EVALUATION OF EFFECT OF KRIMIGHNA BASTI UPAKRAMA ON QUALITY OF LIFE IN CANCER PATIENTS OF FEMALE GENITAL ORGANS (TRYAWARTA YONI)

A Thesis

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CERTIFICATE OF THE SUPERVISOR

It is certified that work entitled, **EVALUATION OF EFFECT OF KRIMIGHNA BASTI UPAKRAMA ON QUALITY OF LIFE IN CANCER PATIENTS OF FEMALE GENITAL ORGANS (TRYAWARTA YONI)** is an original research work done by **Vd. Shivani Sanjeev Gavande** under my supervision for the degree of Doctor of Philosophy in Ayurved- Kayachikitsa to be awarded by Tilak Maharashtra Vidyapeeth, Pune. To best of my knowledge this thesis embodies the work of candidate herself and has duly been completed. It fulfills the requirement of the ordinance related to Ph. D. degree of the TMV and is up to the standard in respect of both content and language for being referred to the examiner.

Date : 23|12|2019.

Place : Pune

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UNDERTAKING

I **Vd. Shivani Sanjeev Gavande** am the Ph. D Scholar of the Tilak Maharashtra Vidyapeeth in Ayurved -Kayachikitsa subject. Thesis entitled, **EVALUATION OF EFFECT OF KRIMIGHNA BASTI UPAKRAMA ON QUALITY OF LIFE IN CANCER PATIENTS OF FEMALE GENITAL ORGANS (TRYAWARTA YONI)** under the supervision of Prof. (Dr) Abhijit H Joshi, solemnly affirm that the thesis submitted by me is my own work. I have not copied it from any source. I have gone through extensive review of literature of the related published / unpublished research works and the use of such references made has been acknowledged in my thesis. The title and the content of research are original. I understand that, in case of any complaint especially plagiarism, regarding my Ph.D. research from any party, I have to go through the enquiry procedure as decided by the Vidyapeeth at any point of time. I understand that, if my Ph.D. thesis (or part of it) is found duplicate at any point of time, my research degree will be withdrawn and in such circumstances, I will be solely responsible and liable for any consequences arises thereby. I will not hold the TMV, Pune responsible and liable in any case.

I have signed the above undertaking after reading carefully and knowing all the aspects therein.

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Vd. Shivani Sanjeev Gavande

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INTRODUCTION

Non-communicable diseases (NCDs) are becoming the country's pre-eminent threat to public health and wellbeing. These diseases include hypertension, diabetes, heart diseases and cancer. Cancer is most deadly killer of 21st century. A national cancer control program (NCCP) of WHO is a public health program designed to reduce the number of cancer cases and deaths and improve quality of life of cancer patients. This is done by implementing systematic, equitable and evidence-based strategies for prevention, early detection, diagnosis, treatment and palliation using available resources.

As per cancer statistics in India (2018), estimated numbers of people living with the disease are around 2.25 million. Every year, over 11, 57,294 lakh new cancer patients are registered. Number of cancer-related deaths per year in India are 7, 84,821, among them 3, 71,302 women die because of cancer. Gynaecological cancers include breast cancer, cervical cancer, vaginal cancer, ovarian cancer and uterine cancer. Incidence of female genital cancer is 12.09 % world-wide.

Ovarian and cervical cancers are the most common gynecological cancers affecting women worldwide and in India. Cervical cancer ranks second most common cancer in India. Five years prevalence of all ages of female genital caners is as follows-

Table 1- Prevalence[1] of female genital cancers in India

Type of Caner	5 years prevalence (in percentage)
Cervix uteri	34.59
Ovary	12.33
Corpus uteri	5.17
Vagina	1.75
Vulva	1.29

Conventional treatment for gynecological cancers is surgery, radiotherapy and chemotherapy. These treatment modalities, though effective, have side-effects, hampering Quality of Life of cancer patients. Adjunct Ayurvedic treatment is effective in cancer

patients mainly in terms of improvement in Quality of Life (QoL), minimizing side-effects of chemotherapy and radiotherapy, reducing inflammation, boosting immune system and thus increasing survival.

Ayurveda, as an ancient medical science is based on Triskandha Ayurveda, which comprises knowledge of Hetu, Linga and Aushadha as three Skandha of Ayurveda.

Hetu and Linga are two essential components of diagnosis and understanding of any disease.
In Ayurvedic system of medicine, the methodology of diagnosing Anukta Vyadhi (unidentified disease) is described as understanding Vikrar Prakruti (etiopathology), Adhisthanantarani (site of disease) and Sthanantar Vishesha (signs and symptoms).

विकारानामाऽकुशलो न जिर्हियात कदाचन ।
न हि सर्व विकाराणाम् नामातोऽस्ति धृवा स्थितिः ॥ च.सू.१९/४४

In Ashtanga Ayurveda, gynecological diseases are incorporated in Kayachikitsa. Charakacharya has emphasized on gynecological disorders by describing a separate chapter 'Yoni Vyapada Chikitsa Adhyaya', the last chapter of Chikitsa Sthana. In this chapter he mentions various causative factors and various signs and symptoms of diseases of female genital organs.

Incidence of various gynecological disorders (Yoni Vyapada) including PCOD, DUB, gynecological cancers is rising due to various causative factors like changing food habits, sedentary lifestyle and mental stress.

The word CANCER does not have any single Ayurvedic synonym. Solid tumors shows similarity with various diseases and conditions mentioned in Ayurvedic texts, such as Dushta Vrana, Dushta Vranashotha, Dushta Granthi, Dushta Arbuda, Dushta Nadi Vrana, whereas non solid tumors like Leukemia, Hodgkin's disease, Non – Hodgkin's disease, Multiple Myeloma show similarity with Sannipatika Jwara, Krimi, and Raktapitta. Thus the treatment of cancer is similar to the treatment of above mentioned diseases and conditions like Dhatugatawastha and Dhatupakawastha as mentioned in Ayurvedic text.

Cancers of organs of female genital system mainly include cervical cancer, vaginal cancer, ovarian cancer, endometrial cancer and cancer of fallopian tubes. All these organs of female genital system are covered under Tryawarta Yoni.

Various factors are responsible in the process of manifestation of cancers of organs of female genitalia .They include multi-parity, poor hygiene of external and internal genital organs, early menarche, late menopause, obesity, PCOD etc. from modern perspective. Along with these factors, Viruddhahara, intake of excessive spicy food, non-vegetarian diet, absence of exercise, mental stress, unhealthy lifestyle and Krimi are also observed as attributing factors in manifestation of cancers of female genital organs in the survey carried out at Integrated Cancer Treatment and Research Center, Wagholi, Pune.

Charakacharya has clearly mentioned Krimi as a causative factor of Acharana Yoni Vyapada. Durnaama, a type of Krimi is described in Rigveda[2], which resides in Yoni (female genital organs).

दुर्णामा योनिमाशये । ऋ.सं. १०/१६२/२ दुर्णामा क्रिमिर्भवति ।

Charakacharya also quoted Apakarshana as first line of treatment of Krimi. Apakarshana of Abhyantara Krimi is recommended by the means of Shodhana Chikitsa. Thus Krimighna Basti Upakrama is selected to assess its effects on cancers of Tryawarta Yoni (cancers of female genital organs).

न हि वातादृते योनिं नारीणां सम्प्रदुष्यति **|**

शमायित्वा तमन्यस्य कुर्याद्दोषश्च भेषजं **||** च.चि ३०/११५

The rationale behind selecting Basti Chikitsa is inevitable relationship of vitiation of Vata Dosha and manifestation of Yoni Vikara[3]. Basti Chikitsa is a treatment of choice in Vata Vyadhi. Therefore Basti Chikitsa using Krimighna medicines was selected in this study to assess its efficacy in cancers of female genital organs i.e. cervical cancer, vaginal cancer, uterine cancer and ovarian cancer.

AIM & OBJECTIVES

AIM:

Evaluation of effect of Krimighna Basti Upakrama on Quality of Life in cancer patients of female genital organs (Tryawarta Yoni).

OBJECTIVES:

1) To assess the effect of Krimighna Basti Upakrama (Ayurvedic Panchakarma Chikitsa) on signs and symptoms of cancer of organs of female genital system.
2) To assess the effect of Krimighna Basti Upakrama (Ayurvedic Panchakarma Chikitsa) on *Sanjata Krimi Lakshanani.*
3) To assess the effect of Krimighna Basti Upakrama (Ayurvedic Panchakarma Chikitsa) on Quality of Life of patients suffering from cancer of female genital system.
4) To assess the effect of Krimighna Basti Upakrama (Ayurvedic Panchakarma Chikitsa) on disease status of patients suffering from cancer of female genital system.

LITERATURE REVIEW

A) Previous research work related to symptoms of cancer of female genital organs are as follows:

Table 2-Previous work done[4] related to symptoms of cancers of female genital organs

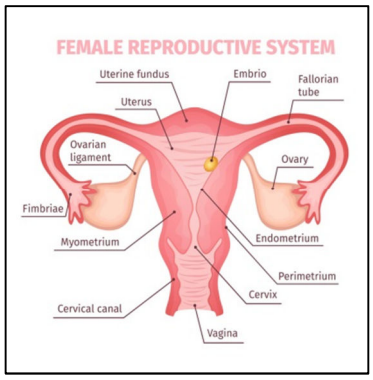
Name of Study	Departmant and Institute
Study of Pradara with special reference to Shwetpradar	Kayachikitsa - Rajiv Gandhi University, Bangalore.
Role of Madhuyashti Ghruta in Yonigata Vrana	Bharati Vidyapeeth,Pune
Effect of Guduchi Triphala Danti Kwatha on Yoni-kanda, by Yoni Prakshalana in Shwet Pradarawith reference to Trichomonas vaginitis	Bharati Vidyapeeth, Pune
Effect of Sariva Choorna and Sariva Gel in Pittaj Yoni Vyapada w.r.t. Trichomonial vaginitis	Bharati Vidyapeeth, Pune
Role of Amalaki Guggulu in Leucorrhoea	Rashtriya Ayurved Vidyapeeth
Effect of certain Kshara (Apamarg Kshara and Tila Kshara) and cautery followed by Udumbara ointment in cervical erosion	Banaras Hindu University, Varanasi
Role of Amalaki and Madhu in Shwetpradara with special reference to pathological organism	Bharati vidyapeeth, Pune
Comparative study of Bhoomyamlaki Choorna with Lukol of Himalaya	Banaras Hindu University, Varanasi
Effect of Darvyadi Ghan Satwa Vati in Shwet Pradara with vaginal infection	Lukhnow University
Study of Kaphaja Yonivyapada and its management with Karanja choorna and Karanja Ointment	Bharati Vidyapeeth, Pune
Shleshmala Yonivyapada and application of Yoni Pichoo of Udumbara Taila	Banaras Hindu University, Varanasi
Study of Trivanga Bhasma in Shwetpradara	Prasuti Balrog - Banaras Hindu University, Varanasi

Name of Study	**Departmant and Institute**
Study of Pushyanuga Choorna and Pushyanuga Choorna Ghana Satwa with special reference to Shwetpradara	Rasa Shashtra and Bhaishajya Kalpana Shri Chhatrapati Shahuji Maharaja University, Kanpur
Treatment of Pradara Roga with Japakusuma and Tanduleeyaka	Prasuti Tantra Banaras Hindu University, Vaaranasi
Treatment of Pradara Roga with certain indigenous drugs	Prasuti Tantra Banaras Hindu University, Varanasi
Vaginal douching with Karanja Kwatha in nonspecific leucorrhoea- A clinical trial	Prasuti Tantra SDM college of Ayurveda, Hassan, Karnataka
A study on Artavvikara	Kayachikitsa Rajiv Gandhi University, Bangalore
Udawarta Yoni Vyapada-Dashmoola Siddha Ksheera Basti Prayoga	M.S.Balgat, Prasuti Tantra and streerog, Tilak Ayurved Mahavidyalaya, Pune
Kaphaja Yoni Vyapada war Nimba Patra Kwathacha Upyoga	S.V Randive Prasuti Tantra and streerog, Tilak Ayurved Mahavidyalaya, Pune
Clinical study on Yonivyapada with special reference to cervical erosion and its management with Nimba patradi Varti	Rawal P K Prasuti Tantra and streerog Gopabandhu Ayurved Mahavidyalaya, Puri
Effect of Pippalyadi Varti on Shleshmaja Yoni Vyapada with special reference to Trichomonas vaginitis	Malathi A Prasuti Tantra and Streerog Gopabandhu Ayurved Mahavidyalaya, Puri
Krimi Pariksha in Shleshmaja Yoni Vyapada and role of Panchwalkala Kwatha douche as Upashaya	Siddhamma, Roga Nidana Vikruti Vidnyan, Sharmashala

Name of Study	Departmant and Institute
	Manjunatheswar College of Ayurved and Hospital, Hassan
Management of Arbuda with special reference to cancer-observational study	Beena, Kayachikitsa, Govt. Ayurved College, Mysore

B) LITERATURE REVIEW – ANATOMY OF FEMALE REPRODUCTIVE SYSTEM[5]

Fig.1: Female reproductive system



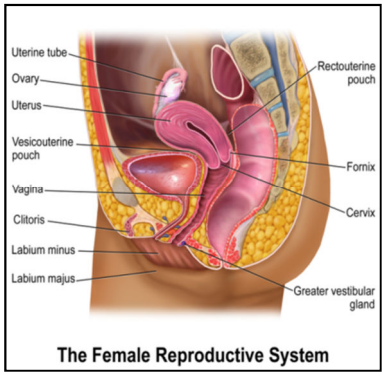
The human female reproductive system[5] has two main parts: uterus and ovaries. These both are internal parts. The vagina meets the external organs at the vulva.

The external organs includes the labia, clitoris, and urethra. The vagina is connected to the uterus through the cervix, while the uterus is connected to ovaries via the fallopian tubes. With regular intervals, the ovary releases an ovum, which passes through the fallopian tube into the uterus.

If during copulation, it meets with sperm, the sperm penetrates and merges with the egg and fertilizes. The fertilization usually occurs in the fallopian tube but can happen outside the fallopian tube (called as ectopic gestation). The zygote then implants itself in the wall of the uterus, where it begins to develop. When developed enough to survive outside the female internal reproductive organ, the cervix dilates and contractions of the uterus expel out the fetus through the birth canal (vagina).

The ova are bigger in size than sperms. A process of oogenesis occurs approximately every month in which there is a formation of a mature ovum from oogonia, which is send to the fallopian tube attached to the ovary for fertilization. If the fertilization process do not occur, this egg is flushed out of through menstruation.

Fig. 2: Female reproductive system-Lateral view



Anatomically female's internal fruitful organs are the duct, uterus, fallopian tubes, cervix, and ovary.

The external parts embody the adipose tissue, rima vulvae, labium, labium, Bartholin's glands, and button.

The ovaries are in pair and produce ovum. Ovaries in the female are gonads and endocrine glands, similar to testes in the male. Ovaries secrete both estrogen and progesterone hormones. Estrogen is responsible for the expression of secondary sex characteristics of females at pubescence and for the maturation and maintenance of the fruitful organs in their matured useful state. Function of progesterone is to help estrogen by promoting menstrual cycle changes in the endometrium.

The ovaries are located in the lateral wall of each side of the pelvis in a region called the ovarian fosse. The fosse usually lies beneath the external iliac artery and in front of the ureter and internal iliac artery.

In humans, the paired ovaries lie within the pelvic cavity and are attached via a fibrous cord called the ovarian ligament. The ovaries are attached to the body of the uterus with the help of suspensory ligament. Mesovarium is a part of broad ligament of uterus which covers the ovary. The ovary is the only intraperitoneal organ in the human body. Tubal and uterine are the two extremities to the ovary. The extremity where the fallopian tube attaches through the infundibulopelvic ligament is the tubal extremity whereas the uterine extremity is attached to the uterus via ovarian ligament.

Arterial Supply -

1. The ovarian artery arises from the aorta just below the renal artery. It descends over the posterior abdominal wall and enters the supplementary ligament of the ovary. It sends the branches to the ovary through mesovarium and continues medially through the broad ligament of the uterus to anastomose with the uterine artery. In addition, the ovarian artery also supplies the uterine tube, the side of the uterus and the ureter.
2. The ovarian artery gives some branches which reach the ovary through the mesovarium.

Venous supply -

The veins emerge at the hilus and form pampiniform plexus. Plexus condenses into a single ovarian vein near the pelvic inlet. The vein ascends on the posterior abdominal wall and drains into inferior vena cava on the right side and into the left renal vein on the left side.

Lymphatic drainage-

The lymphatic from the ovary communicates with the lymphatic from the uterine tube and the fundus of the uterus. They ascend along the ovarian vessels to drain into lateral aortic and pre aortic nodes.

Nerve Supply -

The ovarian plexus derived from renal, aortic and hypogastric plexuses, accompanies the ovarian artery. It contains both sympathetic and parasympathetic nerves. Sympathetic nerves (T10, 11) are afferent (for pain) as well as efferent (vasomotor). The parasympathetic nerves (S1, 2, 3) are a vasodilator.

Physiology and Function-

The ovaries are the site of egg cell production and also have specific endocrine function called as Oogenesis.

The ovaries are the site of gamete (egg cell, oocyte) production. The developing egg cell (or oocyte) grows within ovarian follicles. Follicles are composed of different types and numbers of cells according to their maturation stage, which can be determined by their

size. When oocyte maturation is completed, a luteinizing hormone (LH) surge secreted by the pituitary gland stimulates follicle rupture and oocyte release. This oocyte development and release process are referred to as ovulation. The follicle remains functional and transforms into a corpus luteum, which secretes progesterone to prepare the uterus for possible embryo implantation. Usually, each ovary takes turns releasing eggs each month. However, this alternating egg release is random. When one ovary is absent or dysfunctional, the other ovary will continue to release eggs each month

Ovaries -

Ovaries is a reproductive organ which produce female egg called as ovum. They also produce and secrete estrogen and progesterone

Uterus -

The generative organ or uterus may be a major feminine hormone-responsive reproductive organ of most mammals as well as humans. One end, the cervix, opens into the vagina, while the other is connected to both fallopian tubes. The fetus develops inside the uterus during the gestational period.

The womb consists of a body and a cervix. The cervix protrudes into the vagina. The uterus is held in position with the help of ligaments which are formed by condensation of endopelvic fascia. These ligaments include the pubo-cervical, transverse, cervical, cardinal, and uterosacral ligaments. It is coated by a sheet-like fold of serosa, the broad ligament.

The reproductive function of the uterus is to accept a fertilized ovum that has come through the fallopian tube. It implants into the endometrium and gets nourishment from blood vessels which are specially developed.

Arterial supply -

The uterus is supplied mainly by two uterine arteries which are marked enlarged during pregnancy and partly by the ovarian artery.

The arteria may be a branch of the anterior division of the interior arteria iliaca. It first runs medially towards the cervix, crossing the ureter above the lateral fornix of the vagina

and 2 cm lateral to the cervix. Then the artery ascends with a tortuous course along the side of the uterus. Finally, it runs laterally towards the hilus of the ovary and ends by anastomosing with the ovarian artery.

Venous drainage -

The veins form the plexus along the lateral border of the uterus. The plexus drains through the uterine, ovarian and vaginal veins into internal pudendal iliac veins.

Lymphatic drainage -

Lymphatics of the uterus begins at three intercommunicating networks, endometrial, myometrial and subperitoneal. These plexuses drain into lymphatics on the aspect of the female internal reproductive organ. Of these, the upper lymphatics (from the fundus and upper part of the body) pass mainly to the aortic nodes and only partly to the superficial inguinal nodes along the round ligament of the uterus. The lower lymphatics (from the cervix) pass to the external iliac, internal iliac and sacral nodes. The middle lymphatics from the lower part of the body pass to the external iliac nodes.

Nerve supply -

The uterus is richly supplied by both sympathetic and parasympathetic nerves through the inferior hypogastric and ovarian plexuses. Sympathetic nerves (T12, S1) produce uterine contraction and vasoconstriction. The parasympathetic nerves (S2,3,4) produce uterine inhibition and vasodilatation. However, these effects are complicated by the pronounced effects of hormones on the genital tract. Pain sensations from the body of the uterus pass along the sympathetic nerves and from the cervix, along the parasympathetic nerves.

Endocrine Function -

Ovaries secrete estrogen, progesterone, and testosterone. Estrogen is responsible for the secondary sex characteristics of females at puberty. It is additionally crucial for the maturation and maintenance of the mature and useful procreative organs. Progesterone prepares the uterus for pregnancy and the mammary glands for lactation. The co-actions of progesterone and estrogen promote menstrual cycle changes in the endometrium. In women, testosterone is important for the development of muscle mass, muscle, and bone strength, and for optimal energy levels. It also has a role in libido in women.

The uterus is in the middle of the pelvic cavity in the frontal plane (due to ligament uteri). The fundus does not surpass the linea terminalis. The fundus of the uterus is the top, rounded portion, opposite from the cervix. The vaginal part of the cervix does not extend below the interspinal line. The womb is mobile and moves below the pressure of the complete bladder or full-body part anteriorly, whereas if both are full it moves upwards. Increased intra-abdominal pressure pushes it downwards. The mobility is conferred to it by musculo-fibrous apparatus that consists of a suspensory and sustentacular part. Under traditional circumstances, the suspensory part keeps the uterus in anteflexion and anteversion (in 90% of women) and keeps it "floating" in the pelvis. In cases wherever the womb is "tipped," also known as the retroverted uterus, women may have symptoms of pain during sexual intercourse, pelvic pain during menstruation, minor incontinence, urinary tract infections, difficulty in conceiving, and difficulty using tampons. A girdle examination by a doctor can verify whether a womb is retroverted.

The lining of the cavum is named the mucous membrane. It consists of the purposeful mucous membrane and also the basal mucous membrane from that the previous arises. Damage to the basal mucous membrane leads to adhesion formation and/or pathology (Asherman's syndrome). In all placental mammals, together with humans, the endometrium builds a lining periodically which is shed or reabsorbed if pregnancy does not occur. Shedding of the functional endometrial lining is responsible for menstrual bleeding (known as a "menstrual period" in humans, with a cycle of approximately 28 days, 7 days of flow and 21 days of progression) throughout the fertile years of a female.

The womb principally consists of sleek muscle, called involuntary muscle. The innermost layer of the myometrium is known as the junctional zone, which becomes thickened in adenomyosis. The parametrium is the loose connective tissue around the uterus. The perimetrium is the peritoneum covering of the fundus and ventral and dorsal aspects of the uterus. The womb is primarily supported by the girdle diaphragm, region body, and the urogenital diaphragm. Secondarily, it's supported by ligaments and also the serosa (broad ligament of uterus).

The Fallopian tubes, also known as oviducts, uterine tubes, and salpinges (singular salpinx), are two very fine tubes lined with ciliated epithelia, leading from the ovaries of

female mammals into the uterus via the uterotubal junction. These tubes allow passage of the egg from the ovary to the uterus.

The different segments of the salpinx area unit (lateral to medial):

- The infundibulum with associated fimbriae near the ovary
- The body part region that represents the most important portion of the lateral tube
- The isthmus, that is that the narrower a part of the tube that links to the womb
- The interstitial (intramural) part that transverses the uterine musculature

The uterotubal junction is the uterine opening of the fallopian tube and the junction where tubal canal meets peritoneum is called tubal ostium.

Ciliated cells and peg cells are the two types of cells within the simple columnar epithelium of the fallopian tube. The ciliated cells production is facilitated by estrogen and these cells are predominantly found in the infundibulum and ampulla. Pegs cells are scattered between the ciliated cells and contain apical granules and produce tubular fluid. This fluid contains nutrients for spermatozoa, oocytes, and zygotes. The secretions also promote the capacitation of the sperm by removing glycoproteins and other molecules from the plasma membrane of the sperm. Progesterone increases the number of peg cells, while estrogen increases their height and secretory activity. Tubal fluid flows against the action of the ciliary, toward the fimbriated end. When an associate egg cell is developing in the associate ovary, it is encapsulated in a sac known as an ovarian follicle. On maturation, the follicle and the ovary's wall rupture, allowing the ovum to escape. The egg is caught by the fimbriated end and travels to the ampulla wherever generally the spermatozoan meets the egg resulting into fertilization. The fertilized ovum, now a zygote, travels towards the uterus aided by the tubal cilia and tubal muscle. After 5 days, the new embryo enters the uterine cavity and implants about a day later. Occasionally, the embryo implants into the Fallopian tube instead of the uterus, creating an ectopic pregnancy.

The vagina, a feminine organ, is a fibromuscular tubular tract that has two main functions: sexual intercourse and providing passage for childbirth. In humans, this passage leads from the gap of the female genitals to the womb, however, the epithelial duct tract ends at the cervix.

VAGINA

Vagina is mainly a female sex organ. It is a fibromuscular tubular tract with two main functions: child birth and sexual intercourse.

The epithelial duct gap is larger than the epithelial duct gap. During sexual arousal, the vagina gets moist to facilitate the entrance of the penis. The inner texture of the duct creates friction for the phallus throughout intercourse.

The epithelial duct is at the caudal end of the female genitals behind the gap of the canal. The higher quarter of the duct is separated from the body part by the rectouterine pouch. The vagina and the inside of the vulva are a reddish-pink color, as are the healthiest internal mucous membranes in mammals. A series of ridges produced by the folding of the wall of the outer third of the vagina is called the vaginal rugae. These transverse epithelial ridges provide the vagina with the increased surface area for extension and stretching.

Vaginal lubrication is provided by the Bartholin's glands close to the epithelial duct gap and therefore the cervix. The membrane of the epithelial duct wall additionally produces wetness, although it does not contain any glands. Before and through the organic process, the cervix's mucus glands secrete different variations of mucus, which provides an alkaline environment in the vaginal canal that is favorable to the survival of sperm.

The hymen could be a membrane of tissue that surrounds or partially covers the external epithelial duct gap. The tissue might or might not be burst by epithelial duct penetration. It can also be ruptured by childbirth, a pelvic examination, injury, or sports.

Arterial supply

Vagina is very vascular organ and it is supplied by following arteries ‘

1. The main artery supplying it is the vaginal branch of the internal iliac artery.
2. In addition, the upper part is supplied by the cervico vaginal branch of the uterine artery and the lower part by the middle rectal and internal pudendal arteries.
3. Branches of these arteries anastomose to form anterior and posterior midline vessels called vaginal azygos arteries.

Venous drainage -

The rich vaginal venous plexus drains into the internal iliac veins through the vaginal veins which accompany the vaginal arteries.

Lymphatic drainage -

Lymphatics from upper one third of vagina drain into the external iliac nodes; from the middle one third into the internal iliac nods, and from the lower one third into medial group of superficial inguinal nodes.

Nerve supply -

1. Lower one third of the vagina is pain sensitive and supplied by the pudendal nerve, through the inferior rectal and posterior labial branches of perineal nerve.
2. The upper two third of vagina are pain insensitive and are supplied by sympathetic (L 1,2) nerves and parasympathetic (S2,3) nerves derived from the inferior hypogasrtic and uterovaginal plexuses. Sympathetic nerves are vasoconstrictor and parasympathetic nerves are vasodilators. The fibers form the vaginal nerves which accompany the vaginal arteries.

Function of the Vagina -

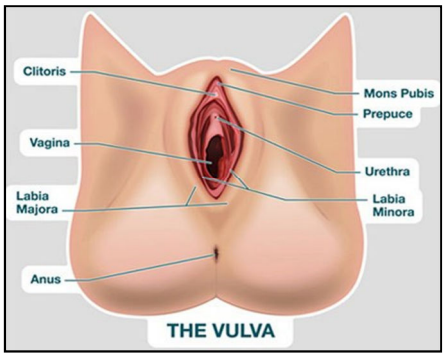
The primary functions of vagina are child birth and sexual intercourse. The concentration of the nerve endings on the brink of the doorway of a woman's duct (the lower third) offers enjoyable sensations throughout sexual intercourse once excited. Ninety percent of the vagina's nerve endings are in this area. However, the duct as a full has scant nerve endings for sexual stimulation and orgasm. This lack of nerve endings makes giving birth considerably less painful.

The Vagina and Childbirth -

The duct provides the channel to deliver the baby from the female internal reproductive organ to its freelance life outside the mother's body. During birth, the physical property of the duct permits it to stretch to several times its traditional diameter. The duct is commonly said because of the passageway within the context of the physiological state and giving birth.

VULVA

Fig.3-The Vulva



The vulva is the external genitalia of the female reproductive tract, situated immediately external to the genital orifice. The vulva consists of the external genital organs of the female mammal. Its development occurs during several phases, chiefly during the fetal and pubertal periods.

As the outer portion of the human uterus or womb, the vulva protects its opening with a "double door": the labia majora (large lips) and the labia minora (small lips). The vulva also contains the opening of the female urethra, and thus serves the vital function of passing urine.

The major structures are:

- The mons pubis
- The labia majora and the labia minora
- The external portion of the clit and also the erectile organ hood
- The vulval vestibule
- The pudendal cleft
- The frenulum labiorum pudenda or fourchette
- The opening (or urinary meatus) of the urethra
- The opening (or introitus) of the vagina
- The hymen

The soft mound at the front of the vulva, the mons pubis, is formed by fatty tissue covering the pubic bone. The mons pubis separates into two folds of skin called the labia

majora, literally "major (or large) lips." The cleft between the labia majora is called the pudendal cleft and it contains and protects the opposite, more delicate structures of the vulva. The labiums meet once more at the region, a flat space between the pudendal slit and also the arse. The color of the outside skin of the labia majora is usually close to the individual's overall skin color although there is considerable variation.

The inside skin and tissue layer square measure typically pink or chromatic. After the onset of pubescence, the fat and therefore the labium become coated by bush. This hair typically extends to the inner thighs and area, but the density, texture, color, and extent of pubic hair coverage vary considerably due to both individual variation and cultural practices of hair modification or removal. The labium square measure 2 soft folds of skin inside the labium.

The erectile organ is found at the front of the female genital organ wherever the labium meets. The visible portion of the erectile organ is that the clitoric complex body part, roughly the size, and shape of a pea. The clitoric complex body part is extremely sensitive, containing as many nerve endings as the analogous organ in males, the glans penis. The point where the labia minora attaches to the clitoris is called the frenulum clitoridis. A prepuce, the clitoric hood, normally covers and protects the clitoris; however, in women with particularly large clitorises or small prepuces, the clitoris may be partially or wholly exposed. The clitoric hood is that the feminine equivalent of the male foreskin and will be partly hidden within the vulvar slit. The area between the labium is named the female genitalia vestibule, and it contains the vaginal and urethral openings. The canal gap (meatus) is found below the erectile organ and simply before of the channel. This is where urine passes from the urinary bladder.

The gap of the duct is found at the lowest of the female genitals vestibule toward the region. The term orifice is additional technically correct than "opening," since the duct is typically folded, with the gap closed unless one thing is inserted. The introitus is sometimes partly covered by a membrane called the hymen. The hymen ruptures during the first episode of vigorous sex, and the blood produced by this rupture has been traditionally seen as a sign of virginity. However, the hymen may additionally rupture due to exercise or be stretched by traditional activities like the employment of tampons. Slightly below and to the left and right of the vaginal opening are two Bartholin glands

that produce a waxy, pheromone-containing substance, the purpose of which is not yet fully known.

Perineum –

The perineum is situated between the pubic symphysis and coccyx. It also includes the perineal body and surrounding structures. The boundaries generally includes the genitals and anus.

The term perineum may refer to only the superficial structures in this region or be used to include both superficial and deep structures. Perineal tears and perineotomy typically occur in childbearing with first-time delivery; the risk of perineal tears can be avoided by regular massage to this area.

This region is the outlet of the pelvis. Its deep boundaries are:

a) The pubic arch and the arcuate ligament of the pubis
b) tip of the coccyx
c) inferior rami of the os pubis and ischial tubercle,
d) the sacrotuberous ligament

The perineum includes two distinct regions separated by the pelvic diaphragm. Its structures include superficial and deep perineal pouches ischioanal fossa, a fat-filled area at the lateral sides of the anal canal finite laterally by prosthetic device internus muscle, medially by the girdle diaphragm and also the anal canal.

C) LITERATURE REVIEW -- TRYAWARTA YONI – AYURVEDIC PERSPECTIVE

Tryawarta Yoni means female genital system described in Ayurvedic Classics.

Etymology of योनि -

- **यु+नि = योनिः अव् +योनिः =अवयवः**

- **मातुः योनिः** is an extensive part of arial region. It is said to be **वायुना परिवीतः**, meaning surrounded by wind.
- **वायुना परियुतो भवति । सास्ना मांसेन च ।** As the volume of cloud is surrounded by the wind, a woman's womb is surrounded by muscles and flesh[6]

- **योनिः अन्तरिक्षम् । अन्तरिक्ष** is called **माता** because in it (**अस्मिन्**) are created (**निर्मीयन्ते**) living beings (**भूतानि**).

- A woman's womb **स्त्रीयोनिः** is called **योनिः** because the fetus is fully mixed **अभियुताः** with it (**एनां**), **एनां** refer to **स्त्रीयोनिम्**; **एनां योनि अभि अभितः युतः मिश्रितः भवति । योनिः स्थानं पौतेः ।** (**निरुक्त् -१४/१८-२०**)

- **दोः शिताम् । दोः द्रवते ।**[7]

  योनिः शिताम् इति शाकपूणिः । विषितो भवति ।

  शितिमांसतः मेदस्त इति गालवः। शितिः मांसं माननं वा। मानसं वा । मनः अस्मिन् सीदतीति वा । मेदः मेद्यते । (**निरुक्त ४/३**)

Tryawarta Yoni as explained in Ayurvedic text -

Sushrutacharya has described about female genital system in Sharira Sthana as,

शंखनाभ्याकृतिर्योनीस्त्र्यावर्ता सा प्रकीर्तिता |

तस्यास्तृतीये त्वावर्ते गर्भशय्या प्रतिष्ठिताः ||

यथा रोहितमत्स्यस्य मुखं भवति रूपतः ।

तत्संस्थाना तथारूपां गर्भशय्यां विदुर्बुधाः ॥ सु.शा.5/55-56

Yoni resembles Shankha Nabhi (hollow portion of a conch shell) in shape and it has three envelops or circles (Avarta). Grabhashayya is in a third circle (Avarta). Tryawarta Yoni[7] also includes the surrounding structures around the uterine cavity like ovary, fallopian tubes, vagina, and vulva. All these organs together form Tryawarta Yoni[8].

पित्तपक्वाशययोर्मध्ये गर्भशय्या, **यत्र गर्भस्तिष्ठति**…**। च.शा.६/३९**

Charakacharya has mentioned that Garbhashayya (Uterus) is situated in between Pittashaya and Pakwashaya. It is a site where foetus resides.

योनिः शकटाकृतिरपत्यलाभाय ...| **का.सं.पान ४७-४८**

Acharya Kashyapa has mentioned the charateristics of favorable (Prashasta Yoni)[8] and unfavorable Yoni (KuYoni) for healthy progeny.

Prashasta Yoni[9] =Shape of Shakat i.e. convex type of vulva is best for pregnancy. Vulva should be soft, having medium-size and with less hairs.

KuYoni (unhealthy / unfavourable vulva) – Excess length of the vulva with gross pubic hairs with fatty mons pubis, oval-shaped vaginal orifice, internal version of the uterus, retroverted uterus, pinpoint cervix are the signs of KuYoni.

आशयास्तु –वाताशयः, **पित्ताशयः**, **श्लेष्माशयो**, **रक्ताशयः**, **आमाशयः**,

पक्वाशयो, **मूत्राशयः**, **स्त्रीणां गर्भाशयोऽष्टम इति** | **सु.शा. ५/८**

Receptacles i.e. Adhaar (Ashaya) are seven in number. The first is of Vata, followed by those of Pitta, Kapha, Rakta, Aama (undigested food), Pakwa anna (digested food), Mutra (urine), and in women, Garbhashayya (uterus), the eighth one, situated between Pittashaya and Pakwashaya. Apart from other Koshtha (hollow organs) in body, woman possesses one more Koshtha i.e. Garbhashaya (uterus which is absent in males).

श्रवणनयन....| नव स्रोतांसि नराणां बहिर्मुखाणि |एतान्येव स्त्रीणामपराणि च त्रीणि द्वे

स्तनायोरधस्ताद्रक्तवहं च | सु.शा.५/१०

....अन्यानि च त्रीणि स्त्रीणां स्तनौ रक्तपथश्च | अ.सं.शा.६/३४

Females have extra three external orifices, two in the breast (one in each breast) and the third one down to excrete Artava which is situated below Samratpatra (clitoris).

Nadis of Yoni and their specifications -

मनोभवागारमुखेऽबलानां तिस्रो भवन्ति प्रमदातनानाम् |

समीरणा चन्द्रमुखी च गौरी विशेषमासानुपर्वयामि ||

प्रधानभूता मदनातपत्रे समीरणा नाम विशेष नाडी |

तस्यामुखे यत् पतितं तु वीर्यं तन्निष्फलं स्यादिति चन्द्रमौलिः ||

या चापरा चान्द्रमसी च नाडी कंदर्पगेहे भवति प्रधाना |

सा सुंदरी योषितमेव सूते साध्या भवेदल्परेतोत्सवेषु ||

गौरीति नाडी यदुपस्थगर्भे प्रधानभूता भवति स्वभावात् |

पुत्रं प्रसूतेबहुधाऽङ्गना सा कष्टोपभोग्या सुरतोपविष्टा || भा.प्र.पू.अ. ३/१७-२०

There are three Nadis[10] explained in Tryawarta Yoni as Sameerana, Chandramasi, and Gouri.

Sameerana Nadi is near the clitoris (Madanat Patra), if semen falls on this Nadi, the lady is not conceived[9].

Chandramasi Nadi is in the middle of the vagina (Kandarp Gehe). If the semen is expelled on this Nadi during coitus, the lady gets an early orgasm and mostly conceives female offspring.

Gouri Nadi is deep inside the vagina (near ectocervix, Upastha). If the sperm sheds on this Nadi, female gets orgasm with efforts and mostly she conceives male child.

Asthi Vidyan of Tryawarta Yoni -

द्वे श्रोणोफलके, एकं भगास्थि | च.शा.७/६

श्रोण्यां पंच, तेषां गुदभगनितंबेषु चत्वारि त्रिकसंश्रितमेकम् | सु.शा.५/१९

Two ischial bones and one pubic bone form Shroni[11]

बस्तिबस्तिशिरोमेढ्रकटीवृषणपायवः |

एक संबंधनाः प्रोक्ता गुदास्थिविवराश्रया || सु.शा.५/१९

Bladder, prostate, uterus in female and anus are protected by the walls of the pelvis[12]. In females, bladder, uterus, cervix, vagina, ovaries and fallopian tubes are protected in the pelvis.

Physiology of Tryawarta Yoni from Ayurvedic perspective

Organs of Tryawarta Yoni i.e. Beeja Vahini (Fallopian tube), Stree Beeja Granthi (Ovaries), Garbha Shayya (Uterus), Yoni (Vagina) and Yoni Mukha (Cervix) are under the influence of Vata Dosha (Apana Vayu).

These organs are muscular and Garbha Shayya is highly vascular. Thus Mansa Dhatu and Rakta Dhatu respectively play an important role in formation of Tryawarta Yoni.
Stanya and Artava are Upa Dhatu of Rasa Dhatu. Thus maintaining normalcy of Rasa Dhatu is essential for proper function of Tryawarta Yoni.

Stree Beeja Granthi produces Stree Beeja (ova), which is associated with Shukra Dhatu.

D) LITERARY REVIEW --TRYAWARTA YONI – YONI VYAPADA

(Diseases of female genital organs –Ayurvedic prespective)

Charakacharya has mentioned 20 Yoni Vyapada in 30th Chapter of Chikitsa Sthana, which are diseases of female genital organs.

Hetu (Causative factors) of Yoni Vyapada -

विंशतिर्व्यापदो योनेर्जायन्ते दुष्ट भोजनात् |

विषमस्थानाङ्गशयन भृश मैथूनसेवनैः ||

दुष्टार्तवादपद्रव्यैर्बीजदोषेण दैवजः || अ.हृ.उत्तरस्थान ३३/२७-२८

योनौभवा रोगा योनिरोगाः कथिताः |

ते दुष्टार्तव वीर्य दोषादिना जनिता || शा.सं.म.७/१७५-१७६ आढमल्ल टीका.

मिथ्याचारेण ताःस्त्रीणां प्रदुष्टेनार्तवेन च |

जायन्ते बीजदोषाश्च दैवाच्च श्रुणु ताः पृथक् || च.चि.३०/८

Causative factors of Yoni Vyapada

- Mithya Aahar - It includes Vishamashana[13], Viruddhashana, Adhyashana, Samshana, Sankirna Bhojana.
- Dusta Artava[14] –Due to vitiated Vata, Pitta and Kapha Dosha, vitiation of Rasa vaha Srotas and production of Saam Ras Dhatu takes place. As a consequence of it, Raja, which is a Updhatu of Rasa also gets vitiated creating menstrual disorders.
- Unhealthy habits of Maithun (Vyavay)
- Heredity
- Daiva (Due to Adhyatmic Vyadhi/Destiny)

Twenty Yoni Vyapadas are classified according to predominance of vitiation of Doshas. The classification of Yoni Vyapada is described in following table:

Table 3: Types of Yoni Vyapada and associated Dosha

Vitiating Dosha	Type of Yoni Vyapada		
Vataja	1.Vataj	2.Udavartini	3.Putraghni
	4. Acharana	5.Aticharana	6.Shandhi
	7. MahaYoni	8.Suchimukhi	9.Prakcharana
	10.Antarmukhi	11.Shushka	
Pittaja	1. Pittaja	2.Asruja	3.Arajaska
Kaphaja	1. Kaphaja		
Vata Pittaja	1. Paripluta	2.Vamini	
Vata Kaphaja	1. Karnini	2.Upapluta	
Sannipatika	1. Sannipataja		

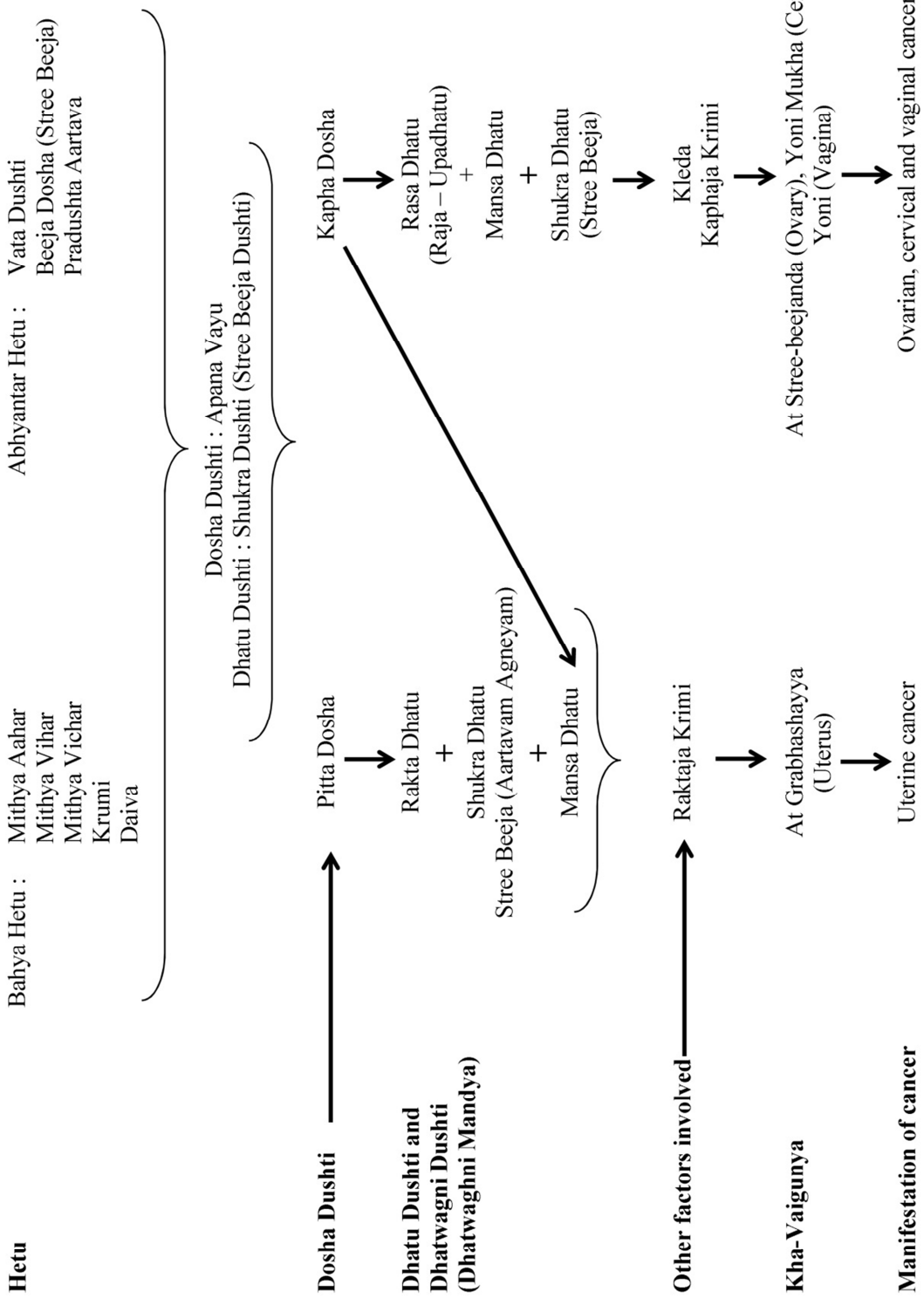
Signs and symptoms of 20 Yoni Vyapada are described in Charaka Samhita.

Table 4-Signs and symptoms in Vinshati Yoni Vyapada[15]

Sr.No.	Signs and Symptoms	Type of Yoni Vyapada
1	Shoola (Pain)	Vatala Yoni (Toda), Pittala Yoni (chosha), TriDoshaja (Severe pain), Udavartini (Pain relieves after expulsion of Rajah), Upapluta (Toda)
2	Supti (Numbness)	Vataja Yoni, Aticharana
3	Kati vankshan ruja	TriDoshaja, Prakcharana, Paripluta
4	Karkashata	Vataja Yoni
5	Maithunasahatwa (painful coitus)	Antarmukhi Yoni, Suchimukhi Yoni
6	Strava	Vataja Yoni (Sashool, Safena, Tanu, Ruksha,) Pittaja Yoni (Neela, Peeta, Asita Kunapa Gandhi) Kaphaja Yoni- (Pichchil), TriDoshaja Yoni -(Shweta, Picchila), Upapluta- (Shweta Strava), Maha Yoni (Fenasra Vahini)
7	Daha	Pittaja Yoni, TriDoshaja Yoni
8	Chhardi	Upapluta Yoni

Sr.No.	Signs and Symptoms	Type of Yoni Vyapada
9	Panduta	Kaphaja Yoni, Upapluta Yoni
10	Shopha	Aticharana, Upapluta Yoni, Maha Yoni
11	Jwar	Pittaja Yoni, Paripluta Yoni
12	Stambha	Vataja Yoni
13	Kandu	Kaphaja Yoni, Arajaska Yoni.
14	Vinmutrasang	Shushka Yoni

Fig. 1 : Samprapti of cancers of Tryawarta Yoni (Cervical, Vaginal, Ovarian, Uterine, Fallopian Tube cancers)



General Management of 20 Yoni Vyapada

स्नेहनस्वेदबस्त्यादि वाताजास्वनिलापहम् |

कारयेद्रक्तपित्तघ्नं शीतं पित्ताकृतासु च ||

श्लेष्मजासू च रुक्षोष्णं कर्म कुर्याद्विचक्षणः ||

सन्निपाते विमिश्रं तु संसृष्टाय च कारयेत् | च.चि.३०/४१-४२

न हि वातादृते योनिं नारीणां सम्प्रदुष्यति |

शमायित्वा तमन्यस्य कुर्याद्दोषश्च भेषजं || च.चि ३०/१५-१६

Though all 3 Doshas are involved in manifestation of Yonivyapada, Vata Dosha plays an important role in pathogenesis of all 20 types of Yoni Vyapada.

Guru, Manda, Abhishyandi Ahara, Vishamashana, Adhyashana, Viruddhashana causes Sarvedehika Kapha Vruddhi. Kaphaja Krumi are formed at the site of Yoni due to Sarvadehik Kapha Vruddhi and Kleda, which in turn produces Kandu (itching) and per vaginal Pichhila Strava (sticky discharge).

Prakruti Vighata is the treatment of Krimi where Kaphaghna Chikitsa is done in such a way that it will destroy Krimi as well as restricts the production of Abhyantar Krimi.

The female genital organs come under the influence of Apana Vayu. Basti Chikitsa[16] is the treatment of choice of Vata Dosha. Thus Krimighna Basti Upakrama is effective in management of Yoni Vyapada, especially in cancers of Tryawarta Yoni.

E) Literature review-CANCERS OF FEMALE GENITAL SYSTEM (Tryawarta Yoni)

Female genital oragans are discussed in previous chapter. Now we will discuss about various types of cancers of female reproductive organs. Female reproductive system contains uterus, cervix, vagina, vulva, endometrium, fallopian tubes and ovaries.

Fig 4: Vaginal Cancer

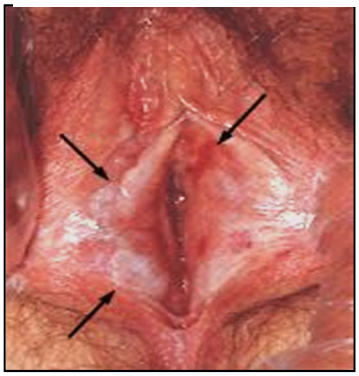
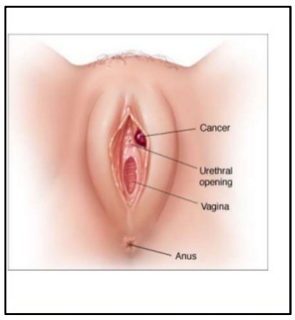


Fig 5: Vulvar Cancer



Vaginal cancer[17] is very rare. Only about 1 in every 1100 women will develop vaginal cancer in her lifetime.[13]

Vaginal cancer starts in the vagina. There are different types of vaginal cancers, but the most common is called squamous cell carcinoma. It starts in the lining of vagina.

Several types of tissues are found in the vagina.

- The lining of vagina has squamous cells. These squamous cells are the types of epithelial cells.
- Vaginal wall underneath the epithelium is made up of connective tissue, mostly lymph vessels and nerves.
- Gland near opening of vagina secretes mucus to make vagina soft and moist.

A precancerous condition is that where some cells look abnormal. They are vaginal intraepithelial neoplasia (VAIN). There are three gradation of VAIN as 1, 2 and 3. VAIN 1 means presence of abnormal cells in 1/3rd of the thickness of vaginal lining. In VAIN 2, there is presence abnormal cells in 2/3rd of the thickness of vagina lining and when the abnormal cells are present throughout the vaginal lining then it is categorized as VAIN 3. VAIN 3 is closer to true cancer.

Squamous cell carcinoma is the most common tye of vaginal cancer. This starts at squamous cells of epithelial lining of vagina. They are most common to upper part of vagina near cervix. If not treated in time, they can even spread to lungs, liver and bone.

Adenocarcinoma - Cancer which starts in gland cell is called adenocarcinoma. About 1 in 10 cases of vaginal cancer is adenocarcinoma.Women after the age of 50 are more vulnerable to such cancer.

Melanoma - Melanoma starts in pigment producing cells that give colour to skin. Fewer 3 in 100 cases of vaginal cancer are Melanoma.Melanoma has effect at lower and outer portion of vagina.Tumours vary greatly in size and shape and colour.

Sarcoma - Sarcoma are the cancers that starts in the cells of bones, muscles and connective tissue. Fewer than 3 in 100 cases of vaginal cancer are sarcoma.These cancers forms deep in the wall of vagina and not the surface.Rhabdomyosarcoma is most common type of sarcoma that affects vagina. Leiomyosarcoma is seen women having age more than 50 years.

If the cancer involves both cervix and vagina, it is called cervical cancer.
If the cancer involves both vagina and vulva, it is considered as vulvar cancer.

Staging of vaginal cancer

The two systems used for staging of vaginal cancer;
1) FIGO (International Federation of Gynecology and Obstetrics)
2) AJCC (American Joint Committee on Cancer TNM grading system.)

Keypoints for staging –

1) Extent of tumour (T) – Size of tumour
2) Spread near by lymphnodes (N)
3) Spread (Metastasis) to distant site (M)

Table 5: Staging and Grading of Vaginal Cancers

AJCC	Stage Grouping	Figo Stage	Stage Description
I A	$T_{1a}N_0M_0$	I	Cancer is only in the vagina and is no longer than 2 cm (4/5 inch) It has not spread to nearby lymphnodes and to distant sites
I B	$T_{1b}N_0M_0$	I	Cancer is only in the vagina and larger than 2 cm. It has not spread to nearby lymphnodes and to distant sites
II A	$T_{2a}N_0M_0$	II	Cancer has grown through vaginal wall but not as far as pelvic wall and is not larger than 2.0 cm. It has not spread to nearby lymphnodes and to distant sites
II B	$T_{2b}N_0M_0$	II	The cancer has growth through vaginal wall but not as far as pelvic wall and is larger than 2.0cm. It has not spread to nearby lymphnodes and to distant sites
III	T_1 N_1M_0 to $T_3N_1M_0$	III	The cancer can be any size and might be growing into lower 1/3 of vagina and/or has blocked the flow of urine which is causing hydronephrosis It has also spread to nearby lymphnodes in the pelvic or groin area but not distant site
IVA	$T_4N_{any}M_0$	IVA	The cancer is growing to bladder or rectom or growing out of pelvis. It might or might not have spread to lumphnodes in the pelvic area but not distant site.

IV B	ANY T ANY N M_1	IV B	The cancer has spread to distinct organs such as lings, liver and bones.It can be of any size and might or might nothave grown into nearby structures of organs. It might or might not have spread nearby lymphnodes.

Signs and symptoms of vaginal cancer[18]

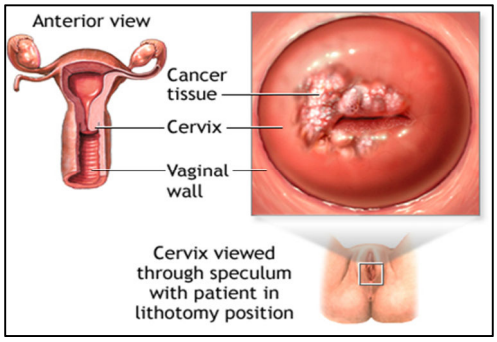
- Abnormal vaginal bleeding (often after sex)
- Abnormal vaginal discharge
- A mass or lump in the vagina that can be felt
- Pain during sex
- Constipation
- Pain in pelvis
- Backpain
- Swelling in the legs.

Screening tests for vaginal cancer

- Medical history
- Clinical examination
- Colposcopy
- Biopsy
- Imaging tests
  - ✓ Chest X-Ray
  - ✓ CT Scan –CT guided the needle biopsy
  - ✓ MRI
  - ✓ PET Scan
- Endoscopic Tests
  - ✓ Proctosigmoidoscop gradually
  - ✓ Cystoscopy

i) CERVICAL CANCER

Fig.6-Cervical cancer



Cervical cancer[19] starts at the cervical lining of the cervix in the uterine cervix.

Cervix has two parts,

a) Ectocervix- The part next to the vagina, having squamous cells

b) Endocervix –The part near to uterus having glandular cells.

These two types of cells meet at a place called, transformation zone. Most of cervical cancer begins at transformation zone; at this zone, normal cell gradually develops precancerous changes as CIN (Cervical epithelial Neoplasia)

Only some of the precancerous lesions turn to cancerous ones.

Types of cervical cancer-

- Squamous cell carcinoma – Most (9 out of 10) cervical cancers are squamous cell carcinoma. This carcinoma develops from ectocervix. Squamous cell carcinoma always starts from the transformation zone.
- Adenocarcinoma – Adenocarcinoma develops from gland cells. Cervical adenocarcinoma develops from mucus-secreting gland vells at endocervix. It has become common in the last 29 years.
- Adenosquamous carcinoma or mixed carcinoma – Less commonly, cervical cancer of both squamous cell carcinoma and adenocarcinoma.

Although almost all cervical cancers are either of squamous cells or gland cells, other types of cancers also can develop in the cervix.

To detect the precancerous stage, the PAP smear test is essential.

Signs and symptoms of cervical cancer

- Abnormal p/v bleeding,
- Bleeding after sex,
- Profuse bleeding during menstruation ,
- Bleeding after vaginal douche or per vaginal examination ,
- Bleeding after menopause
- Pain during sex

Tests for cervical cancer

1) Medical history and physical examination
2) Colposcopy
3) Colposcopic biopsy
4) PAP SMEAR
5) Endocervical curettage
6) Cone biopsy—Cold knife cone biopsy and Loop electrosurgical procedure(LEEP)
7) Imaging

   Chest X Ray

   CT Scan

   MRI Scan

   IVP

   PET Scan

Stages of cervical cancer

The two systems used for staging of vaginal cancer;

1) FIGO (International Federation of Gynecology and obstetrics)

2) AJCC (American Joint Committee on Cancer, TNM grading system.)

Keypoints for staging –

1) Extent of tumour *T) –Size of tumour
2) Spread near by lymphnodes (N)
3) Spread (Metastasis) to distant site (M)

Table: 6 – Staging of cervical cancer

AJCC	Stage Grouping	FIGO Stage	Stage Description
I	$T_1N_{Any}M_0$	I	The cancer cells have grown from the surface of cervix into deeper tissues of cervix.The cancer may also be growing to the body of the uterus,but has not grown outtside the uterus It might or might not have not spread to nearby lymphnodes It has not spread to distant sites
IA	$T_{1a}N_{Any}M_0$	IA	There is very small amount of cancer and it can be seen under microscope It might or might not have not spread to nearby lymphnodes It has not spread to distant sites
IA1	$T_{1a1}N_{Any}M_0$	IA1	The area of cancer is less than 3mm deep and less than 7 mm wide It might or might not have not spread to nearby lymphnodes It has not spread to distant sites
IA2	$T_{1a2}N_{Any}M_0$	IA2	The area of cancer ivasion between 3mm to 5 mm deep and less than 7 mm wide. It might or might not have not spread to nearby lymphnodes It has not spread to distant sites
IB	$T_{1b}N_{Any}M_0$	IB	This includes stage 1 cancers that can be seen without microscope as wellas cancers that can only be seen with microscope,if they have spread deeper than 5 mm into connective tissue of cervix or are wider than 7 mm. It might or might not have not spread to nearby lymphnodes It has not spread to distant sites

IB1	$T_{1b1}N_{Any}M_0$	IB1	The cancer can be seen but not larger than 4 mm. It might or might not have not spread to nearby lymphnodes It has not spread to distant sites
IB2	$T_{1b2}N_{Any}M_0$	IB2	The cancer can be seen and larger than 4 mm It might or might not have not spread to nearby lymphnodes It has not spread to distant sites
II	$T_2N_{Any}M_0$	II	The cancer has grown beyond the cervix, but has not spread to walls of pelvis or the lower part of vagina. It might or might not have not spread to nearby lymphnodes It has not spread to distant sites
IIA	$T_{2a}N_{Any}M_0$	IIA	The cancer has not spread into the tissue near cervix (called the parametria) It might or might not have not spread to nearby lymphnodes It has not spread to distant sites
IIA1	$T_{2a1}N_{Any}M_0$	IIA1	The cancer can be seen but ir is not larger than 4cm. It might or might not have not spread to nearby lymphnodes It has not spread to distant sites
IIA2	$T_{2a}N_{Any}M_0$	IIB	The cancer has spread into tissues near cervix. It might or might not have not spread to nearby lymphnodes It has not spread to distant sites
III	$T_3N_{Any}M_0$	III	The cancer has spread to lower part of vagina or walls of the pelvis. The cancer might be blocking ureters. It might or might not have not spread to

			nearby lymphnodes It has not spread to distant sites
IIIA	$T_{3a}N_{Any}M_0$	IIIA	The cancer has spread to lower part of vagina or walls of the pelvis. The cancer might be blocking ureters. It might or might not have not spread to nearby lymphnodes It has not spread to distant sites
IIIB	$T_{3b}N_{Any}M_0$	IIIB	The cancer has grown to the walls of the pelvis and/or is blocking one or both ureters causing hydronephrosis. It might or might not have not spread to nearby lymphnodes It has not spread to distant sites
IVA	$T_4N_{Any}M_0$	IVA	The cancer has spread to bladder or rectum or it is growing out of pelvis It might or might not have not spread to nearby lymphnodes It has not spread to distant sites
IVB	Any T Any N M_1	IV B	The cancer has spread to distal organs beyond the pelvic area, such as distant lymphnodes, lungs, bones or liver.

iii) Endometrial cancer –uterine cancer -

Fig.7-Endometrial Cancer (Sites with stages)

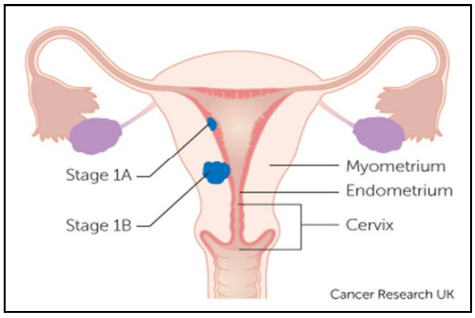
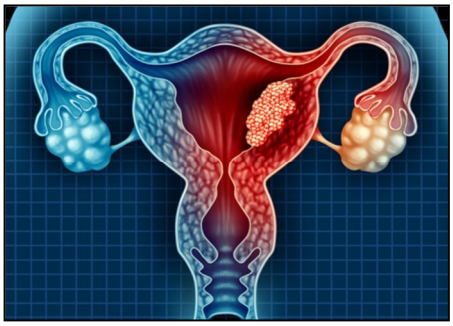


Fig.8-Endometrial Cancer



Cancer that originates from the endometrium or uterus is called endometrial cancer[20]. There is a mutation in the DNA of cells in the endometrium. The mutation turns the normal cell to an abnormal cell. Healthy cells multiply out of control instead of regular dying. Such accumulation of abnormal cells forms a mass or tumor. These cancer cells invade tissues and can spread from a tumor to any other part of the body (metastasis). Changes in the balance of estrogen and progesterone cause change in the endometrium. The increased amount of estrogen as compared to progesterone can increase the risk of endometrial cancer.

Risk factors of endometrial cancer –

- The nulliparous woman – A lady who has not conceived even a single time is at high risk than the woman having a single child.
- More years of menstruation - Menarche at age of 12 years and menopause after 48 years mostly increases the risk of endometrial cancer as more period of exposure of endometrium to estrogen.
- Old age – Endometrial cancer occurs after menopause.
- Obesity – Excess BMI causes hormonal imbalance. This increases the risk of endometrial cancer.
- Hormone therapy to breast cancer – Tamoxifen toxicity while treating breast cancer can cause endometrial cancer.
- An inherited colon cancer syndrome – Lynch syndrome also called hereditary nonpolyposis colorectal cancer (HNPCC) is a syndrome that increases the risk of endometrial cancer

Diagnostic methods used to classify the stages of endometrial cancer -

- Pelvic examination
- Chest X-Ray
- CT Scan
- MRI Scan
- PET Scan
- Lymph node dissection – Surgical procedure to remove the lymph gland.

Cancer spreads in the body through lymph, tissues, blood. Many deaths are due to metastatic cancers. Cancer cells burst away from the tumor site and travel through lymph or blood and form a tumor on other sites.This spreading of cancer to other places is called metastasis.

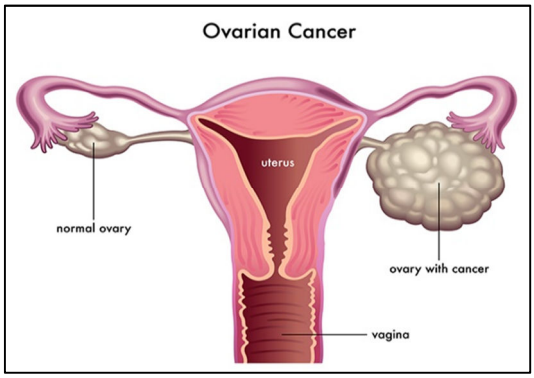
Table7: Staging of endometrial cancer[21]

Stage	Description
I A	Cancer is in the endometrum only or less than halfway through the myometrium.
I B	Cancer has spread halfway or more into the myometrium
II	Cancer has spread to the connective tissue of the cervix, but has not spread outside the uterus.
III	Cancer has spread beyond the uterus and cervix, but not spread beyond the pelvis. Stage III is divided into Stage III A, III B, III C based on how far cancer has spread within pelvis.
III A	Cancer has spread to the outer layer of uterus and to fallopian tubes and ovaries and ligament of uterus.
III B	Cancer has spread to vagina till the parametrium (connective tissue and fat around the uterus).
III C	Cancer has spread to lymphnodes in the pelvis and/or around aorta.
IV	Cancer has spread beyond the pelvis. Stage IV is divided into stage IVA and stage IVB
IV A	Cancer has spread to bladder or bowel wall.
IV B	Cancer has spread to other part of body beyond pelvic cavity including abdomen and/or lymph nodes in the groin.

Grade I and Grade II are at low risk, while Grade III and Grade IV are at high risk.

Ovarian cancer

Fig.9-Ovarian Cancer



Ovarian cancers[22] were previously believed to have originated in ovaries, but recent research suggests that many ovarian cancers may actually start in the cells in the distal end of the fallopian tubes.

The ovaries are mainly made up of three kinds of cells. Each type of cell can develop into a different type of tumor:

- Epithelial tumors start from the cells that cover the outer surface of the ovary. Most ovarian tumors are epithelial cell tumors.
- Germ cell tumors start from the cells that produce the eggs (ova).
- Stromal tumors start from structural tissue cells that hold the ovary together and produce the female hormones estrogen and progesterone.

Epithelial ovarian tumors

Epithelial ovarian tumors start in the outer surface of the ovaries. These tumors can be benign (non cancer), borderline (low malignant potential) or malignant (cancer).

Benign epithelial ovarian tumors

Epithelial ovarian tumors that are benign don't spread and usually don't lead to serious illness. There are several types of benign epithelial tumors including serous cystadenomas, mucinous cystadenomas and Brenner tumors.

Borderline Epithelial Tumors

On histo-pathological examination, some ovarian epithelial tumors don't clearly appear to be cancerous and are known as borderline epithelial ovarian cancer. The two most

common types are atypical proliferative serous carcinoma and atypical proliferative mucinous carcinoma. These tumors were previously called tumors of low malignant potential (LMP tumors). These are different from typical ovarian cancers because they don't grow into the supporting tissue of the ovary (called the ovarian stroma).

Borderline tumors tend to affect younger women than the typical ovarian cancers. These tumors grow slowly and are less life-threatening than most ovarian cancers.

Malignant epithelial ovarian tumors

Cancerous epithelial tumors are called carcinomas. About 85% to 90% of malignant ovarian cancers are epithelial ovarian carcinomas. These histopathological presentations of these tumor cells have several features that can be used to classify epithelial ovarian carcinomas into different types. The serous type is by far the most common and can include high grade and low-grade tumors. The other main types include mucinous, endometrioid and clear cell.

- Serous carcinomas (52%)
- Clear cell carcinoma (6%)
- Mucinous carcinoma (6%)
- Endometrioid carcinoma (10%)

Each ovarian cancer is given a grade, based on how much the tumor cells look like normal tissue:

- Grade 1 epithelial ovarian carcinomas look more like normal tissue and tend to have a better prognosis.
- Grade 2 epithelial ovarian carcinomas look less like normal tissue and usually have a worse outlook.
- Type I tumors tend to grow slowly and cause fewer symptoms. These tumors also seem not to respond well to chemotherapy. Low grade (grade 1) serous carcinoma, clear cell carcinoma, mucinous carcinoma, and endometrioid carcinoma are examples of type I tumors.
- Type II tumors grow fast and tend to spread sooner. These tumors tend to respond better to chemotherapy. High grade (grade 3) serous carcinoma is an example of a type II tumor.

Ovarian germ cell tumors

Germ cells usually form the ova or eggs in females and the sperm in males. Most ovarian germ cell tumors are benign, but some are cancerous and may be life-threatening. Less than 2% of ovarian cancers are germ cell tumors. Overall, they have a good outlook, with more than 9 out of 10 patients surviving at least 5 years after diagnosis. There are several subtypes of germ cell tumors.

The most common germ cell tumors are teratomas, dysgerminomas, endodermal sinus tumors and choriocarcinomas. Germ cell tumors can also be a mix of more than a single subtype.

Common symptoms of ovarian cancer:

- Bloating
- Pelvic or abdominal pain
- Feeling full immediately while having food
- Frequent micturition

Others symptoms of ovarian cancer also include:

- Fatigue
- Stomach upset
- Back pain
- Dyspareunia
- Constipation
- Abdominal swelling with weight loss
- Irregular menstruation

Table 8: Staging and Grading of ovarian cancer[23]

AJCC Stage	Stage grouping	FIGO Stage	Stage description
I	$T_1N_0M_0$	I	The cancer is only in the ovary (or ovaries) or fallopian tube(s). It has not spread to nearby lymph nodes or to distant sites.
IA	$T_{1a}N_0M_0$	IA	The cancer is in one ovary, and the tumor is confined to the inside of the ovary; or the cancer is in one fallopian tube, and is only inside the fallopian tube. There is no cancer on the outer surfaces of the ovary or fallopian tube. No cancer cells are found in the fluid (ascites) or washings from the abdomen and pelvis. It has not spread to nearby lymph nodes or to distant sites.
IB	$T_{1b}N_0M_0$	IB	The cancer is in both ovaries or fallopian tubes but not on their outer surfaces. No cancer cells are found in the fluid (ascites) or washings from the abdomen and pelvis. It has not spread to nearby lymph nodes or to distant sites.
IC	$T_{1c}N_0M_0$	IC	The cancer is in one or both ovaries or fallopian tubes and any of the following are present: • The tissue (capsule) surrounding the tumor broke during surgery, which could allow cancer cells to leak into the abdomen and pelvis (called surgical spill). This is stage IC1. • Cancer is on the outer surface of at least one of the ovaries or fallopian tubes or the capsule (tissue surrounding the tumor) has ruptured (burst) before surgery (which could allow cancer cells to spill into the abdomen and pelvis). This is stage IC2. • Cancer cells are found in the fluid (ascites) or washings from the abdomen and pelvis. This is stage IC3. It has not spread to nearby lymph nodes or to distant sites.

II	$T_2N_0M_0$	II	The cancer is in one or both ovaries or fallopian tubes and has spread to other organs (such as the uterus, bladder, the sigmoid colon, or the rectum) within the pelvis or there is primary peritoneal cancer. It has not spread to nearby lymph nodes or to distant sites.
IIA	$T_{2a}N_0M_0$	IIA	The cancer has spread to or has invaded (grown into) the uterus or the fallopian tubes, or the ovaries. It has not spread to nearby lymph nodes or to distant sites.
IIB	$T_{2a}N_0M_0$	IIB	The cancer is on the outer surface of or has grown into other nearby pelvic organs such as the bladder, the sigmoid colon, or the rectum. It has not spread to nearby lymph nodes or to distant sites.
IIIA1	T_1 N_1M_0 or $T_2N_1M_0$	IIIA1	The cancer is in one or both ovaries or fallopian tubes, or there is primary peritoneal cancer and it may have spread or grown into nearby organs in the pelvis. It has spread to the retroperitoneal (pelvic and/or para-aortic) lymph nodes only. It has not spread to distant sites.
IIIA2	$T_{3a}N_0$ M_0 or $T_{3a}N_1M_0$	IIIA2	The cancer is in one or both ovaries or fallopian tubes, or there is primary peritoneal cancer and it has spread or grown into organs outside the pelvis. During surgery, no cancer is visible in the abdomen (outside of the pelvis) to the naked eye, but tiny deposits of cancer are found in the lining of the abdomen when it is examined in the lab. The cancer might or might not have spread to retroperitoneal lymph nodes, but it has not spread to distant sites.
IIIB	$T_{3b}N_0$ M_0 or $T_{3b}N_1M_0$	IIIB	There is cancer in one or both ovaries or fallopian tubes, or there is primary peritoneal cancer and it has spread or grown into organs outside the pelvis. The deposits of cancer are large enough for the surgeon to see, but are no bigger than 2 cm (about 3/4 inch) across. It may or may not have spread to the retroperitoneal

			lymph nodes, but it has not spread to the inside of the liver or spleen or to distant sites.
IIIC	$T_{3c}N_0$ M_0 or $T_{3c}N_1M_0$	IIIC	The cancer is in one or both ovaries or fallopian tubes, or there is primary peritoneal cancer and it has spread or grown into organs outside the pelvis. The deposits of cancer are larger than 2 cm (about 3/4 inch) across and may be on the outside (the capsule) of the liver or spleen. It may or may not have spread to the retroperitoneal lymph nodes, but it has not spread to the inside of the liver or spleen or to distant sites.
IVA	Any T Any N M_{1a}	IVA	Cancer cells are found in the fluid around the lungs (called a malignant pleural effusion) with no other areas of cancer spread such as the liver, spleen, intestine, or lymph nodes outside the abdomen.
IVB	Any T Any N M_{1b}	IVB	The cancer has spread to the inside of the spleen or liver, to lymph nodes other than the retroperitoneal lymph nodes, and/or to other organs or tissues outside the peritoneal cavity such as the lungs and bones.

F) LITERATURE REVIEW – CONVENTIONAL TREATMENT OPTIONS FOR CANCERS OF FEMALE GENITAL ORGANS

I) Vaginal Cancer –

Vaginal cancers[24] are rare. There is no "standard" protocol that experts agree on. Most of the onco experts agree that treatment given in clinical trials should be considered for any type or stage of vaginal cancer.

Vaginal intraepithelial neoplasia is a pre-cancerous change in the vagina. Many cases of low-grade VAIN (VAIN 1) naturally recover within few days. At every few months interval, the PAP smear test is advisable. In case of VAIN 2, treatment should be started at the right time. When there are many areas of VAIN, brachytherapy (intracavitory radiation) may be used. Surgery is the option to remove abnormal diseased cells if other treatments do not work in the non-invasive cancer stage. A partial vaginectomy (removing part of the vagina) is rarely needed to treat VAIN.

Stage 0 (VAIN 3) or carcinoma in situ [CIS]

- Laser vapourisation
    1. Local Excision
    2. Brachytherapy (intracavitory radiation)
    3. Topical implementation of 5-FU cream or imiquimod weekly for 10 weeks.

Stage I

Squamous cell cancers:

1. Interstitial radiation can be an option in stage I vaginal cancers tumors. For tumors that have grown more deeply, brachytherapy may be combined with external beam radiation.
2. Radical vaginectomy might be needed depending on the size of cancer and where it is in the vagina. Reconstructive surgery to make a brand new canal once the treatment of the cancer is a choice if an oversized part of the canal has been removed.
3. If the cancer is in the upper vagina, it can be treated with radical hysterectomy, bilateral radical pelvic lymph node removal, and/or radical or partial vaginectomy

Adenocarcinomas:

a) For cancers in the upper part of the vagina, the treatment is surgery -- a radical hysterectomy, partial or radical vaginectomy, and removal of pelvic lymph nodes. This can be followed by the operation if required or desired. Both internal and external radiation therapy is used as per requirement

b) For cancers lower down in the vagina, external beam radiation therapy may be used, along with either interstitial or intracavitary radiation therapy (brachytherapy). The humor nodes within the groin and/or pelvis square measure typically treated with external beam radiotherapy

Stage II

1. Radiation using brachytherapy and external beam radiation

2. Radical vaginectomy in squamous cell carcinoma in the upper vagina

3. External radiation to treat lymph nodes in groin or pelvis when the tumor is in the lower third of the vagina.

4. Chemotherapy with radiation to shrink cancer.

.

Stage III or IVA

1**.** Radiation therapy with both brachytherapy and external beam radiation

2. Chemotherapy along with radiation

3. Surgery is rarely used

Stage IVB

1. In stage IV, cancer has spread to distant organs. Radiation in the vagina and pelvis can reduce bleeding.

2. Chemotherapy along with radiation should be given for better relief to the patient.

3. The best option is to get patients in clinical trials as there are no standards for this stage.

Recurrent epithelial cell cancer or glandular carcinoma of the canal

If cancer comes back after treatment it's called recurrence If it comes back in the same place it was the first time, it's called a local recurrence. If it comes back in another a part of the body, just like the liver or lungs, it's known as a remote return.

For local recurrence

At a stage I & II,

Radical surgery

If cancer is treated before with surgery then Radiation.

A clinical trial is a good option in high stage cancers.

For distal recurrence

Surgery, Radiation, and Chemotherapy can be used for better relief to the woman.

The clinical trial is also a better option.

II) Cervical Cancer

Staging[25] of cervical cancer is essential because of fertile age if women and other factors like site of cancer type of cancer i.e squamous-cell or adenocarcinoma, the health of patient and age of the patient.

Stage 0 (carcinoma in situ)

This is the precancerous stage of cervical cancer. Cancer cells are in the surface layer of the cervix. Proper treatment can cure such condition but it may recur in the cervix. So close monitoring with PAP smear and colposcopy is essential**.**

Cancer of cervix with squamous cell carcinoma:

- Cryosurgery
- Laser surgery
- Loop electrosurgical excision procedure (LEEP/LEETZ)
- Cold knife conization
- Simple hysterectomy (as the first treatment or if the cancer returns after other treatment

Cancer of cervix with adenocarcinoma:

- Hysterectomy
- Cone biopsy (a possible option for women who wish to have children). The cone specimen must have no cancer cells at the edges, and the woman must be closely watched after treatment. Once the woman has finished having children, a hysterectomy is recommended.

Stage IA1

Treatment differs in fertile and nonfertile women

Women expecting pregnancy should undergo a cone biopsy. If the edges of the cone biopsy have cancer cells then repeat cone biopsy or removal of the cervix and upper vagina is advisable.

When the woman is not expecting any progeny, total hysterectomy can be an option when cancer shows no lymphovascular invasion.

When cancer goes into blood and lymph, radical hysterectomy along with the removal of pelvic lymph nodes is a choice.

Stage IA2

Treatment differs in fertile and nonfertile women

The woman who is expecting pregnancy

1. Cone biopsy with the removal of pelvic lymph nodes (pelvic lymph node dissection)
2. Radical trachelectomy with pelvic lymph node dissection
   a) When the woman is not expecting any progeny,

1. External beam radiation therapy (EBRT) to the pelvis plus brachytherapy
2. Radical hysterectomy with removal of pelvic lymph nodes and sampling of the para-aortic lymph nodes.
   b) If Cancer has spread to lymph nodes or any other organ, EBRT with chemotherapy is recommended.

Stages IB and IIA

The main treatment options are surgery, radiation, or radiation given with chemotherapy. Chemotherapy (concurrent chemo-radiation).

Stages IB1 and IIA1

The woman who is expecting pregnancy,

- Radical trachelectomy with pelvic lymph node dissection

When the woman is not expecting any progeny,

- Radical hysterectomy with removal of lymph nodes in the pelvis and some lymph nodes from the para-aortic area
- If none of the lymph nodes are found to have cancer, radiation may still be discussed as an option if the tumor is large, if the tumor has grown into blood or lymph vessels, or if the tumor is invading the surrounding connective tissue that supports organs such as the uterus, bladder, vagina (the stroma).
- If cancer has spread to the tissues next to the uterus (called the parametria) or to any lymph nodes, or if the tissue removed has positive margins, radiation (EBRT) with chemotherapy is usually recommended. The doctor may also advise brachytherapy after the combined chemo and radiation are done.
- Radiation using both brachytherapy and external beam radiation therapy may be an option if a woman is not healthy enough for surgery or if she decides they do not want surgery
- Chemotherapy may be given with the radiation (concurrent chemoradiation).

Stages IB2 and IIA2

1. Chemoradiation: This is usually the standard treatment. The chemo may be cisplatin or cisplatin plus fluorouracil. The radiation therapy includes both external beam radiation and brachytherapy**.**
2. Radical hysterectomy with pelvic lymph node dissection and para-aortic lymph node sampling: If cancer cells are found in the removed lymph nodes, or in the edges of the tissue removed (positive margins), surgery may be followed by concurrent chemoradiation.

Stages IIB, III, and IVA

Chemoradiation: The chemo may be Cisplatin or Cisplatin plus Fluorouracil. The radiation therapy includes both external beam radiation and brachytherapy.

Stage IVB

At Stage IVB cervical cancer is not usually considered curable. Treatment options include radiation therapy and/or chemo to try to slow the growth of cancer or help relieve symptoms. Most standard chemo regimens include a platinum drug (cisplatin or carboplatin) along with another drug such as Paclitaxel (Taxol), Gemcitabine (Gemzar), or Topotecan. The targeted drug Bevacizumab (Avastin) may be added to chemo or immunotherapy alone with Pembrolizumab (Keytruda®) may also be an option.

Recurrent cervical cancer

Cervical cancer can come back in local or distant areas. This is called a recurrence.
If, the recurrence in the pelvic cavity only, the patient can survive with extensive surgery with the risk of major side-effects.

Radiation therapy can be an option for some patients. If it fails; chemotherapy, immunotherapy or targeted therapy may be used to slow down the growth of cancer and relieve the symptoms.

III) Endometrial Cancer

Staging[26] of endometrial cancer is essential because of fertile age if women and other factors like site of cancer type of cancer i.e squamous-cell or adenocarcinoma, the health of patient and age of the patient.

The first line of treatment for almost all women with endometrial cancer is total abdominal hysterectomy with bilateral salpingo-oophorectomy (TAH/BSO) The operation includes removing the uterus, fallopian tubes, and ovaries. Lymph nodes from the pelvis and around the aorta may also be removed (a pelvic and para-aortic lymph node dissection [LND] or sampling) and tested for cancer spread. Pelvic washing may be done, too. The tissues removed at the surgery are tested to see how far cancer has spread (the stage). Depending on the stage, chemotherapy or radiation suggested.

Stage I Endometrioid cancers –

Stage I is only in the uterus. It has not spread to lymph nodes or distant sites.
For patients having higher-grade tumors, Radiation after surgery is recommended. Vaginal brachytherapy and pelvic radiation can be used. In young women with early endometrial

cancer, the uterus is removed without ovary to minimize the issues regarding menopause. But there are more chances of recurrence of cancer. The woman unfit for surgery is advised for radiation and /or vaginal brachytherapy.

Fertility-sparing treatment for stage IA grade 1 endometrioid cancers:

For young women who still want to have children, surgery may be postponed while progestin treatment is used to treat cancer. Progestin treatment can cause cancer to shrink or even go away for some time, giving the woman a chance to get pregnant. Still, this is experimental and can be risky if the patient isn't watched closely. An endometrial biopsy or a D&C should be done every 3 to 6 months. If there's still no cancer after 6 months, the woman can try to become pregnant. She will continue to be checked for cancer every 6 months. Because cancer often comes back again, doctors recommend TH/BSO after childbearing is complete.

Other types of stage I endometrial cancers

Cancers such as papillary serous carcinoma, clear cell carcinoma, or carcinosarcoma are more likely to have already spread outside the uterus when diagnosed. If the biopsy is done before surgery shows high-grade cancer, the surgery may be more extensive. Total abdominal hysterectomy with bilateral salpingo-oophorectomy or TAH/BSO), the pelvic and para-aortic lymph node are removed and the omentum is often removed, too. After surgery, chemotherapy with or without radiation therapy is given to help keep cancer from coming back. The chemo usually includes the drugs carboplatin and paclitaxel, but other drugs can also be used.

If cancer can't be removed with surgery, both chemotherapy with or without and radiation are used. Sometimes, the tumor then shrinks so that surgery can then be done to remove it.

Stage II endometrial cancers

In Stage II, endometrial cancer has spread upto connective tissue of cervix, but it has not gone outside of uterus.

1. Radical hysterectomy (the entire uterus, the tissues next to the uterus, and the upper part of the vagina are removed), removal of both fallopian tubes and ovaries (BSO), and pelvic and para-aortic lymph node dissection (LND)

2. Post-surgery, Radiation therapy both vaginal brachytherapy and external pelvic radiation
3. Women unfit for surgery is given radiation directly.

For women with high-grade cancers, like papillary serous carcinoma or clear cell carcinoma, the surgery may include omentectomy and peritoneal biopsies along with the total hysterectomy, removal of fallopian tubes and ovaries, pelvic and para-aortic lymph node dissections, and pelvic washings. After surgery, radiation therapy, chemotherapy or both may be given to help keep cancer from coming back. The chemo usually includes the drugs carboplatin and paclitaxel or possibly cisplatin and doxorubicin. Someone with a stage II uterine carcinosarcoma often has the same type of surgery that's used for high-grade cancer. After surgery, radiation, chemo, or both may be used. The chemo often includes paclitaxel and carboplatin but may instead include ifosfamide, along with paclitaxel or cisplatin.

Stage III endometrial cancers

In Stage III endometrial cancers have spread outside of the uterus.

1. Radical hysterectomy (the entire uterus, the tissues next to the uterus, and the upper part of the vagina are removed), removal of both fallopian tubes and ovaries (BSO), and pelvic and para-aortic lymph node dissection (LND) Pelvic washings can be done and the omentum may be removed.
2. Post surgery radiation is given with assuarence of total excision of tumor.

In Stage III endometrial cancers have spread outside of the uterus.

1. Radical hysterectomy (the entire uterus, the tissues next to the uterus, and the upper part of the vagina are removed), removal of both fallopian tubes and ovaries (BSO), and pelvic and para-aortic lymph node dissection (LND) Pelvic washings can be done and the omentum may be removed.
2. Post-surgery radiation is given with assurance of total excision of the tumor.

Stage IIIA:

A cancer stage IIIA has spread to the tissue covering the uterus (the serosa) or to other tissues in the pelvis, like the fallopian tubes or the ovaries (the adnexa). Post-surgery, chemotherapy and radiation given. Radiation is given to the pelvis or to both the abdomen (belly) and pelvis. Vaginal brachytherapy is often used, too.

Stage IIIB:

In this stage, cancer has spread to the vagina. After surgery, stage IIIB may be treated with chemo and/or radiation.

Stage IIIC:

This includes cancers that have spread to the lymph nodes in the pelvis (stage IIIC1) and those that have spread to the lymph nodes around the aorta (stage IIIC2). Treatment includes surgery, followed by chemo and/or radiation.

For women with high-grade cancers, such as papillary serous carcinoma or clear cell carcinoma, the surgery may include omentectomy and peritoneal biopsies along with the total hysterectomy, removal of ovaries and fallopian tubes, pelvic and para-aortic lymph node dissections, and pelvic washings. After surgery, chemo, radiation therapy, or both may be given to help keep cancer from coming back. The chemo usually includes the drugs carboplatin and paclitaxel or cisplatin and doxorubicin.

Women with stage III uterine carcinosarcoma often have the same type of surgery that's used for high-grade cancer. After surgery, radiation, chemo, or both may be used. The chemo often includes the drug paclitaxel and carboplatin, but ifosfamide, along with paclitaxel or cisplatin may be used. Targeted and/or immunotherapy may also be options for some women.

Stage IV endometrial cancers

Stage IVA: These endometrial cancers have grown into the bladder or bowel.

Stage IVB: These endometrial cancers have spread to lymph nodes outside the pelvis or para-aortic area. This stage also includes cancers that have spread to the liver, lungs, omentum, or other organs.

Some endometrial cancers are stage IV because they have spread to lymph nodes in the abdomen (and not just the pelvis and para-aortic area), but they haven't spread to any other areas. Women with this kind of cancer spread may have better outcomes if all cancer that's seen can be removed (debulked) and biopsies of other areas in the abdomen do not show cancer cells.

In most cases of stage IV endometrial cancer, cancer has spread too far for it all to be removed with surgery. A hysterectomy and removal of both fallopian tubes and ovaries may still be done to prevent excessive bleeding. Radiation may also be used for this reason. When cancer has spread to other parts of the body, hormonal therapy may be useful. But high-grade cancers and those without detectable progesterone and estrogen receptors on the cancer cells are not likely to respond to hormone therapy.

Combinations of chemotherapy drugs may help some women for a time. The drugs used most often are paclitaxel, doxorubicin, and either carboplatin or cisplatin. These drugs are often used together in combination. Stage IV carcinosarcoma is often treated with much the same chemotherapy cisplatin, ifosfamide, and paclitaxel may also be combined.

Some women with advanced endometrial cancer, targeted drugs or immunotherapy may be useful. Women with stage IV endometrial cancer should consider taking part in clinical trials.

Recurrent endometrial cancer

Cancer is called recurrent when it come backs after treatment. Recurrence can be local (in or near the same place it started) or distant (spread to organs such as the lungs or bone). Treatment depends on the amount of cancer and where it is, as well as the kind of treatment was used the first time.

For local recurrences, such as in the pelvis, radiation followed by surgery is used. For women who have other medical conditions that make them unfit for surgery, radiation therapy alone or in combination with hormone therapy is used.

IV) Ovarian Cancer

Stage I

Stage I tumors[27] of the ovary are excised with surgery and don't require further treatment as such. However sometimes recurrence may happen in the following conditions-

1. Very large tumors
2. Tumors with ruptured cysts
3. Poorly differentiated tumors.

In these conditions, close monitoring and chemotherapy are two options.

Stages II, III and IV

All these stages are treated with removal of tumour along with ovary followed by chemotherapy and hormonal therapy.

Often, the chemo used is the same type used to treat germ cell tumors (PEB: cisplatin, etoposide, and bleomycin). The combination of carboplatin and paclitaxel (Taxol) may also be used. Hormone therapy is most often used to treat advanced stromal tumors in women who cannot tolerate chemo, but who want to try treatment. This may mean treatment with a drug such as leuprolide (Lupron) and goserelin (Zoladex), the drug tamoxifen, or an aromatase inhibitor. Rarely, radiation may be an option.

Recurrent stromal tumors

Cancer that comes back after treatment is said to be recurrent. This can happen many years later for stromal tumors. Even so, the prognosis (outlook) might still be good because they grow so slowly. Surgery may be repeated. Any of the chemo regimens used initially can also be used to treat a relapse. Hormone therapy is also an option to treat recurrence. There really isn't a standard treatment for recurrent stromal cancer, so treatment as part of a clinical trial is also a good option. Radiation might also sometimes be helpful.

For tumors that produce hormones, the hormone blood levels may be checked regularly (tumour marker) after surgery to check for increased levels that could suggest the tumor has returned. The level of a hormone called inhibin can also go up with some stromal tumors and might be useful to check for recurrence.

G) LITERTURE REVIEW - ARBUDA

Vyutpatti -

अर्बुद (नपुसक |) अर्ब (अर्बु) विच् तस्मै उदेति उद इण्-ड़ |

Arbuda has been derived from the root of Arb with suffix in along with augmentation and which means to destroy or to kill or to hurt. Udeti means to elevate or to rise.

अर्बूद: **अर्बूदः इति मेघः** (a cloud)[28]

अर्बूद इति अम्बुमत् (Senseless). it shows that derivation of **अर्बूद** is senseless.**अम्बुमान्** cloud is called as **अर्बूद** because it contains water.**अर्बूद** bulges from a long array of 7 ciphers.

अर्बूद मेघः अम्बुमान् भवति । अर्बूदं अम्बुमत् भाति, स यथा उदकभावम् आपद्यमानः महान् बहुः भवति वर्णन तद् इव अर्बूदम् ।

स अर्बूदः मेघः यथा महान भवति तथा विशिष्ट संख्यावाचकं अर्बूदं महत् भवति । तत् इव..[निरुक्त् तृतीय अध्याय पृष्ठ ४७-श्लोक १७-१९]

Synonym of Arbuda –

मांसपिंडकारक रोग भेदे,असूरभेदे ,कद्रू भेदे,सर्पभेदे,मेघ,मांसपिंड भेदे

In Vedic literature, Abrud was considered as serpent-like a demon that was conquered by Lord Indra.

In ancient classics, Arbuda is not mentioned but diseases like Apachi, Ganda, Gandmala resembles the clinical features of Arbuda.

Just as the physician treats the disease like Gandmala, by the rays of sun and moon along with medicines, in the same way, human beings by acquiring knowledge destroy the innocence.

अपचितःप्रा प्रपतत सुपर्णो वसतेरिव | सूर्यैः कृनोतु भेषजं चन्द्रमा वाउपौच्यतु |

अथर्ववेद षष्ठ कांड,नवम अनुवाक सूक्त ८३/१.

Some chanting has been mentioned in Atharva Veda[29] to cure tumours called Gayana.

definition of Arbuda

गात्रप्रदेशे क्वचिदेव दोषाः संमुच्छ्रिता मांसमभिप्रदुष्य |

वृत्तं स्थिरं मंदरुजं महान्तमनल्पमूलं चिरवृध्यपाकम्

कुर्वन्ति मांसोपचयं तु शोफं तमर्बुदं शास्त्राविदो वदन्ति || सु.नि.११/१२-१३

Due to their own reasons, Vata, Pitta, and Kapha Dosha get vitiated. It affects Ras, Rakta, Mansa and Med Dhatu and produces solid, circular, fixes, slightly painful, big, broad-based, slow-growing, nonsuppurative dence elevation on the body. This elevation is called Arbuda.

Nidan Panchak of Arbuda

- **Dosha –**Vata, Pitta and Kapha,
- **Dushya –**Rasa, Rakta, Mansa, Meda.
- **Dushta agni –** Jatharagni Rasadhatwagni, Raktadhatwagni, Mansadhatwagni, Medadhatwagni
- **Dushta srotus –**Annavaha**,** Rasavaha, Raktavaha, Mansavaha, Medovaha Srotas
- **Rog Marga –**Bahya Rog Marga.
- **Vyadhi Adhishthan –**Any where in the body.

कुष्ठविसर्पपिडकामषकनीलिकातिलकालकन्यच्छव्यङ्गोन्द्रलुप्तप्लीहविद्रधिगुल्म

वातशोणितार्शोऽर्बुदाङ्गमर्दासृग्दररक्तपित्तप्रभृतयो रक्तदोषजा गुदमुखमेढ्रपाकाश्च | सु.सू.२५/११

अधिमांसार्बुदाऽर्शोऽधिजिव्होपकुशगलशुण्डिकाऽलजीमांससंघातौष्ठप्रकोप गलगण्ड गण्डमाला

प्रभृतयोर्मांसप्रदोषजाः | सु.सू.२५,१३

पतिमांसालजीगण्ड गण्डमालोपजिव्हिका || च.सू.२८/१४

शाखा रक्तादयः त्वक् च ,बाह्य रोगायतनं हि तत् |

तदाश्रया मषव्यङ्गगण्डालज्यार्बुदादयः |

बहिर्भागाश्च दुर्नामगुल्फशोफादयो गदाः || अ.ह्र.सू.१२/४४-४५

Characteristics of Arbuda

According to Achraya Charak, Arbuda is elevated swelling.

रोगश्चोत्सेधससामान्यादधिमांसार्बुदादयः | च.सू.१८/३३

महत्तु ग्रंथितोऽर्बुदम् |

प्रायो मेदः कफाढ्यत्वात्स्थिरत्वातच्च न पच्यते | अ.हृ.उ.२९/१४-१५

Due to predominance of Kapha Dosha it does not suppurate. It is bigger than Granthi and it is Sthir (fix and hard)

Special features of Arbuda [30]

- Gatra Pradesha (anywhere in body)
- Vrutta (round)
- Sthira (firm or fixed)
- Manda Ruja (slightly painful)
- Mahantam (big)
- Analpa moola (deeply seated)
- Chira Vrudhhya (grows slowly)
- Apakama (does not suppurate)

Types of Arbuda

वातेन पित्तेन कफेन चापि रक्तेन मांसेन च मेदसा |

तज्जायन्ते तस्य च लक्षणानि ग्रन्थेःसमानानि सदा भवन्ति | सु.नि.११/०४

Acharya Sushrut has quoted six types of Arbuda in texts.

Vataja Arbuda —

आयम्यते व्यथत एति तोदं प्रत्यस्यते कृत्यत एति भेदम् |

कृष्णोऽमृदुर्बस्तिरितीवाततश्च भिन्नः स्त्रवेच्चानिलजोस्त्रमच्छम् || सु.चि.११/४

Characteristics of Vataja Arbuda [31]—

- Pricking pain or splitting sensation
- Black discoloration
- Feels hard on touch
- Feeling as distended bladder
- Secrets clear fluid and blood.

Pittaja Arbuda

दन्दह्यते धूप्यति चुष्यते च पापच्यते प्रज्वलतीव चापि |

रक्तःसपीतोऽप्यथवाऽपि पित्ताद्भिन्नः स्त्रवेदूष्णमतीव चास्रम् || सु.नि.११/५

Characteristics of Pittaja Arbuda [32] —

- Burning sensation and severe irritation as it is by a burn.
- Red or yellow discoloration
- Hotness felt on touch
- Hot discharge and when burst, an excessive amount of blood comes out

Kaphaja Arbuda

शीतोऽविवर्णोऽल्परुजोऽतिकण्डू |पाषाणवत् संहननोपपन्नः ||

चिराभिवृद्धिश्च कफप्रकोपः |भिन्नःस्रवेत्तूच्छूक्लघनं च पूयम् ||सु. नि. ११/६

Characteristics of Kaphaja Arbuda [33] –

- Cold on touch
- Minimal or no discoloration
- Slight pain
- Severe itching
- When burst, secretes white, thick, .purulent discharge,

Raktarbuda

दोषः प्रदुष्टो रुधिर सिरासु सम्पीड्य संकोच्य गतस्त्वपाकम् ||१५||

सास्त्रावमुन्नह्यति मांसपिंडं मांसांकुरैराचितमाशुवृद्धिम् |

स्त्रवत्यजस्त्रं रुधिरं प्रदुष्टमसाध्यमेतदुधिरात्मकं स्यात् ||१६||

रक्तक्षयोपद्रवपीडितत्वात् पाण्डोर्भवेत् सोऽर्बुदपीडीतस्तु | सु.नि. ११/१५-१६ पृ.३१३

Characteristics of Raktaja Arbuda [34]

- Elevated swelling (lump of muscles)
- Contraction of Rakta and Sira creating muscular lump which is covered with fleshy buds.
- Very less or nonsuppurative

- Grows very fast
- Continues discharge of blood.

Mansarbuda

मुष्टिप्रहारादिभिरर्दितेऽङ्गे,मांसं प्रदुष्टाम प्रकरोति शोफम् |

अवेदनं स्निग्धमनन्यवर्णमपाकमश्मोपममप्रचाल्यम् ||

प्रदुष्य मांसस्या नरस्य वाढमेततद्भवेन्मांसपरायणस्य | सु.नि,११/१७-१८

The person having an excessive intake of non-vegetarian diet is vulnerable to such type of Mansarbud due to vitiation of Mansa Dhatu.

Characteristics of Mansarbud[35]

- Non-suppuration
- Stony hard and fixed.

Medoja Arbuda :

शरीरवृद्धीक्षयवृद्धिर्हानिः स्निग्धो महानल्परुजोतिकण्डूः |

मेदः कृतो गच्छन्ति चात्र भिन्ने पिण्याकसर्पिः प्रतिमं तु मेदः || सु.नि.११/६ पृ.३११

Characteristics of Medoja Arbuda [36] –

- Big in size
- Smooth, having no contours
- Increases or decreases according to body fat
- Doesn't cause much pain
- When burst, discharge is like Pinyaka (oilcake) or Sarpi (ghee)

Upadrava[37]

यज्जायतेऽन्यत् खलु पूर्वजाते ज्ञेयं तदध्यर्बूदमर्बूदज्ञैः |

यद द्वंद्वजातं युगपत् क्रमाद्वा द्विरर्बुदं तस्य भवेदसाध्यम् || सु.नि.११/२० :मा.नि,द्वितीय खंड३८/२५

When there is an occurrence of Arbuda at the same site or after excision of the first Arbuda, it is called Adhyarbud.

When Arbuda is occurring at the same site at the same time or after some time of occurrence of the first Arbuda, it is called Dwirarbud.

Arbuda becomes Asadhya when-

• There is continues oozing from Arbuda

• Marmas are affected

• Arbuda is disturbing Srotas

• Development of Dwirarbuda.

Chikitsa Sutra of Arbuda [38] –

ग्रंथ्यर्बुदानां च यतोऽविशेषः प्रदेशहेत्वाकृतिदोषदूष्यैः |

ततश्चिकित्सेदभिषगर्बुदानि विधानवत् ग्रन्थि चिकीत्सेतत् || च.चि.१२/८७

संशोधिते स्वेदितमश्मकालेः साङ्गुष्ठदण्डैर्विलयेदपक्वम् |

विपाट्य चोधृत्य भिषक सकोशं शस्त्रेण दग्ध्वा व्रणवच्चिकित्सेत् || च.चि.१२/८3

अदग्ध ईषत् परिशेषितश्च प्रयाति भूयोऽपि शनैर्विवृध्धिम् |

तस्मादशेषः कुशलैः समन्ताच्छेद्यो भवेद्विक्ष्य शरीरदेशान् || च.चि.१२/८२

Treatment of Granthi and Arbuda with respect to Pradesh (site). Akruti (size). Dosha and Dushya are similar.

• Shodhana – Vamana Virechana

• Swedena – Hot fomentation at the site of Arbuda

• Vilayana – Ripening of Apakwa Granthi with the help of asthma, wood, thumb pressing.

• Agnikarma – Fully matured Granthi should be cauterized.

• Vrankarma – Treatment for wound healing.

• Shastra Karma – Surgical procedure to Granthi which is deeply seated, which is partially cauterized by mistake or which is contraindicated for cautery.

H) LITERATURE REVIEW - KRIMI VIDNYAN

क्रमौ क्षुद्र-जन्तौ,रोगभेदे कृमी शब्दे |

क्रमति क्रमु पाद विक्षेपे | हलायुध कोष पान क्रमांक २४२

क्रव्ये[39] भेद्यति क्रान्ते वा स्यात् सरन् कर्मनाह क्रान्ते वा || निरुक्तम ६/३/१३

क्रमू पादविक्षेपे क्रमितमिशास्तम्भामत् इत् इति किः |

कृमि कीटेत्यादि कृमयः कोष्ठपुरीषादि बाष्पसंभवः || सुश्रुत सूत्रस्थान १/३०

Charak Samhita has mentioned 20 types of Krimi out of which Shleshmaja (originates from phlegm), Purishaj (originates from stool) and Raktaja (originates from blood) Krimi are Abhyantara Krimi[40]

On the basis of pathogenicity, Krimi are described as Sunama and Durnama.

Sunama[41] is the word that denotes that these worms do not create any harm to the body; in fact they are useful for the bio-physiological process of the body. E.g. Lactobacilli in the intestine.

सुनामद्वादशी (स्त्री.) वाशिष्ठ उवाच –श्रुणैकमना भूयः सुनामद्वादशीशुभाम् । सर्वपापहरां स्वर्ग्या भुक्तिमुक्तिप्रदायिकाम् ।(शब्दकल्पद्रुम पञ्चमकाण्डम् पृ.३७१)

Durnama[42] is the word used for harmful and disease producing worms.e.g. Kshaya Roga is produced by such harmful Krimi.

दुर्दृष्टं नाम यस्य । (शब्दकल्पद्रुम द्वितीय काण्डम् पृ.७३२)

दुर्घर्षणायै ।(यथा महाभारते)

दुर्णामा योनिमाशये । ऋ.सं. १०/१६२/२

अमीवा (४६) अभ्यमनेन व्याख्यातः ।अस्मिनैव खण्डे । दुर्णामा क्रिमिर्भवति । पापनामा । क्रिमिः क्रव्ये मेद्यति । क्रमतेर्वा स्यात् सरणकर्मणः । क्रमतेर्वा । अतिक्रामन्तो[43] दुरितानि विश्वा । अतिक्रममाणा दुर्गतिगमनानि सर्वाणि ।…(निरुक्त ४/११-१८)

Such Krimi reaches to blood, sucks the blood, even reach to Garbhshayya[44] and cause abortion to fetus and reach to Yoni causing many Yonigata Vyadhi.

क्रिमि –पर्यायाः--

राक्षस[45] – रक्ष्यन्त्यस्मात् रक्षः रक्ष एव राक्षसः ।(शब्दकल्पद्रुम चतुर्थ काण्डम्)

असूरः (पुं) –भूताधिपतिः । (अ.सं.उ.७;पृ.५९)

Asuras (destroys life)

Leaders of attacking microorganisms[46].

अस् दीप्तौ उरः । अस्यति क्षिपति देवान् उर् विरोधे । सूरविरोधीति ।दैत्ये ।

असूरता स्थानेषु न सुष्ठुः रताः स्थानेषु ,चपला इत्यर्थः ।

असुः प्राणः तेन तद्वन्तो भवन्ति रो मत्वर्थे । (वाचस्पत्यम्)

Asuras (destroys life)[47]

Evil spirit which does not stay at single place[48].

सूरि स्तम्भे धातुनामनेककार्यत्वात् ।स्तुतौ भावे । (वाचस्पत्यम्)

According to Nirukta, Asura has an evil association because Asura are enemies of dewas. The Asuras are said to have been created out of anus of the creator.

अप्सरा – अप् सरः (पुं) अप् +सृ+भावे अच् ।अपसरण स्थानात् स्थानान्तरगमनम् । अपोपसर्गात्

गत्यर्थ सृ धातोर्भावे अल्

प्रत्ययः । (शब्दकल्पद्रुम प्रथमो काण्डम्)

निरुक्त –अप्सारीणि । अपि वा ।अप्सः । (नि.घ.३/७/६)

अप्सातेः ।अप्सानीयं भवति ।व्यापनीयं वा। स्पष्ट दर्शनाय इति शाकपूणिः ।अप्सो नाम

(मैत्रा.सं२/८/१) इति व्यापिनः।(निरुक्त ४/भाग९-११)

They don't stay at one place. They can go anywhere in the body[49]. They can be visualized clearly[50].

गन्धर्वः (Gandharva)

गन्धर्वः अन्तराभवसत्वः।इत्यमरः ।

अन्तराभवसत्वस्तु जन्ममरणयोर्मध्य भवः यातनाशरीरवान्,गुप्तप्राणी वा ।[51]

(शब्दकल्पद्रुम द्वितीय काण्डम्)

यातुधानः [Yatudhaan] (which causes pain)[52].

यातुधानः – (पुं) यातुनि रक्षांसि दधाति पुष्णातीति । राक्षसः। धा+बहुल मन्यत्रपीति युच् ।

स्वजातिपोषकत्वात्तधात्वम् यातुं कर्मणां नाशकरी हिंसायाम् ।इति तद्भाष्ये सायणः ।

Synonyms of Abhyantara Krimi are as follows-

Evil spirit or Demon

A worm, an insect, full of worms, ass, spider, ant

Types of Krimi-

Abhyantara Krimi are classified to three types

- Shleshmaja Krimi
- Purishaja Krimi
- Raktaja Krimi

Shleshmaja Krimi[53]

According to Charak Samhita, Ashtanga Sangraha, Ashtanga Hrudaya and Madhav Nidan.Shleshmaja Krimi are habitat of Amashaya

.

श्लेष्मजाःक्षीरगुडतिलमत्स्यानूपमांसपिष्टान्नपरमान्नकुसुम्भस्नेहाजीर्णपूतिक्लिन्नसंकीर्णविरु

द्धासात्म्यभोजन समुत्थानाः तेषामामाशयस्थानं ते प्रवर्धनमानास्तूर्ध्वमधो वा विसर्पन्त्युभयतो वा

| संस्थानवर्णविशेषात्तु-श्वेताःपृथुलब्रध्नसंस्थानाः केचित्,केचीद्वृत्त परिणाहा गन्डूपदकृतयः

श्वेतास्ताम्रावभासाश्च

केचिदणवो दीर्घस्तन्वाकृतयः श्वेता,;तेषां त्रिविधानाम श्लेष्म निमित्ताजानां क्रिमिणां नामानि—अन्त्रादाः,उदारादःहृदयवसःचुरवःदर्भपुष्पः,सौगान्धिकाः,महागुदाश्चेति;प्रभावो हृल्लासःआस्यास्रंस्त्रवणम्,अरोचकाविपाको,ज्वरःमूर्च्छा,जृम्भा,क्षवथु,आनाहःअंगमर्दः,च्छर्दिः,का श्र्य,पारुष्यं चेति || च.वि.७/१२

Table 9: Types of Kaphaja Krimi according to Samhitas (Brihatrayee) in Ayurveda

Sr.No.	Charak	Sushrut	Vagbhat
1	Antrada (**अन्त्राद**)	Mahapushpa (**महापुष्प**)	Antrada (**अन्त्राद**)
2	Udarada (**उदराद**)	Chipita (**चपिट**)	Udaraweshta (**उदरावेष्ट**)
2	Hridayada (**हृदयाद**)	Praloona (**प्रलून**)	Hridayada (**हृदयाद**)
4	Churu (**चुरु**)	Pippilika (**पिप्पिलिका**)	Churu (**चुरु**)
5	Mahaguda (**महागुद**)	Daruna (**दारुण**)	Mahakuha (**महकुह**)
6	Sougandhika (**सौगन्धिक**)	--	Sougandha (**सौगन्ध**)
7	Darbhakusuma (**दर्भकुसुम**)	Darbhapushpa (**दर्भपुष्प**)	Darbhakusum (**दर्भकुसुम**)

- **महापुष्प**[54] **–(न)—कफज कृमिः ।दर्भपुष्पमहापुष्पप्रभृतीनां षण्णामेकतमः ।सु.उ.५४/१२**
- **चिपीट**[55] **–(पुं)चयतीति । चि+बाहुलकात् पिट् च स कित् ।भक्ष्यद्रव्यविशेषः । चिपीटः चिपीटाकारः ।इति तट्टीका ।**

तुण्डहीनं च चिपीटश्चैव व्यङ्गश्चानर्थदर्शनम् । (शब्दकल्पद्रुम द्वितीयकाण्डम्)

- **गण्डूपद**[56] **–गण्डूपद (पुं)गण्डुः ग्रन्थयः ताभिरन्वितानि पदानि यस्य। शाकपार्थिवत्वाच्च समासः । किञ्चुलकः ।**

  (शब्दकल्पद्रुम द्वितीय काण्ड)

  गण्डूपदस्य रूपाणि पिच्छिलानि मृदुनि च ।इति माधवकर रोगविनिश्चये ।अर्शोधिकारे ।

- **पिपीलिका**[57]**--पिपीलक+टापि अत् इत्वम् ।क्षुद्रे पिपोडा इति भाषा ।**(Insect,Ant)

- **दर्भकुसुमः**[58] **–दर्भकुसुम (पुं) कफज कृमी (अ.सं.नि.१४/५२)**

- **सुगन्धकः**[59] **– शोभनो गन्धो यस्य । तत् क्वन् ।**

  क्रिमिभेदः।यथा अन्त्रादा....सुगन्धास्ते च कुर्वते ।समवायातिरिक्तसम्बन्धेन सद्गन्धविशिष्टे । [शब्दकल्पद्रुम पञ्चमो काण्डम्]

Purishaja Krimi[60]

पुरीषाजास्तुल्यसमुत्थानाः श्लेष्मजैः, तेषां स्थानं पक्वाशयः ते प्रवर्धमानास्त्वधो विसर्पन्ति,यस्य पुनरामाशायाभिमुखाः स्युर्यदनन्तरं तदन्तरं तस्योद्गार निःश्वासः पुरीषगन्धिनः स्युः संस्थानवर्णविशेषात्तू सूक्ष्मवृत्तपरीणाहः श्यावनीलहरितपीताः;तेषां नामानि ककेरुकः,मकेरुकः,लेलिहः,सशूलकाः,सौसुरदाश्चेति ; प्रभावःपुरीषभेदः,काश्र्यपारुष्यं लोमहर्षाभिनिवर्तनं च,त एव चास्य गुदमुख परितुदन्तः कंडूं चोपजनयन्तो गुदमुखं पर्यासते,त एव जातहर्षा गुडनिष्क्रमणमतिवेलं कुर्वन्ति,इत्येष श्लेष्मजानां पुरीषजानां च क्रिमिणां समुत्थानादि विशेषः|| च.वि.७/१३

Purishaja Krimi stays inside the small, large intestine and even anus. Brihatrayee and Laghutrayee also have mentioned the characteristics of Purishaja Krimi.

Table 10: Types of Purishaja Krimi

Sr. No.	Charak	Vagbhat	Sushrut	Hareet
1	Kakeruka (**ककेरुक**)	Kakeruka (**ककेरुक**)	Ayawa (**अयव**)	Pruthumunda (**पृथुमुण्ड**)
2	Makeruka (**मकेरुक**)	Makeruka (**मकेरुक**)	Viyawa (**वियव**)	Dhanyankurnibha (**धान्यांकुरसन्निभ**)
3	Sousurada (**सौसुराद**)	Sousurada (**सौसुराद**)	Kipya (**किप्य**)	Suchimukha (**सूचिमुख**)
4	Sashoola (**सशूल**)	Sashoola (**सशूल**)	Chipya (**चिप्य**)	--
5	Laliha (**लेलिह**)	Laliha (**लेलिह**)	Gandupada (**गण्डूपद**)	Kinchuksannibha (**किंचुकसन्निभ**)
6	==	==	Churu (**चुरु**)	Anawaha (**अण्वः**)
7	==	==	Dwimukha (**द्विमुख**)	Sookshmha (**सूक्ष्मः**)

ककेरुकः[61] –A worm in the stomach

लेलिहः[62] **–पुनपुनरतिशयेन वा लेढीति । (शब्दकल्पद्रुम चतुर्थो भागः)**

सूक्ष्मः-[63] **सौक्ष्म्ययुक्त गुणविशेषः ।स्रोतोनुसरणशीलः।आग्नेयद्रव्यस्य गुणेष्वेकः ।सु.सू.४१/३**

सूक्ष्ममार्गानुप्रदेशी।(डल्हण टीका सु.क .२/१९-२०) (Sharp penetrating)

सूक्ष्म(क्ली)सूच्यते इति ।सूच् –पैशुन्ये +सूचे स्यन् ।

(शब्दकल्पद्रुम पञ्चमो काण्डम्)

गण्डूपद –गण्डूपद (पुं)गण्डुः ग्रन्थयः ताभिरन्वितानि पदानि यस्य ।शाकपार्थिवत्वाच्च समासः ।

किञ्चुलकः ।

(शब्दकल्पद्रुम द्वितीय काण्ड)

गण्डूपदस्य रूपाणि पिच्छिलानि मृदुनि च ।इति माधवकर रोगविनिश्चये ।अर्शोधिकारे ।

किञ्चुलकः[64] ।कीट विशेषः ।किञ्चित् लुम्पति ।

बाह्या यूका[65] प्रसिद्धाः स्युः किञ्चुलकाः तथान्तरा । (**शब्दकल्पद्रुम द्वितीय काण्ड**)

अयवः[66]

अल्पो यवस्तु तुल्यो वा ।पूरीषजे कृमीभेदे ,कृमी शब्दे विवरणं नास्ति यवः,यसाधनं यत्न ।अङ्गतया यवह्रीने तिलसाधने ,पितृकृत्यादौ । (**वाचस्पत्यम् प्रथमो भागः**)

Raktaja Krimi[67]

Raktaja Krimi – Both Charaka and Sushruta have said the site of this Krimi as Raktawahi Dhamani or Dhamani. But Madhava Nidana and Vagbhatacharya said that this Krimi is the habitat of Raktawahi Sira.

शोणितजानाम् तु खलु कुष्ठे समानं समुत्थानाम् स्थानं रक्तवाहिन्यो धमन्यः संस्थानं-

अणवो,वृत्तपादाश्च,सूक्ष्मत्वात्चैके भवन्त्यदृशाः ,वर्णः ताम्रः,नामानि-

केशादा,लोमादा,लोमद्विपा,सौरसा,औदुंबरा जन्तुमातरश्चेति | प्रभावः-केश,श्मश्रू,नख लोम

पक्ष्मापध्वंस,व्रणगतानां च हर्ष कंडू तोद संसर्पणानी ,अतिवृद्धानां च

त्वक्सिरास्नायुमांसतरुणास्थिभक्षणमिती....| च.वि.७/११

Table 11: Types of Raktaja Krimi

Sr.No.	Charak	Sushrut	Vagbhat
1	Keshada (**केशाद**)	Keshada (**केशाद**)	Keshada (**केशाद**)
2	Lomada (**लोमाद**)	Romada (**रोमाद**)	Lomada (**लोमाद**)
3	Lomadwip (**लोमद्विप**)	Nakhada (**नखाद**)	Lomavidhwansa (**लोमविध्वंस**)
4	Saurasa (**सौरस**)	Dantada (**दन्ताद**)	Saurasa (**सौरस**)
5	Udumbara (**उदुंबर्**)	Kikkisha (**किक्किश**)	Udumbara (**उदुंबर्**)

6	Jatumatra (**जातुमात्र**)	Kushthaja (**कुष्ठज**)	Matara (**मातरः**)
7	==	Parisarpaja (**परिसर्पज**)	==

स्नायूकः – स्नायूकः[68] **उपद्रव—यदि बाह्यजङ्घायोः स्नायूकस्तन्तुकीटः**[69] **त्रुट्यते तदा खञ्जता**[70] **बाहुसङ्कोचावुत्पद्येताम् ।**

मत्कुण[71] **–मत्कुण (पुं) माद्यतीति । मद्+क्विप्,कुणाति इति कुण् +क ।ततः ।मचासौ कुणश्चेति ।कीट विशेषः । क्वारपोका इति भाषा ।**

तत्पर्यायाः रक्तपायी,रक्ताङ्गःमचकाश्रयः ।निर्विषाणहस्तौ ।निःश्मश्रुपुरूषः ।अजातलोमभगम् ।

(शब्दकल्पद्रुम तृतीय काण्डम्)

उदुम्बरम्[72] **–**

उं शम्भुं वृणोति इति उम्बरम् । उ+वृ +संज्ञायां खच् ।अरूर्द्विधादिति भुम् ।उदुम्बरं तामम् ।

किक्विशः[73] **–**

A kind of worm (said to be injurious to hair, nail and teeth) (**केशाद**, **नखाद**) [

बाह्य कृमी –

बिन्दुकी –बिन्दु (पुं) ,यवाकृतिरूपः (र.४/३६)

बिन्दुलः (पुं) सविषकीट –अग्निप्रकृतकोऽयं पित्तजरोगकृत् । (सु.क.८/९;अ.सं.उ.४३)

बाह्य कृमि-….चतुर्थी बिन्दुकी[74] **नाम वर्तुला मूत्रसंभवा ।**

(शब्दकल्पद्रुम द्वितीय खण्ड)

मत्कुण[75] **–मत्कुण (पुं) माद्यतीति । मद्+क्विप्,कुणाति इति कुण् +क ।ततः ।मचासौ कुणश्चेति ।कीट विशेषः । क्वारपोका इति भाषा ।**

तत्पर्यायाः रक्तपायी,रक्ताङ्गःमचकाश्रयः। निर्विषाणहस्तौ। निःश्मश्रुपुरूषः।

अजातलोमभगम् । (शब्दकल्पद्रुम तृतीय काण्डम्)

लिखा[76] **–**

लिख् गतौ बाहुलकात् ।स च किम्। इत्युणादिवृतौ उज्जलः । यूकाण्डम् इति अमरः । लिकि इति भावाः । इत्यमरभरतौ । तत्पर्यायम् । लिक्का ।लीक्षा ।लीक्का ।लिक्षिका।

बहुपादाश्च सूक्ष्माश्च यूका लिक्षाश्च नामतः।इति वाग्भटे निदानस्थाने चतुर्दशेऽध्याये ।

Egg of louse

Etiopathology of Krimi

Diseases are classified as Nija and Agantu.Vitiating Vata Pitta and Kapha produces Nija Vyadhi and external factors like Abhichara, Abhighata creating diseases are called Agantu Vyadhi. Krimi are also classified according to Hetus, Bahya and Abhyantara.

Hetu of Krimi

अजीर्णादि कृमी सम्भवः |

Table 12: Causative factors of Krimi[77]

Hetu (Causative factor of Krimi)	**Hetu Vivechana (Description of causative factor)**
Aahara	
Rasa	Madhura, Amla
Guna	Guru, Drava, Pichchila, Sheeta, Ruksha, Ushna
Shuka Dhanya (cereals)	Godhuma, Pishtanna, Nav Dhanya[78]
Shimbi Dhanya (pulses)	Masha, Vidala.
Shaka Varga	Bis, Shaluka
Mansa Varga	Anup Mansa, Matsya
Ikshu varga	Guda, Phanita
Ksheer varga	Dadhi, Ksheera
Sura varga	Shukta, Sura
Krutanna varga	Pruthuka. Palal, Ushnodak
Tail varga	Tila Taila, Kusumbha Taila, Pinyaka (oil cakes)
Asthta Aaharvidhi viruddha	Ajeerna, Viruddha, Asatmya, Puti, Klinna, Sankirna Bhojana
Vihara Hetu	Avyayam (sedentary habits) and Diwaswap (daytime sleep)

Signs and symptoms of Krimi -

Fever, discolouration, pain in Amashaya and Pakwashaya, cardiac manifestations, bodyache, vertigo, nausea, diarrhea are collectively shows the presence of Krimi in the body[79].

ज्वरो विवर्णता शूलं हृद्रोगः सदनं भ्रमः ।

भक्तद्वेषोऽतिसारश्च सञ्जातक्रिमिलक्षणम् ।।सु.उ.५४/६

आतङ्कदर्पण व्याख्या (वाचस्पति वैद्य कृत)-ज्वर इत्यादि।विवर्णता शरीरे

श्यामपीतता,शूलमामाशये पक्वाशये च,हृद्रोगो हृदयविकारो

हृल्लासादिः,भ्रमश्चक्रारूढस्येव,भक्तद्वेषो भोजनविद्वेषः॥

Management of Abhyantara Krimi -

Acharya Charak has mentioned in Vimansthana about the management of Krimi.

तत्र सर्व कृमिणाम् अपकर्षणमेवादितम् कार्यम,अनन्तरं प्रकृतिविघातः,अनन्तरं निदानोक्तानां भावानामनुपसेवनमिति | **च.वि** 7/14

So according to text, following are the steps[80],

- Apakarshana
- Prakrutivighata
- Nidan Parivarjana

Apakarshan –

कर्ष विलेखने | means to scratch, **अप** is prefix denoting forceful scratching.

The process by which unwanted things are forcibly eliminated from the body is called Apakrshana. For the elimination of Abhyantara Krimi, Vamana, Virechana, Asthapana Basti and Shirovirechan can be used.

- **Vamana -** Amashay is the site of Kapha Dosha, Vitiated Kapha Dosha creates Kaphaja Krimi in Amashaya, So Vaman helps krimi to come out by the nearest way i.e. Amashaya.
- **Virechana –**Vitited Doshas from Pakwashay (large and small intestine) can be removed with Virechana Yoga. Purishaj Krimi, Antrad, Udaraveshta, Sougandhik Krimi can be expelled out with the help of Virechana Chikitsa.

- **Asthapan Basti –** Medicated enema with the help of medicated oil and decoction of antihelminthic drugs act directly on the site of Krimi, thus forceful expulsion of Krimi is possible with the help of Asthapana Basti.

Prakruti Vighata

Prakruti means the ability to reproduce, Vighata means to destroy. For the survival of Krimi, a favorable environment like Madhura, Amla Rasa, Sheeta, Snigdha and Drava, Pichchil, Manda, Styana guna which are properties of Kapha Dosha are essential. If we want to counteract the Krimi, use of Tikta, Katu Rasa, Kshara Dravyas Ushna, Chala, Laghu, Ruksha, Shlakshna Guna are required. Administration of such Dravyas causes Prakruti Vighata.

During the process of digestion, Saara Kitta Vibhajana takes place at Pakwashaya. Saara Bhaga is used further digestive process. Kitta is thrown out of the body through Purish and Mutra. But if this Kitta gets accumulated in Pakwashaya, putrification takes place. This leads to the formation of Purishaj Krimi. Here Purish acts as prakruti. These things tell us that, with the use of drugs having controversial properties that of Kapha Dosha and Purish do Prakruti Vighata of Krimi. So there will not be any reinfestation

Nidan Parivarjana

संक्षेपतः क्रियायोगो निदानपरिवर्जनम्।सु.सू.१/२५

The factors which are responsible for the production of Krimi should be avoided. Diet with Snigdha, Drava, Sheeta, Manda, Guru, Pichchila, Styana, Madhura, Amla and others which aggravates Kapha Dosha should be avoided. Unhygienic food habits, Vishamashana, Viruddha Aahara create Aama Dosha which promotes Krimi production.

I) LITERATURE REVIEW - DRUG REVIEW

In cancer of female genital organs Krimighna Basti Upakrama was used. The Basti Upakrama includes:

- ✓ Purvakarma - Sarvanga Snehana and Sarvanga Swedana
- ✓ Pradhankarma - a) Sneha Basti for first 3 days with Nimba Taila + Nirgundi Taila + Karanja Taila

  b) Niruha Basti on 4th and 6th day of Vidanga, Musta, Madanphala, Triphala, Shigru, Dantimoola, Yavkuta Kwatha

  Prakshepartha - Madhu & Saindhava

Discussion on dravyas used and its role in Krimighna Basti -

Nimba (*Azadirachta indica*)

निम्बः शीतो लघुर्ग्राही कटुपाकोऽग्निवातनुत् ।

अहृद्यः श्रमतृड्कासज्वरारुचिकृमिप्रणुत् ॥

व्रणपित्तकफच्छर्दिकुष्ठहृल्लासमेहनुत् । भा.प्र.पू.मिश्र प्रकरण कर्पूरादि वर्ग

Fig.10-Nimba (*Azadirachta indica*)[81]

Botanical name: Azadirachta indica .A.Juss

Syn.: Melia azadirachta Linn.

Natural order: Meliaceae

Classical names: Nimba, Tiktaka, Arishta, Pichumarda, Paribhadra, Hinguniryas

Parts used: Bark, Leaf, Flower, Seed, Oil

Action and Uses: The bark is bitter, astringent, acrid, refrigerant, depurative, and antiperiodic. Demulcent, insecticidal, liver tonic, expectorant, urinary astringent, anthelmintic, pectoral and tonic. It is useful in hyper dyspepsia, leprosy, skin diseases,

eczema, leucorrhoea, pruritus, intermittent and malarial fevers, wounds, ulcers, burning sensations, tumors, tubercular glands, anorexia, vomiting, intestinal worms, hepatopathy, cough, bronchitis, urinary incontinence, diabetes, inflammation, amenorrhea, lumbago, hemorrhoids, otalgia, syphilis, and fatigue.

The leaves are bitter, astringent, acrid and insecticidal. They are useful in burning sensation, leprosy, skin diseases leucoderma, tuberculosis boils; Seeds are useful in tumors, leprosy, skin, otalgia, intestinal worms, wounds, ulcers.

The oil is bitter, anthelmintic and anodyne, depurative. It is useful in skin diseases, syphilitic sores, ulcers, ringworms, scabies, worms, fever, and leprosy

Ayurvedic Properties:

Rasa –Tikta

Guna - Laghu, Ruksha, Sheeta

Veerya – Sheeta

Vipak –Katu

Prabhav -Krimighna.

Pharmacological activity -

Anticancer[82], antiviral, spasmogenic, antibacterial, contraceptive for males, antifungal, antibacterial, hypoglycemic, antifeedant against tobacco, caterpillar, insecticidal, and nematicide, vermicide, ant tubercular, anti gastric ulcer, antiseptic, diuretic, anti-inflammatory and hypotansive, analgesic, antipyretic, sedative, antiprotozoal, antidepressant, anti-malarial.

Nirgundi (*Vitex negundo Linn*.)

सिन्दुवारः श्वेतपुष्पः सिन्दुकः सिन्दुवारकः ।

नीलपुष्पी तु निर्गुण्डी शेफ़ली सुवहा च सा ॥९८॥

सिन्दुकः स्मृतिदस्तिक्तः कषायः कटुको लघुः।

केश्यो नेत्रहितो हन्ति शूलशोथाममारूतान् ॥९९॥

केश्यो नेत्रहितो हन्ति शूलशोथाममारूतान् ॥९९॥

कृमिकुष्ठारुविश्लेमज्वरान्नीलापि तद्विधा ।

सिन्दुवारदलं जन्तुवातश्लेष्महरं लघु ॥१००॥ भा.प्र.पू.मिश्रप्रकरण ३ कर्पूरादि वर्ग

Fig.11-Nirgundi (*Vitax negundo Linn*)[83]

Natural order – Verbenaceae

Classical names – Nirgundi, Sugandhika, Sinduwar, Indranika.

Parts used – Root, Bark, leaf, flower, seed.

Action and uses --

The plant is bitter, acrid, thermogenic, anthelmintic, anti inflammatory, antiseptic, cephalic, antipyretic, diuretic, depurative .Oil is prepared with juice of leaves. it is useful in sinuses otalgia scrofulous sores and wounds, ulcers and gangrenous wounds.

Ayurvedic Properties –

Rasa – Katu, Tikta

Guna – Laghu, Ruksha

Veerya – Ushna

Vipak – Katu

Doshghnata –Kapha Vata Shamana

Rogaghnata –Shirashoola, Sandhishotha, Amavata, Grudhrasi, Katishoola, Aruchi, Apachi, Krimi, Kshayroga, Vrana, Palitya, Rajakruchchhrata, pradara, Sutikarog, Visphot, Jwara, Nadivrana, Gandamala, Rakta Pitta, Mukhapaak, Pratishyaya.

Karma – Vedanasthapana, Shothahara, Jantughna, Vranropaka, Keshya, Deepana, Aampachana, Mootrajanan, Krimighna, Kandughna, Vishaghna, Artavjanana, Balya, Rasayan.

Pharmacological activites –

Anti inflammatory, antibacterial, moderate CNS depressant, anti infertility, anti spasmodic, anthelmintic[84], analgesic, hepatpprotective, anti convulsant, antiarthritic, antimicrobial, anti parkinsonian, anti histaminic, antifilarial, mosquito repellant, antiandrogenic.

Karanja - (*Pongamia pinnata*)

करञ्जःकटुकस्तीक्ष्णो वीर्योष्णो योनिदोषहृत् ।

कुष्ठोदावर्तगुल्मार्शोव्रणक्रिमिकफापहः॥१०४॥

तत्पत्रं कफवातार्शःकृमिशोथहरं परम् ।

भेदनं कटुकं पाके वीर्योष्णं पित्तलं लघु ॥१०५॥

तत्फलं कफवातघ्नं मेहार्शःकृमिकुष्ठजित् ।

घूतपूर्णकरञ्जोऽपि करञ्जसदृशो गुणैः ॥१०६॥ भा.प्र.पू.मिश्र प्रकरण ३ कर्पूरादि वर्ग

Fig.12- Karanja (*Pongamia pinnata*)[85]

Natural order: Fabaceae

Classical names: Karanja, Naktamala, Prakeerya, Snigdhapatra.

Action and uses: The roots are used for cleaning the teeth strengthening and in gonorrhea. Bark is anthelmintic, acrid, useful in internal bleeding piles, beribery, ulcers, vaginal affections, skin diseases. The oil isanthelmentic, stomachic, cholagogue, styptic, depurative and is recommened for leucorrhoea, cutaneous infections, herpes, scabies, leprosy, haemorrhoids, dyspepsia with sluggish liver, ulcers, lumbago, rheumatism.

Ayurvedic Properties:

Rasa – Katu, Tikta.

Guna – Laghu, Ushan, Snigdha.

Veerya – Ushna

Vipak – Katu

Doshghnata –Kapha Vata Shamaka

Rogaghnata – Vata Vyadhi, Charmaroga, Vranashotha, Striroga, Agnimandya, Vibandha, Arsha, udavarta, Gulma, Krimiroga, Shotha, Raktavikara, Kasa, Prameha, Kushtha

Karma – Jantughna, Kandughna, Kushthaghna, Shothahara, Vedanasthapana, Deepana Aampachana, Bhedan, Krimighna, Raktaprasadana, Kaphaghna, Kasaghna, Garbhashayya-vishodhana, Mootrasangrahaneeya

Pharmacological Activity –

Antibacterial, antiinflammatory[86] insecticidal, nematocidal, hypoglycemic, antipyretic, hypotensive, cardiac depressant, antihelmintic, anti tubercular, CNS stimulant, sedative, wound healing.

Vidanaga (*Embelia ribes*)

पुंसि क्लीबे विडङ्गं स्यात्कृमिघ्नो जन्तुनाशनः ।

तण्डुलश्च तथा वेल्लममोघा चित्रतण्डुल: ॥१००॥

विडङ्गं कटु तीक्ष्णोष्णं रूक्षं वह्निकरं लघु |

शूलाध्मानोदरश्लेष्मकृमिवातविबन्धनुत्॥१०१॥ भा.प्र.पू.२ हरीतक्यादि वर्ग

Fig.13- Vidanaga (*Embelia ribes*)[87]

Natural order – Myrsinaceae

Classical names – Vidanga, Krimighna, Chitra Tandula, Krimijita, Jantughna

Parts used – Fruit, seed, leaf.

Action and uses –

Fruits are astringent, bitter, antihelmintic, digsestive, carminative, contraceptive, laxative, skin disease, pruritus, bronchitis, Asthma, hemicranias, odontalgia, mootravirechan, ringworms. Seeds are useful for application in ringworms. Leaves are useful in pruritus.

Ayurvedic properties:

Rasa– Tikta, Katu.

Guna – Laghu, Ushana, Teekshna.

Veerya – Ushna

Vipak – Katu

Prabhav – Krimighna

Doshghnata – Kapha Vata Shamaka

Rogaghnata:Shirorog, Akshepaka, Apasmara, Pakshhaghata, Krimidanta, Dantashoola, Agnimandya, Ajeerna, Chhardi, Udarshoola, Adhmaana, Vibandha, Arsha, Krimi, Jeerna Pratishyaya, Rakta Vikara, Gandmala, Mutrakruchchra, Kushtha, Charmaroga.

Karma : Jantughna, Kushthaghna, Shirovirechana, Nadibalya, Deepan, Pachan, Anuloman, Krimighna, Raktashodhaka, Mutrajanana,

Pharmacological actions –

Nematicidal, estrogenic, hypoglycemic, anthelminthic, antiovulatory, Antibiotic, ant tubercular, anti-implantation, anti-inflammatory, anti-pyretic, anti-leishminial, anti-spermatogenic, anti-androgenic, anti-cancer[88], immunostimulent.

Musta (***Cyprus rotundus***)

मुस्तं कटु हिमं ग्राहि तिक्तं दीपनपाचनम्।

कषायं कफपित्तास्रतृड्ज्वरारुचिजन्तुहृत् ॥७८॥ भा.प्र.पू.३ मिश्रप्रकरण कर्पूरादि वर्ग

Fig.14- Musta (*Cyprus rotundus*)[89]

Natural order – Cyperaceae

Classical names – Musta, Nagarmotha, Kruvinda, Mustaka

Parts used –Tubers

Action and uses – The tubers are acrid, astringent, cooling, anti inflammatory, galactogogue, nervine tonic, digestive, carminative, stomachic, anthelminthic, expectorant, lithitriptic febrifuge, vulnorary. They are useful in hyperdypsia, anorexia, flatulence, colic, vomiting, intestinal worms, diarrhea, dysentery, inflammation, skin diseases, fever, scabies, erysepalous, pruritus, wounds, cough, dysmenorrheal, renal calculi, vesicular calculi, ophthalmic disorders, general debility.

Ayurvedic properties –

Rasa- Tikat, Katu, Kashaya.

Guna- Laghu, Ruksha.

Veerya- Sheeta

Vipak-Katu

Prabhav- **Krimighna**

Doshghnata-Kapha Pitta Shamaka

Rogaghnata – Twaka Vikara, Netrarog, Aruchi, Agnimandya, Ajeerna, Sangrahani, Krimi Roga, Rakta Vikara Kasa, Shwasa, Mootrakruchchra, Sutika Roga, Pama, Kandu, Jwara, Dourbalya, Rajorodha.

Karma – Shothahara, Lekhana, Krimighna, Mutrala, Grabhashay Sankochak, Medhya, Balya, Stanyashodhan, Vishaghna, Jwaraghna.

Pharmacological activities -

Estrogenic, hypoglycemic, anthelminthic[90], antiovulatory,antibiotic, antitubercular, anti implantation, anti inflammatory, antipyretic, anti leishminial, antispermatogenic, anti androgenic, anticancer, immunostimulant.

Amalaki (*Phyllanthus embelica*)

हरीतकीसमं धात्रीफलं किन्तु विशेषतः ।

रक्तपित्तप्रमेहघ्नं परं वृष्यं रसायनम् ॥

हन्ति वातं तदम्लत्वात्पित्तं माधूर्यशैत्यतः ।

कफं रूक्षकषायत्वात्फलं धात्र्यस्त्रिदोषजित् ॥३७॥ भा.प्र.पू.मिश्र प्रकरण २ हरीतक्यादि वर्ग

Fig.15- Amalaki (*Phyllanthus embelica*)[91]

Natural order: Phyllanthaceae

Botanical names: Dhatri, Amruta, Vayastha. Shriphala, Amrutaphala, Awala Shiva, Dhatriphala, Shriphala, and Amritphala

Prats used: Fruits, bark, leaves

Action and uses – Fruits are astringent, cooling, anodyne, carminative, digestive, stomachic, laxative, aphrodisiac, diuretic, antipyretic and tonic.

Ayurvedic properties –

Rasa-Amla, Madhura, Tikta, Katu, Kashaya

Guna- Guru, Ruksha, Sheeta.

Veerya-Sheet

Vipak-Madhur

Doshghnata- Tri Dosha Shamaka especially Pitta Shamaka

Rogaghnata : Pittavikara, Mootravarodha, Netraroga, Khalitya, Palitya, Mastishkadourbalya, Drushtimandya, Aruchi, Trushna, Hrudrog, Udavarta, Kasa, Shwaas, Yakshma, Ratkapitta, Raktapradar, Shukrashmari, Kushtha, Visarpa, Daha, Shotha, Tivra Jwara, Dourbalya.

Karma – Dahashamaka, Chakshushya, Keshya, Medhya, Nadibalya, Rochana, Deepana, Anuloman, Amlapittashamaka, Stambhana, Hrudya, Pramehaghna, Kaphaghna, Vrishya, Garbhasthapaka, Pramehaghna, Kushthaghna, Jwaragna.

Pharmacological activity, Spasmolytic, mild CNS depressant, hypolipidaemic, ant atherosclerotic, ant mutagenic, antitumor, hypoglycemic, anti inflammatory, antibacterial[92], antiulcer, HIV 1 reverse transcriptase inhibitor action[93], androgen potentiating.

Bibhitaki (*Terminalia belerica*)

बिभितकं स्वादुपाकं कषायं कफपित्तनुत् ।

उष्णवीर्यं हिमस्पर्शं भेदनं कासनाशनम् ॥

रूक्षं नेत्रहितं केश्यं कृमिवैस्वर्यनाशनम् ।

बिभितमज्जा तृट्छर्दिकफवातहरो लघुः॥

कषायो मदकृच्चाथ धात्रीमज्जाऽपि तद्गुणः ।३५।भा.प्र.पू.मिश्रप्रकरण हरीतक्यादि वर्ग

Fig.16- Bibhitaki (*Terminalia belerica*)[94]

Natural order – Combretaceae

Classical names – Bibhitaka, Aksha, Kalidruma, Bhutavasa, Kaliyugalaya.

Parts used – Bark, seed, fruit.

Action and uses –

The bark is mildly diuretic and useful in anemia. Fruits are astringent, acrid, sweet, thermogenic, expectorant, antipyretic, ophthalmic, antiemetic, rejuvenating.

Ayurvedic properties –

Rasa- Kashaya

Guna- Laghu, Ruksha.

Veerya- Ushna

Vipak- Madhura

Doshghnata-Tri Dosha Shamaka especially Kapha Shamaka

Rogaghnata: Shotha, Vedanayukta Vikara, Charmaroga, Granthivisarpa, Agnimandya, Shwitra, Palitya, Kasa, Shwaas, Swarabhang, Hridrog, Vrana, Netraabhishyanda, Vibandha Anidra, Adhmaan, Trishna, Chhardi, Arsha, Krimiroga, Atisara, Pravahika, Rakta Nishthivan, Ashmari, Klaibya, Jwara, Netraroga.

Karma –Shothahara, Vedansthapan, Raktastambhana, Krimighna, Krishnikaran, Madaka, Pachan, Rechana, Bhedana, Trushnanigrahana, Chardinigrahana, Kaphaghna, Vajikarana, Jwaraghna, Chakshushya.

Pharmacological activity-

Purgative, antihypertensive, antifungal[95], antihistaminic, activity against viral hepatitis, vitiligo, anti rheumatic, broncho dilatory, antispasmodic, antibacterial[95], CNS stimulant, anti stress.

Haritaki (*Terminallia chebula*)

हरीतकी पञ्चरसाऽलवणा तुवरा परम् ।

रूक्षोष्णा दीपनी मेध्या स्वादुपाका रसायनी ॥

चक्षुष्या लघुरायुष्या बृंहणी चानुलोमनी ।

श्वासकासप्रमेहार्शःकुष्ठशोथोदरक्रिमीन् ।

वैस्वर्यग्रहणीरोगविबन्धविषमज्वरान् ॥

गुल्माध्मानतृषाछर्दिहिक्काकण्डूहृदामयान् ।

कामलां शूलमानाहं प्लीहानञ्च यकृत्तथा ।

अश्मरीमूत्रकृच्छं च मूत्राघातं च नाशयेत् ॥ २०॥ भा.प्र.पू.मिश्रप्रकरण हरीतक्यादि वर्ग.

Fig.17- Haritaki (*Terminallia chebula*)[96]

Natural order – Combretaceae

Classical names – Vijaya, Dhatri, Chetaki, Putna, Rohini, Abhaya, Indian walnut, Indian hog plum, Harada

Parts Used – Fruits

Action and uses – Fruits are astringent, sweet, acrid, bitter, sour, anodyne, anti-inflammatory, stomachic, laxative, carminative, depurative, febrifuge and tonic. They are useful in wound ulcers, inflammation, skin diseases, leprosy, stomatitis, hyperacidity, jaundice, haemorrhoides, anaemia, delirium, worm infestations, scrotal enlargement, pharyngitis, hiccough, asthma, intermittent fever, dandruff, arthritis, ophthalmic diseases, general debility.

Ayurvedic Properties –

Rasa – Kashay, Tikta, Madhura, Amla, Katu.

Guna –Laghu, Ruksha.

Veerya – Ushna

Vipak – Madhura

Doshghnata – Tri Dosha Shamaka

Rogaghnata – Vatvyadhi, Mastishka Dourbalya, Nadidourbalya, Indriya Dourbalya, Kantharoga, Agnimandya, Shoola, Anaha, Gulma , Vibandh, Udararoga, Shotha, pratishyaya, Hrudayadourbalya, Visarpa, Prameha, Shukrameha, Kushtha, Visham Jwara, Vatarakta, Twag Dosha.

Karma -Shothahara,Vedansthapan, Vranashodhana, Nadibalya, Medhya, Krimighna, Grahi, Shonitsthapana, Hrudya, Kaphaghna, Sroto Vishodhana, Vrushya, Prajasthapana, Mootrala, Kushthaghna, Rasayana.

Pharmacological activites –

Antimicrobial, antifungal, antibacterial[97], anthelminthic[98] ant hepatitis, anti spasmodic, hypotansive, endurance promoting activity, anti hepatitis B virus, hypolipidaemic, anthelmintic, purgative, against HIV-1 protease activity.

Shigru- (*Moringa Oleifera*)

शिग्रुः कटुः कटुः पाके तीक्ष्णोष्णो मधुरो लघुः ।

दीपनो रोचनो रूक्षः क्षारस्तिक्तो विदाहकृत् ॥

संग्राही शुक्रलो हृद्यः पित्तरक्तप्रकोपणः ।

चक्षुष्यः कफवातघ्नो विद्रधिश्वयथुक्रिमिन् ॥

मेदाऽपचिविषप्लीहगुल्मगण्डव्रणान्हरेत् ॥ ९३॥ भा.प्र.पू.मिश्रप्रकरण कर्पूरादि वर्ग

Fig.18- Shigru (*Moringa Oleifera*)[99]

Synonym: *Moringa pterigosperma*, Gaerta.

Natural order: Moringaceae

Classical names: Shigru, Aksheeva, Mochaka, Tikshnagandha

Parts used: Root, bark, leaves, seeds.

Action and Uses: The roots are bitter, acrid, thermogenic, digestive, carminative, anthelminthic, constipating, anodyne, anti inflammatory, diuretic, ophthalmic, expectorant, haematenic, antilithic. They are useful in dyspepsia, anorexia, verminosis, diarrhea, colic, flatulence, otalgia, paralysis, amenorrhea, dysmenorrheal, fever, renal calculi, ascitis, splenomegaly, epilepsy, hysteria, abscess.Bark is acrid, bitter, antifungal, cardiac and circulatory stimulant. It is useful in ascitis and ring worm.Leaves are anti-inflammatory, anthelmintic, ophthalmic and rich in vitamin A and C. They are useful in scurvy, wounds and tumors. Seeds are purgative, anti-inflammatory, antipyretic, ophthalmic. They are used in neuralgia fever and opthalmoneuropathy.

Ayurvedic Properties –

Rasa – Katu, Tikta

Guna – Laghu, Ruksha, Teekshna.

Veerya – Ushna

Vipak – Katu

Doshghnata--Kaphavata Shamaka

Rogaghnata -Vranashodhaka, Vidradhi, Shirashoola, Aam Vata, Sandhi Vata, Nadidourbalya, Pakshaghata, Ardita, Agnimandya, Aruchi, Krimi, Udarroga, Gulma, Hruddourbalya, Shotha, Kasa, Mootrakruchchra, Ashmari, Rajorodha, Kashtartawa, Medorog, Netraroga, Visha, Charmaroga.

Karma : Vidahi, Shothahara, Krimighna, Shirovirechana, Vedanasthapan, Deepana, Pachana, Grahi, Kaphaghna, Chakshushya, Atavajanan, Medoghna, Vishaghna, Swedajanan, Kushtaghna, Jwaraghna, Lekhana,

Pharmacological activity; anticancer[100], antibacterial, hypotansive, antiviral, antifungal hepato-protective depressant, anti-inflammatory, anticancer, antibiotic (pterigospermin), anti tubercular, anti infertility, stimulant.

Danti – (*Baliospermum montanum*)

दन्तीद्वयं सरं पाके रसे च कटु दीपनम् ।

गुदाङ्कुराश्मशूलार्श: कण्डुकुष्ठविदाहनुत्॥

तीक्ष्णोष्णं हन्ति पित्तास्रकफशोथोदरकृमीन् ।१७१ , भा.प्र.पू.मिश्र प्रकरण हरीतक्यदि वर्ग.

Fig.19-Danti (*Baliospermum montanum*)[101]

Synonym: *Balliospermum axillare*, Blume

Natural order: Euphorbiaceae

Parts used: Root, leaf, seeds.

Action and uses: Roots are acrid, thermogenic, purgative, anti-inflammatory, antehelminthic, digestive, rubefacient, tonic.

They are used in anasarca, dropsy, flatulence, constipation, jaundice, haemorrhoids, leprosy, skin diseases, anaemia, leucorrhoea, wound, vesicle calculi. Seeds are drastic purgatives and are very useful in inflammation and flatulence.The plant is reported as to be used for the treatment of abdominal tumors and cancers. Latex is used for body ache and joints.

Ayurvedic Properties –

Rasa – Katu,

Guna – Guru, Ruksha, Teekshna.

Veerya – Ushna

Vipaka – Katu

Prabhava –Virechana

Doshghnata - Kaphapitta Shamaka

Rogaghnata : Shotha, Vedana, Arsha, Vatvyadhi, Agnimandya, Yakrutvikara, Udarroga, Krimi, Raktavikara, Sarvanga Shotha, Shwasa, Asthma, Sarpvisha, Jwara.

Karm: Shothahara, Vedanasthapan, Krimighna, Virechan, Vishaghna, Jwaraghna, Pittasarak, Raktashodhaka.

Pharmacological activity: Antileukemic[102], anticancer[103], hypotensive, catheteric, antiasthmatic.

Yawa (*Hordeum vulgare*)

यवः कषायो मधुरः शीतलो लेखनो मृदुः।

व्रणेषु तिलवत्पथ्यो रूक्षो मेधाग्निवर्धनः॥

कटुपाकोऽनभिष्यन्दी स्वर्यो बलकरो गुरुः ।

बहुवातमल वर्ण्यस्थैर्यकारी च पिच्छिलः॥

कण्ठत्वगामयश्लेष्मपित्तमेदःप्रणाशनः । २६। भा.प्र.पू.मिश्र प्रकरण् कर्पूरादि वर्ग.

Fig.20-Yawa (*Hordeum vulgare*)[104]

Natural order: Poacae

Classical Names: Yawa, Akshat, Hayapriya, Teekshnamukh.

Parts used: seed

Action and uses:

Seeds are astringent, refrigerant, emollient, diretics, intellect promoting, digestive, aphrodisiac. They are useful in catarrah of throat and urinarytract, asthma, amentia, fever, urocystitis, vomiting, erysepalous, leprosy, obesity, ulcers, burns, vision defects, cephalgia, anaemia.

Ayurvedic Properties –

Rasa- Kashaya, Madhura

Guna- Guru, Ruksha, Mrudu, Pichchil.

Veerya-Sheeta

Vipak-Katu

Prabhav-Virechana

Doshghnata-Kaphapitta Shamaka

Rogaghnata : Daha, Kshatksheen, Timira, Kantharoga, Charmaroga, Visarpa, Gulma, Shoola, Prameha, Medoroga.

Karma: Vatakara, Medohara, Medhya, Lekhana, Vrushya, Purishkruta, Swarya.

Pharmacological activity: Hypocholesterolemic, anti fungal, antiprotozoal, antiviral, diuretic, hypotensive, ant mutagenic[105], antiulcer, antioxidant.

Madan (*Randia dumentorum*)

मदनो मधुरस्तिक्तो वीर्योष्णो लेखनो लघुः ।

वान्तिकृद्विद्रधिहरः प्रतिश्यायव्रणान्तकः॥

रूक्षः कुष्ठकफानाहशोथगुल्मव्रणापहः॥ भा.प्र.पू.मिश्र प्रकरण हरीतक्यादि वर्ग.१४२

Fig.21. Madan (*Randia dumentorum*)[106]

Natural order: Rubiaceae

Classical name: Madana, Chhardighna, Pindi, Nata, Karahata

Parts used: Bark, fruit

Action Uses : The fruits are bitter, astringent, emetic, antiinflammatory, carminative, antehelminthic, abortificient, antispasmodic. It is useful in pain, sprain, inflammation, helminthiasis.It is one of the softest emetics.

Ayurvedic properties

Rasa – Kashaya, Madhura, Tikta, Katu.

Guna: Laghu, Ruksha.

Veerya: Ushna

Vipak: Katu

Prabhav: Vamaka

Doshaghnata: Kapha Vata Shamaka, Kapha Pitta Shamaka.

Rogaghnata : Vata Vyadhi, Aam Vata, Shotha, Vedanayukt Vikara, Krimi, Vrana, Udavarta, Pravahika, Kashtartawa, Kushtha, Visha Vikara, Jwara, Medoroga.

Pharmacological activity : Anti inflammatory, anti cancer[107], antiovulatory, insecticidal, antibacterial, antifungal, antiviral, antipyretic, anti infertility, anthelminthic[108], Anti implantation, anti dirrhoeal.

सैन्धव – (Rock salt)

रोचनं दीपनं वृष्यं चक्षुष्यमविदाही च ।

त्रिदोषघ्नं सुमधूरं सैन्धवं लवणोत्तमम् ॥ च.सू.२७

सैन्धवं लवणं स्वादु दीपनं पाचनं लघु ।

स्निग्धं रूच्यं हिमं वृष्यं सूक्ष्मं नेत्र्यं त्रिदोषहृत् ॥ भा.प्र.प्र.६/२४१

Fig.22-Rock salt

Rock salt is best of salts.It is digestive apetiser and slightly sweet. It is nonirritant aphrodisiac and wholesome to eyes .It alleviates all three Doshas.

Rock salt[109] is that the purest type of salt - unprocessed and raw, innocent of environmental pollutants and chemical parts. "It contains eighty four out of the ninety two trace components needed by the body as well as metallic element, iron, calcium, zinc, magnesium, copper and then on. It's a superior salt; it facilitates the cellular absorption of minerals, and plays an important role in replenishing the body's electrolytes and maintaining the pH balance. Rock salt is cooling instead of heating and is way additional leveling for tyrannid, in comparison to other forms of salt. Its mildness and diverse mineral content help minimize the potential hazards of excess salt. Rock salt also can be accustomed cure abdomen infections and aids in deworming as well".

"Rock salt can be used to stimulate your body's metabolism, and ultimately improve the functioning of your body, Rock salt helps stabilize blood pressure by maintaining a balance of high and low blood pressures Rock salt provides all the essential trace minerals and greatly improves the body's immune system. It fights harmful bacteria and helps kick illnesses to the curb. Gargling with rock salt provides relief against sore throat, dry cough and tonsils, or dissolves rock salt in water and inhale the steam. Rock salt reduces sugar cravings by reactivating internal secretion and thence ends up in weight loss. Rock salt regulates the level of melatonin and thus, regulates our sleep cycle.

मधु (Honey)-

Fig.23-Honey

मधुः शीतं लघु स्वादु रूक्षं ग्राही विलेखनं ।

चक्षुष्यं दीपनं स्वर्यं व्रणशोधनरोपणम् ॥

सौकुमार्यकरं सूक्ष्मं परं स्रोतोविशोधनम् ।

कषायानुरसं ल्हादि प्रसादजनकं परम् ।।

वर्ण्यं मेधाकरं वृष्यं विशदं रोचनं हरेत् ।

कुष्ठार्शः कासपित्तास्रकफमेहक्लमक्रिमीन् ।।

मेदस्तृष्णावमिश्वासहिक्काऽतिसारविड्ग्रहान् ।

दाहक्षतक्षयांतत्तु योगवाह्यात्पवातलम् ।। भा.प्र.प्र.२२/२-५

Honey[110] called Madhu in ayurvedic scriptures is one among the foremost necessary medicines utilized in written material. In written material, honey is employed for each internal and external application. It is mainly used for the treatment of eye diseases, cough, thirst, phlegm, hiccups and blood in vomit, leprosy, diabetes, obesity, worm infestation, vomiting, asthma, diarrhea, and healing wounds. It is additionally used as a natural preservative and sweetener in several ayurvedic preparations. It is additionally used as a vehicle aspect [in conjunction with/beside/at the side of/together with] some medicines to enhance its efficaciousness or to mitigate the side effects of the opposite medicines it's mixed with. It is also known to mitigate increased Kapha Dosha.(Kapha Dosha is the ayurvedic category for body constitutions- those with Kapha Dosha are of larger proportions with a robust frame.) It should also be kept in mind that fresh honey helps to extend body mass whereas recent honey produces constipation and reduces body mass. Honey should not be heated or consumed warm as it causes toxic effects. Cold honey should always be preferred.

J) LITERATURE REVIEW – PAKWASHAYA - AYURVEDIC ASPECT-

Since Basti Upakram is administered at Pakwashaya, study of Pakwashaya from Ayurvedic as well as modern perspective is essential.

Pakwashaya - Ayurvedic perspective

पक्वाशय-(**पुं**) –

Nirukti

निरूक्त्ती- पक्व-पच क्त तस्य वः[111] **।**

१) परिणते,२) दृढे, ३) विनाशोन्मुखे, ४) क्वत् पाके च ,अमरः ।

बृहत् संस्कृताभिधानम् ।पञ्चमो भागः।

पक्वं+व्या +शीड्+आधारे+अप् –नाभ्यधोभागः ।(राजनिघण्टु)

Vyutpatti

व्युत्पत्ति –पचनम् पक्वं भावे क्तः ,तस्य आशयः पक्वाशयः । डल्हण टीका,सु.शा,८/७

पक्वस्य आमादेराशयः आधानम् । यद्वा पक्वं आमादिकं आशेतेऽच ।

पक्वमन्नधीयते नाम स्थाप्यते अस्मिन इति । आयु. शब्द्कोश पृ.८०५

पच् पाके पचति ते ।

अपाचित यथा न पेचे । पक्ता ।

पक्वं पचे लिञ् पक्तिः पाकः ।

Synonym

पुरीषाधार .पुरीषाशय,कटि,श्रोणी,वाताशय,अपानस्थान,

संदर्भ- पारिषद्यं शारीरम् –वैद्यनाथ प्रकाशन

Constitution of Pakwashaya -

During intrauterine development, Vayu works as Sthulanusrotasaam Bhetta[112], Karta Garbhakrutinaam.

Hollw organs are formed at micro and macro level due to Vayu. Vayu is responsible for formation of intestines. During third month of intrauterine life, due to supreme part of Rakta Dhatu and Mansa Dhatu, intestines are formed with the blowing of Vayu.

तृतीये हस्तपादशिरसां पञ्च पिण्डका निवर्तन्ते ,अ ङ्प्र त्याङग विभागश्च् सूक्ष्मो भवति । सु.शा. ३/१५

शाखा चतस्रो मूर्धोरः पृष्ठोदराणि अङ्गानि चिबुक नासौष्ठश्रवणान्ङुली पाष्र्ण्णि प्रभृतीनि प्रत्यङानि ।

डल्हण टीका

According to commentator Acharya Dalhana, Udara[113] is formed in third month of intrauterine life. Pakwashaya is a part of Udara, so the formation and development of Pakwashaya is said to be in third month of intra uterine life.

According to Bhadrashounaka, very first, Pakwashaya[114] and Guda are formed during intra uterine life.

पक्वाशयगुदमिति भद्रशौनकः । मारूताधिष्ठानत्वात् । च.शा.६/२१.

Panchamahabhuta and Pakwashaya -
Five elements related to Pakwashaya

1) Akasha

आकाशं विवर्धयति । सु.शा.५/३

आकाशं विवर्धयति इति अनिलानल विदारित स्रोतसां आध्मापनेन उर्ध्वमधस्तिर्यक् विवर्धित

अवकाश दानेन विवर्धयति । डल्हण टीका -सु.शा.५/३

अंतरिक्षास्तु ,शब्दः शब्देन्द्रियं सर्वच्छिद्रसमुहो विविक्तता च ।

Pakwashaya is formed due to blowing by Vayu in vaccum space.

तं चेतनावस्थितं वायुर्विभजति । सु.शा.५/३

Formation of Dosha, Dhatu and Mala and various organs in the body are due to Vata Dosha

तं वायुर्विभजति दोष धातुमलाङ्गप्रत्यङ्गविभागेन …. । डल्हण टीका सु.शा.५/३

2) Vata Dosha stays at Pakwashaya

पक्वाशयः विशेषेण[115] वातस्थानम् । च.सू.२०/९

अपानस्थानमन्त्रस्थ शुक्रंमूत्रशकृन्ति च । च.चि.२८/१०

3) Teja (Fire)

Pure form of Kapha Dosha and Rakta Dhatu forms Pakwashaya, in the form of *Snayu* and *Mansa*. This transformation is because of Teja Mahabhuta only.

तेजः

Pureeshdhara Kala stays inside Pakwashaya. It synthesizes the excreta. For the synthesis of excreta, Teja Mahabhuta is required. This indiates that Pakwashaya possesses Teja Mahabhuta.

पञ्चमी पुरीषधरा नाम (कला) याऽन्तकोष्ठे मलमभिविभजते पक्वाशयस्था । सु.शा.४/१६

पक्वाशयं तु प्राप्तस्य शोष्यमाणस्य वह्निना ।

परिपिण्डित पक्वस्य वायुः स्यात् कटुभावतः ॥ च.चि.१५/११

4) Aapa

Intestines are formed of pure form of Kapha Dosha having liquid property Drava Guna. Pakwashaya starts from *Unduk*

यकृत्समन्तात्कोष्ठं च तथाऽन्त्राणि समाश्रिता ।

उण्डुकस्थं विभजते मलं मलधरा कला॥ सु.शा.४/१७

डल्हण टीका – अन्तकोष्ठ इति कोष्ठस्य अंतर्मध्यं अन्तःकोष्ठं पुनस्तस्मिन्मलं मूत्रपुरीष तया विभजति।

मलं विभजते इति मूत्र पुरीषरुपतया विभागं करोति । गयी तु तस्मात् कोष्ठात् पृथक्करोतीति व्याख्याति ।

Comparatively less nutritive part of Rakta Dhatu (kitta) forms Unduka while formation of urine, liquid byproducts are absorbed in Pakwashaya. Mala of Majja Dhatu is called as Vitsneha, is again in a liquid form. These evidences prove that Pakwashaya has Aapa Mahabhuta dominance.

5) Prithvi – A specific shape and size of Pakwashaya is due to Ptruthvi Mahabhut.

In different Samhitas, Pakwashaya is either described from functional aspect or from anatomical aspect.

According to Chakrapani commentary Pakwashaya is predominant site of Vata Dosha. Vata Vyadhi are mostly occur in Pakwashaya. Diseases are broadly classified as Amashaya Samuttha and Pakwashayasamuttha. Diseases whose basic site is Pakwashaya become difficult to cure.

According to Sushrut Samhita, Pakwashaya is a site for Purishadhara Kala.

According to Gayadaas, Mala, (byproducts after digestion process) are classified into urine and stool with the help of Apana Vayu.

डल्हण टीका – अन्तकोष्ठ इति कोष्ठस्य अंतर्मध्यं अन्तःकोष्ठं पुनस्तस्मिन्मलं मूत्रपुरीष तया विभजति ।

मलं विभजते इति मूत्र पुरीषरुपतया विभागं करोति ।गयी तु तस्मात् कोष्ठात् पृथक्करोतीति व्याख्याति ।

Pakwashaya is also a part of Panchadasha Koshthanga.

नाभिः प्लीहा यकृत्क्लोम हृद्वृक्कौ गुदबस्तयः ।

क्षुद्रान्त्रमथ च स्थूलमामपक्वाशयौ वपा ॥

कोष्ठाङ्गानि वदन्ति ज्ञाः ॥ काश्यप संहिता

Pakwashaya –Dosha, Dhatu, Mala Vidnyan –

Dosha -

अधोनाभ्यस्थिमज्जानं वात स्थानं प्रचक्षते ।

Pakwashaya is a prime location for Vata Dosha. Kati (lumber region), Sakthi (thigh), Shrotra (ears), Asthi (bones), Sparshanendriya (skin) are secondary sites of Vata Dosha.

पक्वाशय कटी सक्थि श्रोत्रास्थि स्पर्शनेन्द्रियम् ।

स्थानं वातस्य तत्रापि पक्वाधानं विशेषतः ॥ अ.हृ.सू.१२/१

Apana Vayu resides in Pakwashaya. It travels at Shroni (lumbar region), Basti (urinary bladder), Medhra (genital organs) and Uroo (thigh region)[116].

अपानोऽपानगः श्रोणिबस्तिमेढ्रोरूगोचरः।अ.हृ.सू.१२/९

अपानगः इति पक्वाशयः ।

Samana Vayu is associated with Agni and helps in digestion and assimilation process in Amashaya and Pakwashaya.

In healthy state, Samana and Apana Vayu control the functions of Pakwashaya[117].

समान वायु –आमपक्वाशयचरः समानो वन्हिसंगतः । सु.नि.१/१७

Samana Vayu with the help of Apana Vayu processes food particles in Pakwashaya.

Relation between Pakwashaya and other types of Vayu-

Pakwashaya is a prime site of Apana Vayu. Samana Vayu helps the digestion and assimilation process in the field of Apana Vayu. During separation of Saara and Kitta, Apana Vayu play an important role in co-ordination with Samana and Vyana Vayu. Thus disturbance in Apana, Samana and Vyana Vayu leads to Grahani.

Considering the direction of Doshas, Apana, Samana and Vyana Vayu have downword direction. To defaecate properly, Vyana Vayu helps Apana for peristaltic movements in downward direction. Moreover, Vyan Vayu controls Apana Vayu during nine months of intra uterine life.

Rectum doesn't have Sparashanenadriya, still person gets urge for defeacation. This happens because of Prana Vayu. Prana Vayu controls Mana and Indriyas. Guda is Karmendriya. Mana gives knowledge of fullness of rectum to Atma, with the help of Prana Vayu. Neccesity of excretion i.e. Pureesh Vega is supported by Apana Vayu. During Defeacation process, anal sphincters are controlled by Vyan Vayu.

तत्र प्रस्पन्दनोद्वहनपूरण विवेकधारणलक्षणो वायुः पञ्चधा प्रविभक्तः शरीरं धारयति ।सु.सू.१५/१.

डल्हण टीका –प्रस्पन्दनं शरीरस्य चलनम् ,इदं व्यानस्य कर्म,उद्वहनं इन्द्रियार्थानां चास्य उदानस्य कर्म , शुक्रमूत्रादिनां वेगकाले कार्यम् ,अवेगकाले धारणं अपानस्य । सु.सू.१५/१.

Thus, Prana, Samana, Vyan and Apana Vayu plays important role in various functions of Pakwashaya. These functions of Vayu are well elaborated at Vatakalakaleeya Adhyaya in Charak Samhita. If we see comparative strength or potency of gunas of Vata Dosha, we observe, Chalatwa is predominent in Prana Vayu than Apan Vayu. Gurutwa and Sheetatwa is dominant in Apana Vayu than any other types of Vayu. Sukshmatwa is more active in Vyana Vayu. Laghutwa is more active guna in Udaan Vayu. Kharatwa and Rukshatwa are more dominant in Samana Vayu.

Pakwashaya and Pitta Dosha-

Grahani lies between Amashaya and Pakwashaya. Prime digestive power i.e. Jatharagni is always associated with Grahani[118].

पक्वामाशयमध्यस्था ग्रहणी सा परिकीर्तिता: । सु.उ.४०/१६९

Pachak Pitta when leaves its Drava Guna, it is called as Agni.

त्यक्तद्रवत्वपाकादि कर्मणानलशब्दितम् ।

पचत्यन्नं विभजते सारकिट्टौ पृथक् तथा।।अ.हृ.सू.१२/११

Pakwashaya and Kapha Dosha-

Avalambak Kapha and Keldak Kapha are associated with digestion process.

Relation between Pakwashaya and Dhatu-

डिम्भं स्याद्रक्तमांसस्य प्रसादादन्त्रसंभवः ।

सार्धत्रिव्याममन्त्राणि पुरूषानां तु तानि च ॥ शार्ङ्गधर संहिता मध्यम् खण्ड ५

Pakwashaya is formed by pure form of Rakta Dhatu and Mansa Dhatu[119]. The former part of Pakwashaya is Unduka, which is formed by comparatively less nutritive part of Rakta Dhatu. So Mansa dhatu and Rakta dhatu are important dhatus related to Pakwashaya.

Srushtavinmootra i.e. excess production of stool and urine are the symptoms of Mansagata Jwara. This is due to the fact that Pakwasahya is prepared from Mansa Dhatu.

Relation between Pakwashaya and Mala-

पञ्चमी पुरीषधरा नाम (कला) याऽन्तकोष्ठे मलमभिविभजते पक्वाशयस्था । सु.शा.४ /१५

डल्हण –पक्वाशयस्था इति पुरीषस्य पक्वाशयस्थितत्वात् । कोष्ठ: पुनः आमपक्वाशयाश्रय: ।तेन कोष्ठस्थिताऽपि पुरीषस्य पक्वाशयस्थितत्वात् बाहूल्येन पक्वाशयस्था कथ्यन्ते ।

Pakwashaya has Purishdhara Kala as Purish is hold in Pakwashaya. During digestive process Saar-ansh means assimilated part of the food and Kitta-ansha means excretory part of the food are separated at Pakwashaya. Only.Kitta-ansha i.e.excretory part is again divides into solid and liquid contents. Solid part is called as Purisha and liquid part is called as Mutra. Mootra is then sent to Vrukka, then ureters (Gavini) and then collected into Basti from where it is thrown out of the body.

Relation between Pakwashaya and Kala

धात्वाशयान्तर मर्यादा कला ।

The fine demarcation between Dhatu and Aashaya is called as Kala. There are seven Kalas in the body, out of which 5th and 6th Kala are associated with Pakwashaya.

Purishadhara Kala

पञ्चमी पुरीषधरा नाम (कला) याऽन्तकोष्ठे मलमभिविभजते पक्वाशयस्था । सु.शा.४ /१५

षष्ठी पित्तधरा नाम या कला परिकीर्तिता।

पक्वामाशयमध्यस्था ग्रहणी सा प्रकीर्तिता॥ सु.उ.४०/१६९

With the help of Agni and Vayu, Rasa, Mutra, Purisha are synthesized. Purishadhara Kala begins at caecum[120].

Pittadhara Kala

षष्ठी पित्तधरा नाम या कला परिकीर्तिता।

पक्वामाशयमध्यस्था ग्रहणी सा प्रकीर्तिता॥ सु.उ.४०/१६९

Ingested food is partially digested in Kaphasthana i.e.Amashaya and pushed to Pittasthana and Pakwashaya, for further digestive process. The Kala which helds Pittasthana and Pakwashaya is called as Pittadhara Kala[121].

षष्ठी पित्तधरा नाम पक्वामाशयमध्यस्था, सा हि अन्तरग्न्यधिष्ठान् तयाऽमपक्वाशययोर्मध्ये

चतुर्विधं अन्नं बलेन विधार्य शोषयति पचति इति। अ.सं.शा.५

While describing Visha Vega, Acharya Sushrut has explained Pittadhara Kala. Also while referring percolation of toxins in Kala, Acharya Sushrut has described Asthidhara Kala and Majjadhara Kala.

या एव पुरीषधरा ,सा एव अस्थिधरा इति ।सु.क.४/४० डल्हण टीका

या एव पित्तधरा ,सा एव मज्जधरा कला । ।सु.क.४/४० डल्हण टीका

Pakwashaya and Marma

पित्त पक्वाशययोर्मध्ये सिराप्रभवा नाभिः ।

तत्रापि सद्यो मरणं…..॥सु.शा.६/२५

Total 107 Marmas are explained in Sharira Vidnyan. The Marma around Pakwashaya is Nabhi, called as Sadyopranhara Marma meaning injury to it causes sudden death[122].

In Charak Samhita, Indreeysthaan at Sadyomaranenedriya Adhyaya, same fatal conditions are elaborated as,

पक्वाशयसमुत्थानां यस्य स्यात् परिकर्तिका ।

तृष्णागुदग्रहश्चोग्रः सद्यो जहयात् स जीवितम् ॥

पक्वाशयं अधिष्ठाय हत्वा संज्ञा च मारुतः ।

कण्ठे घुर्घूरकं कृत्वा सद्यो हरति जीवितम् ॥ च.ई.१०/१८

पक्वाशयस्थे रूधिरं सशूलं गौरवं भवेत् ।

नाभेरधस्तात् शीतत्वं खेभ्यो रक्तस्य चागमः ॥ अ.सं.उ.३१/३८

Relation between mind and Pakwashaya

One should consume food happily for proper digestion of food. Fear, anger, grief, worry causes vitiation of Doshas in Amashaya and Pakwashaya. In the chapter of Atisara, Bhayaja and Shokaja Atisara are described, indicating impact of mind on functions of Pakwashaya.

काम शोक भयाद् वायुः ।

Causative factors for Arsha (haemorrhoid) are explained as anger and grief.

Rivalry, fear, anger causes indigestion. Thus depression and other mental aggrevations cause vitiation of Doshas in Pakwashaya.

Relation between sense organs and Pakwashaya

इन्द्रियाणि समाश्रित्य प्रकुप्यन्ति यदा मला; ।

उपघातोपतापाभ्यां योजयन्तीन्द्रियाणि ते ॥ च.सू.२८/2०

Vitiated Doshas produce abnormalities in Indriyas causing Indriyapra Doshaj Vikaara[123]. It can cause partial or complete loss of Dnyanendriya or Karmendriya.

According to Sushrut, Pakwashaya is origin of Purishavaha Srotas.

पुरीषवहे द्वे तयोर्मूलं पक्वाशयो गुदं च ,तत्र विद्धस्य आनाहो ,दुर्गन्धता ग्रथितान्त्रता च । सु.शा.९/१२

Guda is a Karmendriya. When Purishwaha srotas gets injured, the functions of Guda are also hampered.

The Vinmutra Vata Krama nigraha is causative factor of ophthalmic disorder. **विण्मूत्रवातक्रमनिग्रहः ।** (Ref.Ma.Ni.Netrarog SU.U.1/2)

Adhovata and Purisha are residents of Pakwashaya likewise, Purishaja Krimi are also habitat of Pakwashaya

पुरीषाजास्तुल्यसमुत्थानाः श्लेष्मजैः, तेषां स्थानं पक्वाशयः ते प्रवर्धमानास्त्वधो विसर्पन्ति…

Also **कृमि कीटेत्यादि कृमयः कोष्ठपुरीषादि बाष्पसंभवः** || **सुश्रुत सूत्रस्थान १/३०**

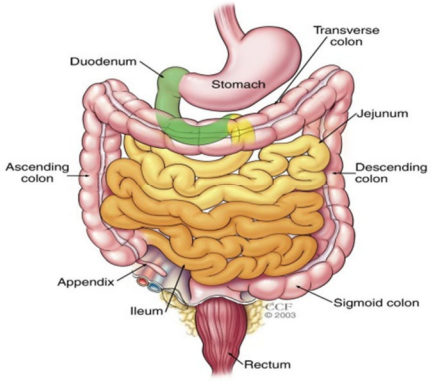
For Purishaj Krimi[124], Krimighna Basti and Virechana are line of treatment.

K) LITERATURE REVIEW – COLON (PAKWASHAYA) -MODERN ASPECT

Embryology

Embryologically[125], the colon develops from the midgut (cecum to the distal transverse colon), the hindgut (distal transverse colon to the dentate line in the anorectum), and the proctodeum (below the dentate line).

Fig.24-Anatomy of colon



The large intestine is within the alimentary tract where water is absorbed from indigestible contents. The large bowel includes the blind gut, appendix, entire colon, rectum, and anal canal. It begins at the terminal ileum with the cecum. Unlike the little bowel, it has a shorter length but a much larger lumen. It is distinguished away from the little bowel by the presence of omental appendices, haustra, and teniae coli.

The caecum is the proximal blind pouch of the ascending colon, lying at the level of the ileocecal junction. The terminal ileum contents open into the cecum on the medial wall, and the ileocecal valve guards this opening. The appendix may be a skinny cylindrical organ with a blind attachment to the blind gut. The base of the appendix lies on the posteromedial wall of the cecum about 1 to 2 centimeters below the ileocecal junction. The tip of the appendix ofttimes floats within the cavity and most typically placed during a retrocecal position. It has a brief triangular peritoneum referred to as the mesoappendix.

The cecum is continuous with the second part of the large intestine: the ascending colon. The ascending colon runs superiorly on the right side of the abdomen from the right iliac fossa to the right lobe of the liver. At this point, it makes a left turn at the right colic flexure (hepatic flexure). Ascending colon is a retroperitoneal organ and has paracolic gutters on either side. The colon is that the third, most mobile, and longest part of the large intestine. It is found

between the right and left colic flexures. The left pain flexure is a smaller amount mobile than the proper and is connected to the diaphragm through the phrenicocolic ligament. The transverse colon is attached to a mesentery, the transverse mesocolon, which has its roots along the inferior border of the pancreas. The transverse colon continues as a descending colon. The descending colon is a retroperitoneal organ and related to paracolic gutters on either side. It terminates into the colon, which is the fifth part of the large intestine. The colon links the colon to the body part. The sigmoid colon is an S-shaped loop of varying length and becomes the rectum at the level of S3.

The rectum occupies the concavity of the sacrococcygeal curvature. It is fastened, primarily retroperitoneal, and subperitoneal in location. It transitions to the anal canal at the amount of the puborectal sling that is made by the fibers of the levator cuckoo muscles. The body part has an associate enlarged middle section referred to as the ampulla. The rectum is anteriorly related to the rectovesical pouch, prostate, bladder, urethra, and seminal vesicles in males. In females, the rectum is anteriorly related to the recto-uterine pouch, cervix, uterus, and vagina.
Blood Supply and Lymphatics

The blood supply to the colon is provided by the superior mesenteric artery (SMA) and the inferior mesenteric artery (IMA). Communication between these 2 vessels happens via the marginal artery that runs parallel to the length of the complete colon. The branches supplying specific portions of the bowel are as follows:

- The cecum is supplied by the ileocolic artery, which is a terminal branch of the SMA. The ileocolic artery gives rise to the appendicular artery to supply the appendix.
- The ascending colon and the right colic flexure are supplied by the ileocolic and right colic arteries, both branches of the SMA.
- The arterial supply to the transverse colon is mostly from the middle colic artery which is a branch of SMA. It may also receive blood supply from the anastomotic arcades between the right and left colic arteries which collectively form the marginal artery.
- The descending and sigmoid colon receive their blood supply from the left colic and sigmoid arteries which are branches of the IMA. The transition of blood supply at the left colic flexure from the SMA to the IMA indicates the embryological transition from the midgut to hindgut that occurs at this point, respectively.
- The rectum and anal canal are supplied by the superior rectal artery which is a continuation of the IMA. They conjointly receive provide from branches of the interior

bone arteries, the center, and inferior body part arteries. Further, the inferior rectal artery is a branch of the internal pudendal artery.

Venous drainage usually accompanies arterial colonic supply. Ultimately, the inferior mesenteric vein (IMV) drains into the splenic vein, while the superior mesenteric vein (SMV) joins the splenic vein to form the hepatic portal vein. Lymphatics of the large intestine drain into the lymph nodes associated with the main vessels which supply them.

Nerve supply

The midgut-derived ascending colon and proximal two-thirds of the transverse colon receive parasympathetic, sympathetic, and sensory nerve supply from the superior mesenteric plexus. The hindgut-derived structures, which include the distal one-third of the transverse colon, descending, and sigmoid colon, receive parasympathetic, sympathetic, and sensory nerve innervation from the inferior mesenteric plexus.

Functions of Colon -

The key functions of the colon embody the following:

- Water and nutrient absorption
- Vitamin absorption
- Feces compaction
- Potassium and chloride secretion
- Moving waste material toward the rectum

1) Absorption –

The overall functions of the large intestine are digestion, absorption, feces formation, excretion and manufacturing of certain vitamins.

About 90% of all absorptions of nutrients take place through the length of large intestines. The other 10% occur in the stomach. Any undigested or partially digested food left in the small intestine is passed on to the large intestine

Absorption and faeces formation –By the time, chyme has remained in the large intestine for 3-10 hours,it has become solid and semisolid as a result of absorption and then it is known as faeces.

I) Water absorption and formation of the stool are some of the chief functions of the large intestine. Daily about 350 gms of fluid chyme is passed into the large gut and 135 gms of moist feces is produced on average. About 60-80 % of the water is absorbed here.

II) Normal saline is forcibly absorbed.

III) Glucose –Isolated large intestine absorbed glucose at the rate of 6 gms per hour. 5% glucose solution is suitable for administration per rectum in humans.

IV) Anesthesia is absorbed

V) Amino acids are also absorbed, absorption in the proximal colon is better than in the distal one.

1) Excretion

Heavy metals like bismuth, mercury, arsenic, etc are excreted through the large gut.

The diffusible substances present in the bowel may be excreted if the concentration of these substances in the colon is lower than blood. That is why this part of the intestine is called artificial kidneys for the removal of body waste products, whose kidneys are in trouble, provided, the concentration of these substances in the intestines are kept lowered by withdrawing from them from it constantly. When they are ingested subcutaneously, they are found in feces.

2) Secretion –

The global cells of the large intestine secrete mucus which acts as a lubricant. Mechanical irritation stimulates some watery secretions. The secretions of large intestine have a distinct alkaline reaction but normal stool has an acidic reaction due to acid produced by bacterial action.

3) Synthetic function –

Bacterial flora in the large intestine synthesizes vitamin K, folic acid and some other members of B complex. A large amount of B-complex are also synthesized but they are not absorbed.

4) Bacterial digestion –

The large intestine is a seat for the growth of various types of micro-organisms or bacteria. Whether they are useful or not, is not definitely known, but the following facts indicate that they may be useful to some extent.

These bacterias are very rich in cytochrome. Some people suggest that the normal flora of large intestine prevents the growth of other pathogenic bacteria and thus serves a very useful purpose.

The unstable foodstuff passes into the large intestine where they are attached by the bacteria with the formation of products as follows-

a. Carbohydrates are converted into CO2, organic acid, etc. Cellulose is converted into carbonic acids and methane.
b. Fat is converted into low fatty acids and glycerol.
c. Proteins are converted to amino acids and ammonia etc.

5) Mass Peristalsis

One great function of the large intestine is its capacity to move. It's mass peristalsis is essential for defaecation.

L) LITERATURE REVIEW-BASTI KALPANA –

Basti is a special treatment in Ayurveda. It pacifies Vitiated Vata. Vata is the root cause of all pathogenesis of diseases in the body. Basti regulates Vata, so it is called complete or half treatment of all diseases.

Meaning of word Basti is Bladder. Animal bladders were used to administer medicinal decoctions or fats through anal opening. So the treatment was also called Basti.

Classification of Basti -

Anatomical classification –

1. Pakwashayagata (Rectal) – As the name suggest drugs i.e. oils or decoctions are administered through rectum which reaches to Pakwashaya,the large intestine.Since pakwashaya is seat of Vata, this treamnet for Vata Vyadhi is rewarding.
2. Garbhashayagata (Uterine) - As the name suggest drugs i.e. oils or decoctions are administered through vagina In female genital disorders especially in infertility such basti type acts as cleansing procedure for Garbhashayya.
3. Mutrashayagata (Urethrovesical) - As the name suggests drugs i.e. oils or decoctions are administered through urethra. Diseases of urinary system are treated with such procedure.
4. Vranagata (Wound) – In case of Naadivrana, for Shodhan and Ropana Karma, medicated oil or decoctions are pushed in the Vrana (wound).

Pharmaceutical classification –

1. Niruha Basti
2. Anuvasana Basti

1. Pharmacological classification- (According to Sushruta)

1. Shodhana Basti
2. Lekhana Basti
3. Snehana Basti
4. Brihana Basti

According to Acharya Vagbhatta

1. Utkleshana Basti
2. Doshhara Basti
3. Shamana Basti

According to the number of Basti

1. Karma Basti- set of 30
2. Kala Basti-set of 16
3. Yoga Basti –set of 8

According to Charaka Samhita–

1. Anuvasana basti.
2. Niruha basti.
3. Uttar basti.

In classical texts some more types of Basti are mentioned with specific names. These are as follows:

1. Yapana Basti -This Basti can be administered at any time. Yapana (prolonging) of life can be achieved by administration of this Basti.
2. Siddha Basti which cures a certain disease.
3. Prasrita Yaugiki Basti which should be administered in the dose of Prasrita.
4. Paadaheena Basti - The Basti which should be administered in the dose of nine Prasrita.
5. Teekshna Basti- the Basti which contains Teekshna (penetrating) Dravya such as Kshara, Mutra or other drugs having Ushna property.
6. Mrudu Basti - The basti which contains Mridu (mild) Dravya such as Dugdha, Mansarasa, Ghrita etc.
7. Picchha Basti -The Basti which contains drugs having Pichchhila property.
8. Rakta Basti- Administration of blood of animals like goat is called as Rakta Basti. This type of Basti should be administered to compensate the Raktakshaya due to any cause.

Importance of Basti [126]–

बस्तिः वयस्थापयिता सुखायुर्बलाग्निर्मेधास्वरवर्णकृच्च।

सर्वार्थकारी शिशूवृद्धयूनां निरत्ययः सर्व गदापहश्च् ॥२७॥

विट्श्लेष्म पित्तानिलमूत्रकर्षो दार्ढ्यावहः शुक्रबलप्रदश्च् ।

विष्वक्स्थितं दोषचयं निरस्य सर्वान् विकारान् शमयेन्निरूहः ॥ च.सि.१/२७-२८

Asthapana refers to maintainance and expansion of life.

केवल एक दोषसहितो वा स्वाशयगः प्रकोपमुपायाति ।

तं पवनं सपित्तकफविट्कं शुद्धि करोऽनुलोमयाति बस्तिः ॥

सर्व शरीरगं च गदसंघ: तत्प्रशमात् प्रशान्तिमुपायाति । च.सि.११/१६-१८

Basti sustains age, gives happy life, add up to strength, digestive power, intellect, voice, and complexion, overcome all diseases, beneficial for young ones and old age. Basti eliminates Purisha, Mutra, Kapha, Vata and Pitta.

Dosha are removed from whole body.
Basti is antecedent treatment for Vata dominance pathologies.
Basti is best for Vata Dosha, among all other treatments.

Proper selection and administration of Basti proves to be best relief for diseases. Different combinations of drugs used for Basti can show varied opposite actions .It can perish and nourish or shrink and reduce different Srotasa, Dhatu in body. Drugs are not given by oral route, no internal administration of sneha required and Doshas are eliminated by easy way. So Basti is better than other treatment modalities like Vamana, Virechana. Basti is best among all Panchakarma treatments because Basti can show different actions by combinations of different drugs. It nourishes body, eliminates body wastes, and prolongs life. Useful in treating different diseases.

Basti is good for Vata, Pitta, Kapha, Rakta and even complex pathologies.

Basti is recommended for pathogenesis like stiffened, contracted, shrunken muscles and limbs, for constipation and pain, for the problem of infertility in both the sexes.

Basti is best for those who suffer from Shakhagata Vata, shrunken extremities, fractures, stiff joints, constipation.

Action of Basti – Basti is administered in body through rectal route. The drug actually reaches up to Nabhi area. But by the action of different drugs it eliminates Dosha from whole body. Grahani is situated at Nabhi area. Basti drug reaches up to Grahani, acts on Pittadhara Kala and Majjadhara Kala. According to Dalhana Pittadharakala and Majjadharakala are same. Purishdhara Kala and Asthidhara Kala are also same. Purishadhara Kala is situated at

Pakwashaya, main seat of Vata Dosha. So along with Vata Dosha, Basti drug acts on Pittadhara, Purishdhara, Majjadhara, Asthidhara Kala. Basti removes all wastes from this area. Basti drug roll up the waste products and are easily removed. Properly administered Niruha Basti removes stools and urine and frees daily bowel movement. It goes up to the umbilical area, waist side and belly and removes impurity. It pacifies the disease for which it is administered and improves digestive power.

Anuvasana Basti when administered routinely for eighteen days it nourishes the whole body.

पक्वाशयो तथा श्रोण्यां नाभ्यधस्तात्च साध्र्वत: ।

सम्यग् प्रणिहितो बस्तिः स्थानेष्वेतेषु तिष्ठति

पक्वाशयाद बस्तिवीर्य खैर्देहेमनुसर्पति ।

वृक्षमूलनिषिक्तानामभयां वीर्यं क्षिवद्रुमम् ॥ सु.चि.३५/२४-२५

First administered Anuvasana Basti oleate Basti and Vankshana area (Hip region). Second controls the Vata Dosha of Murdha. Third gives Bala and Varna. Forth gives Rasa, fifth gives Rakta, sixth Mansa, seventh Meda, eighth Asthi, ninth Majja, tenth Shukra.This way Basti oleates the whole body. Though drug reaches up to Nabhi area the Basti shows its action all over the body.

व्यानस्तिर्यगपानोऽधः प्राणाश्चोर्ध्वं प्रकर्षति ।

यथा स्वमेव नाडिभिर्हारिणिभिरिवोदकम् ॥ अ.सं.क.५/७१

इन्दु टीका-

बस्तिः व्यान स्तिर्यगमपकर्षति ।अपानश्च् अधः प्राणश्चोर्ध्वमपकर्षति यथात्मीय नाडीभि:।यथाश्च्

कश्चित् हारीणिभि:केदारेशूदकमपकर्षति । हारीण्य् केदारजलसंचरणवीथ्यः।

Basti controls Vata from Pakwashaya. Pakwashaya is the main seat of Vata Dosha. When the Vata from Pakwashaya is controlled, other types of Vata functioning all over the body are also controlled[127]. Vata situated at any Sandhi from the body is also controlled. When a tree is irrigated at its root, the whole plant gets nourished. In the same way, Basti given in Pakwashaya controls Vata of the whole body and all systems of the body are nourished.

Drugs of Basti are absorbed in Pakwashaya and get transported in all Srotasa of a body just as when roots are irrigated the whole plant perishes.

Sun though situated high above, dries the water on earth. In the same manner, Basti eliminates Dosha from head to toe by its own power. It is called as Basti Veerya. (potency)
Vata Dosha is responsible for the vitiation of Pitta and Kapha Dosha, all vital metabolisms along with Marma. Basti is a treatment for controlling Vata and it protects Marmas.

First administered Basti removes Vata from Pakwashaya. Second, administered Basti removes Pitta from Grahani. Third Basti eliminates Kapha from Amashaya.

Properly administrated Basti rolls up and eliminates impurities by reaching Kati, Prishtha, and Koshtha area along with different Srotasa. Vayu is powerful among Dosha. Vitiated Vata can destroy toxins. Basti is the only treatment that controls this Vata, nourishes the body. Sushrutacharya has compared the Vayu and Basti, with stormy wind and high tide. When this stormy wind like Vata Prakopa is controlled by Basti, the body is very well nourished. Basti should be administered properly, including pre-post procedures.

Poorvakarma- includes
1. Rugna Parikshana
2. Dravya Siddhata
3. Snehana

Rugna Parikshana Patient should be thoroughly examined before administration of Basti. Basti is administered in only Basti 'Arha' patients.

Basti Arha[128] -
Diseases and pathologies in which Niruha and Anuvasana is recommended
Niruha Basti Arha –

शेषास्त्वास्थाप्याः-विशेषतस्तु

सर्वाङ्गैकाङ्गकुक्षिरोगवातवर्चोमूत्रशुक्रसङ्गबलवर्णमांसरेतःक्षयदोषाध्मानाङ्गसुप्तिक्रिमिकोष्ठोदाव

र्तशुद्धातिसारपर्वभेदाभितापप्लीहगुल्मशूलहृद्रोगभगन्दरोन्मादज्वरब्रध्नशिरःकर्णशूलहृदयपार्श्वपृष्ठक

टीग्रहवेपनाक्षेपकगौरवातिलाघवरजःक्षयार्तविषमाग्निस्फिग्जानुजङ्घोरुगुल्फपार्ष्णिप्रपदयोनिबाहव ङ्गुलिस्तनान्तदन्तनखपर्वास्थिशूलशोषस्तम्भान्त्रकूजपरिकर्तिकाल्पाल्पसशब्दोग्रगन्धोत्थानादयो वातव्याधयो विशेषेण महारोगाध्यायोक्ताश्च ;एतेष्वास्थापनं प्रधानतममित्युक्तं वनस्पतिमूलच्छेदवत् ।च.सि.२/१६

Sarvanga-Akangaroga, Kukshiroga, Vata-Varch-Mutra Sanga, Shukra Sanga, Bala Varna-Mansa- Reta Kshaya, Doshadhmana, Angasupti, Krimikoshtha, Udavarta, Shudhatisara, Parvabheda, Abhitapa, Pleeha, Gulma, Hrudaroga, Bhagandara, UnmadaJvara, Bradhna, Shira-shoola, Karnashoola, Hruda-Parshva-Prishtha Katigraha, Vepana, Akshepaka, Gaurava, Atilaghava, Vishamagni Sphika-Janu-Jangha Uru-Gulfa-Parshni-Prapada-Yoni-Bahu-Anguli-Stananta-Danta-Nakha-Parvasti-Shoola, Shosha, Stambha, Antrakujana, Parikartika, Alpasashabdha, Ugragandha.Vatavyadhis of Maharoga Adhyaya.

These are the conditions and diseases in which Niruha Basti is recommended.

Niruha Basti not recommended in following conditions[129]-

अनास्थाप्यास्तु –

अजीर्ण्यतिस्निग्धपीतस्नेहोत्क्लीष्टदोषाल्पाग्नियानक्लांन्तातिदुर्बलक्षुत्तृष्णाश्रमार्तातिकृशभुक्तभ क्तपीतोदकवमितविरिक्तकृतनस्तःकर्मकृद्धभीतमत्तमूर्च्छितप्रसक्तच्छर्दिनिष्ठिविकाश्वासकासहि क्काबद्धछिद्रोदकोदराध्मानलसकविसूचिकामप्रजातामातिसारमधुमेहकुष्ठार्ताः ।च.चि.२/१४

Following types of Netra are avoided-

ह्रस्वं दीर्घं तनु स्थूलंजीर्णं शिथिलबन्धनम् ।

पार्श्वछिद्रं तथा वक्रमष्टौनेत्राणि वर्जयेत् ॥ च.चि.५/४

Excess small, long, wide, old, improperly tied, opening on lateral side and bend.This type of Netra are avoided.[130]

विषममांसलच्छिन्नस्थूलजालिकवातलाः।

स्निग्धःक्लिन्नश्चतानष्टौ बस्तिन् कर्मसु वर्जयेत् ॥च.चि.५/६

Asymmetrical, muscular, torn, excessive large, net like, dry, oily, sticky type of Basti Putaka is avoided. Rubber catheter and glycerin syringe is used for Basti administration.

Administration of Basti[131] –

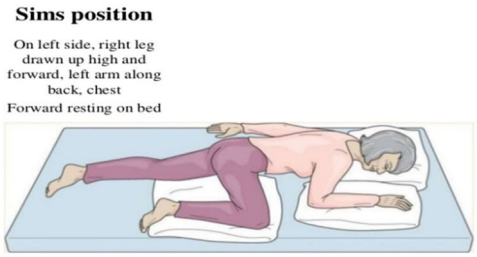
कृतचङ्क्रमणं मुक्तविण्मूत्रं शयने सुखे।

नात्युच्छ्रितेन चोच्छीर्षे संविष्टं वामपार्श्वतः॥

सङ्कोच्य दक्षिणं सक्थि प्रसार्य च ततोऽपरम् ।

अथास्य नेत्रं प्रणयेत्स्निग्धे स्निग्धमुखं गुदे॥ अ.हृ.सू.१९/२३-२४

Fig.25-Position for Basti



Position of the patient-

Left lateral position with left lower extremity straight and right lower extremity flexed on knee and hip joint is the posture given to the patient. Grahani, Guda lie on left side. Gudawali and all these organs lean on left and Basti reach up to Grahani area so left lateral position is ideal for Basti. After Basti administration patient is asked to rest on back lie position.

Patient should not rest too high or low. Surface must be plain for Basti administration. Basti must be administered with slow and uniform speed. Air from catheter is removed. Oil is applied to the tip of catheter.

The following faults are to be avoided during Basti administration.

1. Administrating with air

2. Level of catheter too high, too low
3. Shaking of hands and catheter
4. Too slow, too fast
5. Administrating too outwards or inwards

Paschata Karma-

1. Basti Pratyagaam
2. Yoga- Ayoga-Samyaka Lakshana Parikshana
3. Basti Vyapada Chikitsa
4. Parihara Kala. Basti Pratyagama Krimighna Taila Basti is retained in body for few hours. If it is retained for more than 12 hours and there are no symptoms the condition is ignored as

Krumighna Taila Basti, Anuvasana Basti are retention type of Basti. Krimighna Niruha Basti comes out of body along with Dosha within 40 minutes.

Treatment for Basti Pratyagama is Tikshana Basti, Gudavarti.
Krimighna Basti is administered after lunch as its dose is 50 ml.

Symptoms expressed by Basti-

Samyaka Yoga[132] -

प्रत्येत्यसक्तं सशकृच्च तैलं रक्तादिबुद्धीन्द्रियसंप्रसादः।

स्वप्नानुवृत्तिर्लघुताबलं च सृष्टाश्च वेगाः स्वनुवासितेस्युः ॥ च.सि.१/४४

प्रसृष्टविण्मूत्रसमीरणत्वंरुच्यग्निवृद्ध्याशयलाघवानि ।

रोगोपशान्तिंप्रकृतिस्थता च बलं च तत् स्यात् सुनिरूढलिङ्गम् ॥च.सि.१/४१-४२

1. Ease in micturation and bowel
2. Controlled Vata activity
3. Improvement in digestion
4. Feeling of lightness of body by elimination of Dosha from body cavities.
5. Cure the disease
6. Achieve well health and well being.

Atiyoga[133] –

लिङ्गं यदेवातिविरेचितस्य भवेत्तदेवातिनिरूहितस्य ।च.सि.१/४३

[कफास्त्रपित्तक्षयजानिलोत्थाः सुप्त्यङ्गमर्दक्लमवेपनाद्याः।

निद्राबलाभावतमःप्रवेशाः सोन्मादहिक्काश्च विरेचतेऽति॥ च.सि.१/१९]

Symptoms of Niruha Basti when administered in excess are same of excess Virechana.

1. Weakness,
2. Loss of weight
3. Pain in body
4. Mental disturbances

Ayoga[134]

स्याद्वुक्क्षिरोरोहृगुदबस्तिलिङ्गे शोफःप्रतिश्यायविकर्तिके च ।

हृल्लासिकामारूतमूत्रसङ्गः श्वासो न सम्यक् निरूहिते स्युः॥ च.सि.१/४२-४३

अधःशरीरोदरबाहुपृष्ठपार्श्वेषु रूग्रूक्षखरं च गात्रम् ।

ग्रहश्च विण्मूत्रसमीरणानामसम्यगेतान्युवासितस्य ॥च.सि.१/४५

Symptoms of improper Niruha Basti –

1. Swelling of rectal area
2. Head ache
3. Heart pain
4. Swelling in bladder area, perineum
5. Fissure
6. Feeling of vomiting
7. Constipation
8. Breathlessness

Niruha Vyapada[135]

आध्मानं परिकर्तिश्च स्त्रावो हृद्गात्रयोर्ग्रहः ।

जीवादानं सविभ्रंशः स्तम्भः सोपद्रवः क्लमः ॥

अयोगादतियोगाच्च दशैता व्यापदो मताः। च.सि.६/२९-३०

1. Ayoga
2. Atiyoga
3. Klama
4. Adhmana
5. Hikka
6. Hrutprapti
7. Urdhwavata
8. Pravahika
9. Shira Shoola
10. Sarvanagarati
11. Parikartika
12. Parisrava

Parihara Kala [136]– It is double the days of Basti treatment.

Following things must be avoided during Pariharakala.

एतां प्रकृतिमप्राप्तः सर्ववर्ज्यानि वर्जयेत् ।

महादोषकराण्यष्टाविमानि तु विशेषतः ॥

उच्चैर्भाष्यं रथक्षोभामांतचङ्क्रमणासने।

अजीर्णाहितभोज्ये च दिवास्वप्नं समैथुनम् ॥

तज्जा देहोर्ध्वसर्वाधोमध्यपीडामदोषजाः।

श्लेष्मजाः क्षयजाश्चैव व्याधयः स्युर्यथाक्रमम् ॥च.सि.६/१०-११-१२

Speaking in high voice causes diseases of upper part of the body.

Excessive traveling by rough roads cause diseases of the whole body.

Excess walking cause diseases of lower limbs.

Oversitting cause diseases of middle portion of the body.
Improper diet and junk food cause diseases due to indigestion
Sleep in afternoon cause diseases due to Kapha Dosha
Coitus causes diseases due to Dhatu Kshaya. These factors are avoided also during Krimighna Basti.

Role of Basti on Pakwashaya[137] -

पक्वाशयो तथा श्रोण्यां नाभ्यधस्तात्च साध्र्वत: ।

सम्यग् प्रणिहितो बस्तिः स्थानेष्वेतेषु तिष्ठति

पक्वाशयाद बस्तिवीर्य खैर्देहेमनुसर्पति ।

वृक्षमूलनिषिक्तानामभयां वीर्यं क्षिवद्रुमम् ॥ सु.चि.३५/२४-२५

Though having the longest distance from the earth, the Sun sucks out Rasa of the earth, the same way, Basti given to Pakwashaya eliminates the vitiated Doshas from all over the body. Basti treatment is best treatment for Vata Dosha, So vitiated Vata Dosha is effectively cured with Basti Upakrama. Acharya Sushrut has described role of Basti as,

Actually during Basti Chikitsa, drugs are administered below Nabhi, but due to Veerya of drugs, Basti works from head to leg.

Action of Basti on five types of Vayu[138]—

व्यानस्तिर्यगपानोऽधः प्राणश्चोर्ध्वं प्रकर्षति ।

यथा स्वमेव नाडिभिर्हारिणिभिरिवोदकम् ॥

इन्दु टीका-

बस्तिः व्यान स्तिर्यगमपकर्षति ।अपानश्च् अधः प्राणश्चोर्ध्वमपकर्षति यथात्मीय नाडीभि:।यथाश्च्

कश्चित् हारीणिभि:केदारेशूदकमपकर्षति । हारीण्य् केदारजलसंचरणवीथ्यः।

Basti pulls Vyana Vayu transversely, pulls Apana down, pulls Prana in upward direction, that means basti helps each type of Vata Dosha for its regular direction and functions.

Benefits of Basti -

बस्तिः वयस्थापयिता सुखायुर्बलाग्निर्मेधास्वरवर्णकृच्च।

सर्वार्थकारी शिशूवृद्धयूनां निरत्ययः सर्व गदापहश्च् ॥२७॥

विट्श्लेष्म पित्तानिलमूत्रकर्षो दार्ढ्यावहः शुक्रबलप्रदश्च् ।

विष्वक्स्थितं दोषचयं निरस्य सर्वान् विकारान् शमयेन्निरूहः ॥ च.सि.१/२७-२८

Basti[139] sustains the age, provides happy life, strength, digestive fire, intellect, voice, complexion, performs all functions, is free from complications in child, adult and old patients, alleviates all disorders, draws out faeces, mucus, bile, wind and urine; gives firmness, semen and strengthand pacifies all disordersby eliminating accumulation of impurities situated all over the body.

MATERIALS AND METHODS

1) MATERIALS

A) For literature study

a) Classical Ayurvedic texts, Sanskrit dictionaries

b) Books and articles of modern medical system of medicine.

c) Related sources from authentic website.

B) For clinical work

a) Patients suffering from cervical, vaginal, ovarian and endometrial cancers of all stages and grades.

2) METHODS

A) Grouping of Patients

Total 184 cancer patients of female genital tract were examined. Among them 70 patients undergoing Shamana Chikitsa and having 3 or more Sanjata Krimi Lakshanani were selected on the basis of inclusion criteria. These 70 patients, eligible for Basti Chikitsa, were paired with identical stage, grade, conventional treatment and duration of Ayurvedic treatment. Paired patients were randomly selected for their enrolment in study (n=35) and control (n=35) group. Study group patients were treated with seven days course of Krimighna Basti Upakrama along with Shamana Chikitsa, whereas control group patients were treated with only Shamana Chikitsa.

Shamana Chikitsa comprised of :

1. Morning – evening : Chandraprabha Vati 500 mg + Praval Pishti 500 mg with water.
2. After lunch and dinner : Aloe Plus – 500 mg with water

B) Criteria for Inclusion -

1) Known diagnosed cases of cancers of organs of female genital system i.e. ovarian cancer, endometrial cancer, vaginal cancer and cervical cancer with all stages (I to IV) and grades (I to III) were included in both groups .

2) Patient between age group 21 years to 80 years.

C) Criteria for Exclusion -

1) Pregnant and lactating females

2) Age below 21 years and above 80 years

3) Patients undergoing chemotherapy and radiotherapy

4) Patients having any major illness.

3) PLAN OF WORK

Patients were evaluated with proper diagnosis and investigations proving cancer of female genital system.

Study group patients were treated with Krimighna Basti Upakrama for seven days, (a course of Krimighna Anuvasana and Niruha Basti)

Both groups were guided same dietary advice and Shamana Chikitsa.

Patients were registered at Bharatiya Sanskriti Darshan Trust's Integrated Cancer Research Center, Wagholi, Pune.

Treatment of Study Group

Poorva Karma:

Sarvanga Snehana: Dashamool Taila

Sarvanga Swedana: Peti Sweda – Dashamool Kwatha.

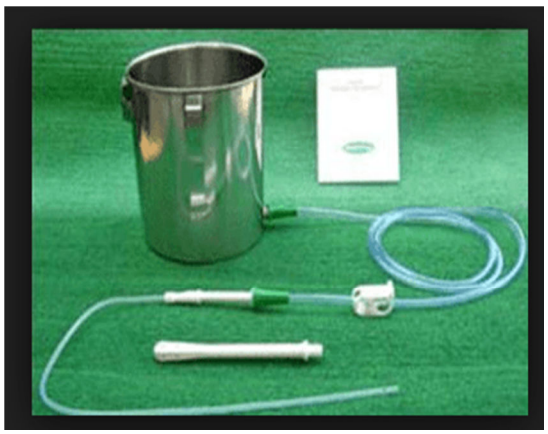
Table 13: Dose Regimen of Pradhan Karma

Procedure	Selected drugs	Dose and duration	Dose frequency
Anuvasana Basti			Together for first 3 days
	Nimba Taila	20 ml	
	Nirgundi Taila	20 ml	
	Karanja Taila	10 ml	
Niruha Basti	Niruah Basti - Vidanga, Musta, Triphala, Shigru, Dantimoola, Madanphal and Yavkut Kwatha Praksheparth - Madhu Saindhav	350 ml 10 grams	On 5th and 7th day
Anuvasana Basti			On 4th day and 6th day
	Nimba Taila	30 ml	
	Nirgundi Taila	30 ml	
	Karanja Taila	10 ml	

METHOD OF PREPARATION OF MEDICINE

Nimba Taila and Nirgundi Taila were prepared at Atharva Nature Healthcare Private Limited. Karanja Taila was procured from the market.

The decoction for Basti was prepared freshly for Niruha Basti. For decoction, Amalaki, Bibhitaki, Haritaki, Vidang, Musta, Madanfal, Shigru, Dantimoola and Yawakut were taken in equal quantity. Total 35 grams coarse powder of above Dravyas was added in 2800 ml water and boiled till it remained 350 ml ($1/8^{th}$ part). The decoction prepared was filtered. After making it warm, oils of Nimba, Nirgundi and Karanja were added in 10 ml of quantity each. Also honey and Saindhav (rock salt) were added as Prakshep Dravyas.



Standardization of raw material and finished products used for the study was done at Drug Standardization Laboratory of Integrated Cancer Treatment And Research Center, Wagholi, Pune and Indian Drug Research Laboratory, Pune.

Assessment criteria

A) Quality of Life Questionnaire (QLQ C30 designed by EORTC) to assess effect of Krimighna Basti Upakrama on Quality of Life of patients.

1. EORTC QLQ-C30 -

The European Organization for Research and Treatment of Cancer Quality of Life questionnaire[140] (EORTC QLQ-C30) is an integrated system for assessing the Quality of Life (QoL) of cancer patients participating in clinical trials and other types of research in which patient-reported outcomes are collected.

The EORTC QLQ-C30 is designed for use with a wide range of cancer patient populations.

Table 14 : Scoring of QLQ-C30 version 3.0

Particulars	Scale	Number of items	Version 3.0 Item numbers
Global health status / QOL			
Global health status/QOL (revised)†	QL2	2	29,30
Functional scales			
Physical functioning (revised)†	PF2	5	1 to 5
Role functioning (revised)†	RF2	2	6, 7
Emotional functioning	EF	4	21 to 24
Cognitive functioning	CF	2	20, 25
Social functioning	SF	2	26, 27
Symptom scales / items			
Fatigue	FA	3	10, 12, 18
Nausea and vomiting	NV	2	14, 15
Pain	PA	2	9, 19
Dyspnea	DY	1	8
Insomnia	SL	1	11
Appetite loss	AP	1	13
Constipation	CO	1	16
Diarrhea	DI	1	17
Financial difficulties	FI	1	28

B) Karnofsky score[141] –

General wellbeing and daily routine activities are evaluated in patient's point of view.

Ascending order shows improvement in wellbeing of patients

The assessment score was as per the formulae described by Crook.et.al.

Table 15 : Karnofsky score[141]

Patient does not need special care and able to carry normal day to day activities	100	Patient is normal and without complaints of disease.
	90	Patient is able to carry normal activities with minor signs and symptoms of disease.
	80	Patient can do normal activity with minimum efforts with some signs and symptoms of disease.
Patient cannot work, only live at home and can take care for personal needs .Rarely assistance needed.	70	Patient has to take personal care and cannot perform normal activity.
	60	Patient has to take personal care and occasionally need assistance, but can be able to care for most of his personal needs.
	50	Patient requires medical assistance with medical care.
Patient cannot take care for self .Require hospital care. Disease progressing rapidly.	40	Patient is disabled and needs hospital admission, special care and assistance.
	30	Patient is severely disabled, hospital admission is needed, although not on the verge of death.
	20	Patient is very ill, hospitalized and active treatment of intervention is necessary.
	10	Patient in declining state, fatal progressing rapidly
	00	Death

C) Symptoms - Following signs and symptoms will be studied for clinical evaluation[142]

P) Signs and symptoms of cancers of female genital organs

P/v discharge

Vaginal burning

Vaginal itching

Abdominal pain

Backache

Fatigue

Weight loss

Q) Sanjata Krimi Lakshanani

Vivarnata (discoloration)

Shoola (pain)

Sadana (body ache)

Bhrama (vertigo)

Bhaktadwesha (anorexia)

Atisara (diarrhea)

GRADING OF SYMPTOMS -

A) Sign and symptoms of cancers of female genital organs[143]

P/V discharge :

Grade 1	Watery profused
Grade 2	Mucous profused curd like discharge
Grade 3	Purulent discharge
Grade 4	Mucopurulent discharge with foul smell
Grade 5	Profused foul discharge with maggots' formation.

Vaginal burning :

Grade 1	Mild burning for some time
Grade 2	Moderate burning sensation, patient can tolerate
Grade 3	Severe burning sensation, needs medication

Vaginal itching;

Grade 1	Mild- itching for some time

Grade 2	Moderate- itching sensation, patient can tolerate
Grade 3	Severe- itching sensation, needs medication

Abdominal Pain:

Grade 1	Mild pain not interacting with routine
Grade 2	Pain subsiding with analgesics.
Grade 3	Severe pain not subsiding with analgesics
Grade 4	Disabilities – need hospitalization

Backache:

Grade 1	Mild pain not interacting with daily routine
Grade 2	Pain subsiding with analgesics.
Grade 3	Severe pain not subsiding with analgesics
Grade 4	Disabilities – need hospitalization

Fatigue:

Grade 1	Mild -fatigue over baseline
Grade 2	Moderate – causing difficulty in routine
Grade 3	Severe – need bed rest
Grade 4	Disability

Weight loss

Grade 1	5 to <10% from baseline; Intervention not indicated
Grade 2	10 - <20% from baseline; nutritional support indicated
Grade 3	>=20% from baseline; tube feeding or TPN indicated

Signs and symptoms of Sanjata Krimi Lakshanani-

Vivarnata:

Grade 1	Mild –discoloration on face and nails over baseline
Grade 2	Moderate – discoloration on face and nail showing weakness
Grade 3	Severe – pallor

Shoola :

Grade 1	Mild pain not interacting with routine

Grade 2	Pain subsiding with analgesics.
Grade 3	Severe pain not subsiding with analgesics
Grade 4	Disabilities – need hospitalization

Sadana :

Grade 1	Mild -fatigue over baseline
Grade 2	Moderate – causing difficulty in routine
Grade 3	Severe – need bed rest
Grade 4	Disability

Bhrama:

Grade 1	Mild symptoms
Grade 2	Moderate symptomatic;
Grade 3	limiting instrumental ADL
Grade 4	Severe symptoms; limiting self-Care ADL

Bhaktadwesh : A disorder characterized by a loss of appetite

Grade 1	Loss of appetite without, alteration in eating habits
Grade 2	Oral intake altered without significant weight loss or malnutrition; oral nutritional supplements indicated
Grade 3	Associated with significant Weight loss or malnutrition (e.g., Inadequate oral caloric and/or fluid intake; tube feeding or TPN indicated
Grade 4	Life-threatening consequences; urgent intervention indicated death

Atisaara :

Grade 1	Dehydration, Increased oral fluids indicated; Dry mucous membranes; diminished skin turgor
Grade 2	IV fluids indicated <24 hrs. IV fluids or hospitalization Indicated
Grade 3	Life-threatening consequences; urgent intervention indicated
Grade 4	Death

D) General well-being by routine biochemical examination – such as haemogram, liver function test, renal function test, CRP, CA125 (tumor marker for ovarian cancer)

Assessment of above mentioned criteria will be done at 3 time points –

In study group - a – Before administration of Krimighna Basti Upakrama
b – At the end of Krimighna Basti Upakrama
c – 1 months after Krimighna Basti Upakrama

In control group – a – Corresponds to day '0' as in study group
b – 7th day of Shamana Chikitsa corresponding to time point 'b' of study group
c – 1 months after Shaman Chikitsa corresponding to time point 'c' of study group

Criteria for withdrawal

- Worsening of general condition.
- Patient's failure to report for follow up or irregular Basti upakram

.

Informed consent form process : Informed consent of patients was taken before doing any investigation and treatment. Patients were educated and informed verbally and in written text in language with which they are familiar.

Adverse event reporting : No adverse events were observed during study work.

Routine Examination and Assessment

The full detailed history and physical examination of the patient was recorded as per the case proforma. Clinical evaluation was done before treatment (time point a) and at the end of treatment (time point b) and on 30th day (time point c) after time point b.

Observations and discussion were made after statistical analysis. Data collected from study group and control group was tabulated and statistically analysed using 'z' test, 't' test' and statistical methods like parametric, nonparametric and ANOVA test. The probability with $p<0.05$ was considered as significance of result.

ANALYSIS

The study was conducted on 70 patients of cancers of female genital organs (Tryawarta Yoni). They include ovarian, uterine, vaginal and cervical cancers. Patients were recruited at Bharatiya Sanskriti Darshan Trust's Integrated Cancer Treatment and Research Centre, Wagholi, Pune. Patients were divided in 2 groups viz Study group consisting of 35 patients, treated with a course of seven days' Krimighna Basti and control group consisting of 35 patients, not treated with Krimighna Basti.

Observations of data collected were divided into –

1. Demographic data
2. Clinical data (includes observations on symptoms, Quality of Life and biochemistry)

A) Demographic Data

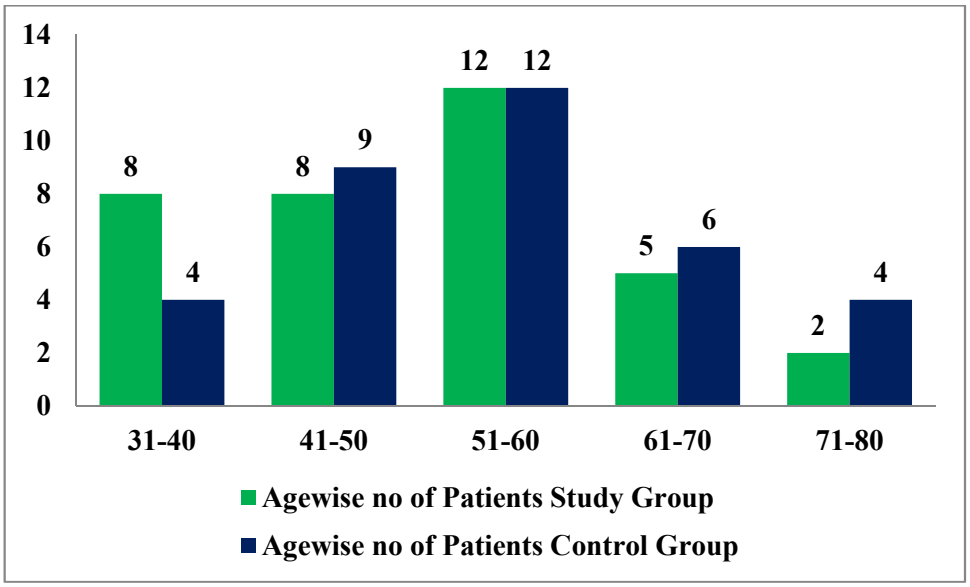
Demographic data consisted of age-wise, organ-wise, stage-wise and grade-wise distribution of patients.

1. Analysis of age-wise distribution of patients of cancers of female genital organs recruited in the study

Table 16 - Age-wise distribution of patients of cancers of female genital organs

Age groups	Study Group		Control Group	
	No. of patients	%	No. of patients	%
31-40	8	22.86	4	11.43
41-50	8	22.86	9	25.71
51-60	12	34.28	12	34.28
61-70	5	14.29	6	17.14
71-80	2	5.71	4	11.43
	35	**100**	**35**	100

Graph 1 - Age-wise distribution of patients of cancers of female genital organs



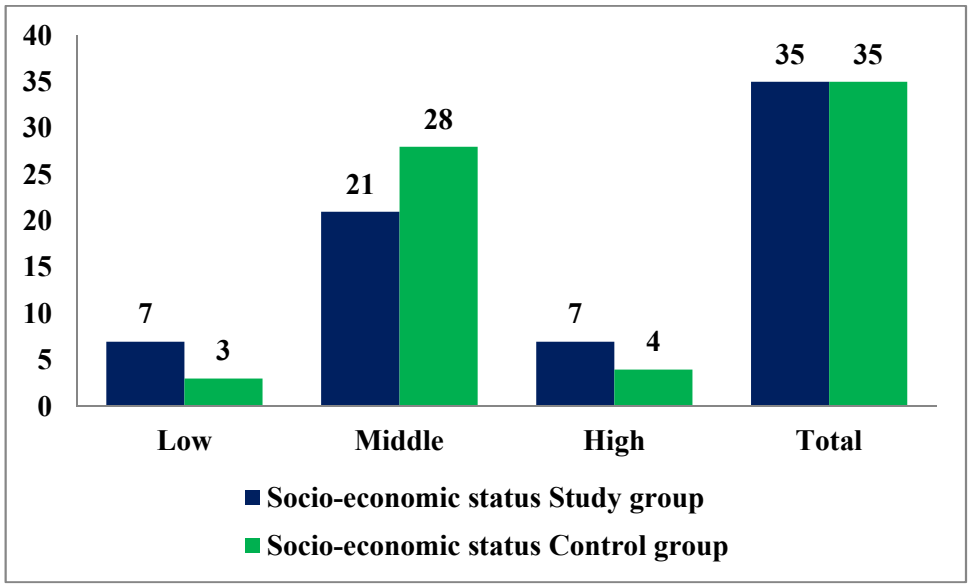
Eight patients of study group (22.86 %) were in age group between 31-40 and 41-50 each. 4 (11.43 %) and 9 (25.71 %) patients of control group lie in these age groups respectively. 12 patients (34.28 %) of study and control groups each were in age group 51-60. 5 patients (14.29 %) of study group and 6 patients (17.14 %) of control group were in age group between 61-70, whereas 2 (5.71 %) and 4 (11.43 %) patients of study and control group respectively were in age group 71 – 80.

2. Analysis of Socio-economic status (SES) of patients of cancers of female genital organs recruited in the study

Table 17 - Socio-economic status of patients of cancers of female genital organs

Socio-economic status	No. of patients in study group / %	No. of patients in control group / %
Low	7 (20 %)	3 (8.57 %)
Middle	21 (60 %)	28 (80 %)
High	7 (20 %)	4 (11.43 %)
Total	35 (100%)	35 (100%)

Graph 2- Socio-economic status of patients of cancers of female genital organs



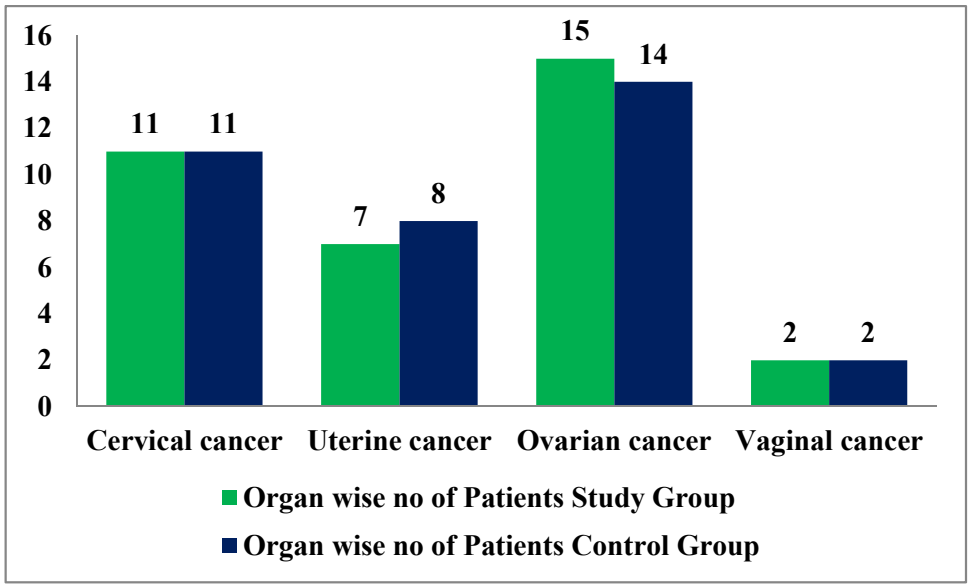
Maximum number of patients from study (21 patients =60%) and control (28 patients =80%) lie in middle socio economic group. 7 patients (20%) each of study group lie in low and high socio economic groups whereas 3 patients (8.57%) and 4 patients (11.43%) of control group were from same socio economic group respectively.

3. Types of cancers of female genital organs of patients recruited in the study

Table 18- Distribution of patients according to types of cancers of female genital organs

Organ wise distribution of gynecological cancers	Study Group		Control Group	
	No. of patients	%	No. of patients	%
Cervical cancer	11	31.42	11	31.42
Uterine cancer	7	20	8	22.65
Ovarian cancer	15	42.86	14	40
Vaginal cancer	2	5.71	2	2.71
Total	**35**	**100**	**35**	**100**

Graph 3- Distribution of patients according to types of cancers of female genital organs



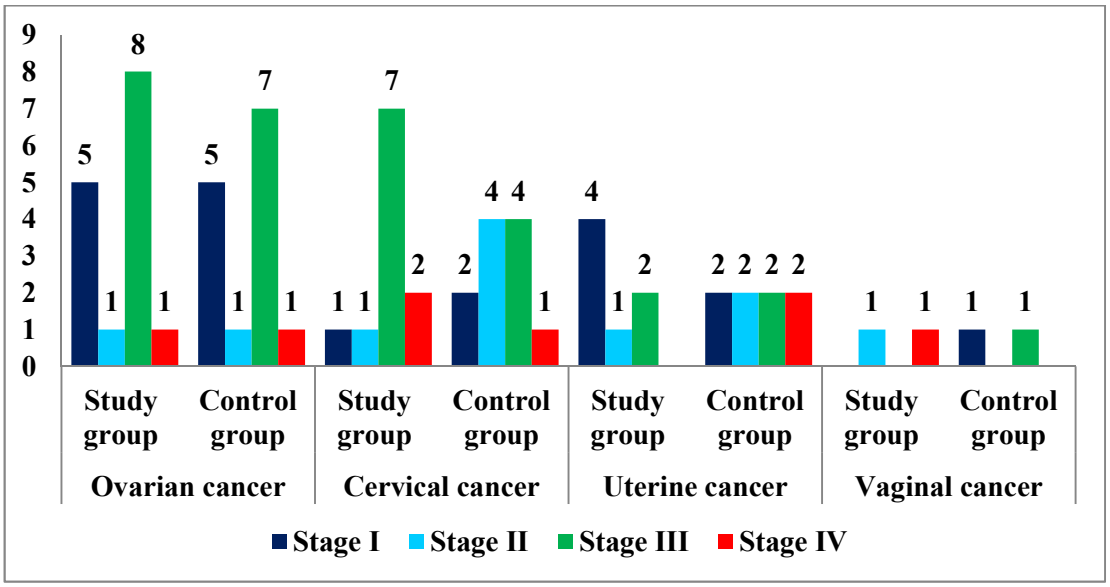
Patients of cervical cancer and vaginal cancer were equally distributed in both study and control groups i.e.11 and 2 in numbers respectively. 7 and 8 patients of uterine cancer were recruited in study and control group respectively. 15 and 14 patients of ovarian cancer were recruited in study respectively.

4. Stage-wise distribution of cancers of female genital organs of patients

Table 19- Distribution of patients of cancers of female genital organs according to stage of the disease

Stage	Ovarian cancer		Cervical cancer		Uterine cancer		Vaginal cancer	
	Study group (No., %)	Control group (No., %)	Study group (No., %)	Control group (No., %)	Study group (No., %)	Control group (No., %)	Study group (No., %)	Control group (No., %)
I	5 (33.33%)	5 (35.71%)	1 (9.09 %)	2 (18.19 %)	4 (57.14 %)	2 (25 %)	0 (%)	1 (50%)
II	1 (6.67%)	1 (7.15 %)	1 (9.09 %)	4(36.36%)	1(14.29%)	2(25%)	1 (50%)	0
III	8(53.33%)	7(50%)	7(63.64%)	4(36.36%)	2(28.57%)	2(25%)	0	1(50%)
IV	1 (6.67%)	1(7.14%)	2(18.18%)	1 (9.09%)	0	2(25%)	1(50%)	0
Total	**15 (100%)**	**14**	**11**	**11**	**7**	**8**	**2**	**2**

Graph 4- Distribution of patients of cancers of female genital organs according to stage of the disease



Among 15 patients of ovarian cancer in study group, 8 patients (53.33%) had stage III disease, 5 patients (33.33%) had stage I disease whereas 1 patient (6.67%) each had stage

II and stage IV disease. Control group patients have almost similar pattern of stages of ovarian cancer i.e. 7 patients (50%) had stage III, 5 patients (35.71%) had stage I and 1 patient (7.15%) each had stage II and stage IV disease.

11 patients of cervical cancer were recruited in each study and control group. Among them 1 patient (9.09%) and 2 patients(18.19%) patients had stage I disease; 1patient (9.09%) and 4 patients (36.36%) had stage II disease.7patients (63.64%) and 4 patients (36.36%) had stage III disease whereas 2 patients (18.18%) and 1 patient (9.09%) had stage IV disease from study and control respectively.

In case of uterine cancer, 7 patients were recruited in study group and 8 patients in control group. Among 7 patients of study group, 4 patients (57.14%) had stage I cancer. One patient (14.29%) had stage II cancer and 2 patients (28.57%) had stage III cancer. 2 patients (25%) each from all 4 stages were recruited in control group.

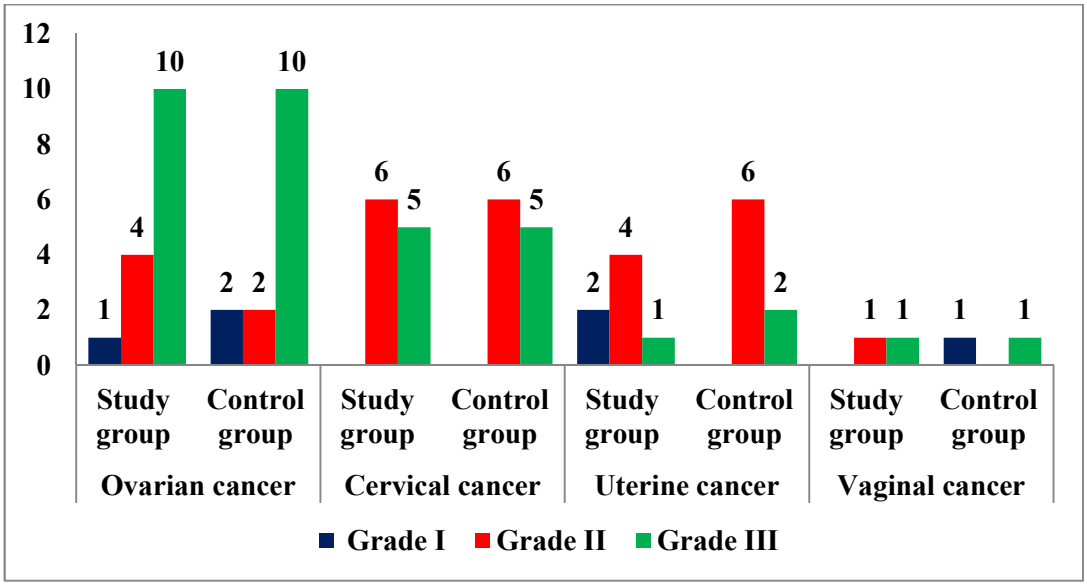
Total 4 patients of vaginal cancer were equally recruited in study and control group (i.e. 2 in each group). Among them 1 patient (50%) each from study group had stage II and stage IV cancer, whereas 1 patient (50%) each from control group had stage I and stage III cancer.

5. Grade-wise distribution of cancers of female genital organs of patients

Table 20 - Distribution of patients of cancers of female genital organs according to grade of the disease

Grade	Ovarian cancer		Cervical cancer		Uterine cancer		Vaginal cancer	
	Study group (No., %)	Control group (No., %)	Study group (No., %)	Control group (No., %)	Study group (No., %)	Control group (No., %)	Study group (No., %)	Control group (No., %)
I	1(6.66%)	2(14.29 %)	0	0	2(28.57%)	0	0	1 (50%)
II	4(26.67%)	2(14.29%)	6 (54.55%)	6 (54.55%)	4 (57.14%)	6 (75%)	1 (50%)	0
III	10 (66.67%)	10(71.42%)	5 (45.45%)	5(45.45%)	1(14.29%)	2 (25%)	1 (50%)	1 (50%)
Total	**15**	**14**	**11**	**11**	**7**	**8**	**2**	**2**

Graph-5- Distribution of patients of cancers of female genital organs according to grade of the disease



Total 70 patients of cancers of female genital organs were recruited in the study (35 each in study and control group). Among them, 28 patients had ovarian cancer, 22 patients had cervical cancer. 15 patients had uterine cancer and 4 had vaginal cancer. In case of ovarian cancer, (n=28), 1 patient (6.66%) and 2 patients (14.29%) of study and control group respectively had grade I cancer. 4 patients (26.67%) and 2 patients (14.29%) had grade II

cancer whereas 10 patients (66.67%) and 10 patients (71.42%) of study and control group respectively had grade III cancer.

Total 22 patients of cervical cancer were equally distributed in study and control group (11 patients in each group) and also had similar grades, i.e. 6 patients (54.55%) and 5 patients (45.45%) each in study and control group had grade II and grade III cancer respectively.
7 and 8 patients of study and control group respectively had uterine cancer. (n=15). Among them 2 patients (28.57%) of study group had grade I cancer. 4 patients (57.14%) of study group and 6 patients (75%) of control group had grade II cancer, whereas 1 patient (14.29%) of study group and 2 patients (25%) of control group had grade III cancer.

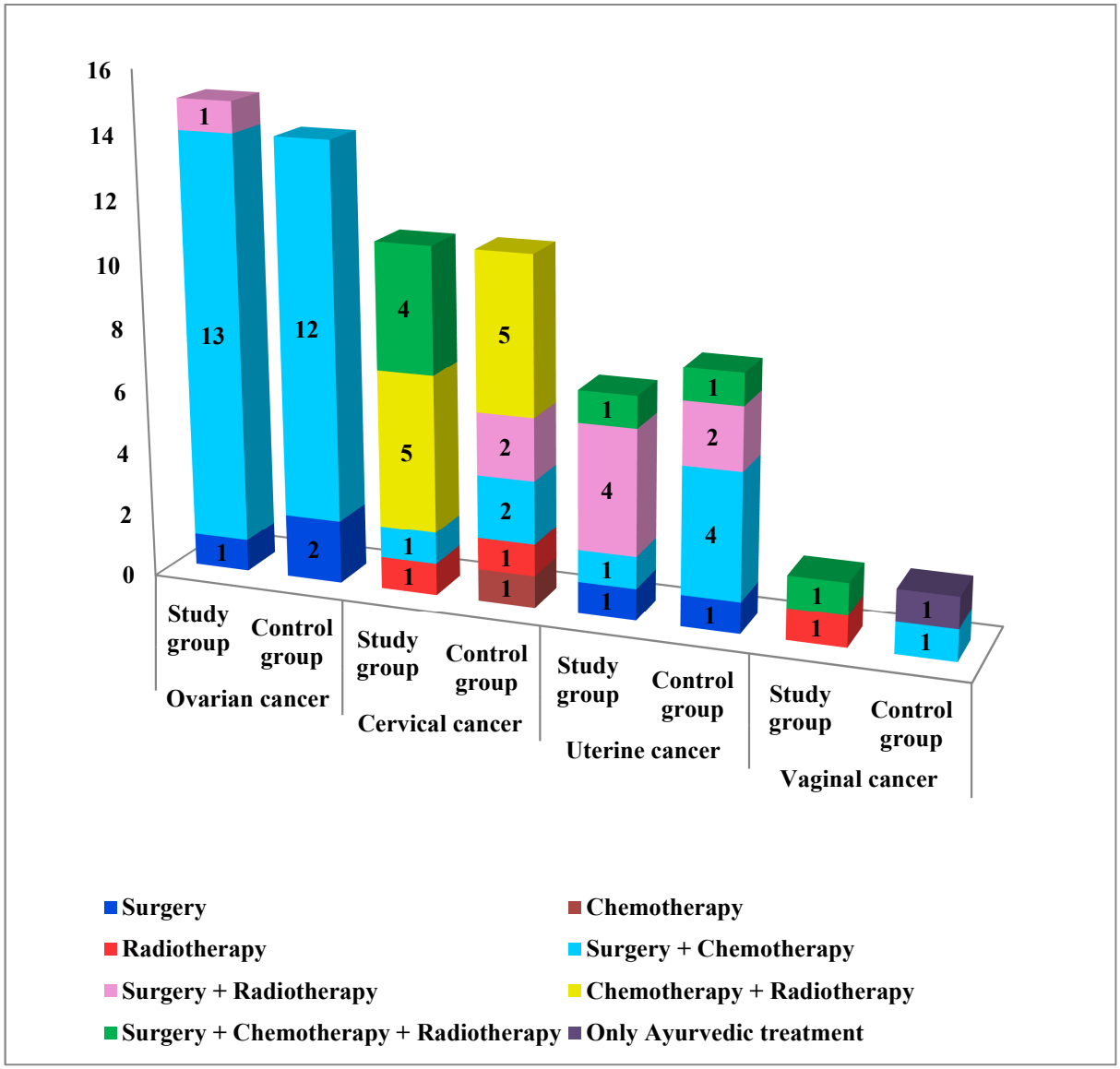
Total 4 patients of vaginal cancer were equally distributed in study and control group. Among them 1 patient (50%) of control group and 1 patient (50%) of study group had grade I and grade II cancer respectively. Grade III disease was present in 1 patient (50%) of study and control group each. Even after clubbing pattern of all 4 cancers of female genital organs mentioned above, grade wise distribution of patients in study and control group was almost equivalent. i.e. 3 patients each of study and control group had grade I disease.15 and 14 patients of study and control group respectively had grade II cancer whereas 17 and 18 patients had grade III cancer.

6. Details of conventional treatment

Table 21- Distribution of patients of cancers of female genital organs according to conventional treatment received by the patients

Conventional treatment	Ovarian cancer		Cervical cancer		Uterine cancer		Vaginal cancer	
	Study group - no. of patients, %	Control group - No. of patients, %	Study group - no. of patients, %	Control group - No. of patients, %	Study group - no. of patients, %	Control group - No. of patients, %	Study group - no. of patients, %	Control group - No. of patients, %
Surgery	1 (6.66%)	2 (14.29%)	0	0	1 (14.29%)	1 (12.5%)	0	0
Chemotherapy	0	0	0	1 (9.09%)	0	0	0	0
Radiotherapy	0	0	1 (9.09%)	1 (9.09%)	0	0	1 (50%)	0
Surgery + Chemotherapy	13 (86.88%)	12 (85.71%)	1(9.09%)	2 (18.18%)	1 (14.29%)	4 (50%)	0	1 (50%)
Surgery + Radiotherapy	1 (6.66%)		0	2 (18.18%)	4 (57.13%)	2 (12.5%)	0	0
Chemotherapy + Radiotherapy	0	0	5 (45.45%)	5 (45.46%)	0	0	0	0
Surgery + Chemotherapy + Radiotherapy	0	0	4 (36.37%)	0	1 (14.29%)	1 (12.5%)	1 (50%)	0
Only Ayurvedic treatment	0	0	0	0	0	0	0	1 (50%)
Total no. of patients	**15**	**14**	**11**	**11**	**7**	**8**	**2**	**2**

Graph 6 - Distribution of patients of cancers of female genital organs according to conventional treatment received by the patients



Conventional treatment in cancer mainly includes surgery, chemotherapy and radiation. Treatment of choice in ovarian cancer is surgery followed by chemotherapy and in very few cases radiotherapy. In our study, 13 patients (86.88%) from study group and 12 patients (85.71%) from control group were treated with surgery and chemotherapy. 1 patient (6.66%) from study group and 2 patients (14.29%) of control group were treated with only surgery, whereas 1 patient (6.66%) in study group was treated with combination of surgery and radiation.

Patients of cervical cancers are treated with surgery, radiotherapy and chemotherapy, alone or in combination depending on the stage of the disease. In our study, 1 patient (9.09%) of control group was treated with chemotherapy alone. 1 patient (9.09%) of study and control group each was treated with radiotherapy alone. 1 patient (9.09%) of study group and 2 patients (18.18%) of control group were treated with a combination of surgery and chemotherapy. 2 patients (18.18%) of control group were treated with surgery and radiotherapy. 5 patients (45.46%) each of study and control group were treated with radiotherapy along with chemotherapy and 4 patients (36.37%) of study group were treated with all three conventional treatment modalities, i.e. surgery, chemotherapy and radiotherapy.

Standard treatment for uterine cancer includes surgery, chemotherapy and radiotherapy depending upon stage and grade of the disease .In our study, among 7 patients of uterine cancer, in study group, 1 patient (14.29%) each was treated with surgery, surgery and chemotherapy and with combination of all three conventional treatments. whereas 4 patients (57.13%) were treated with surgery and radiotherapy. Among 8 patients of uterine cancer in control group, 1 patient (12.5%) each was treated with only surgery and a combination of surgery chemotherapy and radiotherapy. 2 patients (25%) were treated with surgery and radiotherapy and 4 patients (50%) were treated with surgery and chemotherapy.

Patients of vaginal cancer are also treated with surgery, radiotherapy and chemotherapy as per stage and grade of cancer. In our study, 2 patients each of study and control group were recruited. Among 2 patients of study group, 1 patient (50%) was treated with radiotherapy alone and another was treated with surgery, chemotherapy and radiotherapy. 1 patient (50%) of control group was treated with surgery and chemotherapy and another was treated with only Ayurvedic treatment.

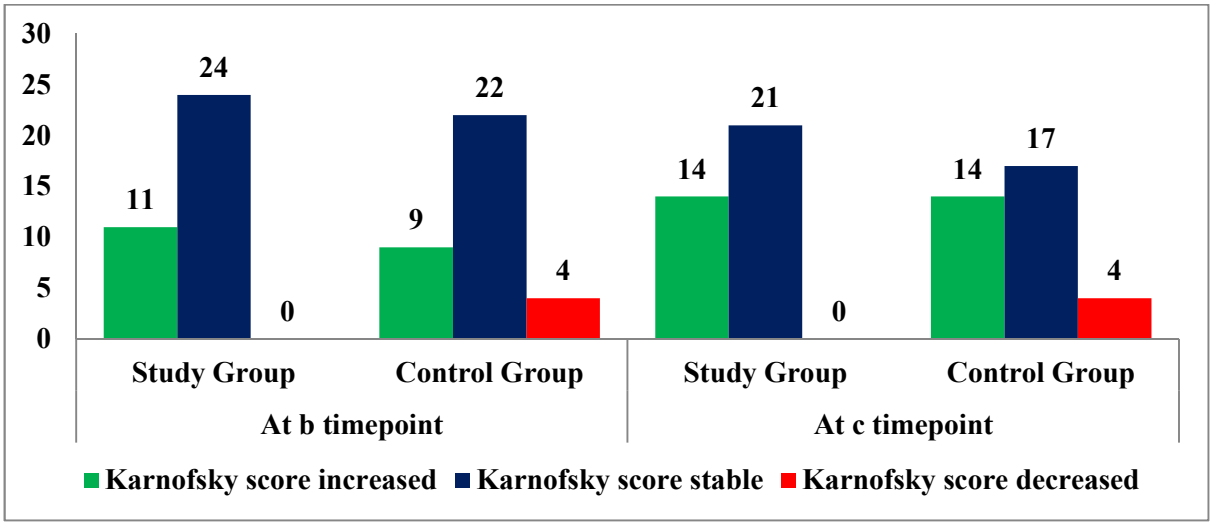
B) Clinical Data: Intergroup Analysis (In-between Study and Control)

1. **Karnofsky score**

Table 22- distribution of patients of cancers of female genital organs according to Karnofsky score in patients of cancers of female genital organs

Kernofsky score	Time point b		Time point c	
	Study group	Control group	Study group	Control group
	No .of patients (%)	No. of patients (%)	No. of patients (%)	No .of patients (%)
Increased	11 (31.43%)	9 (25.71%)	14 (40%)	14 (40%)
Decreased	0	4 (11.43%)	0	4 (11.43%)
Stable	24 (68.57%)	22 (62.86%)	21 (60%)	17 (48.57%)
Total	35 (100%)	35 (100%)	35 (100%)	35 (100%)

Graph 7- Distribution of patients of cancers of female genital organs according to Karnofsky score



Kernofsky Performance Score (KPS) is used for measuring wellbeing and quality of life of cancer patients. It is recorded by physician on 0 to100 scale at different time points to assess treatment response.100 score denotes normal activities, healthy status with no evidence of disease while 0 score indicates mordant stage.

In our study, we measured Kernofsky score of study and control group patients at 3 time points viz, a) before administration of Krimighna basti Upakrama in study group patients,

similar time point of control group patients. b) at the end of Krimighna Basti Upakrama in study group patients i.e. 7th day of time point a in control group patients and c) =one month after Krimighna Basti Upakrama in study group patients and one month after time point b in control group patients. Treatment response was assessed on the basis of increase, decrease or stable of number of Kernofsky score at time point b and c as compared to time point a.

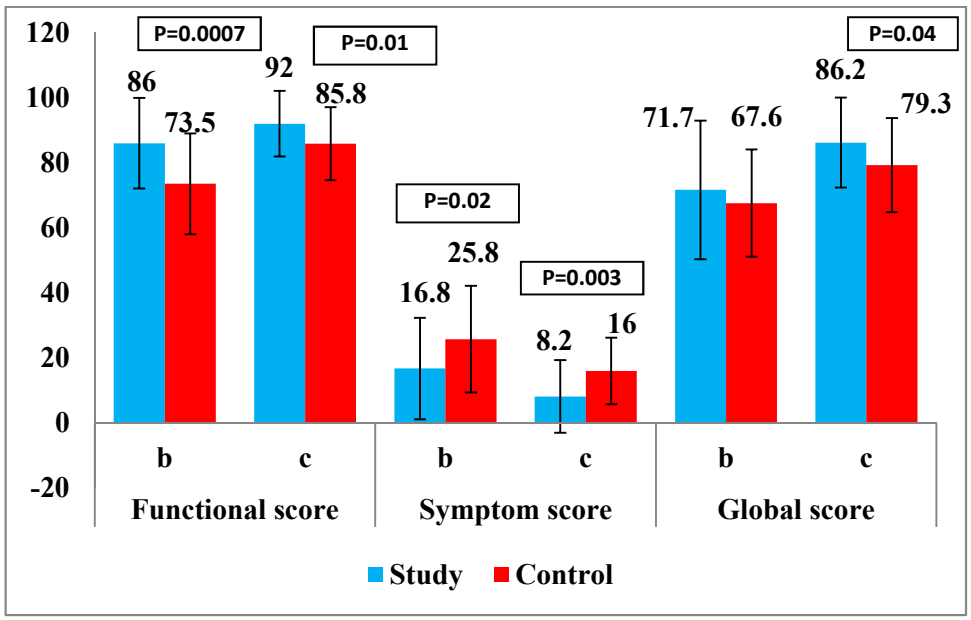
It was observed that Kernofsky score had increased in 11 patients (31.43%) of study group and 9 patients (25.71%) of control group at time point b. It remained stable in 24 patients (68.57%) of study group and 22 patients (62.86%) of control group. Overall improvement and maintenance of Kernofsky score was seen in all patients of study group and 31 patients (88.57%) of control group at time point b. At this time point, decrease in Kernofsky score is not seen in any patients of study group whereas it was seen in 4 patients (11.43%) of control group. Similar observation about decrease in Kernofsky score was seen at time point c in both study and control group. At time point c, increase in Kernofsky score was seen in equal number of patients i.e. 14 patients (40%) in the both groups. whereas stable Kernofsky score was seen in 21 patients (60%) of study group and in 17 patients (48.57%) of control group.

2. Quality of life assessment (QLQ)

Table 23 - Comparative analysis of grading of functional, symptomatic and global score in study and control group of patients of cancers of female genital organs.

QLQ	Functional score		Symptom score		Global score	
Time point	b	c	b	c	b	c
Study Group	86±13.9	92±10.1	16.8±15.6	8.2±11.1	71.7±21.3	86.2±13.8
Control Group	73.5±15.5	85.8±11.2	25.8±16.4	16±10.2	67.6±16.5	79.3±14.5
p value	0.0007	0.01	0.02	0.003		0.04

Graph 8 - Comparative analysis of grading of functional, symptomatic and global score in study and control group of patients of cancers of female genital organs



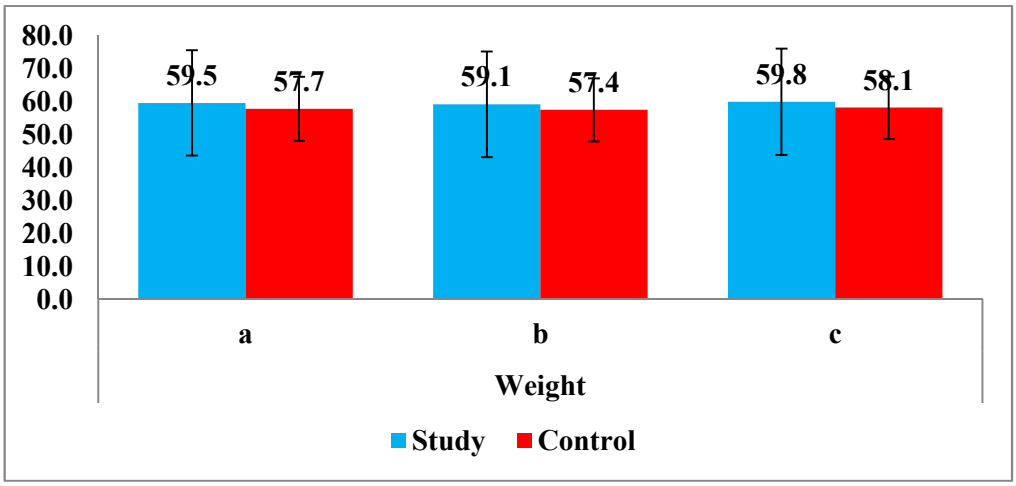
QLQ C30 - A Quality of Life questionnaire derived from EORTC is used to assess the effectiveness of Krimighna Basti Upakrama on Quality of Life of patients of female genital cancers. It is measured in terms of functional score (to assess the day to day functions/activities), symptom score (to assess the symptoms) and global score (to assess the general wellbeing). Functional and global score were statistically significant at time point b and c, whereas global score was significant at time point c

1. **Weight**

Table 24: Comparative analysis of grading of weight in study and control groups in patients of cancers of female genital organs.

Sign	Weight		
Time point	a	b	c
Study	59.5±16	59.1±16.0	59.8±16.1
Control	57.7±9.7	57.4±9.6	58.1±9.5

Graph 9 - Comparative analysis of grading of weight in study and control groups in patients of cancers of female genital organs



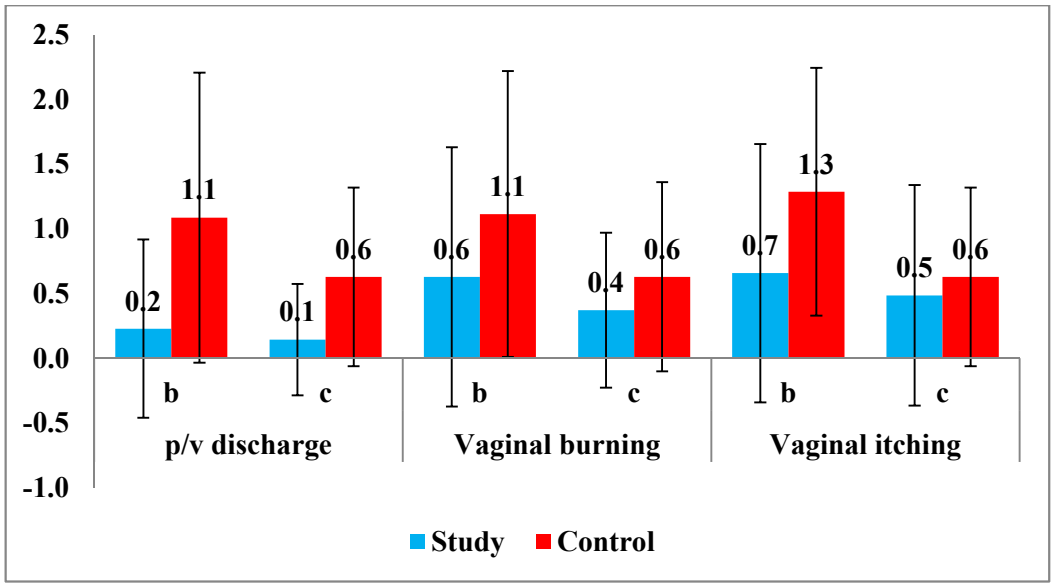
Weight remained almost constant at the time point a, b and c in both study and control group.

2. Analysis of symptoms – Symptoms related to Female genital cancers--

Table 25 - Comparative analysis of grading of symptoms – per vaginal discharge, vaginal burning and vaginal itching in study and control groups in patients of cancers of female genital organs

Symptoms	p/v discharge		Vaginal burning		Vaginal itching	
Time points	b	c	b	c	b	c
Study Group	0.2 ± 0.7	0.1±0.4	0.6±1.0	0.4±0.6	0.7±1.0	0.5±0.9
Control Group	1.1 ± 1.1	0.6±0.7	1.1±1.1	0.6±0.7	1.3±1.0	0.6±0.7
p value	0.0002	0.0007	0.05		0.009	

Graph 10 - Comparative analysis of grading of symptoms – per vaginal discharge, vaginal burning and vaginal itching in study and control groups in patients of cancers of female genital organs



Commonly observed symptoms of cancers of female genital organsnamely, vaginal burning, vaginal itching, abdominal pain, backache and fatigue were selected for study. Symptoms of worms manifestations (Sanjaat Krimi Lakshanani) viz, discolouration (Vivarnata-विवर्णता), pain (Shoola-शूल), body ache (Sadana-सदन), vertigo (Bhrama- भ्रम), nausea (Bhaktadwesha –भक्त द्वेष) and diarrhoea (Atisara -अतिसार्) were also studied in the view of Krimi as commonly observed causative factor of diseases of Tryawarta yoni including cancers of female genital organs.

Analysis of all these symptoms is done by two methods.

a) Inter group analysis - Mean of grading of each symptom was compared in study and control group at time point b and c. This analysis was essential to assess the impact of Krimighna Basti Upakrama on symptoms especially in terms of their severity.

b) Intra group analysis – Mean of grading of each symptom at time point b was compared with time point a in study and control group separately. Similar analysis was done by comparing symptoms at time point c with a.

Analysis of data by this method reflects individual response to the treatment separately in study and control group per vaginal discharge is common symptom of cancers of female genital organsand may persist even after completing conventional treatment in intra group analysis, extremely significant results were seen (p=0.0002 and p=0.0007) at time point b and c for the symptom of per vaginal discharge. In inter group analysis, per vaginal discharge was found significant (p=0.04) in study group patients, when compared at time point b with a. It is not significant at time point b with a in control group and time point c with a in the both groups. Vaginal burning is also frequently observed symptom in cancers of female genital organs. In present study, it is significant (p=0.05) at time point b i.e. at the end of treatment in inter-group analysis. In intra group analysis, this symptom was extremely significant at time point b (p=0.0002) and at time point c (p=0.0003) in study group, when compared with a. Vaginal itching was manifestation of Krimi as per Ayurvedic perspective and many patients suffering from diseases of female genital organs including cancers of female genital organssuffer from vaginal itching.

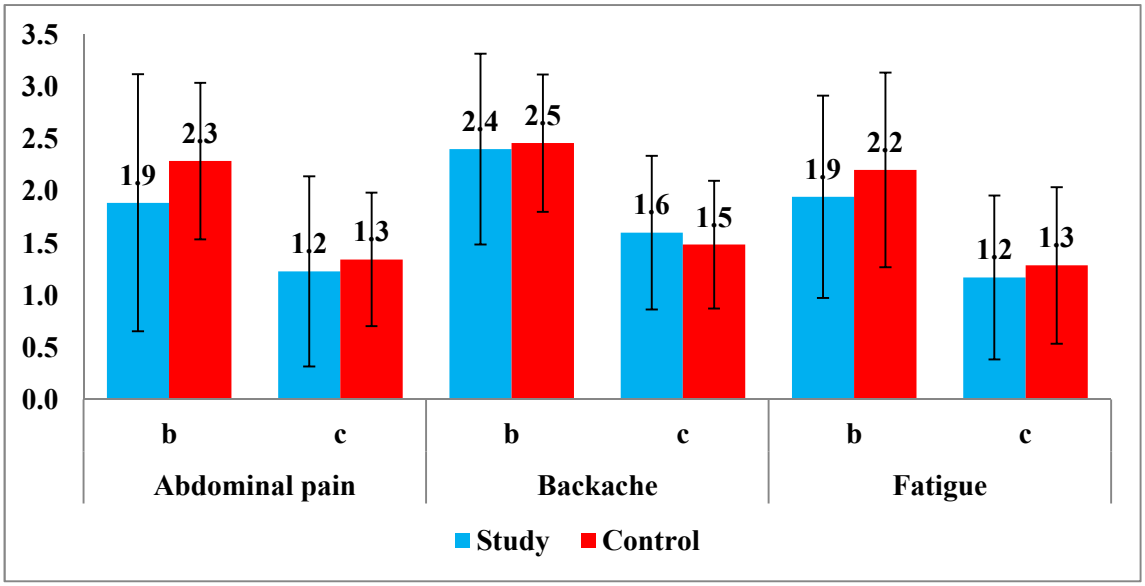
In intergroup analysis, it was very significant (p=0.009) at time point b. In intra group analysis, it was extremely significant (p=0.0001) at time point b and very significant at (p=0.004) at time point c in study group. In control group, it was extremely significant (p<0.0001) at time point c and not significant at time point b.

3. Analysis of symptoms – 2

Table 26- Comparative analysis of grading of symptoms – abdominal pain, backache and fatigue in study and control groups in patients of cancers of female genital organs.

Symptoms	**Abdominal pain**		**Backache**		**Fatigue**	
Time points	**b**	**c**	**b**	**c**	**b**	**c**
Study Group	1.9 ± 1.2	1.2 ± 0.9	2.0 ± 1.1	2.0 ± 1.1	1.9 ± 1.0	1.2 ± 0.8
Control Group	2.3 ± 0.8	1.3 ± 0.6	2.4 ± 0.8	2.4 ± 0.8	2.2 ± 0.9	1.3 ± 0.8

Graph 11 - Comparative analysis of grading of symptoms – abdominal pain, Backache and fatigue in study and control groups in patients of cancers of female genital organs.



Abdominal pain is also a presenting symptom of cancers of female genital organsand persist for a long period. It was not found to be significant in intergroup analysis of both time point b and c However in intra group analysis, it was extremely significant ($p<0.0001$) at time point b in study group patients and not significant at time point c when compared to time point a at the time point c, abdominal pain was extremely significant ($p<0.0001$) in both study and control group when compared with time point a.

Backache (Prushthashoola -पृष्ठशूल) is generally observed as a pressure symptom due to tumour in the pelvic region. Similarly the symptom persist even after the conventional treatment as a consequence of fatigue and per vaginal discharge.

In intergroup analysis, there is no much difference in backache(पृष्ठशूल) in study and control group, at time point b and c. However extremely significant ($p<0.0001$) and ($p<0.0001$) results are found at time point b and c in study group. Also similar results are seen in control group patients at time point c ($p=0.0005$).

Fatigue is a disease related symptom, as well as the symptom due to advance effect of chemotherapy and radiotherapy and remains for longer period. Fatigue is not significant in

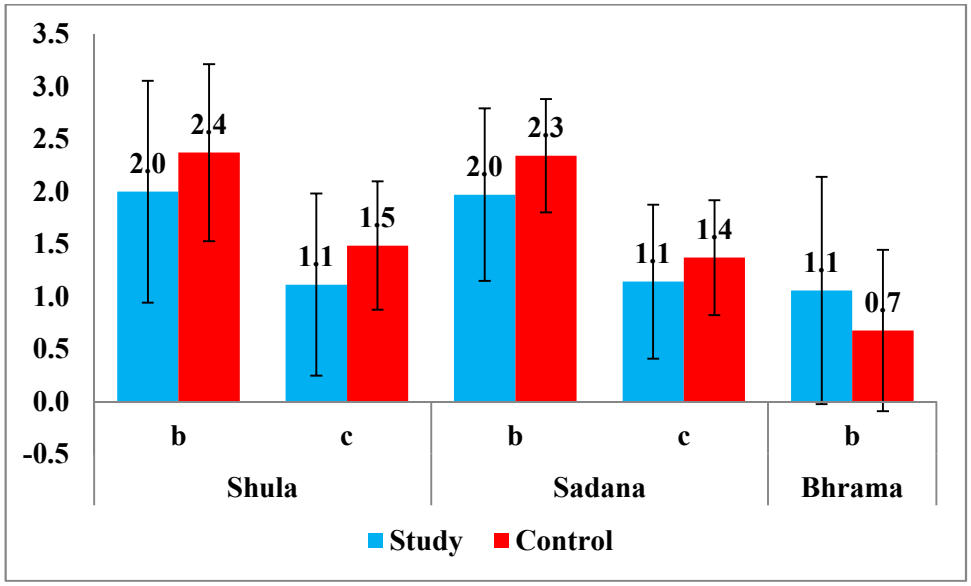
intergroup analysis, while it was extremely significant ($p<0.0001$) at both time points b and c and in both groups i.e. study and control in intragroup analysis.

Analysis of symptoms – Sanjata Krimi Lakshanani

Table 27 - Comparative analysis of grading of symptoms – Shoola (शूल), Sadana (सदन) and Bhrama (भ्रम) in study and control groups of cancers of female genital organs.

Symptoms	Shoola (शूल)		Sadana (सदन)		Bhrama (भ्रम)	
Time points	b	c	b	c	b	C
Study Group	2.0±1.1	1.1±0.9	2.0±0.8	1.1±0.7	1.1±1.1	0.6±0.9
Control Group	2.4±0.8	1.5±0.6	2.3±0.5	1.4±0.5	0.7±0.8	0.3±0.5
p value		0.04	0.02			

Graph 12- Comparative analysis of grading of symptoms – Shoola, Sadana and Bhrama in study and control groups of cancers of female genital organs.

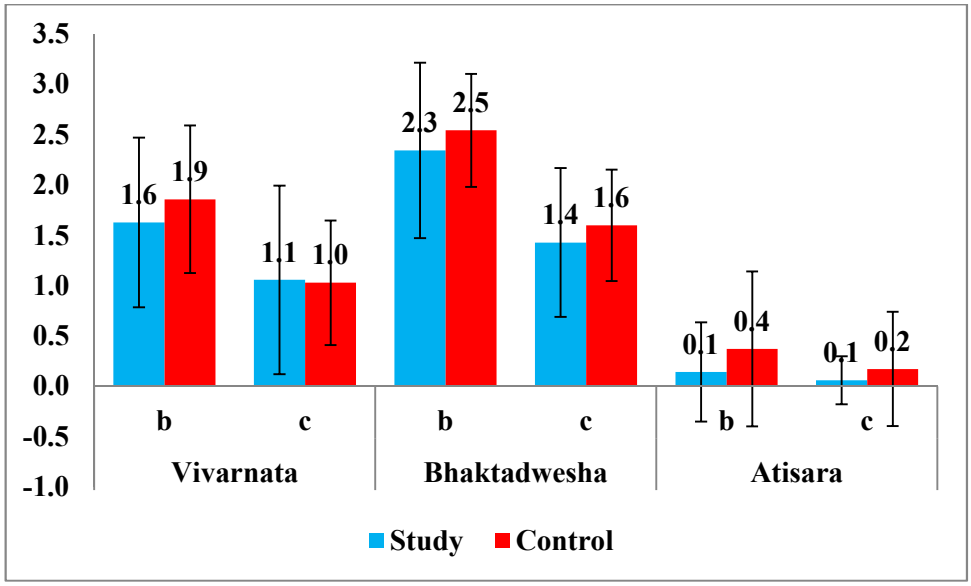


3. Analysis of symptoms –

Table 28 - Comparative analysis of grading of symptoms – Vivarnata, Bhaktadwesha and Atisara in study and control groups of cancers of female genital organs.

Symptoms	Vivarnata (विवर्णता)		Bhaktadwesha (भक्तद्वेष)		Atisara (अतिसार)	
Time points	b	C	b	C	B	c
Study Group	1.6±0.8	1.1±0.9	2.3±0.9	1.4±0.7	0.1±0.5	0.1±0.2
Control Group	1.9±0.7	1.0±0.6	2.5±0.6	1.6±0.6	0.4±0.8	0.2±0.6

Graph 13 -- Comparative analysis of grading of symptoms – Vivarnata (विवर्णता) , Bhaktadwesha (भक्तद्वेष) and Atisara (अतिसार) in study and control groups of cancers of female genital organs.



From Ayurvedic perspective, Krimi (worms) are considered as one of the evident cause of various diseases ,including diseases of Tryawarta yoni. Cancers of female genital organs are one of them. Treatment of choice of Krimi is Apakarshana (Elimination with Shodhan chikitsa). So Krimighna Basti Upakram is selected with the aim of deworming in the study. Symptoms of worm manifestation are fever (ज्वर), discoloration (विवर्णता), pain (शूल), heart diseases (हृद्रोग), body ache (सदन), nausea (भक्तद्वेष) and diarrhoea (अतिसार).

Effect of Krimighna Basti Upakrama is assessed on these symptoms at the end of basti upakram (7^{th} day –i.e.at time point b) and one month after Krimighna Basti Upakrama (at time point c).

Sanjaat Krimi Lakshna, Fever (ज्वर) and Hrudroga (हृद्रोग) were eliminated for assessment as basti upakram is contraindicated in these two conditions.

In intergroup assessment significant results are found for symptom pain (Shoola) at time point c ($p=0.04$) and for the symptom, body ache (Sadana) at time point b ($p=0.02$).

In intragroup assessment, extremely significant results ($p<0.0001$) are found for symptom discolouration (Vivarnata), and body ache (Sadana) at time point b and c in study group whereas similar results are found at only time point c in control group. There is no difference in results between study and control group for the symptom pain (Shoola) and vertigo (Bhrama) as they are extremely significant ($p<0.0001$) at both time points in both groups.

Krimighna Basti Upakrama is effective in two symptoms of worm infestation namely nausea and Atisara. Nausea is extremely significant ($p<0.0001$) at time point b and c in study group and not at all in control group. Similarly diarrhoea is significant at time point b ($p=0.04$) and time point c ($p=0.05$) in study group, however it is not significant in control group.

Biochemical assessment--

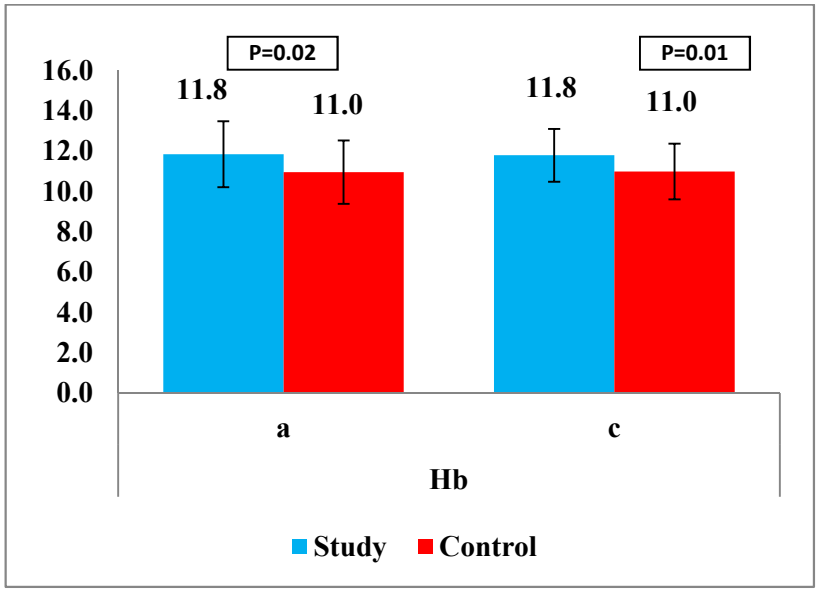
Biochemical parameters such as haemoglobin, WBC, platelets, serum bilirubin (Total), SGOT, SGPT, alkaline phosphatase, serum creatinine, blood urea, CRP, CA125 (in patients of ovarian cancer) were studied. Also stool examination for presence of worms and ova were studied. These parameters were assessed at time point a and c.

A. Haemoglobin

Table 29 -Assessment of Haemoglobin in study and control group of patients of cancers of female genital organs

Investigation	Hb	
Time points	a	c
Study Group	11.8±1.6	11.8±1.3
Control Group	11.0±1.6	11.0±1.4
p value	0.02	0.01

Graph 14-Assessment of Haemoglobin in study and control group of patients of cancers of female genital organs

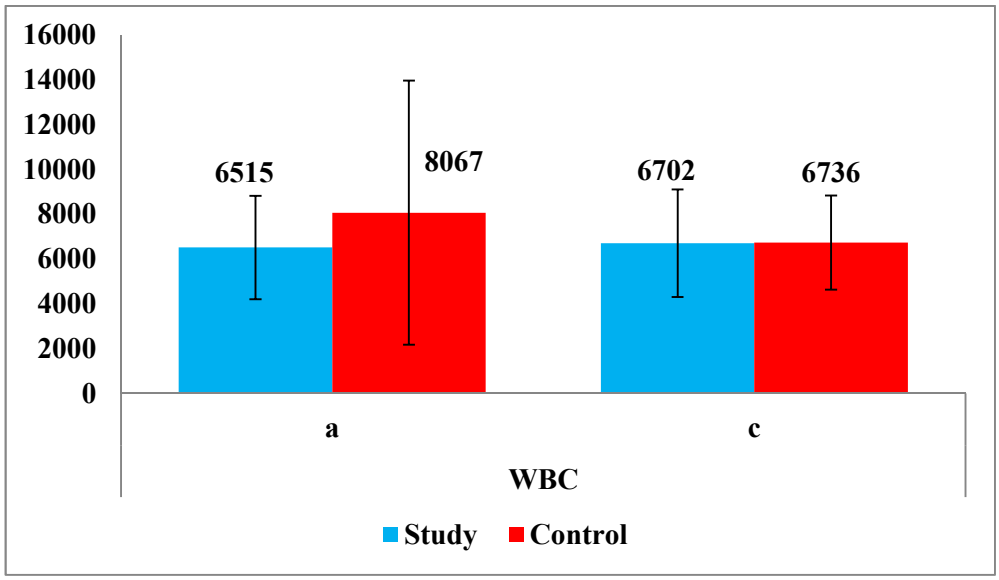


B. WBC (White Blood Cells)

Table 30- Assessment of WBC in study and control group of patients of cancers of female genital organs

Investigation	WBC	
Time points	a	c
Study Group	**6515**±2314	**6660**±2408
Control Group	**8067**±5901	**6736**±2102

Graph 15-- Assessment of WBC in study and control group of patients of cancers of female genital organs

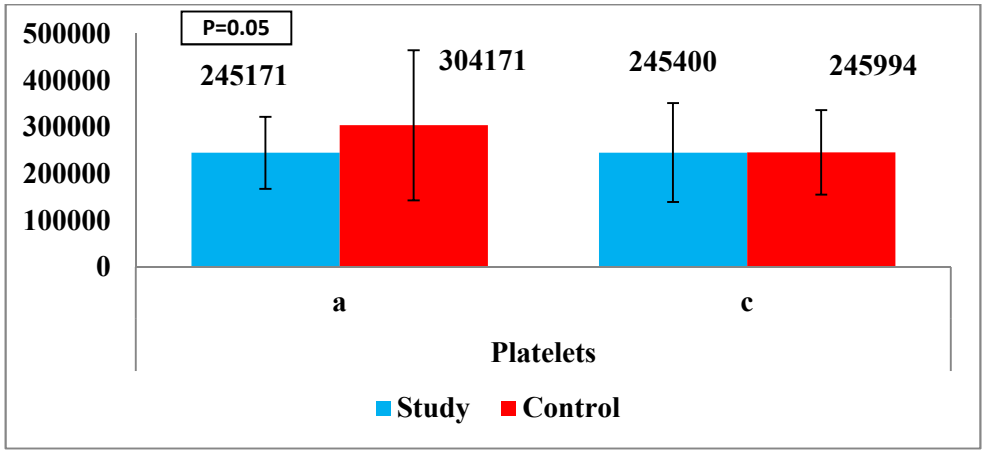


C. Platelets —

Table 31- Assessment of Platelet in study and control group of patients of cancers of female genital organs

Investigation	Platelets	
Time points	a	c
Study Group	**245171**±77420	**247057**±107796
Control Group	**304171**±161171	**245994**±90596
p value	P=0.05	

Graph 16 - Assessment of Platelet in study and control group of patients of cancers of female genital organs

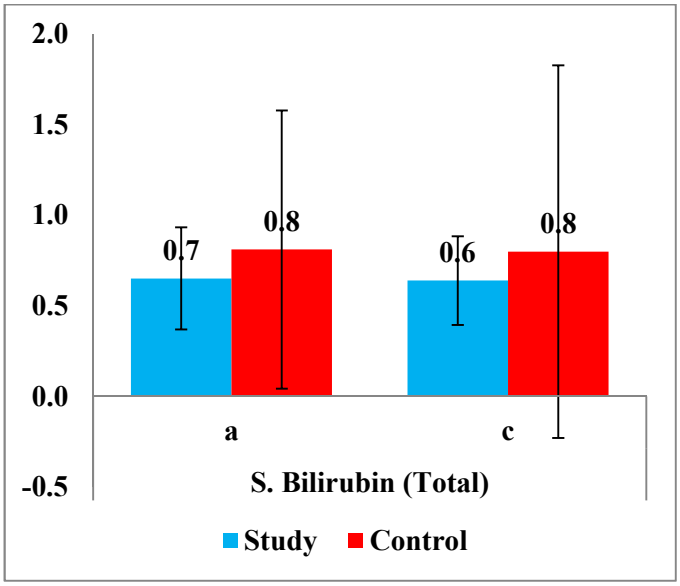


D. Liver Function Tests

Table 32 - Assessment of S. Bilirubin in study and control group of patients of cancers of female genital organs

Investigation	S. Bilirubin (Total)	
Time points	a	c
Study Group	0.7±0.3	0.6±0.2
Control Group	0.8±0.8	0.8±0.1

Graph 17 - Assessment of S. Bilirubin in study and control group of patients of cancers of female genital organs

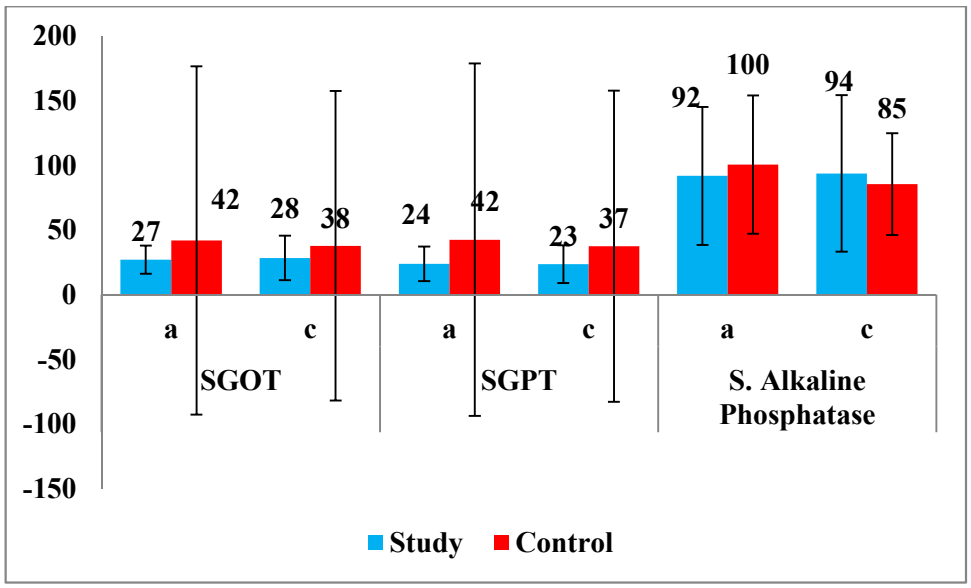


E. Liver Function Tests

Table 33 - Assessment of SGOT, SGPT and alkaline phosphatase in study and control group of patients of cancers of female genital organs

Investigation	SGOT		SGPT		S. Alkaline Phosphatase	
Time point	a	c	a	c	a	c
Study Group	27±10.8	28±17.2	24±13.2	23±14.5	92±53.3	94±60.5
Control Group	42±134.6	38±119.7	42±136.2	37±120.3	100±53.4	85±39.3

Graph 18 - Assessment of SGOT, SGPT and alkaline phosphatase in study and control group of patients of cancers of female genital organs

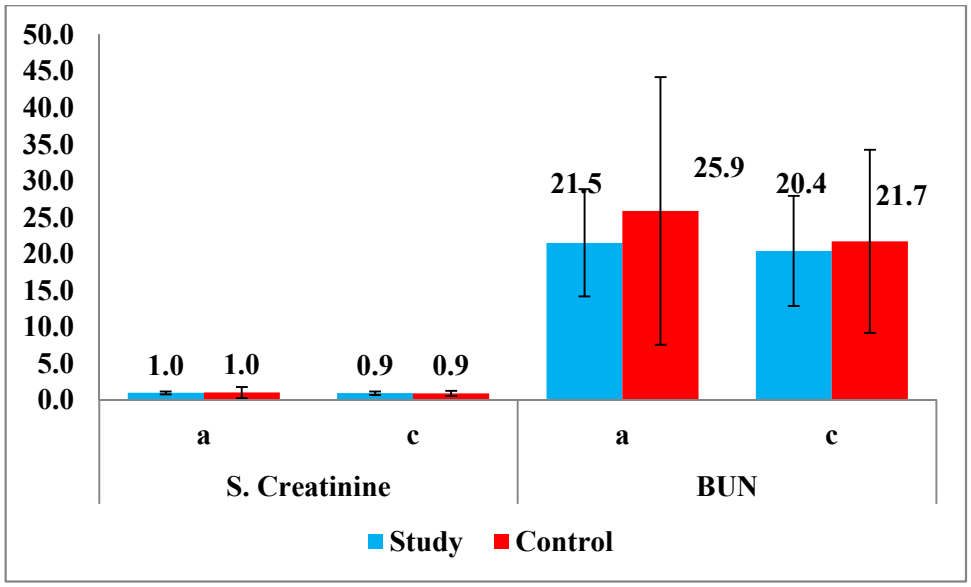


F. Renal Function Tests –

Table 34-- Assessment of Serum Creatinine and BUN in study and control group of patients of cancers of female genital organs

Investigations	S. Creatinine		BUN	
Time point	a	c	a	c
Study group	1.0±0.2	0.9±0.2	21.5±7.4	20.4±7.5
Control group	1.0±0.8	0.9±0.4	25.9±18.3	21.7±12.5

Graph 19 - Assessment of Serum Creatinine and BUN in study and control group of patients of cancers of female genital organs

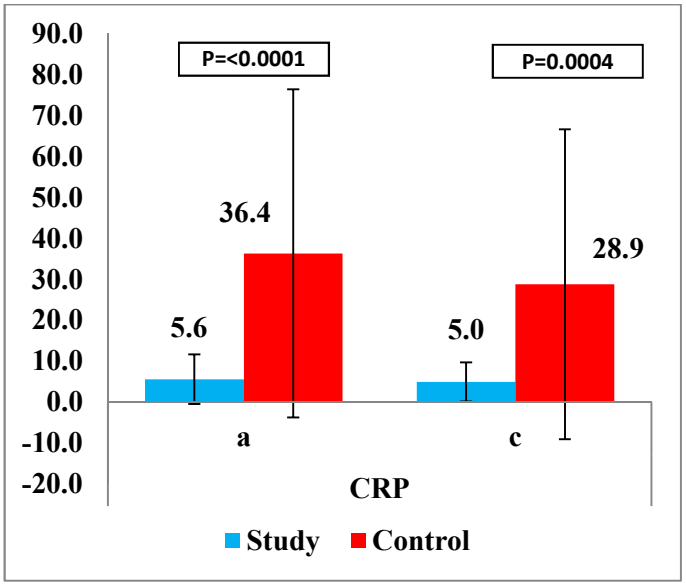


G. C. Reactive Protein (CRP)

Table 35- Assessment of CRP in study and control group of patients of cancers of female genital organs

Investigation	CRP	
Time point	a	c
Study Group	5.6±6.1	4.6±4.8
Control group	36.4±40.1	28.9±37.9
p-value	P=<0.0001	P=0.0004

Graph 20 - Assessment of CRP in study and control group of patients of cancers of female genital organs

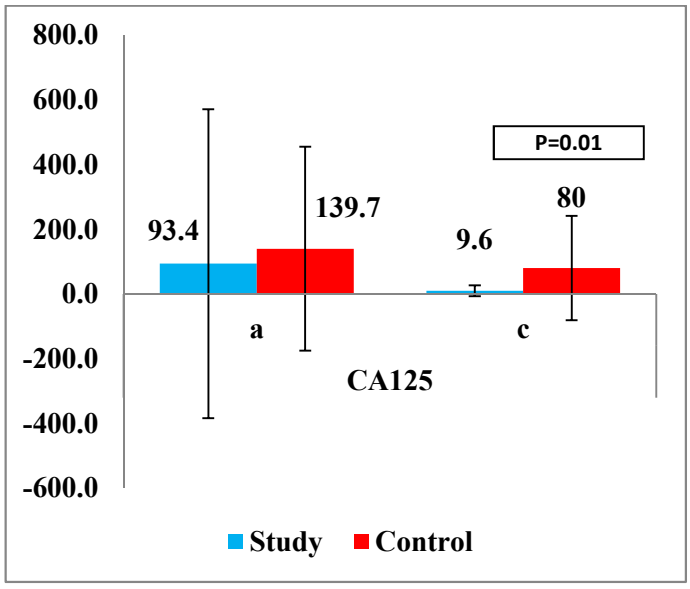


H. CA125 (for ovarian cancer)

Table 36- Assessment of CA125 in study and control group of patients of cancers of female genital organs

Investigation	CA125	
Time point	a	c
Study group	93.4±477.5	9.6±16.7
Control group	139.7±315.2	80±161.6
p value		0.01

Graph 21- Assessment of CA 125 in study and control group of patients of cancers of female genital organs



Stool Examination

Examination of stool was done to assess the presence of ova at time point a and c. Grading was done to report as 0 for negative report and 1 for positive report. In study group, only 5 patients had positive report for worm infestation which was negative at time point c. In control group, no patients were found of presence of worm.

Table 37- Assessment of Stool examination in study and control group of patients of cancers of female genital organs

Investigation	Stool Examination	
Time point	**a**	**c**
Study Group	**0.2±0.4**	**0.0±0.0**
Control Group	**0.1±0.4**	**0.1±0.2**

Haemoglobin was significantly increased (p=0.01), CA125 in ovarian cancer patients was significantly reduced (p=0.01) and presence of ova in stool was significantly disappeared (p=0.01) during intergroup analysis at time point c (i.e.one month after Krimighna Basti upakram. Rest of biochemical parameters remain in normal range at time point c. Examination of stool was done to assess the presence of ova at time point a and c. Grading was done to report as 0 for negative report and 1 for positive report.

Intergroup Analysis – (Time point b to a)

Table 38- Inter group Analysis (Time point b to a) in study and control group of patients of cancers of female genital organs

	Study Group				Control Group			
	Mean - a	**Mean - b**	**p value**	**Significance**	**Mean - a**	**Mean - b**	**p value**	**Significance**
Karnofsky Score	81.7	84.9	0.0004	Extremely Significant	83.1	85.4	0.0882	
Weight	59.5	59.1	0.0291	Significant	57.7	57.4	0.1003	
Functional score	78.0	86.0	0.0007	Extremely Significant	73.8	73.5	0.9202	
Symptom score	23.9	16.8	0.0006	Extremely Significant	26.7	25.8	0.7886	

Global score	64.0	71.7	0.0344	Significant	58.3	67.6	<0.0001	Extremely Significant
p/v discharge	0.3	0.2	0.0437	Significant	1.2	1.1	0.1688	
p/v bleeding	0.2	0.1	0.1603		0.5	0.6	0.2449	
Vaginal burning	1.0	0.6	0.0002	Extremely Significant	1.1	1.1	0.6613	
Vaginal itching	1.0	0.7	0.0001	Extremely Significant	1.3	1.3	1.0000	
Abdominal pain	2.7	1.9	<0.0001	Extremely Significant	2.3	2.3	0.8383	
Backache	3.2	2.4	<0.0001	Extremely Significant	2.0	2.5	0.0005	Extremely Significant
Fatigue	2.7	1.9	<0.0001	Extremely Significant	3.1	2.2	<0.0001	Extremely Significant
Jwara	0.4	0.1	0.0016	Very Significant	0.5	0.2	0.0002	Extremely Significant
Vivarnata	2.5	1.6	<0.0001	Extremely Significant	2.0	1.9	0.3788	
Shula	2.9	2.0	<0.0001	Extremely Significant	3.3	2.4	<0.0001	Extremely Significant
Hrudroga	0.4	0.3	0.0121	Significant	0.2	0.1	0.0831	
Sadana	2.8	2.0	<0.0001	Extremely Significant	2.6	2.3	0.0882	
Bhrama	1.8	1.1	<0.0001	Extremely Significant	1.1	0.7	<0.0001	Extremely Significant
Bhaktadwesha	3.3	2.3	<0.0001	Extremely Significant	2.2	2.5	0.1017	
Atisara	0.3	0.1	0.0437	Significant	0.3	0.4	0.7441	

Intragroup Analysis –(Time point c to a)

Table 39- Intragroup Analysis (Time point c to a) in study and control group of patients of cancers of female genital organs

	Study Group				Control Group			
	Mean - a	**Mean - c**	**p value**	**Significance**	**Mean - a**	**Mean - c**	**p value**	**Significance**
Karnofsky Score	81.7	85.7	<0.0001	Extremely Significant	83.1	86.9	0.0213	
Weight	59.5	59.8	0.1548		57.7	58.1	0.4336	
Functional score	78.0	92.0	<0.0001	Extremely Significant	73.8	85.8	0.0021	
Symptom score	23.9	8.2	<0.0001	Extremely Significant	26.7	16.0	0.0002	
Global score	64.0	86.2	<0.0001	Extremely Significant	58.3	79.3	<0.0001	Extremely Significant
p/v discharge	0.3	0.1	0.0507		1.2	0.6	0.0002	
p/v bleeding	0.2	0.1	0.1603		0.5	0.3	0.3244	
Vaginal burning	1.0	0.4	0.0003	Extremely Significant	1.1	0.6	0.0114	
Vaginal itching	1.0	0.5	0.0049	Very Significant	1.3	0.6	<0.0001	Extremely Significant
Abdominal pain	2.7	1.2	<0.0001	Extremely Significant	2.3	1.3	<0.0001	Extremely Significant
Backache	3.2	1.6	<0.0001	Extremely Significant	2.0	1.5	0.0002	
Fatigue	2.7	1.2	<0.0001	Extremely Significant	3.1	1.3	<0.0001	Extremely Significant
Jwara	0.4	0.4	1.0000		0.5	0.1	0.0005	
Vivarnata	2.5	1.1	<0.0001	Extremely Significant	2.0	1.0	<0.0001	Extremely Significant
Shula	2.9	1.1	<0.0001	Extremely Significant	3.3	1.5	<0.0001	Extremely Significant
Hrudroga	0.4	0.3	0.6539		0.2	0.1	0.1032	
Sadana	2.8	1.1	<0.0001	Extremely Significant	2.6	1.4	<0.0001	Extremely Significant

Bhrama	1.8	0.6	<0.0001	Extremely Significant	1.1	0.3	<0.0001	Extremely Significant
Bhaktadwesha	3.3	1.4	<0.0001	Extremely Significant	2.2	1.6	0.0020	
Atisara	0.3	0.1	0.0507	Significant	0.3	0.2	0.0831	
Hb	11.8	11.8	0.8160		11.0	11.0	0.9112	
WBC	6515.1	6659.7	0.7169		8067	9668	0.6134	
Platelets	245171.4	247057.1	0.9107		304171	245994	0.0528	
S. Bilirubin (Total)	0.7	0.6	0.8130		0.8	0.8	0.8498	
SGOT	26.9	28.2	0.6213		41.8	37.6	0.1098	
SGPT	23.7	23.5	0.8951		42.3	37.4	0.0811	
S. Alkaline Phosphatase	89.0	93.6	0.6286		100.4	85.3	0.0021	
S. Creatinine	1.0	0.9	0.2313		1.0	0.9	0.1679	
BUN	21.5	20.4	0.2472		25.9	21.7	0.0077	
CRP	5.6	4.6	0.0052	Very Significant	36.4	28.9	0.0111	
CA125	93.4	9.6	0.3007		139.7	80.0	0.0350	
stool Examination	0.2	0.0	0.0121	Significant	0.1	0.1	0.0831	

INTERPRETATION

In our study, about 34.28 % patients of each study and control group have age between 51 to 60 years i.e. menopausal age having high score to diagnose cancers. Childbearing age is having less evidence of cancers as compared to peri menopausal and post-menopausal age. During old age, there were fewer patients found. Also it is observed that they are good tolerance for the disease.

In our study 60% and 80% patients of study and control group respectively are from middle socioeconomic status. In Indian scenario, cervical and vaginal cancers are common in women who lie in low socio economic class, whereas ovarian and uterine cancers are common in middle and high economic class. Ovarian and uterine cancer patients are more in our study (i.e. 22/35) 62% proportion in middle socio economic class in evident.

Stage of cancer at initial diagnosis is based on TNM classification. It depends upon the size of tumor, nodal involvement of cancer and metastatic status. Decision about the line of conventional treatment (surgery, chemotherapy and radiotherapy) and prediction about the prognosis of patient depends on the stage of the cancer. In our study, we have recruited almost similar number of each stage of patients in study and control group as aggressiveness of cancer and treatment response depend upon the stage of cancer.10 patients each of stage I cancer and 4 patients each of stage IV cancer lie in study and control group.4 and 7 patients of study and control group respectively had stage II cancer whereas 17 and 14 patients of study and control group respectively had stage III cancer.
Histological grade denotes how the cancer cells differ from normal cells. Grade I (well differentiated cancer) denotes the cancer cell resemble normal cell and are not growing rapidly. It is also called as low grade cancer. Moderately differentiated or Grade II cancer means cancer cells does not look like normal cells and are growing further than normal cells. Grade III (poorly differentiated cancer) means cancer cells look abnormal and may grow or spread more aggressively. This aggressiveness of cancer can be more precisely explained on the basis of grading of cancer. We recruited almost equal number of patients in each grade which helped us to assess response of Ayurvedic treatment on equally distributed cohort in both study and control group. 3 patients each of study and control group had grade I cancer.15 patients of study group and 14 patients of control group had

grade II cancer whereas 17 patients of study group and 18 patients of control group had grade III cancer.

Disease status, Quality of Life and progression of cancer patients mainly depend upon conventional treatment taken by the patient. Thus we recruited almost similar number of patients in study and control group, taking into consideration their past conventional treatment. Assessment of efficacy of Krimighna Basti Upakram was thus possible in almost similar cohort of study and control group.

Karnofsky score measuring wellbeing and Quality of Life of cancer patients, is used to assess the treatment response. In our study maintained and increased Kernofsky score in all study group patients at both time points b and c indicates effectiveness of Krimighna Basti Upakrama on wellbeing of patients suffering from cancers of female genital organs.

QLQ C30 (version 3) of EORTC is a questionnaire of 30 questions to measure the Quality of Life (QoL) of cancer patients in the form of their own perspectives. It is common for all types of cancers. Question number 1 to 28 are answered in 4 options, namely, 1 =not at all; 2=a little; 3=quite a bit; 4=very much. Question numbers 29 and 30 are to be answered from 1 to 7 scales in which 1 denotes very poor whereas 7 denotes excellent. QLQ C30 consists of functional, symptom and global scores Daily activities and functions of patients are measured by functional score which is calculated using questions 1 to 7 and 20 to 27.

A raw mean function score is converted into final functional score using an equation,

$$\frac{1-(Mean\ Raw\ Score)}{\text{Range}} \times 100$$

High functional score represents high /healthy level of functioning.

Symptom score, which is indicative of symptomatology is calculated using question number 8 to 19 and 28. Final symptom score is calculated using an equation,

$$\frac{(\ Raw\ Score-1)\ \}}{\text{Range}} \times 100$$

High symptom score represent high level of symptomatology.

Global score indicates assessment of overall health and Quality of Life from patient's own perspectives which is assessed by question number 29 and 30. Final global score is calculated by using equation,

$$\frac{(Raw\ Score-11)}{\text{Range}} \times 100$$

High global score indicates healthy status and represent high Quality of Life. In our study, functional, symptom and global score are calculated at the time point b and c and compared in study and control group. Functional score at time point b is extremely significant (p=0.0007) and is significant (p=0.01) at time point c. Symptom score is also significant (p=0.02) at time point b and very significant (p=0.003) at time point c. Global score is significant (p=0.04) at time point c.

Difference of each score between time point b and a, also c and a are calculated and significance is recorded in intragroup analysis. In this analysis, all 3 scores are extremely significant (p=<0.0001) at time point c in study group whereas only global score is extremely significant (p=<0.0001) in control group. At time point b, functional and symptom score are extremely significant (p=0.0007) and (p=0.0006) respectively whereas global score is significant (p=0.03) in study group. However in control group, global score is found to be extremely significant (p=<0.0001).

Rationale behind selection of Krimighna Basti Upakram

Cancers of female genital organs i.e. cervical cancer, ovarian cancer, uterine cancer, vaginal cancer are the diseases of Tryawarta Yoni and are well elaborated as Yoni Vyapada. Dushta Vrana, Vranashotha, Dushta Granthi, Dushta Arbuda, Dushta Visarpa, Dushta Nadivrana, which are manifestations of untreated Dushta Vranshotha, shows similar to cancer. Sushrutacharya has clearly stated the derivation of Arbuda that it appears at specific organ, where vitiated Doshas get accumulated.

गात्रप्रदेशे क्वचिदेव दोषाःसम्मूर्च्छिता मांसमभिप्रदूष्य।
वृत्तं स्थिरं मन्दरूजं महान्तमनल्पमूलं चिरवृद्ध्यपाकम्॥ सु.नि.११/१३)

In case of gynaecological cancer, vitiated Doshas accumulate at cervix, vagina, uterus or ovary and exhibit disease. Thus cancers of female genital organs should be treated in line

up with the treatment of Dushta Vrana-Granthi-Arbuda-Shotha as well as treatment of Yonivyapad. Charakacharya has mentioned in Yonivyapad Adhyaya that vitiation of vaat dosha is essential for manifestation of all 20 types of Yonivyapad. Basti Chikitsa is a treatment of choice for vitiated Vata Dosha. Vitiation of Kapha Dosha, Kled leading to worm manifestation is also a common cause of Kapha dominant Yonivyapad. Though Dushta Arbuda is caused by vitiation all 3 doshas, abnormal cell division (Vruddhi) is caused by vitiation of Vata Dosha. Most of the cancers have lifetime risk of metastasis or recurrence according to modern medical science. Identical concept of Vrana Vastu is mentioned in Sushrut Samhita, while defining Vrana,

वृणोति यस्माद् रूढेऽपि व्रणवस्तु न नश्यति ।
आदेह धारणात्तस्माद् व्रण इत्युच्यते बुधैः ॥ सु.सू.२१/४०

Meaning, even after complete treatment of Vrana, Vranavastu remains in latest stage of lifetime. This underscores the need of detoxification in the form of Panchakarma in cancer patients.as female genital organs are under control of Vata Dosha (Apana Vayu), Basti is a treatment of choice for cancers of female genital organs.

Considering Krimi as the causative factor for these diseases, Krimighna Basti Upakrama is chosen as a treatment for study group.

Krimighna Basti UpakramA consist of 5 Matra Basti and two Niruha Most of the herbs included in Krimighna Basti are having anthelminthic property. Deworming property of Nimba (*Azadirachta indica*), Nirgundi (*Vitex negundi* Linn). Karanja (*Pongamia pinnata*), Vidanga (*Embelia ribes*), Musta (*Cyprus rotundus*), Bibhitaki (Terminalia bellirica), Haritaki (*Terminalia chebula*), Amalaki (*Phyllanthus embelica*), Shigru (*Moringa Oleifera*) and Danti (*Baliospermum montanum*) are mentioned in Bhavprakasha Nighantu. Additionally, Karanja (*Pongamia pinnata*), Shigru (*Moringa Olifera*) and Danti (*Baliospermum montanum*) are quoted as Yonidoshahruta (beneficial in the diseases of female genital organs) Kledanashak property of Triphala and Yawa (*Hordeum vulgare*) are well documented. Cancers manifest when shotha (inflammation) and Vrana (ulcers) are left untreated. Thus Shotha-nashaka (anti-inflammatory) and Vrana-nashak (antiulcer) herbs like Karanja (*Pongamia pinnata*), Shigru (*Moringa Oleifera*), Danti(*Baliospermum*

montanum), Madanphal (*Randia dumentorum*), Nimba (*Azadirachta indica*) and Yawa (*Hordeum vulgare*) are used in Matra and Niruha Basti. Madhu (honey) used as Prakshepa Dravya in Krimighna Niruha Basti acts as catalyst (Yogawahi) and additionally beneficial in Shotha, Vrana and Kled. Similarly Saindhava is useful for quick action of herbs in Niruha Basti due to its Sukshma Guna.

Discussion on the symptom of female genital cancers—

- **Per vaginal discharge –**

  Per vaginal discharge is a common presentation of female genital cancers and various types of Yonivyapada. The symptom persists in many patients even after completing conventional treatment. P/v discharge is a symptom seen in Vataja, Pittaaj, Kaphaja, Sannipatika, Asruja, Paripluta, Upapluta and Mahayoni Yonivyapada as mentioned in Charak Samhita.

  Per vaginal discharge is classified on the basis of,

- Colour- Neel (blue), Peeta (yellow), Asita (black), Shweta (white) and Rakta (blood stained)
- Consistency – Tanu (watery), Saphena (frothy), Karkasha (rough), Picchila (sticky)
- Temperature – Ushna (Hot), Sheet (cold)
- Quantity - Prabhoot Straava (profuse discharge), Krucchrena Straava (painful discharge)
- Smell – Kunapagandhi (foul smell like cadaver)

  Vitiated Kapha Dosha, Kleda and Krimi are major factors responsible for Kapha dominant per vaginal discharge in cancers of female genital organs. Karanja Taila is used in Matra Basti and Shigru (*Moringa oleifera*), Danti (*Baliospermum montanum*) and Vidang (*Embelica ribes*) have direct impact on per vaginal discharge as stated in Bhavprakasha Nighantu.

  In our study, extremely significant results for per vaginal discharge are seen at the end of Basti Chikitsa (time point b) and one month after Basti Chikitsa (at time point c) in intragroup analysis. Additionally significant results are obtained in study group at time point b .The results prove effectiveness of Krimighna Basti Upakrama on per vaginal discharge in cancer patients of female genital organs.

- **Vaginal burning –**

  Vaginal burning is one of the symptoms of Pittaaj, Sannipatik and Paripluta Yonivyapada. Patients of gynaecological disorder with Pitta dominant Samprapti suffer from vaginal burning. Nimba (*Azadirachta indica*) used in Krimighna Matra basti and Musta (*Cyprus rotundus*), Bibhitaki (*Terminalia bellirica*), Amalaki (*Phyllanthus embelica*), Danti (*Baliospermum montanum*) and Yawa (*Hordeum vulgare*) used in Niruha Basti are beneficial in relieving vaginal burning. This action is seen due to Sheet (cold) property and Pitta Shamaka (pitta pacifying) action of these herbs.

  In intragroup analysis of our study, significant results are obtained for vaginal burning at time point b. Moreover extremely significant results are seen at time point b and c, in study group patients during intragroup analysis.

- **Vaginal itching –**

  Vaginal itching is seen in many patients of cancers of female genital organs and is described as a symptom of Kaphaja, Aticharanaa and Arajaskaa Yonivyapad. Kleda and Krimi are responsible for itching. Nimba (*Azadirachta indica*) and Karanja (*Pongamia pinnata*) are used in Krimighna Matra basti possesses Krimighna (anthelminthic) and Kandughna (relieves itching) action. Hence beneficial in vaginal itching.

  Triphala and Haritaki are also useful in vaginal itching. In our study, very significant results for vaginal itching are seen in time point b and c respectively; when compared with time point a, in intra group analysis.

- **Abdominal pain –**

  Abdominal pain is mainly observed in ovarian and uterine cancer. It is also a symptom of Kaphaja, Sannipatika, Aticharana and Paripluta Yonivyapada. This symptom mainly occurs due to accumulation of doshas, which are eliminated with basti upakram. Carminative effect of Musta (*Cyprus rotundus*) and Amalaki (*Phyllanthus embelica*) is also beneficial to relieve abdominal pain.

Study group patients shows extremely significant results in abdominal pain at time point b and c when compared with time point a, whereas similar results are seen at only time point c in control group patients.

- **Backache-**

  Backache is observed in many patients of cancers of female genital organs as a pressure symptom of a tumor /accumulated Doshas or a consequence of per vaginal discharge and debility. It is symptom of Paripluta and Mahayoni Yonivyapada.

  Basti Chikitsa helps to eliminate accumulated Doshas in pelvic region through anus and relieves backache. Statistically, similar results are found for back ache to that of abdominal pain.

- **Fatigue –**

  Like all types of malignancies patients of cancers of female genital organs suffer from fatigue as a symptom of disease or adverse effect of conventional treatment. Acharya Charak describes this symptom in Vataja, Pittaja, Sannipatika, Paripluta and Mahayoni Yonivyapada.

  Basti Upakrama is beneficial for removing toxins, improving digestion and metabolism and thus restore energy. Thus Basti Upakrama is found to be effective in fatigue. Additionally Nimba (*Azadirachta indica*) used in basti chikitsa has a property 'Shrama-nashana' whereas Triphala has a characteristic Rasayan action.

Discussion of symptoms of Sanjata Krimi

Among Sanjata Krimi Lakshana, Vivarnata (discoloration), Shoola (pain), Sadana(body ache), Bhrama (vertigo), Bhaktadwesha (nausea) and Atisara (diarrhoea) were selected to assess the effect of Krimighna Basti Upakrama. As discussed earlier, Abhyantara Krimi are the causative factors of various gynaecological disorders including gynaecological malignancies, from Ayurvedic perspectives.

Acharya Charak has explained three types of Abhyantara Krimi namely, Kaphaja, Purishaja and Shleshmaja Krimi. The line of treatment is described as,

तत्र सर्व क्रिमीणामपकर्षणमेवादितः कार्यं, ततः प्रकृतिविघातः,□ नन्तरं निदानोक्तानां भावानामनुपसेवनमिति ।च.वि.७/१४

1) Apakarshana[24]-Forceful elimination (through Shodhan Chikitsa)

2) Prakruti Vighata – Treatment/diet/lifestyle modification which restrict the growth of Krimi

3) Nidan Parivarjana – Avoidance of causative factors of Krimi.

Krimighna Basti Upakrama is a course of Matra Basti and Niruha Basti administered successively 7 days. Niruha Basti are given on 4th and 6th day. Herbs used in Basti Upakrama are described as Krimighna (anthelminthic) .Thus krimighna Basti Upakrama is a form of Apakarshana and Prakruti Vighata Chikitsa.

In our study, Sanjata Krimi Lakshanani like Vivarnata, Sadana, Bhaktadwesha and Atisara are statistically significant in study group at time point b and c when compared with time point a and not significant in control group patients. The results of this data supports our hypothesis that Krimighna Basti Upakrama is beneficial in management of symptoms of cancers of female genital organs, worm infestation and thus Quality of Life of patients.

Discussion on biochemical parameters

Biochemical parameters such as haemogram, liver function tests, renal function tests, CRP, CA 125 (in ovarian cancer) and stool examination were done before Basti Upakrama (time point a) and one month after Basti Upakrama (time point c).Significant improvement is observed in Haemogram which is associated with elimination of toxins from GI tract, improvement in digestion and absorption of nutrients as a consequence of Krimighna Basti Upakrama.

Significant decrease in tumour marker CA125 in ovarian cancer patients is indicative of elimination of accumulated doshas in organs of pelvic cavity and thus reduction of tumour burden.

Presence of ova in microscopic stool examination was also significantly reduced in study group patients at time point c, when compared with time point a. These observations are evident to give a proof of concept that Krimi (worms) are causative factors of cancers of female genital organs.

CONCLUSION

1. Patients of female genital cancer i.e. cervical cancer, vaginal cancer, uterine cancer and ovarian cancer included in our study were mainly from age group 41 – 60 (41 / 70) i.e. 68% and largely from middle socio-economic Class (SEC) (49 out of 70 patients). Maximum number of patients had ovarian cancer (29 / 70, 41 %), 22 / 70 i.e. 31 % had cervical cancer, 15 / 70 (21 %) had uterine cancer, whereas 4 / 70 (5 %) patients had vaginal cancer. Among them maximum number of patients (39 / 70 i.e. 55%) had advanced stage of disease (Stage III and IV), 20 / 70 patients had stage I cancer (28 %) and 11 / 70 patients (15 %) had stage II cancer. Considering grade of cancer, 50% patients (35 / 70) had grade III cancer, 29 patients (42 %) had grade II and 6 patients (8 %) had grade I cancer. Maximum number of patients 35/70 (50 %) were previously treated with a combination of surgery and chemotherapy.
2. Krimighna Basti Upakrama is highly effective in management of symptoms of cancers of female genital organs namely per vaginal discharge and vaginal itching. It is also effective in symptoms vaginal burning, body ache and Sanjata Krimi Lakshana – discolouration. Effectiveness of Basti treatment on these symptoms also persists even after 1 month indicative of long lasting effect of the treatment. This treatment modality is also effective in vaginal burning, a symptom of cancer of female genital organ and nausea and diarrhoea, symptoms of Sanjata Krimi in study group patients, when assessed with their own conditions and symptoms before starting treatment.
3. Treatment protocol of Krimighna Basti Upakrama is beneficial in controlling disease progression of ovarian cancer patients, proved by significant reduction in CA 125, an ovarian cancer specific tumour marker, one month after Krimighna Basti treatment in study group patients.
4. Significantly disappearance of ova in stool examination, 1 month after Krimighna Basti Upakrama is conclusive of deworming effect of Krimighna Basti Upakrama. This action helps to control cancer progression as per Ayurvedic principles.
5. Quality of Life of patients treated with Krimighna Basti Upakrama is notably improved in terms of improvement of well-being and reduction in cancer related symptomatology, which is reflected in functional, global and symptom scores of QLQ C30.

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Sr. No.	Name of the patient	Age at diagnosis	Age at registration	Age at Panchakarma	Socioeconomic status	Diagnosis - check	Disease Index	Stage - Check	Grade - Check	Disease status (P / R / M)		
										a	b	c
1	MJ	58	58	59	M	CA ENDOMETRIUM	182	IA	I	M	M	M
2	NP	43	44	44	M	CA OVARY	183	III	II	M	M	M
3	SR	64	73	80	M	CA OVARY	183	IIA	I	M	M	M
4	KG	54	54	54	M	CA CERVIX	180	IVA	III	M	M	M
5	AV	68	68	71	H	CA ENDOMETRIUM	182	IB	II	M	M	M
6	MR	69	70	70	M	CA ENDOMETRIUM	182	IB2	III	M	M	M
7	GC	52	55	55	H	CA OVARY	183	III	III	M	M	M
8	PS	62	62	63	M	CA OVARY	183	IIIC	III	M	M	M
9	SR	50	53	54	M	CA CERVIX	180	IIIA	III	M	M	M
10	SS	52	52	57	M	CA OVARY	183	IIIA2	III	M	M	P
11	SR	47	49	60	L	CA OVARY	183	IIIC	III	M	M	M
12	SA	32	33	34	M	CA CERVIX	180	IIIA	II	M	M	M
13	KG	54	54	57	M	CA CERVIX	180	IVA	III	M	M	M
14	AA	34	35	39	M	CA OVARY	183	IA	III	M	M	M
15	UN	36	35	36	M	CA OVARY	183	IC	III	M	M	M
16	SR	47	49	60	L	CA OVARY	183	IIIC	III	M	M	M
17	SS	44	44	44	M	CA ENDOMETRIUM	182	IIIC1	II	M	M	M
18	SS	34	34	37	M	CA CERVIX	180	IIA	II	M	M	M
19	CH	72	72	73	M	CA VAGINA	184	IIA	II	M	M	M
20	SB	45	45	45	M	CA OVARY	183	IA	II	M	M	M
21	AD	60	62	63	H	CA OVARY	183	IC3	III	M	M	M
22	SK	38	40	47	L	CA CERVIX	180	IIIB	II	M	M	M

23	YS	59	59	64	M	CA ENDOMETRIUM	182	IB	II	M	M	M
24	SS	61	61	61	H	CA CERVIX	180	IIIB	III	M	M	M
25	KB	60	60	69	H	CA CERVIX	180	IIIC	II	M	M	M
26	SR	47	49	63	L	CA OVARY	183	IIIC	III	M	M	M
27	DN	50	50	55	M	CA CERVIX	180	IIIB	II	M	M	M
28	MN	38	38	49	M	CA ENDOMETRIUM	182	IIA	II	M	M	M
29	SSK	50	51	59	M	CA ENDOMETRIUM	182	III	I	M	M	M
30	SD	55	55	58	L	CA OVARY	183	IVB	III	M	M	M
31	AV	45	46	62	H	CA OVARY	183	IA	II	M	M	M
32	SW	57	59	63	H	CA VAGINA	184	IV	III	M	M	M
33	UC	51	51	63	M	CA OVARY	183	IIIA	II	M	M	M
34	SK	38	40	47	L	CA CERVIX	180	IIIB	III	M	M	M
35	SS	40	40	45	L	CA CERVIX	180	IA	II	M	M	M

Sr.	Name of	Karnofsk			Weight			Functional			Sympto			Global			p/v			p/v			Vagin			Vagin			Abdo			Backa			Fatig			Jwar			Vivar			Shula			Hrud			Sadan			Bhra			Bh			A
		a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a
1	MJ	80	80	90	83.4	82.0	85.0	58	91	100	59	51	36	33	58	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	3	2	3	2	1	1	0	0	3	2	1	4	3	2	0	0	0	4	3	2	4	3	2	4	3	2	0
2	NP	80	80	80	69.0	68.5	69.0	84	93	80	28	28	5	67	67	92	0	0	0	0	0	0	3	2	1	3	2	1	4	3	2	4	3	2	3	2	1	0	0	0	3	2	1	4	3	2	0	0	0	3	2	1	0	0	0	4	3	2	0
3	SR	80	80	80	37.3	36.0	35.5	36	60	71	56	64	28	67	42	83	0	0	0	0	0	0	0	0	0	0	0	0	3	2	1	4	3	2	4	3	2	2	1	1	2	1	0	3	2	1	0	0	0	4	3	2	4	3	2	4	3	2	0
4	KG	80	80	80	45.0	42.6	44.0	100	100	100	15	3	0	92	100	67	0	0	0	0	0	0	3	2	1	4	3	2	4	3	2	4	3	2	4	3	2	4	3	2	0	0	0	3	2	1	4	3	2	0	0	0	3	2	1	3	2	1	4	3	2	3
5	AV	70	70	80	58.0	57.2	57.0	71	91	93	15	5	5	67	67	58	0	0	0	0	0	0	0	0	0	0	0	0	3	2	1	4	3	2	3	2	1	1	0	0	3	2	1	4	3	2	1	0	0	3	2	1	0	0	0	3	2	1	0
6	MR	90	90	90	70.2	70.2	72.6	80	91	96	13	5	8	67	83	92	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	1	1	3	2	1	0	0	0	3	2	1	3	2	1	0	0	0	3	2	1	0	0	0	3	2	1	0
7	GC	90	90	90	65.5	67.8	67.0	98	93	100	13	8	0	50	58	75	0	0	0	0	0	0	0	0	0	0	0	0	3	2	1	4	3	2	4	3	2	0	0	0	3	2	1	4	3	2	0	0	0	3	2	1	1	0	0	4	3	2	0
8	PS	80	80	80	60.0	60.3	60.8	67	100	100	8	5	0	50	100	100	3	2	1	3	2	1	3	2	1	4	3	2	4	3	2	4	3	2	3	2	1	0	0	0	4	3	2	4	3	2	1	0	0	3	2	1	2	1	0	4	3	2	0
9	SR	80	90	90	54.2	54.9	55.6	62	73	67	64	44	28	33	75	83	0	0	0	0	0	0	0	0	0	0	0	0	3	2	1	4	3	2	4	3	2	1	0	0	2	1	1	3	2	1	0	0	0	3	2	1	1	1	1	4	3	2	0
10	SS	70	80	80	55.2	54.8	55.4	47	78	98	59	28	8	50	67	100	0	0	0	0	0	0	3	2	1	3	2	1	4	3	2	4	3	2	4	3	2	0	0	4	3	2	4	3	2	0	0	0	4	3	2	2	1	0	0	4	3	2	0
11	SR	80	90	90	54.2	52.2	54.0	82	73	89	21	26	10	58	58	67	0	0	0	0	0	0	1	0	0	0	0	0	4	3	2	4	3	2	2	1	0	1	0	0	0	0	0	2	1	0	0	0	0	1	1	1	1	1	0	3	2	1	0
12	SA	80	80	80	70.0	69.4	71.0	22	42	64	72	23	38	50	83	100	0	0	0	0	0	0	3	2	1	2	1	0	4	3	2	4	3	2	4	3	2	0	0	0	3	2	1	4	3	2	0	0	0	3	2	1	1	0	0	4	3	2	0
13	KG	80	80	80	48.6	46.2	46.5	100	100	100	18	5	0	50	58	58	0	0	0	0	0	0	4	3	2	3	2	1	4	3	2	4	3	2	3	2	1	3	2	1	4	3	2	0	0	0	3	2	1	3	2	1	4	3	2	4	3	2	3
14	AA	80	80	80	66.0	68.1	68.0	93	100	89	10	23	0	83	58	83	2	1	1	0	0	0	2	1	1	2	1	1	3	2	1	4	3	2	3	2	1	1	0	0	3	2	1	4	3	2	0	0	0	4	3	2	1	0	0	4	3	2	0
15	UN	70	80	80	59.7	58.6	58.0	64	64	84	49	36	26	67	58	92	0	0	0	0	0	0	0	0	0	0	0	0	4	3	2	3	2	2	3	2	1	0	0	0	3	2	1	4	3	2	0	0	0	4	3	2	3	2	1	4	3	1	0
16	SR	80	90	90	0.0	0.0	0.0	93	98	93	21	18	3	67	67	83	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	2	1	3	2	1	0	0	0	2	1	0	2	1	0	0	0	0	2	1	0	3	2	1	2	1	0	0
17	SS	70	80	80	55.0	56.7	58.9	78	76	91	3	5	3	58	33	67	3	2	1	0	0	0	0	0	0	2	1	1	4	3	2	4	3	2	3	2	2	1	1	1	3	2	1	4	3	2	0	0	0	4	3	2	3	2	1	4	3	2	0
18	SS	90	90	90	65.7	64.0	65.8	80	91	100	26	18	15	75	33	92	4	3	2	3	2	1	4	3	2	4	3	3	4	3	2	4	3	2	3	2	2	0	0	0	3	2	1	4	3	2	0	0	0	3	2	1	3	2	2	4	3	3	0
19	CH	70	80	80	37.4	37.9	38.3	62	84	91	23	18	5	58	67	75	0	0	0	0	0	0	0	0	0	0	0	0	4	3	2	4	3	2	3	2	1	0	0	4	3	2	3	2	1	1	1	1	1	3	2	1	2	1	0	4	3	2	0
20	SB	80	80	90	64.3	64.0	65.0	71	84	100	15	8	3	83	83	92	0	0	0	0	0	0	0	0	0	0	0	0	4	3	2	4	3	2	4	3	2	0	0	0	4	3	2	4	3	2	0	0	0	4	3	2	0	0	0	4	3	2	0
21	AD	90	90	90	69.7	67.9	68.0	76	60	76	44	36	23	42	50	67	0	0	0	0	0	0	2	1	1	2	1	0	4	3	2	3	3	2	4	3	2	1	0	0	3	2	2	3	3	2	0	0	0	4	3	3	4	3	3	4	2	1	0
22	SK	70	80	80	64.4	63.5	63.7	98	98	100	0	3	0	17	33	75	0	0	0	0	0	0	0	0	0	0	0	0	4	3	2	4	3	2	3	2	1	0	0	0	3	2	1	4	3	2	0	0	0	4	3	2	4	3	2	4	3	2	1
23	YS	80	80	80	62.4	61.0	62.0	91	80	100	28	10	3	58	67	83	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	4	3	2	4	3	2	0	0	0	3	2	1	4	3	2	0	0	0	4	3	2	2	1	0	4	3	2	0
24	SS	90	90	90	76.2	75.8	76.0	98	100	96	0	0	3	100	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	2	1	0	1	0	0	0	0	0	3	2	1	2	1	0	3	2	1	0	0	0	3	2	1	0
25	KB	90	90	90	62.5	62.8	61.0	96	96	96	8	10	0	100	100	100	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	2	1	0	0	0	0	3	2	1	0	0	0	2	1	0	1	1	0	3	2	1	0	0	0	0	0	0	0
26	SR	80	90	90	53.0	52.5	52.7	76	82	84	23	18	8	58	42	83	0	0	0	0	0	0	0	0	0	0	0	0	4	3	2	4	3	2	3	2	1	0	0	0	3	2	1	2	1	0	4	3	2	0	0	0	0	0	0	3	2	1	0
27	DN	90	90	90	99.6	99.3	98.0	93	91	100	13	5	0	50	83	100	0	0	0	0	0	0	3	2	1	0	0	3	2	1	3	2	1	3	2	1	1	0	0	2	1	0	3	2	1	0	0	0	3	2	1	0	0	0	3	2	1	0
28	MN	90	90	90	61.6	61.0	63.0	91	93	93	13	8	8	92	92	100	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	2
29	SSK	80	90	90	72.3	72.0	73.0	67	91	100	21	3	3	67	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	1	4	3	0	0	0	0	0	0	2	1	0	1	1	1	3	2	1	1	0	0	2	1	0	0
30	SD	90	90	90	54.8	54.8	56.0	82	96	96	21	8	0	50	83	100	0	0	0	0	0	0	0	0	0	0	0	0	4	3	2	3	2	1	3	2	1	0	0	0	2	1	0	3	2	1	0	0	0	3	2	1	2	1	0	4	3	2	0
31	AV	90	90	90	60.7	59.6	60.0	80	71	82	33	28	18	100	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	1	2	1	0	0	0	0	3	2	1	0	0	0	0	0	0	1	1	1	0	0	0	2	1	1	0
32	SW	90	90	90	71.3	71.0	73.0	91	93	100	5	0	0	67	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	2	1	0	2	1	0	0	0	0	3	2	1	2	1	0	3	2	1	0
33	UC	90	90	90	50.5	50.3	52.0	96	96	100	3	8	0	67	67	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	1	2	1	1	0	0	0	3	2	1	3	2	1	0	0	0	2	1	0	2	1	0	3	2	1	0
34	SK	80	80	80	60.8	60.2	63.3	87	98	100	5	3	0	100	100	100	0	0	0	0	0	0	0	0	0	0	0	0	3	2	1	3	2	1	2	1	0	0	0	0	2	1	0	3	2	1	0	0	0	3	2	1	1	0	0	3	2	1	0
35	SS	80	90	90	43.8	44.4	45.6	60	80	91	33	28	3	50	75	83	0	0	0	0	0	0	3	2	1	3	2	1	3	2	1	3	2	1	2	1	1	0	0	0	3	2	1	3	2	1	0	0	0	3	2	1	2	1	0	3	2	1	0

ti		Hb		WBC		Platelets		S.		SGOT		SGPT		S. Alkaline		S.		BUN		CRP		CA125		sto	
b	c	a	c	a	c	a	c	a	c	a	c	a	c	a	c	a	c	a	c	a	c	a	c	a	b
0	0	9.8	10.2	5200	5400	210000	234000	0.5	0.8	32	26	17	13	120	95	1.4	1.2	32	30	1.66	1.42	40.8	28.6	0	0
0	0	11	11.9	5830	5600	283000	245000	0.57	0.8	12.43	11.05	33.15	32	66.83	48	1.08	1	15.66	13	1.33	1.2	7.9	5.7	0	0
0	0	13.4	12.5	8000	7400	160000	177000	1.03	0.8	27.88	24	15.89	13	53.97	49	1.2	1.2	32	27	4.89	3.2	4.3	3.5	0	0
2	1	10.7	12.7	2800	4500	203000	221000	0.82	1.4	56	62	45	40	237	137	0.8	0.9	42	35	16.6	11.9	22.2	13.9	0	0
0	0	12.5	12.7	6000	6500	209000	228000	0.9	0.5	22	21.96	20	13.58	66	44	0.81	1.02	19	16.79	0.76	4.55	15.7	11.4	0	0
0	0	10.8	11.4	10800	6800	290000	271000	0.62	0.8	20	12.94	9.74	8.9	69.35	64	1.35	1.2	19.18	15	24.71	16.48	8.9	4.3	0	0
0	0	13.2	10.5	4000	4800	268000	136000	0.8	0.6	22	27	30	30	58.6	48.2	1	1	34	29	15.7	13.3	5	8	1	0
0	0	11.5	10	5200	4500	157000	152000	0.8	0.8	22	19	25	22	35	23	1.2	1	32	25	13	11	3.9	1.2	0	0
0	0	13.8	12.7	2380	7810	152000	235000	0.05	0.79	17.4	15.1	10.4	14.3	96.9	54.14	0.92	0.89	29.7	30.1	1.67	0.97	4.66	4.3	0	0
0	0	13.5	9.8	10700	15000	475000	690000	0.8	1.2	20.18	24.03	24.39	28.9	181.94	256	0.95	1.4	12.24	11.73	6.44	8.1	5.2	5.1	1	0
0	0	12.9	13.3	9100	8700	299000	288000	0.59	0.66	36.98	28.12	30	25.56	55.08	81.3	0.88	0.87	25.23	25.36	1.49	1.41	7.43	6.35	0	0
0	0	11	12.5	6900	7400	169000	177000	1.03	1	27.88	25	15.89	13	53.97	46	1.2	1	25.69	22	0.41	0.66	30.97	4.3	0	0
2	1	10.3	12.4	5600	3500	134000	247000	1.2	0.6	27	24.33	17	17.22	56.03	44.19	0.8	0.9	13	11	24.18	19.78	18.3	9.48	0	0
0	0	12	12.5	6200	6400	293000	290000	0.65	0.68	28	26	28	21	0.97	140	0.72	0.79	16.6	15	4.6	3.4	6.4	6.7	0	0
0	0	12.1	11.9	8500	8500	225000	198000	1	0.7	24	21	28	16	246	250	0.6	0.8	18	12	0	0	7.3	5.92	1	0
0	0	13.2	13	8200	13300	260000	309000	0.52	0.56	28.35	30.99	17.81	34.84	53.71	50	0.96	0.88	18.29	19.42	1.49	0.38	7.43	5.6	0	0
0	0	9.6	10.2	3500	3400	198000	70000	0.97	0.48	33.13	14.94	31	15.58	176	66.75	0.86	1.42	22	13.98	2.31	1.15	7.6	5.2	0	0
0	0	12.7	12.6	6900	8600	222000	236000	0.8	0.46	19.09	26.12	14.22	15.81	45.8	65.38	0.83	0.91	17.39	15.88	4.67	5.05	0	0	0	0
0	0	8.5	9.3	13300	5800	249000	264000	0.4	0.7	22	20	21	17	74	68	0.9	0.8	12	12	6.99	5.2	0	0	0	0
0	0	7.2	9.4	4900	8900	89000	457000	0.4	0.5	58	55	85	77	197	156	1	0.8	16	17	4.6	2.1	9.3	8	1	0
0	0	10.9	9.5	6600	6350	395000	265000	0.22	0.3	39	12	32	22	69	60	0.81	0.79	19	13	6.34	4.22	2836	39.9	0	0
0	0	11.2	10.5	5800	6500	278000	125000	0.58	0.41	23.32	80.75	22.68	54.31	64.51	210	0.92	0.71	14.72	31.45	5.44	6.92	36.3	15.9	1	0
0	0	11.8	11.6	5100	6000	214000	307000	0.58	0.44	24.92	20.29	17.57	10.79	82.97	53.47	0.79	0.61	19.15	21.54	6.84	6.04	0	0	0	0
0	0	11.5	10.9	4600	4200	256000	235000	0.65	0.6	13.42	27	15.82	18	81.51	158	1.34	1.1	32.34	34	1.42	0	25.2	0	0	0
0	0	13.5	13.4	8300	8100	324000	314000	0.52	0.48	23.32	21.65	11.9	10.86	62.9	72	1.01	0.87	22.69	26.34	1.75	1.13	0	0	0	0
0	0	13.2	11.7	7500	7000	248000	236000	0.5	0.51	27	32.03	17.33	21.65	70.22	63.52	0.82	0.88	19.62	23.7	3.71	1.3	6.78	6.85	0	0
0	0	12	13.3	5200	5000	257000	303000	0.56	0.49	24.68	30.19	18.93	26.44	60.42	77.41	1.07	1.09	16.64	16.04	4.04	4.67	0	0	0	0
1	0	13.6	13	7100	6500	274000	234000	0.48	0.5	19.73	15	19.65	13	104	96	0.81	1	20.34	17.4	4.62	2.4	0	0	0	0
0	0	10.9	12.5	5900	6830	142000	150000	0.42	0.79	52.8	50	32.31	30	66.37	106	1.07	0.6	17.52	9.81	5.71	3.98	0	0	1	0
0	0	12.1	12	5300	4500	203000	177000	0.43	0.5	18.77	18.61	20.05	15.73	59.55	49	1.09	0.99	31.8	29.59	4.25	3.76	75.11	89.95	0	0
0		14.5	14	7500	6100	272000	269000	0.5	0.4	34.34	30	30.03	28	76.05	57	1.21	1	21.25	19.2	1.61	0.4	22.24	0	0	0
0	0	11.8	12.03	5800	4700	316000	280000	0.26	0.6	15.2	12	15.1	11.4	99	75	1.03	1	17.06	14	3.6	1.9	0	0	0	0
0	0	14.9	15	9520	10000	358000	267000	1.4	0.5	24	25	28	31	137.2	321	0.61	0.8	17.9	8.1	1.6	14.8	22.4	18	0	0
0	0	10.8	10.8	5100	6500	300000	125000	0.45	0.13	16.77	80.75	14.38	54.31	63.27	210	0.88	0.71	13	31.45	4.77	6.92	31.89	26.35	0	0
0	0	11.8	12.1	4700	5700	199000	177000	0.8	0.73	26.84	23.24	15.42	12.38	72.45	90.19	0.95	0.88	17.94	17.1	3.9	5.71	0	0	0	0

WRITTEN INFORMED CONCENT FORM
CERTIFICATE BY INVESTIGATOR

I certify that I have disclosed all details about the study in the terms easily understood by the patient.

Date: Signature of the research scholor :
Name:

CONSENT BY SUBJECT

I have been informed to my satisfaction, by attending physician, the purpose of the clinical trial and the nature of drug treatment and follow up,including the laboratory investigations to be performed to monitor and safeguard my body function.

I am also aware of my right to opt out of the trial at any time during the course of trial without having to give the reason for doing so.

I, exercising my free power of choice, hereby give my consent to be included as a subject in clinical trial assessment of the effect of basti upakram/Ayurvedic treatment in the treatment of my disease.

Date: Name of the Subject:
Signature or thumb impression:
Date: Name of witness:
Signature or thumb impression
Relationship:

रुग्णेचे संमतीपत्र

मी खाली सही करणार .....
वय वर्षे निवास .....असे लिहू देते की ,.
या संशोधनासाठी आवश्यक अशा शारीरिक तपासण्या व प्रयोगशाळेतील चाचण्या माझ्यावर करून घेण्यासाठी मी परवानगी देत आहे.

माझ्यावर केले जाणारे उपचार मला पूर्णपणे माहित असून ते मला उपकारक आहेत याची मला पूर्ण कल्पना आहे.

संशोधानातील रुग्णा या नात्याने मी उपचारांसाठी पूर्ण सहकार्य करेन.संपूर्ण संशोधन शेवटास जाईपर्यंत मी सहकार्य करेन.तरीही या प्रयोगातून मी केव्हाही माघार घेऊ शकते,याची पूर्ण मुभा मला माझ्या वैद्यांनी दिलेली आहे.

हे संमतीपत्र मी माझ्या सावध अवस्थेमध्ये, स्वखुशीने देत आहे.

सही/अंगठा(रुग्णा)

साक्षीदार सही/अंगठा

CASE REPORT FORM - HISTORY

Centre:……☐

Code No.(of Clinical trial):…….☐

Sr. No .of the subject:…….

Subject:…….

Gender: Male ☐ Female ☐

Date of birth: ☐☐ ☐☐ ☐☐☐☐

Address:……

Educational Status:…….

Illiterate ☐ Read and write ☐ Primary ☐

Middle school ☐ High school ☐ College ☐

Other (specify) ☐ INA ☐

Occupation:

Desk work ☐ Field work ☐

Field work with physical labour ☐

Field work with intellectual ☐

Constant standing or sitting for long hour ☐

Indicate nature of work…….

Total family members:…….

PERSONAL HISTORY

Diet: Veg ☐ Nonveg ☐

Bowel habits Regular ☐ Irregular ☐

PAST MENSTRUAL HISTORY

Age at Menarch(in years) ☐☐
Average length of menstrual cycle ☐☐
Duration of bleeding period in days ☐☐
Amount of bleeding per day(in pads) ☐☐
History of excessive bleeding in the past ☐☐
Associated symptoms if any…….

OBSTETRIC HISTORY

Marital status:

Unmarried ☐ Married ☐
Widow ☐ Divorce/Separated ☐

If married ,Age at marriage(in years) ☐☐
Total no .of pregnancies ☐☐
H/O difficult labour
No .of living children
Total no. of Abortion/still birth,if any
Age of last child(in years)
Current Contraceptive use if any

None ☐ IUD ☐ Condom ☐ Vasectomy ☐

Natural ☐ Pills ☐ Female sterlisation ☐

PRAKRUTI

VATAJ ☐ PITTAJ ☐ KAPHAJ ☐

VAT-KAPHAJ ☐ VAAT-PITTAJ ☐ PITTA-KAPHAJ ☐

SANNIPATAJ ☐

PHYSICAL EXAMINATION

Pulse

Blood pressure

Respiration rate

Lymphadenopathy ABSENT ☐ PRESENT ☐

IF PRESENT, specify the area……

Local ☐ General ☐

Area……..

SYSTEMIC EXAMINATION

Normal (0) Abnormal(1)

CVS
If abnormal,details……

Respiratory system
If abnormal,details……

CNS
If abnormal, details……..

Digestive system
If abnormal ,details……

Urogenitle system
If abnormal, details……

CANCER REALATED HISTORY

1) SYMPTOMS ON ONSET OF DISEASE

2) INVESTIGATIONS CARRIED OUT

3) CONVENTIONAL TREAMENT TAKEN

ASSESSMENT

SR NO.	ASSESSMENT CRITERIA	TIME POINT a (0 DAY)	TIME POINT b (7^{TH} DAY)	TIME POINT c (90^{TH} DAY)
1	QLQ C30			
a	FUNCTIONAL SCORE			
b	GLOBAL SCORE			
c	SYMPTOM SCORE			
2	KARNOFSKY SCORE			
3	CANCER RELATED SYMPTOMS	GRADING		
	p/v discharge			
	p/v bleeding			
	Vaginal burning			
	Vaginal itching			
	Abdominal pain			
	Backache			
	Fatigue			
	Weight loss			
4	SYMPTOMS OF WORM INFESTATION FROM AYURVEDIC PERSPECTIVE (*Sanjat krimi lakshanani)*			
	Jwar (Fever)			
	Vivarnata (discolouration			
	Shool (pain)			
	Hrudroga (cardiac disorder)			
	Sadan (bodyache)			
	Bhramah (Vertigo)			

	Bhaktadwesh (Anorexia			
	Atisaar (Diarrhoea)			
5	**CANCER STATUS (P = PROGRESSION / R = REGRESSION / M = MAINTAINED)**			

WRITTEN CONSENT

I ,here by, have been informed by the doctor about study conduct for the research purpose ,. I am also well aware about the therapeutic procedures that are going to be administered on me during research work time I am also well aware about the clinical examinations ,investigations carried out and questionnaires to be solved by me during research work time . I exercised my free power of choice here my consent to be included as a subject in the clinical trial assessment of effects of basti upakrama/Ayurvedic treatment as a treatment of my disease..

Signature of the subject

Name of the subject

Signature of the witness

Name of the witness

Relation

WRITTEN INFORMED CONCENT FORM
CERTIFICATE BY INVESTIGATOR

I certify that I have disclosed all details about the study in the terms easily understood by the patient.

Date:

Signature of the research scholor:
Name:

CONSENT BY SUBJECT

I have been informed to my satisfaction, by attending physician,the purpose of the clinical trial and the nature of drug treatment and follow up ,including the laboratory investigations to be performed to monitor and safeguard my body function.

I am also aware of my right to opt out of the trial at any time during the course of trial without having to give the reason for doing so.

I, exercising my free power of choice, hereby give my consent to be included as a subject in clinical trial assessment of the effect of bastiupakram/Ayurvedic treatment in the treatment of my disease.

Date:

Name of the Subject:

Signature or thumb impression:

Date:

Name of witness:
Signature or thumb impression
Relationship:

रुग्णेचे संमतीपत्र

मी खाली सही करणार .....
वय वर्षे निवास .....असे लिहू देते की ,.
या संशोधनासाठी आवश्यक अशा शारीरिक तपासण्या व प्रयोगशाळेतील चाचण्या माझ्यावर करून घेण्यासाठी मी परवानगी देत आहे.

माझ्यावर केले जाणारे उपचार मला पूर्णपणे माहित असून ते मला उपकारक आहेत याची मला पूर्ण कल्पना आहे.

संशोधानातील रुग्णा या नात्याने मी उपचारांसाठी पूर्ण सहकार्य करेन.संपूर्णसंशोधन शेवटासजाईपर्यंत मी सहकार्य करेन.तरीही या प्रयोगातून मी केव्हाही माघार घेऊ शकते,याचीपूर्णमुभा मला माझ्या वैद्यांनी दिलेलीआहे.

हे संमतीपत्र मी माझ्या सावध अवस्थेमध्ये,स्वखुशीने देत आहे.

सही/अंगठा(रुग्णा)

साक्षीदार सही/अंगठा

CASE REPORT FORM -HISTORY

Centre:……. ☐

Code No.(of Clinical trial):……. ☐

Sr.No.of the subject:…….

Subject:…….

Gender: Male ☐ Female ☐

Date of birth: ☐☐ ☐☐ ☐☐☐☐

Address:……

Educational Status:…….

Illiterate ☐ Read and write ☐ Primary ☐

Middle school ☐ High school ☐ College ☐

Other (specify) ☐ INA ☐

Occupation:

Desk work ☐ Field work ☐

Field work with physical labour ☐

Field work with intellectual ☐

Constant standing or sitting for long hour ☐

Indicate nature of work…….

Total family members:…….

PERSONAL HISTORY

Diet: Veg ☐ Nonveg ☐

Bowel habits Regular ☐ Irregular ☐

PAST MENSTRUAL HISTORY

Age at Menarch(in years) ☐☐
Average length of menstrual cycle ☐☐
Duration of bleeding period in days ☐☐
Amount of bleeding per day(in pads) ☐☐
History of excessive bleeding in the past ☐☐
Associated symptoms if any…….

OBSTETRIC HISTORY

Marital status:

Unmarried ☐ Married ☐
Widow ☐ Divorce/Separated ☐

If married ,Age at marriage(in years) ☐☐
Total no .of pregnancies ☐☐
H/O difficult labour
No .of living children
Total no. of Abortion/still birth,if any
Age of last child(in years)
Current Contraceptive use if any

None ☐ IUD ☐ Condom ☐ Vasectomy ☐

Natural ☐ Pills ☐ Female sterlisation ☐

PRAKRUTI

VATAJ ☐ PITTAJ ☐ KAPHAJ ☐

VAT-KAPHAJ ☐ VAAT-PITTAJ ☐ PITTA-KAPHAJ ☐

SANNIPATAJ ☐

PHYSICAL EXAMINATION

Pulse

Blood pressure

Respiration rate

Lymphadenopathy ABSENT ☐ PRESENT ☐

IF PRESENT, specify the area……

Local ☐ General ☐

Area……..

SYSTEMIC EXAMINATION

Normal (0) Abnormal(1)

CVS
If abnormal,details……

Respiratory system
If abnormal,details……

CNS
If abnormal, details……..

Digestive system
If abnormal,details……

Urogenitle system
If abnormal,details……

CANCER REALATED HISTORY

1) SYMPTOMS ON ONSET OF DISEASE

2) INVESTIGATIONS CARRIED OUT

3) CONVENTIONAL TREAMENT TAKEN

ASSESSMENT

SR NO.	ASSESSMENT CRITERIA	TIME POINT a (0 DAY)	TIME POINT b (7^{TH} DAY)	TIME POINT c (30^{TH} DAY)
1	QLQ C30			
a	FUNCTIONAL SCORE			
b	GLOBAL SCORE			
c	SYMPTOM SCORE			
2	KARNOFSKY SCORE			
3	CANCER RELATED SYMPTOMS	GRADING		
	p/v discharge			
	p/v bleeding			
	Vaginal burning			
	Vaginal itching			
	Abdominal pain			
	Backache			
	Fatigue			
	Weight loss			
4	SYMPTOMS OF WORM INFESTATION FROM AYURVEDIC PERSPECTIVE (*Sanjatkrimilakshanani)*			
	Jwar (Fever)			
	Vivarnata (discolouration			
	Shool (pain)			
	Hrudroga(cardiac disorder)			
	Sadan(bodyache)			
	Bhramah(Vertigo)			
	Bhaktadwesh(Anorexia			
	Atisaar(Diarrhoea)			
5	CANCER STATUS (P = PROGRESSION / R = REGRESSION / M = MAINTAINED)			

Sr.No.	Name of patient	Age at diagnosis	Age at registration	Age at Panchakarma	Socioeconomic status	Diagnosis	Disease Index	Stage	GradeI	Disease status (P / R / M)		
										a	b	c
1	RB	62	64	64	M	CA ENDOMETRIUM	182	IIA	II	M	M	M
2	BR	36	36	36	H	CA OVARY	183	IIIB	III	M	M	M
3	SS	49	49	49	H	CA OVARY	183	IB	I	M	M	M
4	SB	60	60	60	M	CA CERVIX	180	II	II	M	M	M
5	KV	56	56	56	M	CA ENDOMETRIUM	182	IIIC1	II	M	M	M
6	PU	53	53	53	M	CA ENDOMETRIUM	182	IVB	III	M	M	M
7	NR	32	38	38	M	CA OVARY	183	IIIB	III	M	M	M
8	AP	34	35	35	M	CA OVARY	183	III	III	M	M	M
9	SJ	60	60	60	M	CA CERVIX	180	IIIA	III	M	M	M
10	SB	73	75	75	M	CA OVARY	183	IIIA	III	M	M	M
11	MV	44	44	44	M	CA OVARY	183	IIIB	III	M	M	M
12	PS	62	63	63	M	CA CERVIX	180	IIIC	III	M	M	M
13	SS	48	49	49	M	CA CERVIX	180	IVA	III	M	M	M
14	BB	63	63	63	M	CA OVARY	183	IC1	III	M	M	M
15	RR	60	60	60	M	CA OVARY	183	IB	III	M	M	M
16	CA	49	49	49	H	CA OVARY	183	IIIB	III	M	M	M
17	SS	60	64	64	H	CA ENDOMETRIUM	182	IVB	II	M	M	M
18	JS	56	57	57	L	CA CERVIX	180	II	II	M	M	M
19	HS	79	79	79	M	CA VAGINAL VAULT	184	III	III	M	M	M
20	SS	34	34	34	M	CA OVARY	183	IA	II	M	M	M
21	SJ	57	57	57	M	CA OVARY	183	IIA	II	M	M	M
22	VU	52	52	52	M	CA CERVIX	180	IB	II	M	M	M
23	AB	46	46	46	M	Uterine leiomyosarcoma	182	IA	II	M	M	M
24	MT	42	52	52	M	CA CERVIX	180	IIIB	III	M	M	M
25	LK	49	50	50	L	CA CERVIX	180	II	II	M	M	M
26	SD	51	51	51	M	CA ENDOMETRIUM	182	III	III	M	M	M
27	KV	76	76	76	M	CA CERVIX	180	IIA	III	M	M	M
28	KK	60	64	64	M	CA ENDOMETRIUM	182	IIA	II	M	M	M
29	DD	56	56	56	M	CA ENDOMETRIUM	182	IB	II	M	M	M
30	SV	61	62	62	M	CA OVARY	183	IVB	III	M	M	M
31	SJ	74	74	74	M	CA OVARY	183	IA	I	M	M	M
32	MS	48	48	48	M	CA VAGINAL VAULT	184	I	I	M	M	M
33	SS	51	56	56	M	CA OVARY	183	IIIA	III	M	M	M
34	RK	48	48	48	L	CA CERVIX	180	IIIB	II	M	M	M
35	PM	48	48	48	M	CA CERVIX	180	I	II	M	M	M

Sr.	Name of	Karnofsk			Weight			Functional			Sympto			Global		
		a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
1	RB	90	90	80	42	42.6	43.8	87	84	87	49	26	18	67	75	83
2	BR	90	90	90	53.9	54.6	51.6	84	60	78	15	46	33	67	58	67
3	SS	90	90	90	71.8	72	73	51	67	93	46	31	5	58	67	83
4	SB	80	80	90	55	55.9	57.5	60	73	91	26	13	15	67	67	75
5	KV	90	90	90	54.3	54.1	56	44	76	100	20	28	5	33	50	83
6	PU	90	80	90	74.8	74	75	36	40	76	20	72	31	33	50	83
7	NR	90	90	90	51.3	52	58	47	58	78	20	64	18	50	58	67
8	AP	90	90	90	56.6	56	57	51	84	82	20	18	18	42	58	67
9	SJ	90	80	80	64.8	64	64.9	73	78	89	20	13	18	67	75	58
10	SB	90	90	70	54.3	54	56	38	44	64	67	41	36	33	58	67
11	MV	90	80	90	63	63	61.9	44	73	91	62	18	13	50	67	67
12	PS	90	80	80	62.5	61	62.4	51	69	82	49	31	21	58	58	75
13	SS	90	90	90	52.9	54.3	54.9	47	71	93	56	23	15	67	50	83
14	BB	80	80	80	49.5	49.1	47	73	71	84	23	10	5	67	75	92
15	RR	80	80	80	54.9	53.7	55	88	64	71	51	31	23	33	42	50
16	CA	80	90	80	87.2	88	89.2	88	82	100	20	8	10	100	100	100
17	SS	80	90	90	68.6	66.5	66.5	88	73	73	20	15	10	50	67	92
18	JS	80	80	90	43.7	43.9	42.7	88	56	69	20	41	33	17	42	67
19	HS	80	80	90	54.7	52.4	54.6	88	53	71	20	23	15	67	83	92
20	SS	90	90	90	52.4	54.3	54.3	88	89	100	20	13	18	50	75	83
21	SJ	80	90	90	55.74	55	55.2	88	100	100	10	0	0	100	100	100
22	VU	80	80	90	58.5	58	58.9	88	87	102	20	15	3	67	75	92
23	AB	90	90	90	58.94	57.3	65	88	58	71	20	41	23	33	42	58
24	MT	90	90	90	58	58.6	60	88	73	87	20	23	10	58	67	67
25	LK	80	90	90	54.9	50.8	50.2	88	76	89	10	26	13	75	83	92
26	SD	80	90	90	43.24	45	45.6	88	82	89	20	23	13	67	83	83
27	KV	80	80	90	59.9	58	57.6	88	102	102	10	3	3	100	100	100
28	KK	80	80	80	75.8	76.7	70.4	38	56	78	30	38	31	33	67	67
29	DD	90	90	90	47.6	46.7	48	88	64	78	30	38	28	42	42	75
30	SV	80	80	80	59.4	58	57.4	88	89	91	30	15	13	42	58	83
31	SJ	70	70	80	47.2	46.6	47.4	88	91	78	10	26	10	75	67	83
32	MS	70	90	90	54	54	56	88	93	98	10	21	8	100	92	100
33	SS	70	80	90	51.3	51.9	53	88	93	98	10	8	5	75	83	92
34	RK	70	90	90	60.4	59.7	59.7	88	56	71	50	51	36	33	58	50
35	PM	70	90	90	67.6	66.6	66.5	88	87	100	10	10	5	67	75	100

Sr.	Name of	p/v			p/v			Vagin			Vagin			Abdo			Backa			Fatig			Jwar			Vivar			Shu			Hrud			Sadan			Bhra			Bhakt			Atisa			Hb	
		a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	c
1	RB	0	0	0	0	0	0	0	0	0	0	0	0	2	3	2	2	3	2	0	0	0	1	0	0	2	3	2	1	0	0	1	0	0	2	3	2	1	1	0	2	3	2	1	1	0	12.10	10.80
2	BR	0	0	0	0	0	0	0	0	0	1	2	1	2	2	1	2	3	2	3	2	1	0	0	0	2	2	1	4	3	2	0	0	0	2	3	2	2	1	1	2	2	1	1	0	0	8.60	7.70
3	SS	1	2	1	0	0	0	2	3	2	2	1	0	2	3	2	2	2	1	3	2	1	1	0	0	2	1	0	4	3	2	0	0	0	2	2	1	0	0	0	2	2	1	1	0	0	11.00	10.80
4	SB	0	0	0	0	0	0	0	0	0	1	1	0	2	3	2	2	3	2	2	3	2	1	0	0	2	1	1	4	3	2	0	0	0	2	2	1	3	2	1	2	2	1	2	2	1	11.8	9.8
5	KV	0	0	0	0	0	0	0	0	0	0	0	0	2	3	2	2	3	2	4	3	2	0	0	0	2	1	0	3	2	1	0	0	0	2	2	2	1	0	0	2	3	2	0	0	0	10.10	11.30
6	PU	0	0	0	0	0	0	0	0	0	0	0	0	2	3	2	2	2	1	3	2	1	0	0	0	2	2	1	4	3	2	0	0	0	2	2	1	3	2	1	2	3	2	0	0	0	9.50	8.20
7	NR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	2	4	3	2	0	0	0	2	3	2	4	3	2	0	0	0	2	2	1	2	1	1	2	3	3	1	2	1	11.40	12.30
8	AP	1	2	1	0	2	1	0	1	1	1	1	0	2	1	0	2	2	1	3	2	1	0	0	0	2	2	1	3	2	1	0	0	0	2	2	1	2	1	0	2	2	1	0	0	0	11.30	10.50
9	SJ	0	0	0	0	0	0	1	2	1	1	2	1	2	2	1	2	2	1	3	2	1	1	0	0	2	1	0	3	2	1	0	0	0	2	2	1	1	1	0	2	3	2	0	0	0	13.20	13.80
10	SB	0	0	0	0	0	0	0	0	0	1	2	1	2	3	2	2	3	2	4	3	2	0	0	0	2	3	2	4	3	2	0	0	0	2	3	2	3	2	1	2	3	2	0	0	0	8.50	8.90
11	MV	0	0	0	0	0	0	0	0	0	1	2	1	2	3	2	2	2	1	2	1	0	0	0	0	2	3	2	4	3	2	0	0	0	2	2	1	2	1	0	2	3	2	0	0	0	10.60	10.60
12	PS	2	2	1	0	1	0	1	1	0	2	1	0	2	2	1	2	2	1	3	2	1	0	0	0	2	2	1	3	2	1	0	0	0	3	2	1	2	1	0	2	2	1	0	0	0	13.20	11.60
13	SS	2	3	2	0	2	1	1	2	1	1	2	1	2	2	1	2	2	1	3	2	1	0	0	0	3	2	1	3	2	1	0	0	0	4	3	2	0	0	0	2	3	2	1	2	1	12.70	11.00
14	BB	1	1	0	0	0	0	1	1	0	1	1	0	2	2	1	2	2	1	4	3	2	1	0	0	1	2	1	4	3	2	0	0	0	4	3	2	0	0	0	2	2	1	0	0	0	10.6	11
15	RR	0	0	0	0	2	1	1	1	1	1	1	0	2	2	1	2	3	2	3	2	1	0	0	0	1	2	1	3	2	1	0	0	0	3	2	1	3	2	1	3	2	1	0	0	0	11.30	10.70
16	CA	0	0	0	0	0	0	0	0	0	0	0	0	2	3	2	2	3	2	3	2	1	0	0	0	1	2	1	4	3	2	0	0	0	4	3	2	0	0	0	4	3	2	0	0	0	12.10	12.70
17	SS	2	2	1	0	2	1	1	2	1	2	3	2	2	2	1	2	3	2	3	2	1	0	0	0	2	2	1	2	2	1	0	0	0	3	2	1	0	0	0	3	2	1	0	0	0	12.70	12.80
18	JS	2	2	1	0	2	1	1	2	1	2	3	2	2	3	2	2	3	2	3	2	1	1	0	0	2	2	1	4	3	2	0	0	0	3	2	1	0	0	0	3	2	1	0	0	0	10.50	11.20
19	HS	0	0	0	0	0	0	1	2	1	2	1	1	3	2	1	2	2	1	4	3	2	1	0	0	2	2	1	4	3	2	0	0	0	3	2	1	0	0	0	2	1	1	0	0	0	11.70	12.03
20	SS	1	1	1	4	3	2	1	2	2	2	1	1	3	3	2	1	2	1	4	3	2	0	0	0	2	2	1	4	3	2	0	0	0	3	2	1	2	1	1	4	3	2	0	0	0	12.07	12.50
21	SJ	1	1	1	0	0	0	0	0	0	2	1	0	2	1	0	1	1	0	0	0	0	0	0	0	2	1	0	3	2	1	0	0	0	3	2	1	0	0	0	3	2	1	1	1	0	11.20	11.50
22	VU	2	3	2	2	1	0	1	3	2	2	1	1	2	2	1	1	2	1	4	3	2	1	0	0	2	2	1	3	2	1	0	0	0	3	2	1	0	0	0	3	2	1	1	0	0	10.60	10.90
23	AB	0	0	0	0	0	0	3	2	1	3	2	1	2	3	2	4	3	2	3	2	1	0	0	0	2	3	2	4	3	2	0	0	0	4	3	2	3	2	1	4	3	2	0	0	0	7.60	13.30
24	MT	3	2	1	0	0	0	3	2	1	3	2	1	2	2	1	1	2	1	4	3	2	4	3	2	2	2	2	2	1	1	0	0	0	4	3	2	2	1	0	4	3	2	0	0	0	9.60	11.00
25	LK	4	3	2	0	0	0	4	3	2	4	3	2	2	3	2	1	3	2	4	3	2	2	1	0	2	2	1	4	3	2	0	0	0	4	3	2	0	0	0	4	3	2	0	0	0	8.70	10.20
26	SD	3	2	1	0	0	0	3	2	1	1	2	1	2	2	1	4	3	2	4	3	2	1	0	0	2	2	1	4	3	2	0	0	0	2	2	1	0		0	2	2	1	0	0	0	11.50	11.20
27	KV	2	1	1	0	0	0	0	0	0	1	1	1	3	1	1	2	1	1	0	0	0	0	0	0	2	1	1	3	2	1	0	0	0	2	2	1	0	0	0	2	2	1	1	1	0	12.50	10.50
28	KK	0	0	0	0	0	0	0	0	0	1	0	0	3	2	1	2	3	2	4	3	2	0	0	0	4	3	2	3	2	1	0	0	0	2	3	2	2	1	1	2	3	2	0	0	0	10.10	10.60
29	DD	3	2	1	4	3	2	3	2	1	1	1	0	3	2	1	2	3	2	4	3	2	0	0	0	3	2	1	4	3	2	0	0	0	2	2	1	2	1	0	1	3	2	0	0	0	12.70	12.90
30	SV	0	0	0	0	0	0	2	1	0	1	1	0	3	3	2	2	3	2	2	1	0	0	0	0	2	1	0	4	3	2	0	0	0	2	2	1	0	0	0	1	3	2	0	0	0	11.00	8.60
31	SJ	3	2	1	0	0	0	0	0	0	1	2	1	3	2	1	2	2	1	3	2	1	0	0	0	0	0	0	3	2	1	2	1	1	2	1	0	0	0	0	1	3	2	1	1	0	11.80	10.00
32	MS	3	2	1	3	2	1	3	2	1	0	0	0	3	3	2	2	3	2	4	3	2	0	0	0	2	2	1	4	3	2	0	0	0	2	3	2	0	0	0	1	3	2	1	3	3	12.10	11.90
33	SS	0	0	0	0	0	0	0	0	0	0	0	0	3	2	1	2	1	0	2	1	0	0	0	0	2	1	1	2	1	1	0	0	0	2	2	1	0	0	0	1	2	1	0	0	0	7.10	11.00
34	RK	4	3	2	3	2	1	4	3	2	2	2	1	3	3	2	2	3	2	4	3	2	4	3	2	2	1	1	0	0	0	3	2	1	2	3	2	0	0	0	1	3	2	0	0	0	9.30	9.50
35	PM	3	2	1	0	0	0	0	0	0	2	3	2	3	2	1	2	3	2	4	3	2	0	0	0	2	2	1	4	3	2	0	0	0	2	3	2	3	2	1	1	3	2	0	0	0	12.50	11.00

WBC		Platelets		S.		SGOT		SGPT		S. Alkaline		S.		BUN		CRP		CA125		stoo	
a	c	a	c	a	c	a	c	a	c	a	c	a	c	a	c	a	c	a	c	a	b
11900.00	114000.00	431000.00	284000.00	0.51	0.39	15.00	13.00	7.00	15.00	46.00	46.00	0.20	0.58	14.00	17.00	45.12	40.23	6.30	9.60	0	0
3910.00	4400.00	350000.00	99000.00	0.30	0.40	17.00	15.00	18.45	13.40	42.00	37.00	0.94	1.00	13.00	14.00	9.22	8.60	86.90	77.00	0	0
7530.00	6000.00	217000.00	210000.00	0.30	0.60	22.00	21.00	24.00	21.00	56.40	46.90	1,0	1,1	17.00	14.00	9.33	8.20	136.00	102.00	0	0
7220	6000	221000	333000	0.7	0.4	32	28	44	32	47	46	0.5	0.9	28	22	11.7	9.2	127	79.16	0	0
5590.00	4400.00	240000.00	157000.00	1.40	0.90	15.00	11.00	24.00	18.00	65.00	34.00	0.60	0.80	42.00	38.00	215.10	210.00	75.00	65.00	0	0
8500.00	4600.00	252000.00	290000.00	0.40	0.60	27.00	22.00	15.00	11.00	109.00	168.00	0.80	0.60	32.00	44.00	78.60	6.70	296.90	44.00	0	0
5100.00	6000.00	189000.00	210000.00	0.40	0.60	24.00	18.00	24.00	21.00	106.00	99.13	0.66	0.90	71.00	59.00	54.30	34.78	100.20	70.30	0	0
10900.00	8900.00	520000.00	350000.00	0.80	0.20	17.00	14.00	19.00	21.00	75.00	68.00	0.80	1.20	21.00	17.00	17.23	11.90	19.80	12.80	0	0
3700.00	4500.00	265000.00	235000.00	0.40	0.60	22.00	18.00	27.00	16.00	40.00	32.00	0.89	0.90	26.12	18.00	6.30	2.40	22.17	16.88	0	0
9680.00	7400.00	205000.00	310000.00	4.67	6.48	815.00	725.00	824.00	728.00	210.00	140.70	0.70	0.82	27.80	21.77	7.20	9.74	47.66	34.11	0	0
8400.00	10100.00	316000.00	243000.00	1.20	0.90	15.00	17.00	23.00	19.00	104.00	93.00	0.90	1.10	18.00	15.00	54.00	57.10	6.44	4.22	0	0
7200.00	6600.00	189000.00	126000.00	0.90	0.20	21.00	17.00	22.00	21.00	35.00	27.00	0.89	0.70	29.00	24.12	67.12	54.32	7.88	9.10	0	0
11300.00	9000.00	276000.00	235000.00	0.38	0.20	12.00	15.00	15.00	13.00	273.00	180.40	1.74	0.90	13.00	9.40	10.33	9.66	24.00	19.30	1	1
6100	5300	592000	345000	0.61	0.4	20.29	22	9.82	7.1	106.8	90.12	0.7	0.9	13	11	78.92	52.1	600	380	1	0
7650.00	6000.00	467000.00	345000.00	0.32	0.40	18.60	17.00	15.80	13.50	98.00	81.30	0.93	0.89	27.00	14.00	4.29	4.00	7.44	6.91	0	0
5790.00	5180.00	180000.00	234000.00	0.40	0.60	20.00	18.00	16.00	14.00	87.00	76.00	1.40	0.90	22.00	18.00	56.00	70.00	15.40	9.12	0	0
4830.00	6650.00	419000.00	345000.00	1.20	0.80	17.00	15.00	24.00	22.00	110.00	94.00	0.60	0.80	13.00	13.00	89.00	76.00	12.90	9.10	0	0
7800.00	6500.00	157000.00	194000.00	0.60	0.80	22.00	24.00	17.00	14.00	126.00	102.00	1.20	0.80	32.00	28.00	78.40	64,30	42.12	34.10	0	0
6700.00	7800.00	234000.00	230000.00	0.80	0.90	27.00	24.00	17.00	15.00	103.00	99.00	1.40	1.20	47.00	38.12	55.13	48.12	33.12	20.13	1	0
4600.00	5400.00	231000.00	210000.00	0.80	1.20	17.00	14.00	25.00	23.00	76.00	69.00	1.40	0.90	34.00	28.00	11.70	13.00	87.13	67.22	0	0
6300.00	7500.00	175000.00	178000.00	0.80	0.82	15.00	17.00	23.00	27.00	75.00	84.00	0.63	0.90	22.00	16.00	24.48	21.45	603.20	186.34	0	0
4500.00	4600.00	180000.00	254000.00	0.60	0.40	28.00	22.00	17.00	14.00	102.00	88.00	0.90	0.40	26.00	24.00	12.56	10.12	88.16	78.22	0	0
10600.00	10300.00	160000.00	481000.00	1.68	1.20	16.00	14.00	12.00	12.00	85.00	88.00	0.67	0.43	16.00	22.00	14.80	11.24	76.40	69.44	1	1
9700.00	8500.00	290000.00	234000.00	1.20	0.80	14.00	12.00	17.00	15.00	87.00	75.00	0.80	0.60	19.00	15.00	23.00	16.00	86.15	54.22	0	0
6500.00	10600.00	471000.00	567000.00	0.54	0.50	15.58	21.00	10.54	12.00	112.90	132.00	1.32	1.50	17.00	15.00	22.00	22.00	67.12	54.20	0	0
6330.00	7800.00	280000.00	254000.00	0.70	0.80	15.00	15.00	13.00	14.00	134.00	112.00	1.20	0.80	14.00	14.00	28.00	26.00	66.12	46.13	0	0
7600.00	10100.00	193000.00	183000.00	0,8	0.90	14.00	11.00	17.00	15.00	126.00	86.00	0.70	0.80	13.00	19.00	33.00	27.80	108.00	86.12	1	0
4300.00	4200.00	114000.00	113000.00	0.40	0.80	12.00	15.00	24.00	21.00	168.00	126.00	1.00	0.59	17.00	13.00	6.77	4.60	34.70	20.20	0	0
7390.00	6470.00	322000.00	258800.00	0.30	0.50	16.00	14.00	13.00	15.00	75.00	68.00	0.60	1.20	7.00	9.30	1.00	1.20	67.11	77.11	0	0
7150.00	5490.00	376000.00	389000.00	0.40	0.22	24.00	22.00	15.07	12.02	66.00	53.00	0.88	0.83	13.00	11.00	45.22	37.33	8.20	8.40	0	0
7060.00	8500.00	266000.00	234000.00	0.40	0.60	17.00	14.00	27.00	22.00	43.00	40.00	0.57	0.60	42.00	34.00	12.80	0.90	24.12	19.80	0	0
5000.00	5600.00	320000.00	340000.00	1.20	0.90	18.00	14.00	24.00	22.00	87.00	76.00	1.20	0.70	13.00	9.00	40.17	30.20	37.00	26.00	0	0
39600.00	3500.00	967000.00	250000.00	0.90	0.46	22.00	18.00	17.00	14.00	55.00	46.00	1.34	1.17	32.00	28.00	23.60	18.20	1766.00	922.80	0	0
10200.00	6000.00	366000.00	222000.00	0.89	1.20	16.00	18.00	13.00	11.00	169.00	153.00	4.96	2.48	101.60	56.00	18.12	22.23	15.22	13.80	0	0
5700.00	4500.00	215000.00	234000.00	0.46	0.30	26.00	22.00	27.00	24.00	214.00	130.00	0.90	0.80	13.00	11.00	8.71	6.11	88.00	66.13	0	0