

**TO EVALUATE THE ROLE OF A  
PARA-SURGICAL MEASURE FOR THE  
MANAGEMENT OF  
FISSURE IN ANO vis-à-vis PARIKARTIKA**

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## **CERTIFICATE OF THE SUPERVISOR**

It is certified that work entitled **To Evaluate the Role of A Minimal Invasive Para-surgical Measure for the management of Fissure in ano** *vis- a- vis Parikartika* is an original research work done by **Dr. Mayur Amar Pawaskar** under my supervision for the degree of Doctor of Philosophy in **Shalyatantra** subject to be awarded by Tilak Maharashtra Vidyapeeth, Pune. To best of my knowledge this thesis

- embodies the work of candidate himself
- has duly been completed
- fulfils the requirement of the ordinance related to Ph.D. degree of the TMV
- Up to the standard in respect of both content and language for being referred to the examiner.

**Signature of the Supervisor**  
**(Dr. G. S.Lavekar)**

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*Mayur Pawaskar*

# **TO EVALUATE THE ROLE OF A PARA-SURGICAL MEASURE FOR THE MANAGEMENT OF FISSURE IN ANO VIS-À-VIS PARIKARTIKA**

## **ABSTRACT**

Parikartika is a word which has been referred to in Bruhat-trayi (earlier three Samhitas of Ayurveda) not as separate entity, but as a complication of other diseases pertaining to ano-rectal and oesophageal regions and their therapies. Description of this condition is very much suggestive of the modern ailment fissure-in-ano when it is limited to anal-region. This description of Parikartika resembles the signs and symptoms described for anal fissure. The symptoms include cutting or burning pain in anus, pain in umbilical region and radiating pain in the genitals and thighs. Constipation may be habitual or due to disease because patient is apprehensive to relax the sphincters and defecate.

Fissure in ano or anal fissure is one of the most upsetting disorders of the ano-rectal region. This is a tear in the anal skin at or inside the anal verge which causes severe pain and bleeding after defecation. It has been suggested that the nature of chronic anal fissure is ischemic in nature.

Anal fissure induces high resting anal pressures and infrequent spontaneous relaxation of the internal anal sphincter, which can impede blood supply to the anoderm.<sup>1</sup> Fissurectomy and lateral internal sphincterotomy are the gold standard treatments for fissure in ano.<sup>2</sup> Decrease in the anal pressure by anal dilatation or by lateral sphincterotomy can form a significant method of the treatment in fissures. However, these procedures can cause permanent sphincter defects and may also result in subsequent continence disturbances in most of the cases with high recurrence rates.<sup>3</sup> A meta-analysis in the Cochrane database<sup>4</sup> concludes that medical applications did not achieve satisfactory results while anal stretch methods resulted in high degree of sphincter damage.

## **NEED OF RESEARCH**

It was noted that the shortcomings in the application of anal dilatation may be due to uncontrolled approaches. The need for standardisation of the application procedures has been stressed.<sup>4</sup> This calls for the need to develop standardised methods for anal dilatation and also correct the abnormalities of Apana Vata which is the main cause for the disease.

Therefore, in the present study an attempt was made to compare the effect of fissure management device which was used for dual purpose of administration of Matrabasti of Yashtimadhu taila as well as gradual anal dilatation, vis-à-vis only administration of Matrabasti of Yashtimadhu taila. The Matrabasti would help resolve symptoms associated with abnormalities of Vata Dosha and gradual anal dilatation would help in decreasing resting anal pressures and infrequent spontaneous relaxation of the internal anal sphincter.

## **AIM OF THE STUDY**

To compare the role of “a para-surgical measure along with Yashtimadhu taila matrabasti” with a group treated with only “Yashtimadhu taila matrabasti” for the management of Fissure in ano.

## **OBJECTIVES OF THE STUDY**

To establish a comprehensive, controlled and standardized minimal invasive para-surgical measure for the management of fissure in ano.

## **HYPOTHESIS**

**Null Hypothesis** - There is no significant difference between the results obtained in the group of patients treated with “a para-surgical measure along with Yashtimadhu taila matrabasti” and the group treated with “Yashtimadhu taila matrabasti alone”.

**Alternative Hypothesis** - There is a significant difference between the results obtained in the group of patients treated with “a para-surgical measure along with Yashtimadhu taila matrabasti” and the group treated with “Yashtimadhu taila matrabasti alone”

## **Research work was conducted with following steps**

1. Literature survey
2. Authentication of Haritaki, Bibhitak, Amalaki, Yashtimadhu
3. Procurement of raw material samples
4. Physico-chemical characterisation of raw material (RM) samples
5. Preparation of Triphala Tablet & Yashtimadhu taila.
6. Clinical Trial Study Design
7. Results and Discussion
8. Conclusion

## **1. LITERATURE REVIEW**

- Guda Sharira (Ayurvedic View)
- Review of modern literature for anatomy of Anal Canal
- Review of modern literature for Physiology of Rectum and Anal Canal
- Examination of the Ano-Rectal Diseases
- Comprehensive review of Parikartika with Nidanpanchak and treatment in Ayurvedic literature
- Detail review for Fissure in Ano in modern literature including its etiology, pathophysiology, clinical features, differential diagnosis, complications and available different types of treatment including palliative and surgical interventions
- Drug review- Thorough review of books regarding chemical constituents, descriptions, Ayurvedic properties and pharmacological activities of Yashtimadhu (*Glycyrrhiza glabra*), Teel Taila (Sesame oil), Haritaki (*Terminalia chebula*), Bibhitaki (*Terminalia belerica*), Amalaki (*Emblica officinalis*)
- Comprehensive review for Sneha Kalpana from Ayurvedic texts
- Review of method of preparation of Yashtimadhu taila from Sharangdhara samhita

## 2. METHODOLOGY

### METHOD OF PREPARATION OF TRIPHALA TABLETS

<b>Ingredient</b>	<b>Quantity</b>
Haritaki ( <i>Terminalia chebula</i> )	500 gm (1 part)
Bibhitak ( <i>Terminalia bellerica</i> )	500 gm (1 part)
Amalaki ( <i>Emblica officinalis</i> )	500 gm (1 part)

All three ingredients were taken in equal part and pulverised to obtain 60 mesh powder. All powders were blended thoroughly and quantity was weighed. Inert binding solution was added to the blend and granules were prepared from the mixture. After drying the granules were compressed to tablets (each measuring 500 mg).

Triphala tablets were sent to the laboratory for QC check.

### METHOD OF PREPARATION OF YASTIMADHU TAILA

General principles advocated by Sharangadhara in *Sneha Kalpana* have been adopted here i.e. the ratio of Kalka: Sneha: Drava Dravya as 1:4:16.

Yastimadhu kalka	1 part
Teel taila	4 parts
Yastimadhu kwatha	16 parts

Yastimadhu kwatha choorna (coarse powder) is prepared from the roots and stolons of Yashtimadhu. To this 16 parts of water is added and kwatha is obtained on low flame which was reduced to Chaturamsha i.e.  $\frac{1}{4}$  of the liquid quantity taken. This is subjected to filtration. To this 4 parts of Teel taila is added along with 1 part of Yastimadhu Kalka i.e. in the ratio of Kalka: Teel taila: Yashtimadhu kwatha as 1:4:16.

The mixture is then boiled on a low flame till the quantity of liquid content is reduced to 4 parts (i.e. equivalent to quantity of Teel taila). The boiling is carried out till the Samyak-Paka Lakshana of Taila-kalpana are obtained. The end product (Yashtimadhu taila) is strained through muslin cloth after cooling (Swangasheeta).

### **Taila Siddhi Lakshana**

Kalka pariksha was done to confirm the siddhilakshana of taila as a part of standardisation. Kalka is pressed to form varti (thread-like structure) and burnt on fire. If crackling sound is evident, the mixture still requires boiling on low flame. The taila is considered to be 'samyak-siddha' when there is no crackling sound of varti on burning.

Samyak-siddhi lakshan of Taila-vidhi mentioned in Ayurvedic texts are as follows

- Disappearance of *Phena* (bubbles in the frying pan while heating) is *Sneha Siddhilakshana* for *Taila*.
- If *Kalka* is non sticky and can be made easily into *Varti* form when rolled between fingers and no cracking sound appear when put on *Agni* are the characters of *Sneha siddhi*.
- The appearance of desired smell, colour and taste of added drug in the *Sneha*.

## **3. CLINICAL TRIAL STUDY DESIGN**

A comparative clinical trial between two therapeutic study groups was conducted.

### **CENTRE OF STUDY**

The study was conducted at D Y Patil Ayurvedic Hospital, Nerul, Navi Mumbai, Maharashtra.

### **SELECTION OF THE SUBJECTS**

Patients of either gender diagnosed to have fissure-in-ano were selected randomly. A detailed Case Record Form (CRF) was prepared considering all the points pertaining



to history, signs, symptoms & examinations as mentioned in classical Ayurvedic texts & allied sciences to confirm the diagnosis.

### **ALLOCATION OF SUBJECTS**

200 patients were selected for the study who fulfilled the inclusion criteria. The subjects were randomly divided into two groups with 100 subjects in each group.

**GROUP A** - Subjects in Group A were intervened with Fissure management device (FMD) alongwith matrabasti of Yashtimadhu Taila.

**GROUP B** - Subjects of Group B were intervened only with matrabasti of Yashtimadhu taila.

### **DURATION OF THE STUDY**

Six weeks' procedure for each group followed by 6 months (24 weeks) follow up (total 3 follow-ups with interval of 2 months or 8 weeks each)

Total duration of the study = 30 weeks (6 weeks' procedure + 6 months)

### **INTERVENTIONS**

There were 2 different sets of interventions practiced in each group.

#### **GROUP A**

The Intervention was two-stepped 'Pre-procedure' and 'Minimally Invasive Para-surgical Procedure' (Experimental procedure).

#### **Step 1 - Pre-procedure**

Triphala tablets (2nos) were given with lukewarm water at bedtime every night starting two days prior to the application of "Minimally Invasive Para-surgical Procedure".

#### **Step 2 - Minimally Invasive Para-surgical Procedure (Experimental procedure)**

- Yashtimadhu taila was administered in form of matrabasti in quantity of 60 ml.

- After an hour, fissure management device (FMD) was slowly inserted into the anus.
- The balloon of the FMD was inflated with 5cc of fluid. The position along with inserted FMD was maintained for another 5 minutes.

The same procedure was repeated 6 times at weekly intervals.

The fluid for inflation was increased by 5cc in every sitting to have a gradual incremental dilatation.

## **GROUP B**

The Intervention was two-stepped ‘Pre-procedure’ and ‘Matrabasti’ (Experimental procedure)

### **Step 1 - Pre-procedure**

Triphala tablets (2nos) were given with lukewarm water at bedtime every night starting two days prior to the application of “Matrabasti”.

### **Step 2 - Matrabasti (Experimental procedure)**

- Yashtimadhu taila was administered in form of matrabasti in quantity of 60 ml.
- After Matrabasti, the patient was advised to lie in the same position till comfortable.

The same procedure was repeated 6 times at weekly intervals.

- The Patients in both the groups were advised to take a high fibre diet and consume water adequately.

## **ASSESSMENT PARAMETERS**

The patient’s response was assessed before treatment and on every follow up with the following parameters;

- Nature of pain - Was done on visual analogue scale (VAS).
- Difficulty in passage of flatus - Present or Absent
- Constipation - Present or Absent

- Pruritus - Present or Absent
- Bleeding - Present or Absent

## **4. RESULTS AND DISCUSSION**

### **Effect of treatment**

Observations were made in 100 patients before treatment & after treatment with minimally invasive para surgical technique usage of fissure management device along with Yastimadhu taila matrabasti, and Yashtimadhu taila matra basti alone in group A & group B respectively with regard to the different subjective & objective criteria listed in the case proforma.

Pain experienced by patients at different time points was measured on VAS ranging from 0 to 10. The median pain scores before treatment were 9 and 8.5 in group A and B respectively which indicate that pain was the predominant symptom. There was gradual decrease in pain in both the groups. Though both the groups were comparable at baseline, there was significant difference between the 2 groups from Day 7 onwards. In group A, median pain score was significantly less than Group B.

In all patients, the symptom of constipation was documented as present/absent. In both the groups, number of patients without symptom at different points, was counted and analyzed using chi square test. The groups were found significantly different from each other.

Parikartika is a disease where pain is the predominant symptom which is caused due to Vataprakopa and is associated with Pitta. The Apana Vata vikruti causes pain in the gudapradesh. Furthermore, the apana vata vikruti also results in obstruction to the passage of faeces which is its normal karma.<sup>5</sup> The localization of Doshas occurs in Twak between Payudwaram and Gudaushta. As a result of the Pathogenesis, the Twak becomes Ruksha and shows tendency to crack. Sushruta and Vagbhatta have clearly stated that similar changes occur in skin when Vata vitiates from the skin.

In all patients, the symptom of difficulty in passing flatus was documented as present/absent. In both the groups, number of patients not having the symptom at different points was counted and analyzed. The groups were found significantly

different from each other. Since there is a disruption in the skin, the patient is apprehensive to relax the sphincters and pass flatus.

In all patients, the symptom of pruritis was documented as present or absent. In both the groups, number of patients without symptom at different points, was counted and analyzed. The groups were found significantly different from each other. Pruritis Ani is a common symptom found in many colorectal disorders especially fissure in ano which may generally result due to perianal faecal contamination.<sup>6</sup> However at the end of the study the patients in both the groups were free from Pruritis.

In all patients, the symptom of bleeding was documented as present or absent. In both the groups, number of patients without symptom at different points, was counted and analyzed. The groups were found significantly different from each other.

## **5. CONCLUSION**

It can be concluded that the usage of fissure management device (FMD) with Matrabasti of Yashtimadhu taila can provide faster relief in symptoms of Parikartika such as pain, constipation, difficulty in passing stool, pruritis ani and bleeding.

The gradual dilatation method managed with the fissure management device (FMD) along with Matrabasti of Yashtimadhu taila also does not cause any sphincter insufficiencies.

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# **Chapter 1**

## **INTRODUCTION**



The aim of medical science is to provide better health to every human being so as to have a nice tomorrow. Different medical sciences with various principles and fundamentals are trying their best for one common goal i.e. Health for all. In order to achieve this goal, a medical science should be able to eliminate the disease and that too without any side effects. The words heal and health means “whole” or “intact”. In a sense; ‘to heal’ is ‘to make whole’; whereas health is harmonious functioning of one’s body, mind and spirit.

The Constitution of the World Health Organization (WHO), which came into force on April 7, 1948, defined health as a state of complete physical, mental, and social well-being and not merely an absence of disease or infirmity.<sup>7</sup> This definition of health is in close proximity to the definition of good health mentioned in Ayurvedic classics.

Parikartika is a commonly described disease condition in Ayurvedic literature. The term *Parikartika* denotes cutting or cutting pain all around. Although the condition is assumed to be a ‘*Shastrasadhya vyadhi*’ Acharya Sushruta has advised surgery only in a few cases where there is no scope for medical treatment. He considered surgery as the last option in almost all the diseases as it may lead to complications.

Description of Parikartika resembles a lot with Fissure-in-ano, a disease condition described in details in Modern medicine. Fissure in ano is one among the most common ano-rectal disorders encountered in surgical practice. Even though it is a very common disease, it is also a disease which leaves the patient with severe pain and agony.

Fissure in ano is generally classified as a surgically curable disease. But, being an Ayurvedic surgeon it is our responsibility to always have a conservative minimal invasive para-surgical approach wherever possible. Even the practice parameters from the American Society of Colon and Rectal Surgeons state that conservative therapy is safe, has few side effects, and should usually be the approach in therapy for all fissure types.<sup>8</sup>

Latest research works have shown that patients present with complications after undergoing a surgery for fissure, and this is the reason why even the Western surgeons are also trying hard to find para-surgical options for treatment of fissure in ano.

## **RATIONALE AND SIGNIFICANCE OF THE STUDY**

Fissure in ano is a tear in the epithelial lining of the anal canal. Principles of Fissures management is releasing or reducing sphincter spasm and healing of fissure.

The treatment of acute fissure is conservative, whereas surgery is commonly indicated for chronic anal fissure (CAF), as reported by The American Society of Colon and Rectal Surgeons.<sup>9</sup> Anal stretch has been almost abandoned because it is likely to damage anal sphincters, causing faecal incontinence. It has been proved that Fissurectomy and lateral internal sphincterotomy are the gold standard treatments for fissure in ano. It has also been proved that internal anal sphincter hyper tonicity is a determining factor in the development and continued presence of an anal fissure. Sphincterotomy on the other hand remains an effective operation, with a high rate of resolution of symptoms, but again at the price of an increased risk of temporary or permanent incontinence.<sup>10</sup>

Renzi and colleagues evaluated the use of balloon dilation compared with lateral internal sphincterotomy in a prospective randomized trial using a 40-mm balloon insufflated to 1.4 atmospheres for 6 minutes. Healing rates were high and no different in both groups (overall 94%). However, after 24 months of follow-up, no patients in the balloon cohort developed incontinence compared with 16% in the lateral internal sphincterotomy group ( $P < .001$ ). Although manual dilation is now rarely indicated for anal fissure, balloon dilation may be a preferable alternative for lateral internal sphincterotomy.<sup>11</sup>

Hence, the present research work is designed to find the role of a minimal invasive para-surgical measure for patients suffering from fissure in ano.

## **NEED FOR FURTHER RESEARCH**

It is proven that releasing and reducing the sphincter spasm leads to healing of fissure in ano which in turn abolishes pain. All the previous works done have used some or the other medication locally i.e taila or ghrita. Such medicines act by providing lubrication (softening and smoothening) to the anal canal so as to facilitate defecation

without any pains. Medicated taila and ghrita also exhibit the healing action over the fissure in ano but minimal action on reducing/releasing the sphincter spasm. As mentioned earlier reducing or releasing the anal sphincter spasm is the key to healing of fissure and prevention of recurrence.

The present study involves administration of basti along with gradual dilatation of the anal canal which is postulated to reduce/release the sphincter spasm along with effects of Yashtimadhu taila matrabasti for a pain-free defecation owing to its properties like vedanasthapana (pain relieving) and vranaropana (wound healing).

## **AIM & OBJECTIVE**

### **Aim**

To compare the role of “a para-surgical measure alongwith Yashtimadhu taila matrabasti” with a group treated with only “Yashtimadhu taila matrabasti” for the management of Fissure in ano.

### **Objectives**

To establish a comprehensive, controlled and standardized minimal invasive para-surgical measure for the management of fissure in ano.

## **HYPOTHESIS**

**Null Hypothesis** - There is no significant difference between the results obtained in the group of patients treated with “a para-surgical measure along with Yashtimadhu taila matrabasti” and the group treated with “Yashtimadhu taila matrabasti alone”.

**Alternative Hypothesis** - There is a significant difference between the results obtained in the group of patients treated with “a para-surgical measure along with Yashtimadhu taila matrabasti” and the group treated with “Yashtimadhu taila matrabasti alone”.

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# **Chapter 2**

## **DISEASE REVIEW**

## **PARIKARTIKA IN AYURVEDIC LITERATURE**

It is well accepted that *Parikartika* as per Ayurvedic terminology resembles much to Fissure-in-ano as described in Modern medicines. 'Fissure-in-ano' clinically presents as a fissure or a crack in the anal orifice. The prominent symptoms include severe pain during and following defecation, sometimes associated with bleeding. Ayurveda describes a number of disease conditions in relation to ano-rectal region or *Guda*. But it is surprising to note that fissure-in-ano even being one of the most common ailments of ano-rectal region, has not been described as a separate disease entity by the ancient scientists. However, a detailed exploration of literature suggests some words which clinically may resemble this condition. It may be worthwhile to mention here that the Ayurvedic practitioners have recently coined a word '*Guda-Vidar*' to represent this condition, but this word does not have any origin in the original classics of Ayurveda. *Parikartika* is a word which has been referred to in *Bruhat-trayi* (earlier and extensive three Samhitas of Ayurveda) not as separate entity, but as a complication of other diseases pertaining to ano-rectal and oesophageal regions and their therapies. Description of this condition is very much suggestive of the modern ailment fissure-in-ano when it is limited to anal-region. *Parikartika* is not described in Vedas too. Other authors also have paid very poor attention to its description as compared to other diseases.

Acharya Sushruta has described *Parikartika* somewhat in descriptive manner not as a separate disease identity, but as a complication of other diseases or a condition produced by the Vaidya while conducting therapies for other diseases. He has also described its treatment, local as well as general. But he has not given much description about its pathology, types, surgical and Para surgical treatments. It seems possible in this connection that Sushruta did not consider it to be a disease complication of any significance which required surgical intervention, because it used to be cured by local medicaments only. In the chapter of Vaman-Virechan Vypad and Basti Vyapad, he has given the aetiology of the disease. Acharya Charaka and Vagbhatta have described about treatment of *Parikartika* in detail. Acharya Kashyapa has elaborated various types of *Parikartika* and its treatment. Ashtanga Sangrah and Ashtanga Hridaya have also supported the above description, but without going into

the details. Sharangdhar Samhita has described it as a complication of excessive emesis.

Before proceeding to understand the disease – Parikartika - in its broader perspective, it is better to undertake a critical study of the anatomy as described by the ancient authors.

## **GUDA SHARIRA (AYURVEDIC VIEW)**

### **INTRODUCTION**

‘*Guda*’ (anal region) is the site of disease condition ‘*Parikartika*’. Hence description of *Guda* region is inevitable. *Guda* is one of the *bahirmukha srotas* and the terminal part of *stoolantra* (rectum), which plays vital role in defecation i.e. excretion of *Kitta* (unwanted and unused matter passed ahead through the digestive tract) and passing the flatus.

### **GUDA – NIRUKTI**

The organ which creates the Apana Vayu and Mala is called Guda

According to “Ayurvediya Shabdakosha” the organ which evacuates the Apana Vayu is called Guda.<sup>12</sup> This definition is more suitable as far as the physiology of anus is concerned.

### **GUDA – UTPATTI**

According to Acharya Sushrut, *Sara* (qualitatively best part) of *rakta-dhatu* and *kapha-dosha* is digested by *pitta-dosha* with the help of *vayu* and by this process *Guda* is formed in the embryonic stage.

Acharya Charaka mentions that *uttaraguda* and *adharguda* are derived from the maternal source.

Vagbhata also mentions that soft organs like *Guda* are formed by the maternal source of the body.

### **ANATOMY OF GUDA**

According to Acharya Charaka, *Guda* is one of the fifteen organs belonging to *Koshtha*. Further, he has divided it into two parts viz., *Uttar Guda* and *Adhar Guda*. But according to Ayurvedic text, it is difficult to make a line of demarcation between the *Uttar Guda* and *Adhar Guda*.

Here in Chakrapani-teeka is mentioned that *Uttar Guda*, the upper part of *Guda*, stores the faeces and the *Adhar Guda*, the lower part of *Guda*, is related to defecation.



The words like Sthoola Guda and Gudoshtha are also used in Ayurvedic texts. Acharya Charaka has considered Sthoola Guda as a root of Purisha Vaha Srotas. The Sthoola Guda is located very near to Basti. Kaviraj Gangadhara describes Sthoola Guda as a trifoliate organ, which directly indicates it as same as the rectum.

Acharya Sushruta says, that Gudoshtha is situated at a distance of half yava away from the hair line and one finger interior to the last vali i.e. samvarni.

## **GUDDA - SHARIR RACHANA**

Acharya Sushruta has elaborately described the organ *guda*. He states that the last part of *sthoalantra* (large intestine) which is  $4\frac{1}{2}$  *angulis* in length. It has three folds or *valis*, at a distance of  $1\frac{1}{2}$  *angulis*. The uppermost is *pravahini*. It is one and half *anguli* in length. Dalhana says this *vali* bears the stools down. The middle one is the *visarjani*, it is also  $1\frac{1}{2}$  *anguli* in length. It relaxes the anus and helps to evacuate. The lowermost *vali* is the *samvarani*. It is one *anguli* in length. It opens during the time of defecation and covers the anus. Below the *samvarani vali* is the *gudashtha* which is 1 *anguli* inferior to it and half *anguli* in length. It is the total length of the *guda* is  $4\frac{1}{2}$  *anguli* in length. Sushruta also describes that these three *valis* arranged one upon another spirally like a shell. The color of the *valis* resembles the palate of elephant i.e. blackish red in colour.

The visceral organs are well protected by the body cage of *shroni*. *Shroni* comprises of five bones out of them four bones are attached with *guda*, *yoni* (vagina) and *nitamba* (buttocks) and the remaining one is in the *trika* region. The *Asthi sandhi* of this region is of *samudga* type.

There are 60 *snayus* in the pelvic region and 80 are in the groin. The *snayus* which are connected with *guda* region come under the group of *sushira*.

According to Acharya Sushruta, in *koshtha* region there are 34 *vatavahinis* / *siras* (nerves / channels carrying *vayu* or impulses). Out of these, eight *siras* are situated in the *shroni* region, connected with *linga* (penis) and *guda* (anus). Similar connection also has been described regarding the *pitta*, *kapha* and *raktavaha siras*.

There are twenty-four dhamanis in the body, out of which ten go downwards and perform the functions of micturition, defecation, ejaculation of semen, menstruation and expulsion of foetus during delivery.

## **GUDA AS A VITAL ORGAN**

### **(1) Marma**

Acharya Sushruta mentions *marma* i.e. vital points in our body where convergence of five structures i.e. *marma*, *sira*, *snayu*, *asthi* and *sandhi* occurs. Twelve *paranas* located here are *Agni*, *Soma*, *Vayu*, *Satva*, *Raja*, *Tama*, *Panchendriya* and *Bhootatma*. Trauma to the *marma* causes death or disability.

Acharya Sushruta and Acharya Vagbhata mentions *guda* as the *sadyapranahara marma*, any severe trauma at this site may cause instant death. Acharya Sushruta has categorised *guda* as a *mansa marma*, while Acharya Vagbhata mentions it as a *dhamani marma*. Acharya Sushruta has given the measurement of *guda marma* as four *Angulis*.

Injury to Guda marma causes obstruction of Apana vayu (flatus), mala (faeces), and loss of moment in sthulatra (paralytic ileus) and patient dies instantaneously.

### **(2) Pranayatana**

*Pranayatan* are the vital organs proper functioning of which is absolutely important for proper functioning of the body. Such ten *pranayatanas* (*Dashapranayatan*) are mentioned by Charakacharya. *Guda* is one of the *Dashapranayatan*

### **(3) Srotas**

*Guda* is a *bahirmukha srotasa*. Acharya Charak has indicated *Sthoola guda* as the *moolasthan* (root site) of the *Purishavaha srotas* and Acharya Sushruta has also mentioned *guda* as the same.

### **(4) Karmendriya**

*Guda* is enlisted under Karmendriya group. The function designated to it is defecation and releasing of flatus.

The mechanism of defecation too was known in the ancient times. Here “Apana Vayu” is the responsible factors for accomplishment of the process of defecation

along with associated efforts of vallies. Mahamahopadhyaya Gana Nath Sen has coined the physiology of defecation according to Ayurvedic texts. The role of *Vallis* is very significant in this context.

Step (1) - Pravaḥini as the name goes helps to propel or force the stool down once the stool has occupied its place in rectum.

Step (2) - There after the 2nd *Valli* viz. *Visarjani* relaxes the anal wall and thus promotes further passage of the faeces.

Step (3) – *Samvarani*, the third *valli*, then comes to action. If the conditions are favourable for defecation this *valli* relaxes and after the faeces has passed it helps to cut the faecal column once *Visarjani* has completed its work. But if there is no favourable condition then this *valli* does not allow faeces to pass and provide a voluntary control over the rather involuntary process of defecation. This *Samvarani*, according to ancient authors, also acts as a guard at the anal orifice.

## **REVIEW OF MODERN LITERATURE**

### **ANATOMY OF THE ANAL CANAL**

The diseases of the anorectal area are few of the commonest pathological conditions of the terminal part of Gastro-intestinal tract and present very complex conditions, in their management. From surgical point of view, it is essential for any physician and surgeon to have thorough knowledge of anatomy and physiology of anal canal while treating case of fissure-in-ano. It is helpful not only for operating a case of fissure-in-ano if needed but also in understanding the pathological course which the impending fistulae and the abscess formation may take. So it is an essential requirement for a surgeon to possess a thorough knowledge of the anatomical aspects of ano-rectal region before he proceeds to diagnose and manage a case of fissure-in-ano.

The basic understanding and knowledge of modern surgical or applied anatomy of the anal canal and rectum is undoubtedly provided by Milligan and Morgan (Milligan, 1942; Milligan and Morgan 1934, 1937; Morgan, 1936). Thompson (1899) had also previously thrown light on the subject in his historic monograph "mycology of the pelvic floor". The former authors in fact performed the various operations and gave their histological findings too.

In fissure-in-ano mainly there is a need for either fissurectomy or sphincterotomy. Therefore, it is very important that to have a good and thorough knowledge of its anatomy and recognition of the sphincters, anal canal and rectum. The ano-rectum, as the term suggest, can be described under two heads; viz. Rectum and Anal Canal.

### **EMBRYOLOGY**

The development of rectum and anal canal is associated with the growth of the tail fold. Further it is intimately associated with that of the bladder and other elements of the urogenital system. The epithelial lining of the various parts of the gastro - intestinal tracts is of endodermal origin. In the region of the mouth and the anal canal,

however, some of the epithelium is derived from the ectoderm of the stomatodaeum and of the proctodaeum respectively.

## **DERIVATIVES OF HIND GUT**

1. Left one third of transverse colon
2. Descending and pelvic colon
3. Rectum &. Upper part of the anal canal
4. Parts of the urogenital system derived from the primitive urogenital sinus

### **Derivation of Individual Rectum and Anal Canal<sup>13</sup>**

#### **Rectum**

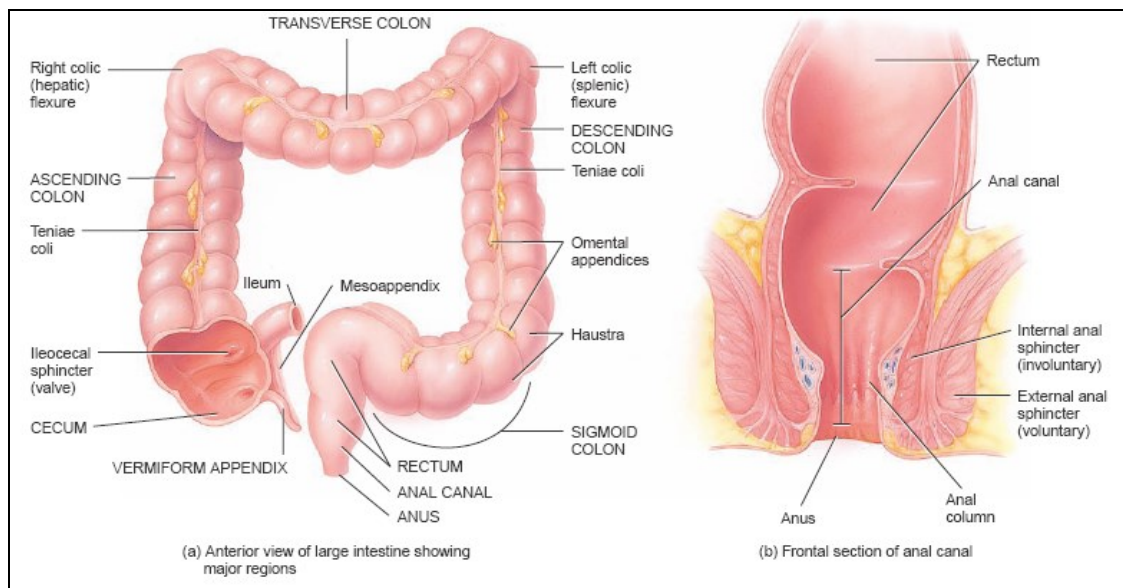
The rectum is derived from the primitive rectum i.e. the dorsal subdivision of the cloaca. According to some authorities the upper part of the rectum is derived from the hind gut proximal to the cloacae. The rectum extends from the third sacral vertebra to the ano-rectal ring. It describes three lateral curves, two concave to the left [hence the left lateral position for sigmoidoscopy and one concave to the right. The relative shortness of the longitudinal muscle coat forms the valve of Houston that is so much in evidence in sigmoidoscopy. Fasciae around rectum are

- Fascia Propria—visceral layer of pelvi fascia
- Fascia of Waldeyer—parietal layer of pelvic fascia
- Lateral ligaments – condensed layer of pelvic fascia

#### **Anal Canal<sup>14</sup>**

The Anal canal is formed partly from the endoderm of the primitive rectum and partly from the ectoderm of the anal pit or proctodaeum. The line of junction of the endodermal and ectodermal part is represented by the anal valves Pectinate Line. The anatomical anal canal extends from the anal valves to the anal verge [The external boundary of the anal canal]. The surgical anal canal commences at the level where the rectum passes through the pelvic diaphragm and ends at the anal verge.

## RECTUM



This is the terminal part of the descending colon which is placed in the posterior part of the pelvis. Bacon (1949) described it as a part of the large intestine which is attached to and in continuation of the sigmoid colon at the level of 3rd sacral vertebra, and lies in the concavity of the sacrum. The length of the rectum may vary in different subjects from 12-15 cm. (Bacon, 1949 and Grays) It ends about an inch in front of the tip of the coccyx, becomes narrower and continues with the anal canal. It has two convex curves one on the right and the other is on the left side. The pelvic floor is formed by the levator ani muscles on each side by which it seems the rectum is suspended. Rectum at the recto-sigmoid junction the lumen of the rectum is same what smaller and gradually it becomes distended and is the widest portion of the large intestine which is known as ampulla. Then again it narrows down and terminates at the pectinate line in the pelvic floor and continues into the anal canal.

The rectum has an incomplete peritoneal covering thus giving rise to such terms as extra-peritoneal anal intra peritoneal rectum. The upper 1/3 portion of the rectum an anterior aspect anal laterally on both sides has a reflection of peritoneum. Second 1/3 part is also covered only anteriorly and the lower 1/3 part of the organ is completely devoid of peritoneal cavity. Anteriorly the peritoneum reflects on the posterior wall of Vagina and Uterus forming a “Recto-uterine” pouch or the “Pouch of Douglas” in females. In the males it reflects on the urinary bladder and thus forms “recto-vesicle

pouch". On rectal examination digitally we can palpate these pouches in the male and female both. The pouch of Douglas descends more downwards as compared to the "Rectovesical" pouch in the males. The same peritoneal folds from "Para-rectal fossae" by taking reflection from the sides of the rectum on the pelvic wall. The distance of the rectovesical pouch is about 7.5 cms. From the anus, the recto-uterine pouch is 5 cms. The rest of lower portion of the rectum is completely bare. This extra peritoneal portion is rather covered by a fibrous sheath of true pelvic fascia. In the empty condition of rectum, the mucous membrane in its lower part presents a number of longitudinal folds which affects the distensibility of the rectum. During distention of the rectum a number of transverse or horizontal folds have been recognized.

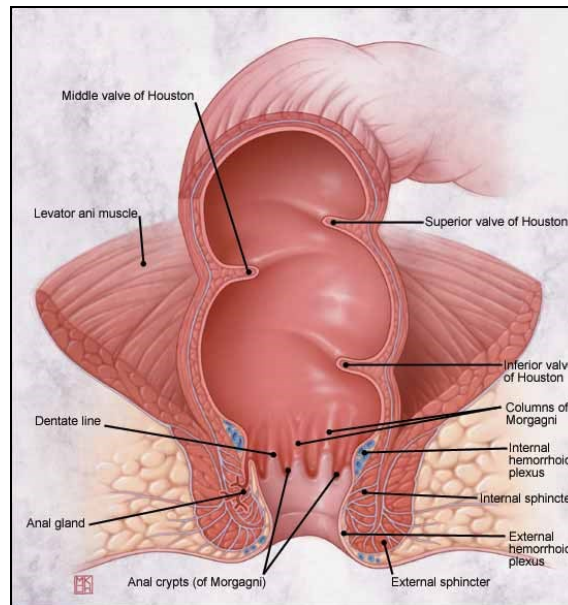
The Rectum has 3 layers or coats of musculature. The first from within is the mucous membrane, the other two are the circular and the longitudinal muscle coats. Functionally, the Rectum consists of two parts, one above and one below the middle fold. The upper part contains faeces and is free to distend towards the peritoneal cavity while the lower part occupies a more confixed situation and is enclosed in a tube of condensed extra-peritoneal tissue and remains empty in the normal individuals.

In male, anteriorly it is separated by Denonvillies fascia from prostate and posteriorly Waldeyer's fascia-from the coccyx and last two sacral vertebrae. These fascial layers' act as barrier to malignant penetration.

The rectum has three lateral curvatures; the upper and lower are convex to the right, and the middle is convex to the left on the mucosal aspect, these three curves are marked by semicircular folds, otherwise called as Houston's valves.

O'Brien and Hurst have considered the sigmoid colon a fecal reservoir, the rectum being normally empty, and entry of faeces into it, stimulates defecation. The experimental distention of the rectum and anal canal results in the desire to defecate and causes relaxation of the anal sphincter (Gray's Anatomy).

## ANAL CANAL



**Fig. Anatomy of anal canal**

It begins from the lower part and is in continuation of the ampulla of the rectum. It is suddenly narrowed passing downwards and backwards and ends at the anus or anal verge. The length is 1.5 cm. to 3 cm. and the diameter is about 3cm. during normal defecation. The anterior wall is slightly shorter than its posterior wall. Nelter also supported the above view. It is posterior to the perineal body and the external opening of the anus is situated in the midline. The empty lumen is puckered into longitudinal folds. Posteriorly it is in contact with mass of fibrous and muscular tissue known as ano-coccygeal ligament which separates anal canal from the tip of the coccyx. Anteriorly it is separated from the perineal body by the membranous part of bulbous urethra in the male and lower end of the vagina in the female. Laterally, it is surrounded by Ischiorectal fossae around the external sphincter.

### PECTINATE LINE

This lies opposite the middle of the sphincter ani-internus and is commonly considered to be the site at which the anal membrane is situated in the early fetal life. It is a landmark between the skin and mucous membrane. It is not only a landmark, but also a function of rectum and anal canal. It is a white wavy line placed at the lower part of the anal canal and is called Hilton's line after the name of the person who first described it. From the surgical point of view, it is one of the most important



landmarks. According to Pennington 85% of all proctological diseases occur in this area. Importance of this is shown below.

- At this line the internal sphincter is replaced by the external sphincter.
- Here, the squamous epithelium and the columnar epithelium are covered by a transitional epithelium.
- The fascia lunate of levator and ends here forming one of the weakest part and hence there are more chances of bursting of the boil.
- Here is a junction of sympathetic and cerebrospinal nerves which pierce the sphincters.
- Below this line the area is very sensitive to pain and above it is less sensitive.
- The lymphatic drainage distal to this line is into the superficial sub inguinal lymph nodes and proximally into the pelvic lymph nodes.
- Triangular tags are present on this line, causing irritation and pruritus ani.
- Possibility of harbouring micro organisms and its multiplication eventually gives rise to rupture, causing abscess formation and finally fistulae in ano or sinuses.

Above the pectinate line, the mucosa is thrown into 8-14 longitudinal folds, known as rectal column or columns of Morgagni. Each adjacent column is connected below by an anal valve. The mucosa immediately above the valves is lined by an epithelium consisting of several layers of cuboidal cells. Traced upwards, these give way at a variable distance; usually about 0.5-1 cm. from the valves to a single layer of columnar cells.

Below the pectinate line, the anal canal is lined with a modified skin devoid of hairs, sebaceous glands and sweat glands and it is closely adherent to the underlying tissues. As seen in an opened up excised rectum and anal canal, lining of this part of the canal for about 1 cm below the anal valves appears thin, smooth, pale and stretched. This area is sometimes known as pecten (Stroud- 1896). Traced further inferiorly, the lining becomes thicker and just outside the anal orifice acquires the hair follicles, glands and other histological features of normal skin.

## **COLUMNS OF MORGAGNI**

These are longitudinal folds, 5 to 10 or 8 to 12 in numbers known as the columns of Morgagni (Walls)

## **THE CRYPTS OF MORGAGNI**

The crypts are 5-10 in number (Gray's) and are present in the anal canal. Between the inferior extremities of the column of Morgagni, small pocket like structures are present which are called the crypts. Most of them are situated posteriorly and each opens into anal glands by a narrow duct called anal ducts. These ducts bifurcate and pass to enter the internal sphincter muscle, where there is an ampulla.

## **ANAL GLANDS**

The ducts from the crypts extends through the mucosa and forms anal glands, which are first described independently by Chiari (1878) and Herman & Desfosses (1880) Parks (1961) did an excellent anatomical study with special reference to their role in the pathogenesis of infections in the anal region. There are 4-8 glands in the normal anal canal. Their extensions are found in submucosa, internal sphincter, intersphincteric longitudinal layer (Park) and even up to ischiorectal fossae.

## **MUSCLES OF THE ANAL CANAL**

The ano-rectal canal has a complex type of muscle which from sphincters e.g. internal sphincter and external sphincter. At the function of anorectum the circular muscle coat of the rectum becomes thickened and forms sphincter ani-internus. The sphincter surrounds 30mm of the anal canal and ends below the level of white line.

### **Internal Sphincter**

The internal sphincter consists of a thickened circular muscle coat. This involuntary muscle arises where the rectum passes through the pelvic diaphragm and ends inferiorly  $\frac{1}{4}$ " to  $\frac{1}{3}$ " above the level of anal orifice (Thomson, 1956). In anal fissure and other anorectal diseases, the spasm of this muscle has very impotent role.

### **Longitudinal Muscle**

These muscles are in continuation with the rectum and inter-mingle with the fibers from the puborectalis muscle. The fibers fan out through the lowest part of the

external sphincter and are inserted into the anal and perianal skin. Thus constituting the corrugator cutis-ani of Ellis.

### **External Sphincter**

The anal verge is surrounded by the external sphincter muscle. Goligher considered it as one muscle, but some authors say that it is subdivided into three parts. The subcutaneous part of this, which lies below the internal sphincter, presents numerous longitudinal muscles (Goligher et al.). Milligan and Morgan described it particularly to be 'umbrella ring' like in state during walking.

### **THE ANORECTAL RING**

This term has been coined by Milligan and Morgan (1934) to denote the functionally important ring of muscle which surrounds the junction of the rectum and anal canal. By the fusion of internal sphincter muscle, the longitudinal muscle of the rectum, Puborectalis and the deep portion of the external sphincter, the anorectal ring is formed. Anal canal and rectum is encircled by this muscular ring. This ring has most important role for the proctologists in the treatment of ano-rectal abscess and fistulae in ano. The complete division of this ring results into rectal incontinence (Gabriel).

### **TISSUE SPACES IN RELATION TO THE ANAL-CANAL**

This is a pyramid shaped space on either side of the anal canal and lower part of rectum. Its apex lies in the upper region where the levator muscles join the fascia on the obturator internus. The base is formed by the perianal skin. Ischio-rectal fossa is divided by a horizontal fascia into two spaces ischio-rectal and perianal spaces.

#### **Ischio-rectal Space**

This comprises the upper 2/3 of the ischio-rectal fossa and is filled with coarsely lobulated fat.

#### **Perianal Space**

This space lies between the internal sphincter and the mucocutaneous lining of the upper 2/3 of the anal. It contains internal haemorrhoidal venous plexus and related terminal branches of the superior haemorrhoidal artery.

## **BLOOD SUPPLY<sup>15</sup>**

The blood supply of the ano-rectal region is from the 3 main arteries.

1. Superior haemorrhoidal artery.
2. The middle haemorrhoidal artery.
3. Inferior haemorrhoidal artery.

### **1. Superior haemorrhoidal artery**

It is the terminal continuation of the inferior mesenteric artery. At the level of third sacral vertebra, it divides into two branches right and left which pass inferiorly and laterally to encircle the bowel until they meet on the anterior surface of the rectum. This artery goes into upper part of the rectum, and supplies all layers of it including mucosa. Its most abundant distribution is to the posterior wall of the rectum. Lastly it anastomoses with inferior haemorrhoidal artery.

### **2. The middle haemorrhoidal artery**

It is a branch of the anterior trunk of the hypogastric artery. It is a paired vessel. These are the small arteries, but it has been reported that 10% of death occurs due to severe hemorrhage from this artery. They supply blood to the lower rectum and also to the musculature of the anterior wall of the rectum.

### **3. Inferior haemorrhoidal artery**

It is also paired, branch of the corresponding internal pudendal artery (branch of the iliac artery). Each inferior haemorrhoidal artery traverses the ischio-rectal fossa obliquely and divides into three or more branches which are distributed to the levator ani, internal and external sphincter muscles and the anal canal.

## **VENOUS DRAINAGE<sup>16</sup>**

There are two types of the plexus which drain the blood from the ano-rectal region

1. Superior haemorrhoidal plexus, and
2. Inferior haemorrhoidal plexus.

## **1. Superior haemorrhoidal plexus**

These plexuses are present in the submucosa above the anorectal junction. These plexuses drain into superior haemorrhoidal vein which continues upwards as the inferior mesenteric vein of the portal venous system. There is a characteristic feature that these veins have no valve mechanism. Therefore, they cause internal hemorrhoid from increased venous pressure in the superior haemorrhoidal plexus through portal hypertension.

## **2. Inferior haemorrhoidal plexus**

These are found below the ano-rectal junction outside the muscular layer. The inferior haemorrhoidal plexus surrounds the anal canal and drains into the larger veins, viz. Middle haemorrhoidal vein and Inferior haemorrhoidal vein.

The inferior haemorrhoidal vein drains into the pudendal vein while the middle haemorrhoidal veins empty into the hypogastric vein. These both pudendal and hypogastric veins drain into the inferior vena cava and thus belong to the systemic venous system. Here it is interesting to note that there are a number of anastomosis between the superior and inferior haemorrhoidal plexuses, they play big role as collateral channels in a case of portal hypertension.

## **LYMPHATIC DRAINAGE<sup>17</sup>**

There are three main routes of lymphatic drainage. The lymph from the upper part of the rectum drains upward through the lymphatic's and glands accompanying the superior haemorrhoidal and inferior mesenteric vessels to the aortic glands. The lymph from the middle part of rectum drains laterally along the middle haemorrhoidal vessels on either side to the internal iliac glands on the corresponding side of the pelvic wall. From the lower part, the lymph is drained laterally through para rectal lymph glands on the back of the rectum and along lymphatic plexus in the anal and perianal skin, the anal sphincters and ischio-rectal fat to reach eventually the inguinal lymph glands or glands along the internal iliac vessels.

## **NERVE SUPPLY<sup>18</sup>**

The anal canal is derived from the proctoderm and invagination of the ectoderm and the rectum is endodermal origin. Because of the difference in their origin the arterial & nerve supply and the venous & lymphatic drainage differ in the two structures.

The upper part of the dentate line is supplied with autonomic nervous system and is non sensitive. Region below the dentate line is supplied with somatic sensory nerves and is highly susceptible to painful stimuli.

Rectum is supplied by both sympathetic and parasympathetic nerves. Sympathetic nerves take origin from the 11 to 12 thoracic and 1st and 2nd Lumber nerves and pass through the ganglionic chain to inferior mesenteric plexus on the anterior side of the aorta. Some fibers go to the rectum along with the inferior mesenteric artery and superior haemorrhoidal artery. Remaining fibers leave the inferior mesenteric plexus to unite with the fibers from lateral ganglionic chains and from the pre-sacral nerve. Presacral nerve again bifurcates into right and left hypogastric nerves which pass to the corresponding hypogastric plexus on the lateral wall of the rectum. At this point fibers of parasympathetic nerve join the hypogastric nerves. The internal sphincter muscle, muscular coat and mucous membrane of the rectum are supplied by sympathetic fibers from the hypogastric plexus. Constriction of the internal sphincter and inhibition of peristalsis are main functions of these sympathetic nerves.

The parasympathetic nerves of the rectum are derived from the anterior roots of the 2nd, 3rd, and 4th sacral nerves. Through the hypogastric and inferior mesenteric plexuses, they are distributed to the rectum. The action of these nerves is to increase the peristaltic movements, the secretory activity and to open or relax the internal sphincter.

The normal cutaneous sensation which is felt in the skin of the perianal and of the wall of the anal canal below the level of anal valves is conveyed by the afferent fibers in the inferior haemorrhoidal nerves. The dull sensation experienced in the mucosa above the level of anal valves in response to touching is conveyed by parasympathetic nerves.

## PHYSIOLOGY OF RECTUM AND ANAL CANAL

### DEFAECATION

Defecation is a complex act in animals. In man, the controlling influence of the cerebral cortex makes it even more complex, most of the time rectum is empty of faeces. This is due to the presence of a weak functional sphincter which exists about 20cm from the anus at the junction between the sigmoid colon and rectum and partly due to the presence of a sharp angulation here. This act as a resistance to the rectal filling. When a mass movement forces faeces into the rectum, the desire for defecation is normally initiated including the reflex contraction of the rectum and relaxation of the anal sphincters.

The stimulation to initiation of the act is distension of the rectum. The voluntary suppression of this urge occurs when the circumstances are not convenient for defecations. Apart from the cerebral control in man, there is a centre in the lumbo-sacral region of the spinal cord which can maintain reflex defecation.

### DEFAECATION REFLEXES

Mass peristaltic movements push faecal material from the sigmoid colon into the rectum. The resulting distension of the rectal wall stimulates stretch receptors, which initiates a **defecation reflex** that empties the rectum. The defecation reflex occurs as follows

In response to distension of the rectal wall, the receptors send sensory nerve impulses to the sacral spinal cord. Motor impulses from the cord travel along parasympathetic nerves back to the descending colon, sigmoid colon, rectum, and anus. The resulting contraction of the longitudinal rectal muscles shortens the rectum, thereby increasing the pressure within it. This pressure, along with voluntary contractions of the diaphragm and abdominal muscles, plus parasympathetic stimulation, opens the internal anal sphincter.

Ordinarily defecation is initiated by defecation reflexes. One is the intrinsic reflex, other one is the parasympathetic reflex.

Afferent signals are produced due to the rectal distention that are spread through the myenteric plexus to initiate peristaltic waves in the descending colon, sigmoid colon and rectum forcing the faeces to anus. These peristaltic waves are further intensified by parasympathetic reflex that involves the sacral segments of the spinal cord. The mechanism is follows when nerve endings are stimulated, the signals are transmitted into the spinal cord and thence are reflexed back to the descending colon, sigmoid colon, rectum and anus by way of parasympathetic nerve fibers in the pelvic nerves. Thus this parasympathetic signals relaxes the internal sphincter. The external anal sphincter is voluntarily controlled. If it is voluntarily relaxed, defecation occurs and the feces are expelled through the anus; if it is voluntarily constricted, defecation can be postponed. Voluntary contractions of the diaphragm and abdominal muscles aid defecation by increasing the pressure within the abdomen, which pushes the walls of the sigmoid colon and rectum inward.

The defecation reflexes are also excited by straining efforts which may raise abdominal pressure as much as 200mm of Hg, which pushes faeces to anus. But these reflexes are almost never as effective as natural reflexes.

If defecation does not occur, the faeces back up into the sigmoid colon until the next wave of mass peristalsis stimulates the stretch receptors, again creating the urge to defecate. In infants, the defecation reflex causes automatic emptying of the rectum because voluntary control of the external anal sphincter has not yet developed.

The amount of bowel movements that a person has over a given period of time depends on various factors such as diet, health, and stress. The normal range of bowel activity varies from two or three bowel movements per day to three or four bowel movements per week.

### **ANAL CONTINENCE**

The normal anal continence is a relative phenomenon. Hence it is difficult to formulate an acceptable definition. If a person has a complete control of flatus and faeces, it is considered as continent. If there is lack of control, then it is considered as incontinent. Even in normal subjects a fluid stool may cause incontinence.

The anal canal mechanism, in combination with the suppression of the urge to defecate, has to cope with the consistency and rate of delivery of faeces into the



rectum. Sensory stimulation in the rectum and pelvic floor may reach consciousness and leads to reflex relaxation of the cranial portion of the anal canal which may allow rectal contents to be identified more accurately.

The most commonly accepted explanation of anal continence is that the high pressure zone (average 25-120 mm of Hg.) in the anal canal maintains the continence. Physical factors maintaining continence are the angulation between anal canal and rectum, the slit like configuration of the anal canal and the action of the internal anal sphincter. External anal sphincter provides additional support and acts fully as an emergency voluntary control of short (1-2 minutes) duration.

### **EXAMINATION OF THE ANO-RECTAL DISEASES**

The examination of the anal fissure is a very difficult procedure because it is one of the most painful conditions and the patient suffering from it is usually very apprehensive of even defecation rather than the rectal examination. For the examination of fissure-in-ano, the patient should be kept preferably on the lithotomy position on a lithotomy table with a proper light. The examiner should display particular gentleness during the examination.

### **INSPECTION**

This is the most important step in examination, for anal fissures can always be seen if properly sought. The difficulty arises for seeing the fissure, when the patient comes with associated anal spasm which closes the anal orifice tightly and conceals the fissure. Induced the finding of marked spasm of sphincters in the patients with a suggestive history is strong presumptive evidence of the existence of a fissure. The spasm can usually be overcome by gentle but determined lateral separation of the edges of the anal orifice, by traction with the fingers placed close to the either side of the anus.

The first thing that will probably be noted is sentinel skin tag posteriorly or anteriorly. This may be big or small. The fissure itself appears as a triangular shape or pear-shaped slit in the skin of the anal margin just above the base of the sentinel tag. The floor of the fissure may consist either of connective tissue or the internal sphincter, the pale transversely running fibers of which can often be clearly distinguished. In cases of very superficial fissures, they may present as merest cracks in the wall of anal

canal without sentinel tag. There may be bleeding during stretching. In deep chronic lesion there may be acute inflammation with frank pus exuding from fissure. There may be an inflammatory swelling behind the fissure due to intersphincteric or perianal abscess, and even an external fistulous opening.

### **SENTINEL TAG**

So called because it seems to stand guard as it was at the distal border of the lesion (L. Devis). Sometimes an anal valve is torn down by scybalous mass resulting in fissure with a sentinel tag at the end of it (R. Mahadevan). Immediately beyond the distal border of fissure there may be a peeling up of skin covered tissue beneath which is frequently found a shallow pocket. This structure constitutes a sentinel pile (L. Devis) at the upper end of the ulcer there is frequently a hypertrophic skin hangs, this is called sentinel pile. (A. Khan).

### **PALPATION**

Palpation of the fissure in ano is most painful part of the examination and it is not usually done. By palpation we confirm the presence of sphincteric spasm, the rounded lower edge of the internal sphincter being easily palpable just distal to the fissure itself. The passage of the finger is uncomfortable. But the maximum tenderness is elicited when finger is placed on the fissure itself, induration of the lateral edges of the fissure, indicating fibrosis. At the upper end of the fissure a hypertrophied anal papilla may be palpable. The digital examination is of course important as a means of excluding other lesion in the lower rectum.

### **PROCTOSCOPY**

This is often impossible because patient comes with agonizing pain if necessary it has to be performed with a smaller proctoscope than usual, for the final withdrawal of the end of the open instrument over a tender fissure may be very uncomfortable indeed. In doubtful cases, however, it may show the fissure more clearly than was possible on simple inspection. Proctoscopy may also demonstrate other lesions such as internal hemorrhoids or proctitis which may have a bearing on the patients' complaints.

## **SIGMOIDOSCOPY**

This is the best performed with a narrow-bore instrument, its main value being to exclude proctitis or a Crohn's lesion of the distal large bowel, but it may also rarely reveal an unsuspected carcinoma.

## **DIAGNOSIS**

A typical history of anal pain associated with defecation is pathognomonic of anal fissure.

While performing the local examination gentleness in handling the patient and his tissue is mandatory to ensure a successful examination in the presence of an acute anal fissure, while separating the margins of the anus.

The diagnosis can easily be confirmed by demonstrating the anal ulcer. In long standing cases, a sentinel skin tag may be present. In very chronic cases the triad of the disease i.e. anal fissure, sentinel tag and hypertrophied anal papilla can be demonstrated. There may be more or less spasm of the anal sphincters with puckering of the anus.

Because of intense pain, digital examination of the anal canal should not be attempted. In such circumstances the local application of a surface anesthesia such as 5 percent xylocaine on a pledget of cotton wool, left in situ for 5 minutes, will enable the necessary examination. In early cases the edges of the anal fissure are impalpable whereas in fully established cases a characteristic crater which feels like a vertical button hole can be palpated.

## PARIKARTIKA

### Vyutpati

The term *Pari* when used as suffix, means “all over” or “whole”, or every entity” or “every aspect”.

*Kartika* is derived from “*Krita*” verb which means to cut. It is a noun form.

Thus the word *Parikartika* as a whole means “to cut circumferentially” or to cut all around.

### Nirukti

Pari = Sarvato Bhaavaha.

Kartika = sharp shooting pain (especially in rectum).

Parikrit = Krintati = to cut off cut round clip.

Kartana = to cut off.

### Vyakhya

*Parikartika* denotes cutting or cutting pain all around. According to Monier Williams, the word *Parikartika* is derived from root “*Parikri*” which denotes to surround to uphold, to cut around, clip, cut off or cutting up to. (*pari*= all around, *Kartanam*= cutting)<sup>19</sup>

Acharya Kashyapa says that the one (condition) having cutting and tearing pain.

There is cutting and tearing pain everywhere as told by Acharya Dalhana. Acharya Jejjata has anticipated about the condition and opined in a very pin pointed way, according to him the specific vatika pain is present all around in a specific area of *Guda*, is *Parikartika*. According to Dalhana, the commentator of Sushruta Samhita, there is cutting and tearing pain everywhere.

### NIDANA

The precipitating and predisposing factors of any disease are known as its Nidana. The ancient Ayurvedic text lacking the proper classified documentation of Nidana, Samprapti, and Rupa etc. of Parikartika at any single place. Even then many Nidana that may produce Parikartika are described by Acharyas which are scattered in the text.

In Parikartika Vata is the dominant dosha. This is because of the site, Guda, which is actual site of Vata especially Apanavayu.

The etiological factor of Parikartika can be explained under 3 headings.

1. Aharaja and Viharaja nidana
2. Vyadhi nimittaja
3. Vaidya nimittaja

### **Aharaja and Viharaja Nidana**

*Tikta, Ushna, Kashaya, Alpa, Bhojana; Vegadharana, Udeerana; excessive shodhana therapy; diurnal and seasonal variations*<sup>20</sup>.

While dealing with *Vamana* and *Virechana Vyapat* Acharya Sushrut describes that the debilitated person with *mrudu koshta* or *mandagni*, when indulges in excessive *rooksha* (increasing dryness), *teekshna* (pungent / aperient), *ushna* (hot) and *lavana* (salty) *ahara* or consumes *virechana aushadhi* that causes vitiation of *pitta* and *vata dosha* leading to *parikartika*<sup>21</sup>

According to Acharya Charak, when strong *virechana aushadhi* is given to a *snigdha kaya, guru koshta, in saamavata, in krusha* person or *mrudu kosta* and in work out week individual, it can cause extensive painful condition *parikartika*<sup>22</sup>. Acharya Sushrut has said that due to consumption of *kashaya* (astringent), *tikta* (bitter) and *ushna* (hot) and *rooksha* (dry) substances *vata-dosha* enters into *koshta* of a person and along with abstained urges of defecation, develops symptoms like *atopa, shoola* and *parikartika* as sequel to *veetasanga*.<sup>23</sup>

The second predominant *Dosha* that seems to play important part is *Pitta*. The factors vitiating it are *Katu, Amla, Lavaṇa, Ahara, Krodha*, diurnal and seasonal variations.<sup>24</sup>

Kapha Dosha, though not predominantly present for triggering the condition, but still it plays a role many ways. The factors vitiating Kapha are *Swadu, Amla, Lavaṇa, Adhyashana, Sita, Guru Bhojana, Divaswapna* and diurnal and seasonal variations.<sup>25</sup>

Other than the three Doshas, Acharya Sushruta has paid utmost attention to *Rakta Dhatu*, up to the extent that he says that *Rakta* is the fourth dosha. He also says that as *Vayu* unites with blood to form *vraṇa*.

Consumption of the causative factors for Apana Vikruti are Ruksha Anna and Guru Anna, holding the natural urges of micturition and defecation, too much of traveling by vehicles, traveling repeatedly at various places by walking. While mentioning the disorders produced by this he says that “Vitiated Apana Vayu produces such Roga that are sited in Pakvashaya and are difficult to treat. Again in Nidana Sthana (16/40), he has given few more reasons of Parikartika. He says that “Due to excessive accumulation of Mala in Pakvashaya, it obstructs the normal passage of Vāyu and produces Vibandha with cutting like pain. Due to this the Snehamsa (unctuous portion) gets absorbed rapidly and eliminates dry faeces with pain.<sup>26</sup>

The excessive intake of astringent, bitter, pungent and dry articles of diet, by the suppression of natural urge of mala Pravruti, by excessive indulgence in eating and coitus, the Apana Vayu provoked in the colon; growing stronger it causes obstruction in the lower part of the alimentary tract and produces retention of faeces, flatus and urine and thus produces very serious disorders of misperistalsis<sup>27</sup>

Acharya Sushruta has said that due to consumption of Kashaya (astringent), Tikta (bitter) and Ushna (hot) and Ruksha (dry) substances, Vayu enters into Koshta of a person and along with abstained urges of defecation, produces Atopa, Shoola and Parikartika as sequel to Vitasanga.<sup>23</sup>

Due to Agnimandya and reverse movement of Vata, Pitta also gets vitiated, also due to Ahara like Katu, Amla, Lavana and Ushna the Pitta gets vitiated.

### **Vyadhi nimittaja**

Condition that produce after a disease or during the disease stage is vyadhi nimittaja.

The chief Roga is Udāvarta that produces Parikartikā.<sup>28</sup> Acharya Charaka has described this condition as a lakshana of Atisara.<sup>29</sup> He says that in Vatika Atisara the patient passes scanty, hard stool with froth and sound. There is gripping and cutting pain, all around in the Guda and there can also be prolapse of rectum. He has also mentioned the same condition occurring in the Jwara in Chikitsa.<sup>30</sup>

He has said that in a Jwarita person having Jeerṇa-jwara there are chances of having Parikartika and thus he should consume ‘Peya’ with Bilva. Here it can be inferred that there is generalized dehydration of the body so the bowels are not clear and passage

of even a single hard motion is enough to resulting to a fissure and create other complications.

After an attack of diarrhea the patient will suffer from Parikartika because in diarrhea the sphincters lose their capacity to dilate and go into severe spasm. Thus, when even a scabulous passes, the tear of anal margin takes place causing Parikartika.

Acharya Charaka and Vagbhatta have mentioned 'Parikartika' as a symptom in Vataja Atisara. He says that a person who is suffering from Vatik Atisara and has complaints of scanty, watery or hard rounded motions, soon develops Parikartika.<sup>29</sup>

Acharya Vagbhatta has also supported the view of Acharya Charaka in the chapter of Atisara Grahani Dosha Nidana.<sup>31</sup>

Acharya Sushruta, while explaining the prodromal features of *Arsha* has not mentioned the word *Parikartika* but has documented a very similar symptom.

The symptom here is Guda '*Parikartanam*' i.e. there is cut in the anus and cutting pain. This is nothing else but *Parikartika* and it is explained here as a prodromal symptom of *Arsha*. The shapes of the *Vatika Arsha* are like 'arrow' and are pointed which is similar to sentinel tag.

According to Acharya Charak

- In *Sahaja Arsha*<sup>32</sup> there is severe pain in *Gudavalli*<sup>32</sup>
- In *Vatika Arsha*, the symptoms described in Charak Samhita<sup>33</sup> are very much similar to those found in *Parikartika* viz. pain in anus, penis, abdomen, umbilical region and so on.
- Also in *Kaphaja Arsha* associated symptoms are *Parikartika*, nausea etc.<sup>41</sup>
- In *Grahaṇi* chapter is mentioned that in *Vatika Grahaṇi*<sup>42</sup> there is cachexia, weakness, pain in chest, no perception of taste, and *Parikartika*.

Acharya Kashyapa has mentioned in Garbhiṇi Chikitsa Adhyaya that *Parikartika* is prevalent in pregnant ladies.<sup>34</sup> He has also mentioned the types of this condition according to the predominant *dosha* present viz. *Vata*, *Pitta*, and *Kapha*. But even there, *Parikartika* has not gained as much attention as was due.

### **Vaidya nimittaja**

Vaidya Nimittaja are *Nidana* (causes) that are exogenous and iatrogenic type produced by an unskilled Vaidya.

The utmost care needs to be taken while conducting *Panchakarma* therapies like *Virechana*, *Basti* and *Vamana*. When an inexperienced or unskilled physician performs such therapies, there are chances of development of various complications enlisted by Acharya Sushrut. *Parikartika* is one of them.<sup>35</sup>

### **Virechan Vyapad**

Acharya Charak and Sushrut both have mentioned '*Parikartika*' as one of the important complication of *Vamana* and *Virechana Vyapad*. They have mentioned that if *teekshna*, *ushna* and *rooksha* medicines are consumed by a person with *mrudu koshta* and with *alpa-bala* (weak person) for *Virechana*, then *Parikartika* results.<sup>36, 21</sup> Acharya Sushrut has mentioned predominance of *vata* and *pitta-dosha* in it.

### **Basti Vyāpada**

If *Basti* containing *rooksha*, *teekshna* and *lavan* drugs are administered in higher dose; it may produce *Parikartika*.<sup>46 37</sup>

### **Basti Netra Vyāpada**

Due to inappropriate administration of *Basti Netra* and defect in *Basti Netra* itself may cause this disease.<sup>38</sup> *Gudaksata* may occur due to inappropriate administration of *Basti Netra*.

### **Excessive use of Yapana Basti**

It may lead to *Parikartika* along with other diseases.<sup>39</sup> Acharya Kashyapa has added that this is a disease of Gravida woman. *Virechana*, *Basti Vyapada*, *Bastinetra Vyapada* and *Vataja*, *Atisara* are said to be the main cause of *Parikartika*. In all causes 'trauma' is an important factor. In *Virechana* and *Basti Netra Vyapada*, it is the nature of quantity of drug, in *Basti Netra*, direct mechanical trauma to *Guda Twak* and in *Vataja Atisara*; it is the hard stool which produces trauma to rectal mucosa to cause the disease *Parikartika*.



### **Other conditions**

In Ayurvedic literature *Parikartika* and *Parikartana* are two terms which seem to be synonymous for each other. It appears that they have been used for same meaning and been used on numerous occasions as symptoms of various diseases.

*Parikartika* is seen in following contexts.

1. *Apana Avruta Udana*
2. *Vyana Avruta apana*
3. *Heena dosha apahrita Vyapat*
4. *Pureesha Avruta vata*
5. *Pureesha Avruta vata*
6. *Sahaja arsha*
7. *Sahaja arsha*
8. *Pureesha nigraha*
9. *Vataja grahani*
10. *Vatika atisara*
11. *Udavarta*

Hence looking into the above references it can be considered that these conditions may contribute, or participate the *nidana* of *parikartika*.

### **Poorva roopa of Parikartika**

The Ayurvedic texts did not mentioned Poorva roopa of Parikartika. Rather it is counted as one of the poorva roopa of arsha.<sup>40</sup> Both Susruta and Vagbhata have mentioned parikartika as the premonitory symptom of arsha roga. But Charaka has mentioned it as one of the symptoms presenting particularly in kaphaja arshas.<sup>41</sup> Further in the chapter of grahani roga, both charaka and vagbhata have enumerated Parikartika as symptom of vataja grahani.<sup>42</sup>

## Roopa of Parikartika

Acarya susrutha has explained as<sup>43</sup>

1. Guda sadaham parikartanam- cutting and burning sensation in guda.
2. Nabhi medhra basti shirasu sadaham parikartanam - pain to umbilical region, penis and fundus of bladder.
3. Anila sanga. Avarodha of apana.
4. Vayu vishatambha. Vigunata in vayu.
5. Aruchi

This description is absolutely correct because in modern medicine also for anal fissure same clinical symptoms are described as cutting or burning pain in anus, pain in umbilical region and radiated pain in penis and thigh also. Constipation may be habitual or due to disease because patient is apprehensive to relax the sphincters and defecate so wind is not passed and constipation develops.

Parikartika is the one in which, blood is being eliminated either mixed with, before or after elimination of faeces accompanied with pain. Dalhana commenting on this says that this cutting type of pain is because of vata<sup>44</sup>

In the context of verechana vyapat Dalhana quotes Parikartika presents with cutting type of pain all around the anus<sup>45</sup> By the above references we can infer that Parikartika presents with Vrana.

According to charaka<sup>46</sup>

1. Trikavamkshanabastinam todam - cutting pain in groin, flanks and scortal region.
2. Nabheradho ruja - pain in para umbilical region.
3. Vibandha – constipation.
4. Alpalpamuthanam- passage of scanty stools.

Parikartika kartikakara vedana<sup>47</sup>

If a mrudu kosta person under go basti karma with ruksha, teekshna, and excess quantity of basti then he is likely to develop Parikartika.<sup>48</sup>

But Kashyapa and other authors have not described the clinical features of this disease. The causative Doshas being Vayu and Pitta it is but natural that the pain also predominantly displays a Vatika and Paittika character.

Vrana is an essential symptom of Parikartika which is having Dirghakriti shape or Triputakakrti<sup>100</sup> and a Srava may be present<sup>101</sup>

The Vrana surface appears more Ruksha. Features of Vata Pittaja Vrana and also Dushta Vrana like Samvritatwam, Vivitatwam, Kathinya, Mruduta, etc. can be found.<sup>101</sup>

### **SAMPRAPTI**

The Samprapti of Parikartika and Arsha shows close similarities. It is evident from the fact that both these conditions are manifested in the same srotas i.e. Pureeshavaha Srotas. The role of specific etiological factors and side of manifestation of disease further strengthens this theory.

The dosha undergoes Chaya as a normal physiological response to various endogenic and exogenic stimuli. When the person Continue to use the specific etiological factors mentioned for the vitiation of Dosha, they undergo vitiation and Agni-Vaisamya also occurs, which causes Avipaka and Malasanchaya, resulting in Vitiation of Apana Vayu. This progress to subsequent stage Purishavaha srotas and the Doshas migrate through out the body through Pradhanasiras. At this condition when the person uses Nidana, the small Srotas of Guda vallis undergoes pathologic changes and Dosha Dushya Sammoorchana localizes here and further changes occur. During this process, disease manifestation occurs.

In this disease Vataprakopa is predominant with associated Pitta. The localization of Doshas occurs in Twak between Payudwaram and Gudaushta. As a result of the Pathogenesis, the Twak becomes Ruksha and shows tendency to crack. Sushruta and Vagbhatta have clearly stated that similar changes occur in skin when Vata vitiates from the skin.

The peculiar anatomical structure of this area also plays an important role in the manifestation of this disease. The Twak over this area is devoid of hairs, sebaceous glands and sweat glands which are normally present in the skin. This indicates that,

this area is more Ruksha in normal individuals, which is further aggravated during the pathology predominant to Vata.

According to Acharya Sushruta, there is vitiation of Vayu and Rakta. Pitta is the main dosha in Rakta so Pitta is also vitiated simultaneously.

Thus when the ruksha mala passes through unlubricated Guda there is formation of crack with severe pain & burning or difficulty in passing flatus or stool, as per the doshik predominance. In this disease the most predominant doshas is Vatta. Due to Agnimandhya and various other nidana there is rukshata of mala and so its sarata (free flowing- ness) is lost & it is not evacuated in the due time this causes obstruction in the normal passage of Apana and it is not propelled out. The vayu vitiated in the malashaya along with pitta and or kapha also affects.

The second kind of Samprāpti is that the diseases like Atisāra, Grahaṇi etc. are if not treated properly and patient continues to indulge Āhāraja Nidāna then preexisting pathology leads to Guda Vikṛuti and later on Parikartikā occurs.

The third type of Samprāpti is due to Āgantuja Nidāna where there is wound formation in first stage and then the Doṣas get sited in the Vraṇa, producing further symptoms. When the wound is produced simultaneously there is vitiation of Doṣa which in term leads to Parikartika.

### **Bheda of Parikartika**

The detailed descriptions about classification of Parikartika, Samprāpti and symptomatology have not been found in any Ayurvedic text, except the Kashyapa Samhita. Ācārya Kāśyapa has described the involvement of all the three Doṣas e.g. Vāta, Pitta and Kapha in the Adhyāya of Garbhiṇi Cikitsā while giving the detailed Cikitsā of the disease Parikartikā<sup>66</sup>.

The classification of Parikartika into 3 types is mainly based upon the character of pain i.e.

1. Vatika Parikartika - pain is shooting cutting or pricking in nature.
2. Paitika Parikartika - the character of pain is burning nature.
3. Shaleshmika Parikartika - dull ache pain represents the kapha preeminent Parikartika.

Since it quite a known fact that Kashyapa Samhita is not a complete work and some parts of the book have been lost over a period of time, it is just possible that Kashyapa might have had considered the Nidana-Panchaka of this disease in details in some of the lost portion and later given a brief account of it in relation to a gravid woman. Still the fact cannot be denied that even a mention of the disease connection with a pregnant woman in itself is a bigger contribution of his understanding and keen observation because, as we know today, anal fissure is a very common complaint of the pregnant woman especially the primi-para and precisely in the immediate ante-natal and post-partum period.

### **SADHYASADHYATA**

Sadhyasadhyata of a disease is decided by considering all the factors which are likely to influence the curability and incurability of a disease. It is essential to consider the Sadhyasadhyata before administering any form of Chikitsa.

Any type of Vrana can be cured easily, provided the patient is with good Satva, Mamsadhatu, and Agni and if he is in his younger age. If a Vrana is left untreated, the Sadhyatwa, as a consequence may lead to Yapyatwa stage and finally leading to Asadhyatwa stage.

Parikartika which affects the superficial layer of the Twak (anal skin) are easily curable. Therefore, it can be included in the Sukhasadhya group. If it affects the deeper layers, it shows reluctance to heal. Therefore, it can be included in krichhrasadhya group. If it is associated with Kushtha, Vishodushti and Sosha, the healing of Vrana will be delayed.

If Parikartika is associated with Sanniruddhaguda, it is considered as yapyatwa.

### **CHIKISTA OF PARIKARTIKA**

Acharyas have described the treatment of Parikartika in the briefest manner. The Kashyapa has mentioned its management according to Doshic type of Parikartika others have not considered as Doshic type of classification, but it is true that none of them has described surgical management. As the disease was completely cured by the use medicinal preparations only, thereby there was no need of surgery.

The treatment divided into two categories.

1. Local treatment.
2. General treatment.

### **Local treatment**

This includes Basti karma. Most of the drugs which are used in basti karma are vata pitta shamaka and vrana ropaka. Basties are prepared in Ghrita, Tail and milk with the help of other different drugs. There are three types of Basti described Sushruta and other Ayurvedic authors viz. (i) Anuvasana Basti (ii) Pichha Basti and (iii) Sheetal Basti.

Remedy consists in employing a Pichha Basti with Yastimadhu and Seasum pasted together and dissolved in clarified butter and honey. And patient should be kept (Ghrita) on Anuvasana Basti, (in cases of Pitta-predominance) Basti should be employed with the cream of clarified butter and if case is Vata Predominance with Tail cooked with Yastimadhu.

Charaka has also advocated both types of medicines which have been advocated by the Sushruta. He says cooling enema consisting of drugs having Madhura and Kashaya properties (Pichha and Anuvasana Basti) prepared with Madhuyasti powder and kwatha should be used.

Further, he gives advice for the administration of cooling enema consisting of the milk prepared with sweet and cooling drugs and it has been mixed with licorice Basti prepared with Ral, Madhuyashti, and Mud of kamal.

The chances to re-produce the Parikartika due to improper way of administration of basti, as already has been described in the etiology of this disease.

Charak has used mainly Kashya Rasa, Sheetal Veerya and drugs of Madhur things. These drugs are mixed with milk and then milk which is mixed with the above drugs should be given as Basti.

Kashyap has also advised for the Anuvasana Basti. In this type of Basti the base is milk, oil or Ghrita.

These are either Vata Shamak or Pitta Shamak. In many compositions so many drugs have been used they have Vata and Pitta Shamak properties and Madhuyashti is many

times used. Because it has property of cooling, Vata- Pitta- Rakta Shamak and widely it has been advocated by Sushruta for treatment of Traumatic wounds, Pittaja Vranas, Fractures, Bhagandara, Updansa and Ulcer etc.

Both Charaka and Sushruta have advocated for treatment of Parikartika Pichha Basti with Madhuyashti, Madhu and til. In Chikitsa Sthana Charaka has described the Basti only for Parikartika as White Mountain a bony, pigeon pea, kadamb and Huzzal tree should be prepared in milk with honey and sugar, and given as a cold enema, by the physician in Parikartika.

From the above description it can be seen that the basti are prepared mainly in sneha and milk with the help of other drugs. The drugs of madhura, kashaya rasa along with sheeta virya having mainly vata-pitta shamaka, vranashodhana and vranaropana properties.

### **General Treatment**

Treatment is based on following factors.

1. To alleviate the Vata and Pitta.
2. To correct the abdominal trouble because in this disease Vata and Pitta are vitiated. Most of patients come with burning type of pain. So keeping these points in the mind all Ayurvedic authors have described only Vata and Pitta Shamak management.

In Parikartika the major issue is constipation and pain only. If one corrects the constipation with regularized bowel movements and alleviates the pain the disease may disappear to a great extent within few days. Pain due to Vata and Pitta vitiation and constipation due to two reasons firstly is the habitual constipation and other is due to fear of pain during defecation.

Acharya Charaka has written about the oral treatment in Parikartika and advised consumption of milk medicated with the bark of panchasksheeri vrikshas<sup>49</sup>. He has also advised to take Amla Dravya because it has the property of Vata Shamak and increases the digestive fire. According to Charaka if there is Parikartika present with fever, patient should drink the gruel prepared with the heart shaped leaves of Sida, fruits of Kokam, Butter tree, sour jujube, then painted leaved ureria and yellow barried night shade mixed with Beal fruit.<sup>30</sup> When there is bleeding per rectum and

sever pain, milk boiled in vessel made up of stone and then mixed with churna of yastimadhu should be administered.

In Kashyapa Samhita the treatment has been given to predominance of Dosha.

### 1. Vatik Parikartika

Brahiti, Beal and Anant are used which all have the Vata-Shamak Property.<sup>50</sup>

### 2. Pattika Parikartika

Madhayasti, Hanspatti, Dhaniya, Madhu etc. These drugs are useful for Pitta Shamana and have also property to correct abdominal trouble with laxative.<sup>50</sup>

### 3. Kaphaja Parikartika

In this he has used the drugs which have the property of Kapha –Shamak and Vata shamak also as Kantakari, Peepal, Gokshuru and Salt.<sup>51</sup>

The various preparations advocated by different authors in Parikartika have been summarised in following table

Sr. No.	Remedy	Reference	Ingredients
1.	Pichha basti.	Sushruta <sup>21</sup> (Su. Ch. 34/16, 38/85).	Ber, Nagbala, Shelu, Semal, Soft leaves of hanvana, Cooked in Dugdha with Madhu Ghrita plus Yastimadhu, Black tila.
2.	Pichha Basti.	Charaka <sup>52</sup> (Ch. Chi. 14/228).	Stalk of semal, Kusha, Black soil milk, Tail, Ghrita and Madhuyashti Kalka.
3.	Anuvasana basti	Sushruta	Madhuyashti, Khusa, Gambhari, Kutaki, Kamala, Chandan, Shyama, Padmaka, Leemoot, Indrayava, Ateesh, Sugandh Bala, Tail, Ghritamilk and decoction of Nyogradhadgana.



4.	Anuvasana basti	Kashyapa	Laghu Panchamoola, Madanphala, Yava, Kola, Kulatha, Water, Dadhmastu, Tail, Kustha, Saunf, VachMadhuyashti, Indrayava, Seeds of Harenu, Devadaru, Bilva, Lavanga (clove), Rasna, Nagarmotha, Chhoti Ilaichi and Priyangu.
5.	Anuvasana basti	Kashyapa	Hingu, Daruharidra, Deodaru, Pathya, Putika, Kangi, Castor oil.
6.	Basti	Charaka	Milk, Madhuyashti, Tila-Kalka and Milk diet.
7.	Basti	Charaka	Rala Madhuyashti, Kamala, Rasavat and Milk.
8.	Peya	Charaka	Bela, Brakshamala, Bera, Pithivana, Kantakari with powder of unripened fruit of Bela's cortex Peya of red rice made from decoction of Bela etc. and Bela.
9.	Parikartika Nashak Basti	Charaka	Bark of Kanchanara, Leaves of Arhara, Bark of Kadamba and Kalka of Veta, Milk, Madhu, and Sugar.
10.	Parikartika Nashak Basti	Charaka	Stalks of Gambhari and unchnara, Milk, Madhu and Sugar.
11.	Yush for Vatik	Kashyapa	Brahiti, Bilva, Anantamula.

	Parikartika		
12.	Yush for Paittika Parikartika	Kashyapa	Brahiti, Bilva, Anantamula
	Yush for Kaphaja Parikatika	Kashyapa	Kateri, Gokshuru, Pippali and salt.
14.	Lehanayoga	Kashyapa	MadhurDravyas, Milk, Sugar, Madhu, Tila tail, Madhuyashti.

### **Pathya for Parikartika**

1. Nadi sweda and Lukewarm water sitz bath advised to relieve severe pain<sup>53</sup>
2. Langhana, pachana, rooksha, ushna and laghu ahara
3. Parisheka with cold water, milk and drug with kashaya rasa and sheetala guna.<sup>54</sup>
4. Madhura rasa and vata anulomaka ahara vihara<sup>55</sup>
5. Light leafy blend vegetables and avoidance of constipation and strain during defecation<sup>56</sup>.
6. Old Raktashali and shasti rice, yava and Kulatha<sup>57</sup>

### **Apathya for Parikartika**

1. Vegadharana, maithuna, riding, sitting in Utkata Asana.<sup>58</sup>
2. Vyayama, krodha, guru ahara sevana<sup>59</sup>
3. Ati tikshna, atilavana, ati rooksha diet<sup>60</sup>

# FISSURE IN ANO

## INTRODUCTION

The term “fissure” generally denotes a crack or a slit or a cleft or a groove.

### Synonyms<sup>61</sup>

- Anal ulcer
- Anal fissure
- Ulcer-in-ano
- Faecal ulcer

### Definition

The term “fissure” generally denotes a crack or a split or a cleft or a groove. The anal fissure (or fissure-in-ano) has been described as an acute superficial break in the continuity of the anoderm (anal skin) usually in the posterior midline of the anal margin.

Etymologically, the term “fissure” has been derived from the Latin root “fissura”, meaning generally a cleft, sulcus or groove, normal or otherwise. It has especially been described in reference to deep folds in the cerebral cortex. But in proctologic terminology, fissure means a crack longitudinally in the anal skin as has been shown above. In fact, an anal fissure is a true ulcer in the skin of the anal canal.

A crack associated with severe pain at the anal verge related with the act of defecation is called anal fissure. Anal fissure is one of the most painful conditions of the ano-rectal area. But it is also one of the most neglected conditions of all the ano-rectal diseases.

Goligher’s comments that “This is a common disease of the anus which causes an amount of suffering out of all proportion to the size of lesion”. Mazier et al. have advocated the use of term “ulcer-in-ano” exclusively for chronic anal fissures.

- “An anal fissure appears to be a longitudinal crack in the anal skin, but in reality it is a true ulcer of the skin of the wall of the anal canal” (Nesselrod).
- “An elongated ulcer in the long axis of the anal canal” (Bailey and love)

- “The squamous mucosa of the lower half of the anal canal is prone to superficial ulceration, which present clinically as an anal fissure. It is a linear ulcer, usually situated in the posterior commissure of the canal” (Davis Christopher)
- “An anal fissure is a site of chronic ulceration of the skin of the anal canal, often with a hemorrhoid or hypertrophied anal papilla at its upper end.” (Ottinger).
- “This is a common disease of the anus which causes an amount of the suffering out of all proportion to the size of the lesion. A fissure consists essentially of a crack in the skin lined part of the anal canal which often shows a considerable reluctance to heal” (Goligher).
- “An abraded mucosa may progress to produce a superficial anal fissure. (Nixon and O’Dennel).
- “Examination of the lower half of the anal canal by separation of the buttocks to open up the peri-anal region will reveal the presence of any simple anal fissure as it is located below the dentate line and is always confined to the anoderm in the mid posterior position or the mid anterior position.” (Todd).
- Fissure in ano is a painful linear ulcer in the long axis of the lower third of the anal canal (Som)
- Anal fissure is very common condition. It is most important cause of severe anal pain. (R. Mahadevan)

## **AGE**

It is usually encountered in young or middle aged adults, but sometimes seen at other ages including infancy and early childhood (Bennet). It is disease mainly of middle life (R. Madevan). Hamilton says that “Fissure-in-ano is not uncommon in children, and probably because the condition is not even thought of, in young child the diagnosis is frequently missed”. Bacon has advocated that “Fissures are more common in the meridian of life and apparently are more common in women than in men”. It is uncommon in the aged groups.

## **GENDER**

Anterior fissure is more common in women than in men, and accounts for some 40% of all fissures in that women as contrasted with only 10% in men (Goligher). Posterior fissure is 90% in men, 60% in women.<sup>62</sup>

The lesion is usually encountered in younger and middle aged adults but also may occur in infants, children, and the elderly<sup>63</sup>

## **LOCATION**

It is mostly found on the midline posteriorly. The next frequent situation is the midline anteriorly<sup>64</sup>. Location may vary, and an anterior midline fissure is seen more often in women, although most fissures in women and men reside in the posterior midline<sup>65</sup>. Ninety percent occur posteriorly, and 10% occur anteriorly<sup>66</sup>.

Fissures are equally common in both the genders. Anterior fissures are more common in women than in men. Occasionally, patients develop anterior and posterior fissures simultaneously. One of the remarkable features of fissure-in-ano is that it is nearly always located in the midline posteriorly because of the elliptic arrangement of the external sphincter fibers posteriorly.<sup>67</sup> Petros et al. Also found fissures to be more commonly located in the anterior midline (15% in men and 45% in women<sup>68</sup>). In any event, the length of each fissure is remarkably constant, extending from the dentate line to the anal verge and corresponding roughly to the lower half of the internal sphincter, a point of practical importance when operative therapy is considered.<sup>69</sup>

In any patient with a fissure located off the midline, a specific systemic disease should be considered.<sup>70</sup>

Location may vary, and an anterior midline fissure is seen more often in women, although most fissures in women and men reside in the posterior midline.

Fissures away from these two locations should raise the possibility of associated diseases, especially Crohn's disease, hidradenitis suppurativa, or STDs.<sup>71</sup>

## **AETIOLOGY**

According to Davis, "main etiology of anal fissure is anal infection". Boyd says that there are only two reasons by which anal fissures occur.

1. Trauma by the passage of a thick column of hard stool and,
2. Loss of elasticity due to chronic infection and fibrosis.

Further he says that at least 95% of these lesions are situated in the posterior commissure, because the fibers of external sphincter which encircle the anus fuse much more completely in front than behind. So that mucosa of the posterior aspect of anal canal is less strongly supported and more easily torn. Some suggested that mucocutaneous junction of the anus is least supported posteriorly as the superficial external sphincter is inserted to the coccyx in racket shaped manner. Moreover, a scybala inprings against the mucosa at the posterior angular bend if the anorectal junction. Fissure-in-ano is end result of a tear of mucous membrane at 6 o'clock position of the anus or of anal valve by a hard scybala in a constipated patient.

Mahadevan says that the main cause for fissure-in-ano is trauma due to the passage of a large constipated faecal matter over distending of the anal canal. The fibers of the sphincter ani externus decussate on their way to get attached to coccyx leaving a weak spot in the posterior midline. So posterior midline is more common site for fissure-in-ano. In a person who habitually takes laxatives and purgatives or has irritable colon the absence of a normal stretching by solid faecal mass results in fibrous contracture of the sphincter. In such a condition a tear easily occurs when a hard mass is passed, straining during parturition. Tear by a foreign body like a piece of glass or bone. Insertion of overlarge speculum is among some of the rarer causes.

Bailey and Love have said that the cause of anal fissure, particularly the reason why the midline posteriorly is frequently involved is not completely understood. Probability is that posterior wall of the rectum curves forwards from hollow of the sacrum to join the anal canal, which turns sharply backwards. During defecation the presence of hard faecal mass is mainly on the posterior ano-rectal angle in which event the overlying epithelium is greatly stretched and being relatively unsupported by muscle, is placed in a vulnerable position when a scybalous mass is being expelled. Possibilities in some cases are due to tearing down of an anal valve of ball. As shown by the above percentages, an anterior anal fissure is much more common in women, particularly in those who have born children. This can be explained by lack of support the anal mucous membrane by a damage of pelvic floor. Further Bailey and Love have said that incorrectly performed operation for hemorrhoids in which too much

skin is removed resulting into anal stenosis and tearing of the structure when a hard motion is passed.

Khan has said that the relative frequency of anterior fissure in females may be explained by the trauma caused by the fetal head on the anterior ano-rectal wall. The overall frequency of posterior fissure can be explained by the natural curvature of anal canal which takes a sharp forward bend from the rectum. A hard stooling coming down the rectum strikes hard on the posterior wall of the anal canal, and constipation therefore is a common etiological factor.

The renowned proctologist of the world Goligher has also described only two etiological factors for fissure-in-ano. The first is anatomical consideration of the anal canal including their muscles. He says that “Elliptical shape of the inferior edge of the external sphincter the lower part of the internal sphincter is perhaps less well supported posteriorly and anteriorly and the skin more liable to split behind or in front”. But this leaves the much greater predilection to dorsal fissure still unexplained.

Further, he says trauma to the anal canal during the passage of a large hard motion is greatly responsible for the development of fissure-in-ano. A majority of the patients certainly relate the onset of their symptoms to the passage of such a constipated motion some are habitual to take some laxatives. In fact, as a result of this habituation of medicine patients have had only liquid motion for months or years, and their anal canal has undergone some contraction so that sudden passage of a hard scybala could be particularly difficult and traumatizing to it.

Etiology and Pathogenesis understanding of anal fissure was increased tremendously in recent years. The initiating factor is trauma, typically overstretching of the anoderm by a large hard stool. The proposed explanation for the posterior midline predominance is a lack of tissue support and maximal stretching at this site. It has been hypothesized that failure to heal is secondary to poor perfusion of the anoderm in the posterior midline. According to this hypothesis, posterior midline ischemia is the result of arterial anatomy and internal anal sphincter hyper tonicity. The evidence in support of this hypothesis is very strong.

Angiographic and anatomic studies of the inferior rectal artery show compromised blood flow in the posterior midline. Laser Doppler flow-metry demonstrates lower perfusion in the posterior midline and to a lesser extent in the anterior midline. There

is manometric evidence of sustained hyper tonicity of the internal anal sphincter in patients with chronic anal fissure, and an inverse correlation has been demonstrated between anal pressure and anodermal blood flow the higher the pressure the lower the blood flow. Successful treatments for chronic anal fissure produce a significant reduction in resting anal tone and a significant increase in anodermal blood flow. Whether internal sphincter hyper tonicity is a cause's effect remains uncertain. It has been assumed that hyper tonicity is a reaction to ano-rectal pain. It has also been postulated that increased anal pressure precedes fissure, and that psychological stress produces a sustained rise in internal anal sphincter tone.

### **CLASSIFICATION**

For all practical purposes, the fissure can be classified into two groups

1. Primary or Idiopathic
2. Secondary or such fissures

Which develop in those patients who have undergone anal operation, such as haemorrhoidectomy or laying open of a low anal fistula, where the resulting wound is situated anteriorly or posteriorly. Considering the large number of minor anal operations which are regularly performed the secondary anal fissure are not uncommon. Other condition to which fissures may be secondary are non-specific proctocolitis and Crohn's disease.

### **TYPES**

1. Acute
2. Chronic.
  1. Acute - This ulcer is often a mere crack in the epithelial surface, but may, never the less, cause severe pain and spasm.
  2. Chronic - This has thickened margin edges, the skin at the lower edges of the fissure is often edematous, hypertrophied and undermined, producing the so called sentinel tag. In the base of the ulcer one can sometimes see the fibers of the external sphincter crossing transversely.



## **PATHOLOGY**

One of the remarkable features of this condition is the constancy of its situation, which is nearly always in the midline of the posterior wall of the anal canal or immediately left or right side of it, occasionally it occurs in middle of the anterior anal wall, and of exceptionally it is found elsewhere on the circumference of the anus. Anterior fissures are more common in woman than in man. Fissures are always single but rarely two or more fissures are encountered simultaneously.

The situation of the fissure in the vertical axis of anal canal is also a very constant. It lies in the cutaneous portion of anal lining between the level of the anal valve and the anal orifice. In this portion it is situated superficial to the lower most quarter or one third of the internal sphincter muscle. Initially it is separated from the sphincter by the thin layer of longitudinal muscle spread on the inner surface of the latter but eventually it may deepen down to the sphincter so as to expose its circular fibers in its floor. Goligher says that it bears no direct relationship to external sphincter, for it was formerly held by some authorities that anal fissure invariably lay on lower most or subcutaneous part of the external sphincter and that it was external sphincter fibers that were usually revealed in the base of the fissure (Gabriel, 1948). An alternative view advanced by Miles (1919-39) was that pale tissue exposed by a chronic fissure was not sphincter muscle at all but instead a condensation of fibrous tissue in the sub mucous space of the anal canal, forming a ring of fibrosis which is "Paten band" and which he believed played an important part in the aetiology of anal fissure.

The work of Eisenhammer (1953), Goligher, Leacock and Brossy (1955) and Thomson (1956) however, leaves no doubt that the tissue underlying a fissure-in-ano is the internal sphincter muscle that the structure identified by Miles as the 'Paten band' is simply the prominent lower edge of this sphincter, and that at no stage the external sphincter is in direct contact with an anal fissure.

## **SECONDARY CHANGES**

In its early stages fissure is a simple slit in the skin of the anal canal but there soon developed in connection with it certain secondary changes. One of the most important points is the swelling of the skin at the lower end of the fissure, actually at the level of the anal orifice, so that it forms a tag like swelling the so-called sentinel tag. This is

due to low grade infection and lymphatic oedema, and after the tag has undergone very inflamed, tense and oedematous appearance, it may go into fibrosis later on and persist as a permanent fibrous skin tag even after the fissure has healed. Quite frequently the anal valve immediately above the fissure also becomes swollen due to oedema and fibrosis, and forms a hypertrophied anal papilla or polyp which does not usually reach anything like some size as the sentinel tag. Another, feature in a long standing case is the development of fibrous induration in the lateral edges of the fissure. At any stage frank suppuration may occur and extend into the surrounding tissues to form a perianal abscess, which may discharge through the fissure into the anal canal or may burst externally to produce low anal fistula. Usually the external opening of this fistula lies in or close to the midline a short distance behind the anus, and an anal fissure should always be thought of as the commonest cause of such a median low dorsal fistula.

When the fissure is relatively superficial the sphincter usually undergoes a tight spasm, but when the fissure deepens and bares sphincter fibers thus becomes even more pronounced. After several months the muscle may become fibrosed in its spastic condition so that a rather fibrotic, lightly contracted, internal sphincter may result. The external sphincter may also have to some extent in the contraction of the anal musculature associated with the pain of the fissure, but it does not undergo the intense persistence contraction and eventual fibrosis seen so often in the internal sphincter.

### **PATHOGENESIS**

According to Devis (1960) "Infections material having gained entrance to anal tissues infection can localize superficially in the subcutaneous, space, inviting dissolution of the overlying anal skin. The resulting defect in the anal skin is an ulcer. Nesselrod (1970) has said that chief cause of anal fissure is anal infection and it occurs in three stages

**Stage 1** The infectious material is trapped or lodged in one or more of the anal crypts and is carried to the anal glands via the anal ducts. Thus, the crypts serve as funnels through which the infectious material from the intestinal tract is directed into the anal ducts and glands. In other words, these crypts act as portals of entry of the infectious material into the perianal and peri-rectal tissues without trauma playing any role. The liquid material (the semi-watery stool) can gain entry in the crypts much more easily.

**Stage 2** The second stage of anal infection is initiated by the so-called invasion of the surrounding tissues by the infectious material. This can occur directly due to breaks in the continuity of gland or duct. Alternatively, the infection may also travel indirectly through the vascular and lymphatic supply.

**Stage 3** If the infectious material localizes itself superficially in the subcutaneous tissue of the anal wall, usually the posterior one, a dissolution of the anal skin results in the formation of an ulcer of the anal skin, more commonly known as an anal fissure.<sup>72</sup>

## **CLINICAL FEATURES**

### **Pain**

The story of the condition is very much suggestive in cases of active anal fissure. Acute anal pain is associated with and following stool. The pain starts with the act of defecation<sup>73</sup> and is described as a sharp/cutting or tearing; which subsequently continues as a burning or gnawing discomfort for several hours (3 to 4 hours) following stool.

To some patients the pain is so agonizing that they tend to become constipated rather than go through the agony of defecation. The reason of pain following stool can be understood on the basis of pathophysiology of nervous involvement of anorectal region.

During defecation the anal tissues are stretched and the margins of the anal ulcer are separated. The first victim of anal fissure is the anal integument /skin of the anal canal. The anal skin has somatic sensory nerve- supply further the sensitive nerve conveys its influence from the surface of the ulcer to the spinal marrow, and the motor branch conveys the motor power from the spinal marrow to the sphincter muscle thus the irritation engendered at the ulcer is conveyed to the spinal marrow, thereby producing reflected effects upon the sphincter muscle, leading to painful contraction, which continues until the muscle becomes fatigued and at that time the patient feels relief. Hence the spasm of the muscle results in pain, whereas, the fatigue results in relief.

## **Bleeding**

Bleeding may be present or may not be present. Usually the bleeding is quite slight and amounts to little more than a streaking of the motion, but occasionally the loss is more profuse and may cause anemic.<sup>74</sup>

Bleeding is very common with fissure-in-ano but is not invariably present. The blood is bright red and usually scant in amount.<sup>75</sup>

Bleeding is common and, as a rule, stains the toilet paper during wiping.<sup>76</sup>

Bleeding is common (80 per cent), characteristically small in quantity, bright red, and usually only occurring during straining or defecation.<sup>77</sup>

## **Swelling**

Some patients with a large sentinel tag may become aware of this as a lump at the anus and may complain of heaving a painful external pile.<sup>78</sup>

## **Discharge and Pruritus**

If there is much discharge this may lead to soiling of the underclothes, and to increase moisture of the peri-anal skin with resulting pruritus around the anus.<sup>79</sup>

## **Urinary symptoms**

Sometimes patients have developed disturbances of micturation by reflex mechanism and C/O either dysuria and retention or increased frequency.<sup>80</sup>

## **Bowel habit**

The patient can quickly make out that is either initiated or aggravated by defecation. So there is tendency to defer going to stool, thereby the normal bowel habit is gradually taken over by the constipation.

## **Nervous Manifestation**

In stable individuals there may be no systemic reaction. Whereas in less stable persons there may be abdominal discomfort, digestive disturbances, headache, irritability and extreme nervousness. There may be marked changes in the personality.

## **DIFFERENTIAL DIAGNOSIS<sup>81</sup>**

Most of the conditions presenting with anal pain, swelling, bleeding can be easily differentiated by examination. Thus hematoma, prolapsed hemorrhoids, various types of abscesses in the anal region can be easily identified. However, a few ulcerative lesions which produce fissures in the anal skin such as carcinoma, ulcerative colitis, Crohn's disease, syphilitic ulcers, gonorrhea requires more careful discrimination.

- **ANAL ABRASION AND PRURITUS WITH SUPERFICIAL CRACKS**

Anal abrasion is caused by passage of hard stools and it is usually found in infants and children. These are superficial cracks which heal easily under proper anal hygiene. In pruritus-ani several superficial cracks extending radially from anus are found. When situated anterior or posterior midline position one of these ulcers may simulate fissure in ano. Both these conditions are limited to superficial layer of skin and the characteristic features of fissure-in-ano such as tenderness, spasm of internal sphincter etc. are absent. Thus these conditions can be differentiated from fissure in ano.

- **ULCERATIVE COLITIS**

Fissure-in-ano can be found in some types of ulcerative colitis in which ulcerative lesions are a prominent feature.

In this disease ulcers occur in large intestine. Fissure-in-ano is a rectal manifestation of this disease and they are extremely painful and become broad deep and very septic so that they readily lead to abscess and fistula formation. They are often situated in the midline and may be multiple in numbers. When ulcerative colitis involves the greater part of large intestine, the diarrhea and some constitutional symptoms are also manifested.

If proctocolitis is confined to the rectum and lower part of the sigmoid colon, then the patient may develop mild diarrhea and little general disturbances with painful fissures. Usually these fissures are inflamed. The presence of proctocolitis can be confirmed by endoscopy.

- **CROHN'S DISEASE**

Anal fissures can be found in Crohn's disease affecting the large or small intestine. The fissures appear grosser than idiopathic fissures and more similar to that seen in ulcerative colitis. But it is more extensive than the latter. Histological examination of the tissue obtained by biopsy confirms the disease. Sigmoidoscopy may reveal disease in the rectum, but rarely rectal mucosa appears normal when the intestinal lesion is situated at a higher level in the bowel.

- **ASSOCIATED WITH CARCINOMA**

A. Squamous cell carcinoma of the anus.

B. Adenocarcinoma of rectum.

In both these conditions, the anal skin is involved and shows fissures resembling chronic idiopathic fissures. There will be more induration than a simple fissure. In chronic cases, these fissures form the lower most part of the more extensive lesion of anal canal or rectum. These will be severe pain on defecation. The inguinal glands may become hard and enlarged. Histological examination of the tissue obtained by biopsy confirms the diagnosis.

- **PRURITUS ANI WITH SUPERFICIAL CRACKS OF ANAL SKIN**

Many cases of anal fissure develop pruritus ani due to irritation of perianal skin by the discharge.

In case of primary pruritus, the skin shows superficial cracks extending radially from the anus. There is no true anal spasm or tenderness in these cases.

- **COCCYDYNIA**

The complaint of the patient is severe pain during defecation. There is a history of injury or fracture of the coccyx, which causes the contraction of levator ani, whiles various movements.

Whereas in some cases there is no history of fracture or injury and such a condition is known as "COCCYDYNIA" of unknown aetiology. Rectal examination reveals local tenderness and occasionally deformity.

- **SYPHILITIC FISSURES**

The lesion imitating as fissure-in-ano in a syphilitic patient maybe a primary chancre or condyloma. This lesion that closely resembles an ordinary anal fissure, soon acquires a good deal of induration at it margins and base, and the inguinal lymph nodes become enlarged. A symmetrical lesion on the opposite wall of the anal canal and a dark ground illumination test of the discharge showing spirochetes are diagnostic. Wasserman's reaction is positive. Anal condyloma occurs at the anal orifice or perianal skins and may cause multiple fissures. Region is usually moist and pruritic with presence of several superficial septic fissures. Secondary skin lesions and mucous patches in the mouth are usually present.

- **TUBERCULAR ULCER**

Very rarely, a tuberculous ulcer occurs in the anal canal and may closely resemble a simple anal fissure at first. Later, it tends to enlarge and to develop an under mined ulcer. Biopsy and guinea-pig inoculation is diagnostic.

- **IDIOPATHIC STENOSIS OF INTERNAL SPHINCTER**

In older patients, usually women accustomed to taking aperients over many years this condition occurs. Due to this the anal canal has for a long time been spared of the regular dilating action of a normal solid motion. As a consequence, the internal sphincter undergoes contraction and may become fixed in this contracted condition by fibrosis. There may be no history of chronic or existing fissure and no other symptoms except difficulty in passing motions.

- **MISCELLANEOUS CONDITIONS**

- Proctalgia fugax
- Coccygodynia
- Rectal crisis of Tabes
- Frank psychoneurosis
- Ectropion
- Agranulocytic angina
- Gonorrhoea
- HIV
- Lymphogranuloma venereum

## **COMPLICATIONS**

Main complications are

1. Abscess and fistula.
2. Sentinel tag.
3. Enlarged papilla
4. Anal contracture

## **TREATMENT**

Most of the superficial fissure heals spontaneously often in 3 or 4 weeks, which have short history of pain. On the other hand, chronic fissures do not heal on the conservative line of treatment. They may produce less symptoms but trouble may recur frequently. To avoid trouble to the patient one should be anxious for a quick judgment whether there is need of conservative line of treatment or surgical intervention. Thus there could be two types of treatment for fissure-in-ano.

1. Medical or Conservative Treatment.
2. Surgical Treatment.

### **1. MEDICAL TREATMENT**

- (i) Palliative
- (ii) Injection treatment

#### **Palliative**

In his treatment warm sitz bath, hot packs, careful cleaning of the anal outlet following the passage of stools. (Anal Hygiene) and application of ointment and use of laxative is common. In this treatment the laxatives play a major role to some extent.



## **Avoidance of Constipation**

This is most important point in the medical treatment for fissure-in ano. Fric.L. has suggested for olive oil enema to avoid the constipation. John Wilson has advised to regularization of bowel habits with mineral oils or other stool softness and Senna suppositories twice daily. Mahadevan (1974) has given liquid paraffin orally, olive-oil enema or bland suppository before defecation. If the repeated anal trauma occasioned by passage of hard faeces can be avoided many fissures heal rapidly without any other treatment (Goligher) for achieving laxation as advised above now-a-days some oily preparation is in commonest use. They tend to produce soft and easy motions as advocated above e.g. Liquid Paraffin, Petrolagar, Agrol or Milpar. Khan has also advised the use of laxatives for the treatment of fissure-in-ano. Many patients are accustomed to some other purgatives. They should be advised to take it in slightly increased doses. If fissure is healed, care should be taken for regularizing the bowel habits and constipation must be avoided. If this care is not taken by the patient, there are more chances to recurrence of fissure. All proctologists as Bacon and Nesselrod have given the above suggestion. For withdrawal of the purgatives, gradually the doses be reduced till the patient finds that he can evacuate easily without becoming constipated. During this treatment 'if a surgeon does not take care about the purgation and patient passed liquid stool for months together there are more chances of anal stenosis (Goligher)

**Nitric oxide**<sup>82</sup> - has been identified as the chemical messenger of the intrinsic nonadrenergic, non- cholinergic pathway mediating relaxation of the internal anal sphincter. Topical application of nitroglycerin, a nitric oxide donor, causes a transient lowering of resting anal pressure and an increase in anodermal blood flow. Bacher et al reported a 92% healing rate within two weeks for acute fissures treated with application of 0.2% glyceryl trinitrate ointment t.i.d.

**Topical Nitroglycerin**<sup>83</sup> Lund et al randomized 80 patients to apply 0.2% glyceryl trinitrate ointment (GTN) or placebo to the lower anal canal b.i.d. Chronicity was defined by symptoms of greater than six weeks duration and fibrosis at the base of the fissure. At eight weeks healing was observed in 68% of the GTN group.8% of the placebo group. Median time to healing was six weeks. Resting pressure fell and anodermal blood flow increased in the GTN Group. 3/38 patients in the GTN group

recurred and each was successfully treated by further GTN. No patients report impairment of continence. Resting pressure returned to pre-treatment levels with discontinuation of GTN. 58% of patients reported headache; only one patient stopped treatment. Schouten et al treated 34 consecutive patients for 6 – 12 weeks with topical Isosorbide Dinitrate. 15 within ten days' anal pain was resolved in all patients. At twelve weeks, there was complete healing in 30/34. Mean duration of follow up was eleven months- fissure relapse was seen in 2/30. The reversible nature of “chemical sphincterotomy” is particularly attractive in patients at increased risk of impaired continence; e.g. patients who have had LIS. In Lund's trial, five patients in each group were recurrences after LIS; 3/5 healed with GTN.

**Botulinum Toxin** - The injection of a total of 20–25 U of botulinum a toxin into both edges of an anal ulcer and directly into the internal sphincter muscle at the ulcer base is a simple procedure that has had some mixed success in healing anal fissures. It can be done with local anesthesia as an outpatient procedure, with delay of symptomatic relief by approximately 1 week. Its paralysis of the internal sphincter completely reverses in several months, but the fissure may recur. Subsequent repeat treatments can be performed if the initial response was adequate, but it is expensive with at best modest healing rates<sup>84</sup>

**Injection of long acting local anesthetics** - Sensory nerve supply to the skin in the region of an anal fissure is divided from the inferior rectal nerves, and blocking of these nerves by long acting anesthetics injection can give relief from pain of fissure-in-ano. These anesthetics are prepared in sterile oily media, the object of which is to delay the absorption of the anesthetics agents and prolong its local action. Well known preparation Nupercaine and Proctocaine and so many other preparations are available in the market now a day.

**Technique of Injection** - Taking proper aseptic care the injection should be injected producing a wheel of ½% lignocaine in the skin 2.5 cm. Behind the anal verge and needle being injected at this part, 5-10 ml drug may be injected immediately behind the anus, deep to the fissure, and skin should be sealed with Tr. Iodine, second injection should not be given in less than 3 months, and it is probably unwise for this treatment to be repeated within period of one year.

Long acting anesthetics are in very common use from the 1920's and 30's, being strongly recommended by Gabriel (1929) and Morgan (1935) in America Yeomans Goarsch and Mathesheimer (1927) and Gorsch (1934). Not only had they advocated it for fissure, but also to give relief from pain after haemorrhoidectomy. Thereafter, Farquharson (1971). Wilson (1973), Som (1974), Mahadevan (1974), Lock (1977), and Khan (1978) all of them have suggested the use of long acting injection therapy. Further they have said that these solutions are very irritable to the skin. If there is local contamination many other complications may be produced by the use of these injections.

#### **Use of the Anesthetic ointment<sup>85</sup>**

Now a day's local anesthetic are used as an ointment for relieving. The pain and spasm of the fissure very frequently this treatment is adopted by every proctologist and every physician; popular preparations are 3% Decicaine (amethocaine). Percailol or lignocaine 5%. The best time for application is before defecation and after defecation; it can be used by the help of finger or by any nozzle, but it should not touch the peri-anal skin because it produces local dermatitis and pruritis (Goligher). Now a day's similar ointments with cortisone are also used.

#### **Use of Anal Dilators<sup>86</sup>**

Since much of the prolonged pain of a fissure is due to sphincter spasm, rest of the sphincter is essential as advised by Becon (1946). It is strictly recommended by Gabriel (1948), but it is not good because in this condition the patient comes having severe pain and dilatation is not justified (Goligher). Again Goligher suggested to produce local anesthesia by applying the local anesthetics and dilatation can be performed digitally.

**Method** - Under general anesthesia with the patients in lithotomy position, the lubricated, gloved index finger is inserted as far as the ano-rectal line and with the palmer surface against the anal wall the muscle is stretched by firm pressure applied in a rotatory motion. The index finger of the other hand is then introduced beside the first, and firm pressure is made in opposite directions about the circumference of the anus. This procedure should be carried out slowly, several minutes being consumed in doing so. Goligher again suggested that "I some time permit". Now suitable dilators

are available which are manufactured in 3 sizes, small or medium size is usually preferable.

Endoscopic anal dilation is a non-operative treatment option for chronic anal fissure. The use of a standardized technique of anal dilation with either a parks retractor or a balloon precludes the possibility of permanent incontinence or wound complications and was found to be safe (1.3% frequency of transient minor incontinence) and effective (94 % cure rate) in a study of 146 patients with chronic anal fissures.

This technique was subsequently adapted for endoscopic use with a two-valved anoscope and assessed prospectively in 62 patients with chronic anal fissures. The cure rate was 52% at 1 week and 95.2% at 1 month, with a recurrence rate of 2.2% at 24 months. No defects in continence were noted.

The general disrepute into which forced anal dilation has fallen should not be extended to control or precise anal dilation, a different technique with widely differing results. Endoscopic anal dilation can be accomplished in one outpatient session, usually at the time of sigmoidoscopy, which most patients with chronic anal fissures undergo during their evaluation. Comparative trials that include endoscopic anal dilation are warranted if the entire range of non-operative treatment choices for chronic anal fissure is to be analyzed.

### **Suppositories<sup>87</sup>**

Currently, many suppositories are available for the treatment of fissure-in-ano. They contain, in different proportions, sundry combinations of anesthetics, analgesics, astringents, anti-inflammatory agents (usually hydrocortisone), and emollients in a host of bases and preservatives. However, when the suppositories are inserted, they rest well above the area of the fissure because they, by necessity, must rest above the puborectalis muscle and are therefore not in direct contact with the fissure. Many patients complain that the insertion is painful. Credit claimed by the manufacturers for these agents is probably a result of the natural history of the healing of the majority of acute fissures by other measures such as warm baths, stool softeners, and a “tincture of time.” Some suppositories may help because of their emollient function. The many creams and ointments available for treating fissure-in-ano generally contain the same variety of components as the suppositories.

Depending upon the severity of the patient's symptoms, it may be worthwhile to continue medical treatment for up to 6 months if the patient demonstrates steady improvement<sup>88</sup>

## **COMPLICATIONS OF THE MEDICAL TREATMENT**

The medical treatment is liable for so many complications, that this has gone into disrepute. Regular use of such ointments cause local dermatitis and retard the natural healing of the ulcer rather than promoting it, Goligher has also given this statement and Khan says that these ointments produce local dermatitis and pruritis.

Similarly, in the injection therapy, there are more chances of abscess formation and subsequent fistulae may develop. Nesselrod has said that by using these injections we can extend the relief by increasing the dose. It must be remembered, however, that the use of larger amounts entails greater risk of complication such as slough and abscesses. From the practice point of view, the contaminations are unavoidable.

Because, it is liable to produce local abscesses and fistulae. It may also produce incontinence due to paralysis of the sphincter, because it has been seen that higher doses of these local anesthetics definitely produce the paralysis of anal sphincters by which the relief from pain is achieved. Lock has reported severe pruritis and sensitization whilst using 1% lignox Gel in 51 patients who had undergone previous anal dilatation out of 102 cases. They had to come for repeated sittings. Alexander has also reported dermatological complications, Goligher says, "In using the local anesthetic ointments, there are more chances to produce pruritis and dermatitis, which is more liable to produce secondary infection."

Moreover, in anal dilatation there is the need of general anesthesia and during dilatation there may be profuse bleeding by an enthusiastic surgeon. In injection therapy too, there are more chances of producing the local sepsis, abscess, fistulae etc.

## **2. SURGICAL TREATMENT**

There is considerable divergence of opinion as to the essential step in the operative treatment of anal fissure whether it is correction of spasm and contraction of internal sphincter muscle by stretching or by partial or complete division or excision of the

fissure, so as to provide a wide external wound in which the discharges cannot stagnate.

There is probably no need to remove either the fissure itself or the sentinel pile. The presence of a large skin tag may warrant its removal for cosmetic or cleansing reasons. Over the years, various operative procedures have been proposed for the treatment of a chronic or recurrent fissure. They include classic excision of the fissure, with or without sphincterotomy, either partial or complete; V-Y anoplasty with sliding skin graft (advancement flap of anoderm); anal sphincter stretch; and internal sphincterotomy of the posterior and lateral varieties<sup>89</sup>

**1. Stretching of the anal sphincter** - This is associated with the name of Recamier, 1829. In 1829 this type of operation was adopted by Recamier. It is simple operation and there is no need of many instruments and other surgical accessories. Only by the help of fingers this operation can be performed. Not only a surgeon but junior staff without special equipment can also perform it easily. Thus this operation was made popular by the surgeon for treating the cases of fissure-in-ano.

**Technique** - This operation can be performed even under local anesthesia, but it is better done under general anesthesia preferably with a relaxant. With the patient in lithotomy or left lateral position, the anus is stretched by the help of index and middle finger of the both hands. During this the forearms are fully pronated so as to stretch the posterior wall of the anal canal. (Goligher) suggested that better stretching is obtained in male patients by using the sagittal rather than the transverse plane as this avoids the fingers coming in contact, with the ischial tuberosities. This problem does not arise in woman because of their wider pelvis.

**Results** - Results obtained in 99 patients by watts, Benett and Goligher were as follows

**Relief of pain** - In 94 of the 99 patients early complete relief of pain was achieved by the treatment and was usually apparent within a day or two of the operation.

**Time of work** - Though a few patients returned to their jobs almost immediately, it was more usual for them to remain off work for a few days.

**Complication** - Within few hours of stretching patients developed painful perianal oedema. One of these patients also had prolapsed, thrombosed hemorrhoids. It would seem that this is a method to be avoided to cases with concomitant large internal piles.

**Recurrence** - 94 patients initially got relief, 11 had further pain. In 5 patients original pain was not relieved by stretching. So it can say that in 16%, the treatment did not prove completely successful. Two patients developed recurrence within 6 months. Fries and Reitz of Stockholm reported recurrences on 1-10 year follow up of 59 patients and Moor had 2 recurrences only in 41 cases treated for 1-9 years.

**2. Excision of Anal Fissure** - In 1948 this operation was very popularized chiefly by Gabriel, who believed that excision of broad triangle of skin of perianal region along with the main lesion itself very important and provides relief. The advantage of so doing, according to him was that the apical part of the wound corresponding to the site of the former fissure was given a chance to epithelize before the basal portion could close, so that there was little prospect of being left with an unhealed area of granulation in the posterior wall of the anal canal. The triangular shape of wound is to promote free external drainage and there is less chances of accumulation of discharges so healing will not be impaired. He divided the sphincter muscle in exposed area, which he was stated subcutaneous or lowermost part of the anal sphincter, but was really the rounded inferior margin of the internal sphincter, as demonstrated by Goligher, Leacock and Brossy. He also usually stretched the anal sphincters. But he attached particular importance to the triangular excision of the skin and advised that it should be of a precisely triangular shape and of a size not less than 4 cm. from apex to middle of base.

**Result** - Though Gabriel reported excellent results for the operation, this statement does not appear to be based on any detailed follow-up study. Goligher says that I have performed very many Gabriel fissurectomies in the past, but never, subjected the outcome to careful analysis. I can only say that my clinical impression is that this is very good and reliable operation.

### **3. Excision of anal fissure with immediate Skin Grafting**

A modification of the operation, suggested by Hughes (1953) to expedite healing and shorten the convalescence, is to apply an immediate split thickness skin graft to the wound after the excision of the fissure.

### **4. Division of the Internal Sphincter**

This technique is performed only surgical treatment of the fissure-in-ano under general anesthesia. Miles stated that he had treated many idiopathic fissure-in-ano by 'Pectenotomy' or division of the 'Pecten band' in lower part of the anal canal. By a short longitudinal incision in the lining of the posterolateral part of canal it can be obtained. This fibrous band was shown in 1951 by Eisenhammer and Goligher (1934), Milligan and Morgan (1948) and Gabriel in the course of excising anal fissures. They made a practice of dividing what they maintained was the spastic, subcutaneous part of the external sphincter. But again this band of muscle was demonstrated beyond doubt to be wrongly identified inferior margin of the internal sphincter (Eisenhammer, 1951, Goligher et al, 1955). Credit for the suggestion of treatment of the anal fissure by internal sphincterotomy alone goes to Eisenhammer (1951, 1953). Morgan and Thomson (1956) also helped greatly to popularize this operation.

### **5. Technique of Open Posterior Internal Sphincterotomy**

This operation can be performed under a local anesthetic blocker of the inferior rectum nerves. For the actual operation patient should be turned on his left lateral side. But Goligher suggests that it should be done under general anesthesia, because this is much painful condition. And after G.A. it will be more convenient to do operation in lithotomy position and then by the help of No. 7 Bard Parker knife carrying a small no. 10 blade. This operation should be performed.

### **Complications**

There may be anal incontinence in the post-operative period. In 34% of cases the control of flatus is impaired and in 15% the control of faeces is impaired during few weeks after operation. These impairments may be controlled after some days but in 3 years follow up there is incidence of incontinence for flatus had delivered to 13% and for faeces of 9 percent. Another functional defect is found that is faecal staining of the



underclothes this is 28%. Goligher says that our impression was borne out by a more detailed study Bonnett and Duthie of the physiology of the internal anal sphincter and its disturbance by internal sphincterotomy was that an important factor in production of these imperfections of control was the longitudinal furrow that developed in the scar of sphincterotomy wound in the posterior wall of the anal canal. It seemed that faecal matter and flatus could leak down by this groove. The possibility that lateral sphincterotomy has less prominent furrow on the anal canal than the posterior sphincterotomy. Eisenhammer and Bannnet and Goligher and more recently Parks strongly recommended lateral sphincterotomy, and lateral subcutaneous sphincterotomy described by Noturus. In 1970 Hoffman and Goligher also used such type of operations. In this the lower part of the internal sphincter is divided as in subcutaneous tenotomy which have virtually no wound at all.

## **6. Lateral Subcutaneous Internal Sphincterotomy**

Sphincterotomy of the internal anal sphincter is an established method of treating a chronic anal fissure.

In 1951 Eisenhammer gave original description of the procedure. He had studied and classified the anatomy of the anal canal and showed that the floor of a fissure in ano was the internal sphincter muscle. Eisenhammer divided the internal sphincter through the floor of fissure and then performed a gentle instrumental anal dilatation. In performing sphincterotomy he was careful to preserve the subcutaneous external sphincter muscle so as to prevent gaping of anal verge. Following Eisenhammer's paper many surgeons adopted this procedure and with time they developed minor modifications on his original technique. To improve drainage and healing of the anal wound. The posterior midline incision through the internal sphincter muscle has been extended and to the perianal skin with superficial division of the subcutaneous external sphincter muscle (Morgan and Thomson; Lochart-Mummery). Parks has also described a technique where he makes a small circumferential incision in the perianal skin and then dissects under it to expose the internal sphincter which is then divided. After sphincterotomy the skin wound is closed with interrupted suture. In 1971 M.J. Motharas has developed new technique of lateral subcutaneous internal anal sphincterotomy. It avoids an open intra anal wound, the divided internal sphincter muscle remains intact. It would thus avoid 'Kayhole' deformity and wound healing

should be more rapid. For these reasons a series of patients were treated by lateral subcutaneous internal anal sphincterotomy rather than by the standard technique of mid posterior internal sphincterotomy. Miller has done lateral internal sphincterotomy by the help of tenotomy knife. The last few fibers of the muscle are broken by the help of the finger and “v” shaped groove can be felt.

### **Complication**

In 1962, Bunnet et al have reported that there is incidence of faecal Soiling of the underclothes and anal region in approximately 30% of cases, in Mid Posterior Sphincterotomy. Bunnet et al has further reported that furrow deformity in 12 out of 16 patients and 8 of the 12 had minor degree of anal incontinence by mid posterior internal sphincterotomy. In 1967 Hardey has reported that 19 have key hold deformity out of 59 patients by mid-post internal sphincterotomy. Clery (1970) has reported 6% faecal soiling.

### **CRYOSURGERY**

Cryosurgery is method using sub-zero temperatures for the selective destructor of unwanted tissues. This method of treatment has been used to treat many benign, premalignant and malignant conditions of skin, and mucous membrane. Documented record shows that James Arnot used-ice and salt mixture for treatment of cancer of breast and cervix. Since then many therapeutic agents have tried by various experts for cryodestruction. AC White, an American dermatologist used liquid air to treat skin epithelioma. In 1909 Morten used solid carbon dioxide snow for this condition. Lyoyd Williams have treated hemorrhoids with cryo destruction even without using anesthesia. Setrag A Zacarian an American dermatologist studied various therapeutic agents for cryo destruction and found the only liquid nitrogen with boiling point  $-196.0^{\circ}\text{C}$ . can ensure total cell death in the treated area. According to Philip Hopkins, lesions of the skin, or mucous membrane of ano-genital regions are well accessible to cryosurgery. Thus fissure in ano along with skin tag can be treated by cryosurgery. K.Y. Jelly is spread over the area to be treated and a cryoprobe slightly smaller than that of the lesion is applied firmly. The liquid Nitrogen is then passed through the cryoprobe; within 3-4 seconds the skin turns white as freezing occurs and the water in the fissure changes to ice. The cryoprobe adheres to the skin and allows traction

sufficient to draw the frozen skin away from underlying structures. The advancing front of the developing ice ball can be seen clearly. The freezing is stopped when it is judged to have spread adequately beyond the lesion usually to cover 2-3 mm of normal surrounding skin. This may take 5-20 seconds, sometimes more depending on the size of the lesion. It is essential to ensure the depth of freezing for complete destruction of unwanted tissue. After the cryo destruction a small black tissue is found at the site and it falls within few days. Antibiotics are given after the procedure to prevent infection. Statistical data are not available regarding the efficacy of cryosurgery in the case of fissure in ano.

### **Acute fissure treatment<sup>90</sup>**

The aim of treatment of an acute fissure-in-ano is to break the cycle of a hard stool, pain, and reflex spasm. This result often can be accomplished with simple measures such as warm baths to help relieve the sphincter spasm. Although authors always advise warm baths, the first objective evidence of benefit from this recommendation was described by Dodi et al. In a unique study, they manometrically recorded at room temperature (23\_C) the resting anal canal pressure of normal controls and patients with anorectal problems such as hemorrhoidal disease, fissures, and proctalgia fugax. Recordings were then made while the anus was immersed in water at varying temperatures (5\_C, 23\_C, 40\_C). Resting pressures were recorded for an additional 30 minutes after immersion at 40\_C for 5 minutes. In all subjects, resting anal canal pressures diminished significantly from baseline after immersion at 40\_C but remained unchanged in subjects after immersion at 5\_C and 23\_C. Pinho et al. Could find no significant difference between anal pressures in subjects at rest or during voluntary contraction before and after perineal baths at 40\_C. However, their study was conducted on normal subjects.

### **ADJUVANT THERAPY**

Now few words about the adjuvant therapy which includes the warm sitz baths, hot packs or compresses, laxatives and aperients and the anal hygiene which collectively forms the basis of almost all ano-rectal affections including hemorrhoids, ano-rectal abscesses and fistulae, pruritus ani and perianal dermatases. The role of these simple measures in the control and treatment of anorectal diseases is too well known to merit

over-emphasis. These measures not only help in the prevention and cure of the disease but also provide relief and comfort to the patients who may suffer from various ano-rectal diseases. These measures with the conservative and operative methods as described in the preceding pages.

The wise physician starts treatment by applying medicine after ascertaining in every way, everything that is to be examined, thus he never commits mistake in administration of remedial measure.

# **Chapter 3**

## **DRUG REVIEW**

The World Health Organization's definition regarding the drug says that "Any substance or product that is used or intended to be used to modify or explore the physiological systems or pathological status for the benefit of the recipient." It is undisputable that the drug is as old as the disease. The ailments have been man's heritage since the beginning of this existence and search for effective remedies to combat it, is perhaps equally old.

Ayurvedic treatise speak about the importance of drugs as 'Nothing in world exists which does not have the therapeutic utility.' Taking this fact into consideration Ayurvedic physicians have formulated single as well as compound drugs for curative and preventive purpose in various ailments.

The theory of Tridosha is unique to the science of Ayurveda, so much so that even the drugs and medicinal plants are described for their properties and uses in view of their impact specifically on the three Doshas. According to the predominance of a particular Dosha in a disease the symptoms may present themselves. The selection of drug is also to be made according to keeping the three Doshas in view.

In fissure-in-ano cutting and burning types of pain is usually present. According to the Ayurvedic viewpoint, it can be said that in fissure-in-ano there is preponderance of mainly two Doshas viz. Vata and Pitta. Due to this Doshic predominance the two major symptoms of pain and burning sensation are present. For the relief of these symptoms a drug which is Vata and Pitta Shamaka is more suitable.

In the treatment of all types of wounds and inflammations Yastimudhu is considered the drug of choice. In inflammatory conditions of the eye and various types of Vrana, Chakradatta has advocated the use of this drug. Acharya Charaka has advocated the use of this drug in Vataja and Raktaja diseases at various places. In Sushruta Samhita it finds description at so many places as to its use in pain following the surgery and in various surgical and medical diseases. The Sneha (generally, Ghrita or Taila) processed with Yastimadhu is indicated for healing of wounds and the burn injuries. Among the medical diseases it has been mainly advised in diseases and symptoms of Pittaja origin such as thirst, burning sensation etc. Among the surgical diseases its use has been advocated in traumatic wounds. Pittaja-burns, fractures, Bhagandar (fistula), Parikartika (fissures), Visarpa (Erysipelas) and ulcers. Acharya Vagbhat has referred

to the use of Madhuyashti in almost all diseases mentioned by Acharya Charaka and Sushruta. Considering these facts, it can be said that this drug is mainly beneficial in diseases caused due to aggravation of Vata and Pitta-doshas. This can also be interpreted as Yashtimadhu is useful in diseases presenting inflammation and pain as the chief-symptoms. This explains the reason, why almost all the ancient authors including Charak, Sushrut, Vagbhat and Kashyap have equivocally prescribed Yashtimadhu preparation both for local and general application in Parikartika.

In the selection of the drug the following factors and properties were considered as useful.

- Yashtimadhu has Vatahara, Pitta shamak and Vrana-sodhan-ropana properties.
- It has been advocated by various ancient authors in the treatment of ulcers, surgical wounds and inflammatory conditions.

In this section the available literature about botanical, chemical and Ayurvedic aspects of Yashtimadhu and Teel taila (sesame oil) are briefly narrated. The information is mainly compiled from Ayurvedic Pharmacopoeia<sup>91</sup> and Bhavaprakash Nighantu.<sup>92</sup>

## INGREDIENTS OF YASTIMADHU TAILA

### YASTIMADHU



**Latin name** Glycyrrhiza glabra

**Family** Leguminosae

**Gana** Sandhaneeya, Varnya, Shonitasthapana (Cu.), Sarivadi, Anjanadi (Su)

**Synonyms** Mulethi, Jethimadh, Liquorice

#### **Names in different languages**

Sanskrit - Yastimadhuka, Yastika, Madhuka, Madhuyasti, Yastyahva

Assamese - Jesthimadhu, Yeshtmadhu

Bengali - Yashtimadhu

English - Liquorice root

Gujrati - Jethimadha, Jethimard, Jethimadh

Hindi - Mulethi, Mulathi, Muleti, Jethimadhu, Jethimadh

Kannada - Jestamadu, Madhuka, Jyeshtamadhu, Atimadhura



Kashmiri - Multhi

Malayalam - Irattimadhuram

Marathi - Jeshtamadh

Oriya - Jatimadhu, Jastimadhu

Punjabi - Jethimadh, Mulathi

Tamil - Athimadhuram

Telugu - Atimadhuramu

Urdu - Mulethi, Asl-us-sus

**Parts Used** - Dried, unpeeled stolon and root

**Main Constituents**- Glycyrrhizin, glycyrrhizic acid, glycyrrhetic acid, asparagine, sugars, resin and starch

**Habitat** - Jammu & Kashmir, Dehradun, Delhi

**Morphology** - A herb grows up to 6 Ft. in height

### **Brief Description**

Yashti consists of dried, unpeeled, stolon and root of *Glycyrrhiza glabra* Linn, (Fam. Leguminosae), a tall perennial herb, upto 2 m high found cultivated in Europe. Persia, Afghanistan and to little extent in some parts of India.

**a) Macroscopic** - Stolon consists of yellowish brown or dark brown outer layer, externally longitudinally wrinkled, with occasional small buds and encircling scale leaves, smoothed transversely, cut surface shows a cambium ring about one-third of radius from outer surface and a small central pith, root similar without a pith, fracture, coarsely fibrous in bark and splintery in wood, odour, faint and characteristic, taste, sweetish.

**b) Microscopic** Stolon- transverse section of stolon shows cork of 10-20 or more layers of tabular cells, outer layers with reddish-brown amorphous contents, inner 3 or

4 rows having thicker, colourless walls, secondary cortex usually of 1-3 layers of radially arranged parenchymatous cells containing isolated prisms of calcium oxalate, secondary phloem a broad band, cells of inner part cellulosic and outer lignified, radially arranged groups of about 10-50 fibers, surrounded by a sheath of parenchyma cells, each usually containing a prism of calcium oxalate about 10-35  $\mu$  long, cambium form tissue of 3 or more layers of cells, secondary xylem distinctly radiate with medullary rays, 3-5 cells wide, vessels about 80-200  $\mu$  in diameter with thick, yellow, pitted, reticulately thickened walls, groups of lignified fibers with crystal sheaths similar to those of phloem, xylem parenchyma of two kinds, those between the vessels having thick pitted walls without inter-cellular spaces, the remaining with thin walls, pith of parenchymatous cells in longitudinal rows, with inter-cellular spaces. Root -transverse section of root shows structure closely resembling that of stolon except that no medulla is present, xylem tetrarch, usually four principal medullary rays at right angles to each other, in peeled drug cork shows phelloderm and sometimes without secondary phloem all parenchymatous tissues containing abundant, simple, oval or rounded starch grains, 2-20  $\mu$  in length.

### **Properties and Action**

**Rasa** - Madhur

**Guna** - Guru, Snigdha

**Veerya** - Sheeta

**Vipak** - Madhur

**Doshagnata** - Vata-Pitta shaman

**Karma** - Balya, Chakshushya, Vrushya, Raktaprasadan

**Pharmacological actions** - Anti-inflammatory, antibacterial, antifungal, anti-arthritis, antipyretic, tonic, mild laxative, anti-ulcer and blood purifier as well.

## **TEEL TAILA (SESAME OIL)**



**Parts Used - Seeds of *Sesamum indicum* (for oil extraction)**

**Family - *Pedaliaceae***

**Names in different Indian languages**

**Sanskrit - Teela**

**Hindi - Til**

**Gujarati - Tal**

**Marathi - Teel**

**Urdu - Til**

**Punjabi - Til**

**Bengali - Til**

**Sinhala - Tala**

**Telugu - Tillu, Nuvvulu**

**Kannada - Acchsilu**

**Malayalam** - Ellu

**Tamil** - Ellu

**Oriya** - Rasi

**Ayurvedic Properties**

**Rasa (taste)** - Madhur

**Anurasa** - Tikta, Kasaya

**Veerya (potency)** - Ushna.

**Vipaka (post-digestion metabolic effect / taste)** - Madhur

**Guna (properties)** - Snigdha, Guru, Suksma, Vyavayi, Visada, Sara, Vikasi

**Karma (actions)** - Balya, Caksusya, Dipana, Garbhasaya sodhana, Kesya, Medhya, Sandhaniya, Snehana, Stanyajanana, Tvak prasada, Vranaropana, Vranasodhana, Vrsya

**Doshagnata** - Vatahara

**Rogagnata** - Agnidagdha (Accidental burns), Ardita (Facial palsy), Bhagna (Fracture), Dantashula (Toothache), Kandu (Itching), Karnashula (Otagia), Krumi (Helminthiasis / Worm infestation), Medhya (Brain tonic), Daurbalya (Weakness) , Pakshaghata (Paralysis /Hemiplegia), Puyameha (Gonorrhoea), Shirahshula (Headache), Shula (Pain), Vatavikara (Disorders due to Vata Dosha), Vrana (Ulcer)

**Actions & Uses**

Useful as massage oil in all Vata disorders

Useful to enhance flexibility of muscle tissues

Tones up skin and makes it smooth and supple

Helps in reducing swelling and oedema

Helps to reduce fat deposition and improve lipid profile

Useful as a base oil in many Ayurvedic (medicated) oils

## INGREDIENTS OF TRPHALA TABLET

### HARITAKI



**Latin Name** - Terminalia chebula

**Names in different languages**

**Sanskrit** - Abhaya, Kayastha, Shiva, Pathya, Vijaya

**Assamese** - Shilikha

**Bengali** - Haritaki

**English** - Myrobalan

**Gujrati** - Hirdo, Himaja, Pulo-harda

**Hindi** - Harre, Harad, Harar

**Kannada** - Alalekai

**Kashmiri** - Halela

**Malayalam** - Katukka

**Marathi** - Hirda, Haritaki, Harda, Hireda

**Oriya** - Harida

**Punjabi** - Halela, Harar

**Tamil** - Kadukkai

**Telugu** - Karaka, Karakkaya

**Urdu** - Halela

**Family** - Combretaceae

**Brief Description**

Haritaki consists of the pericarp of mature fruits. It is a moderate sized or large tree found throughout India, chiefly in deciduous forests and areas of light rainfall, but occasionally also in slightly moist forests, upto about 1500 m elevation, throughout India, flowers appear from April, August and fruits ripen from October-January

**Parts Used (Upayuktang)**

Phala (Fruit)

**Constituents**

Gallic acid, chebolic acid, punicalagin, chebulanin, corilagin, neochebulinic, ellagic acid, chebulegic acid, chebulinic acid, 1,2,3,4,6-penta-Ogalloyl- $\beta$ -D-glucose, 1,6, -di-O-galloyl-D-glucose, casuarinin, 3,4,6-tri-O-galloyl-D-glucose and terchebulin

**Properties and Action**

**Rasa** - Madhura, Amla, Katu, Tikta, Kashaya

**Guna** - Laghu, Ruksha

**Virya** - Ushna

**Vipaka** - Madhura

**Karma** - Dipana, Anuloman, Hrudya, Chakshusya, Tridoshaprashamaka, Rasyana

**Therapeutic uses** - Arsha, Vibandha, Shofa, Aruchi, Hrudroga, Prameha, Shwasa, Kasa, Gulma, Vibandha, Vishamajwara, Jirnajwara, Udarroga

**Therapeutic dose** - 3 to 6 Gms of Powder

## **BIBHITAK**



**Latin Name** - Terminalia belerica

### **Names in different languages**

**Sanskrit** - Vibhita, Aksha, Akshaka

**Assamese** - Bhomora, Bhomra, Bhaira

**Bengali** - Bayada, Baheda

**English** - Beleric Myrobalan

**Gujrati** - Bahedan

**Hindi** - Bahera

**Kannada** - Tare kai, Shanti Kayi

**Kashmiri** - Babelo, Balali

**Malayalam** - Tannikka

**Marathi** - Baheda

**Oriya** - Baheda

**Punjabi** - Bahera

**Tamil** - Thanrikkai

**Telugu** - Thanikkaya

**Urdu** - Bahera

**Family** - Combretaceae

**Brief Description** - Bibhitak consists of pericarp of dried ripe fruits. It is a large deciduous tree, 10-12 m or more high, commonly found in plain and forests up to 900 m elevation, fruits ripen towards November.

**Parts Used (Upayuktang)**

Phala (pericarp of dried fruit)

**Constituents**

Bellericanin, Gallic acid, Termilignan

**Properties and Actions**

**Rasa** - Kashaya

**Guna** - Laghu, Ruksha

**Virya** - Ushna

**Vipaka** - Madhura

**Karma** - Chakshushya, Kasa, Kruminashana, Kaphapittajit, Keshya

**Therapeutic uses** - Chardi, Shwasa, Kasa, Krumiroga, Vibandha, Swarabheda, and Netraroga

**Therapeutic dose** - 3 to 6 Gms of Powder

**AMALAKI**

**Latin Name** - *Emblica officinalis* Gaertn. *Phyllanthus emblica* Linn

**Names in different languages**

**Sanskrit** - Amalka, Amrutphala, Dhatriphala

**Assamese** - Amlakhi, Amlakhu, Amlaku

**Bengali** - Amla, Dhatri

**English** - Emblic Myrobalan

**Gujrati** - Ambala, Amala



**Hindi** - Amla, Aonla

**Kannada** - Nellikayi, Bela nelli, pottadenollikayi

**Kashmiri** - Amlī, Embali

**Malayalam** - Nellikka

**Marathi** - Anvala, Avalkathi

**Oriya** - Ainla, Anala

**Punjabi** - Aula, amla

**Tamil** - Nellikai, nelli

**Telugu** - Usirika

**Urdu** - Amla, Amlaj

**Family** - Euphorbiaceae

### **Brief Description**

Amalki is mostly collected in winter season after ripening and in Kashmir in summer, a small or medium sized tree, found both in natural state in mixed deciduous forests of the country ascending to 1300 m on hills; cultivated in gardens, home yards or grown as a road side tree.

### **Parts Used (Upayuktang)**

Fruit (Fresh and Dried),

### **Constituents**

Gallic acid, Ellagic acid, pyrogallol, some norsesquiterpenoids, corilagin, geraniin, elaeocarpusin, and prodelphinidins B1 and B2 also possess antineoplastic effects.

### **Properties and Actions**

**Rasa** - Madhura, Amla, Katu, Tikta, Kashaya

**Guna** - Laghu, Ruksha

**Virya** - Sheeta

**Vipaka** - Madhura

**Karma** - Rasayana, Vrushya, Chakshusya, Tridoshghna

**Therapeutic uses** - Raktapitta; Amlapitta; Prameha; Daha

**Therapeutic dose** - Fresh juice (Swaras) = 40 ml, Powder = 3-6 gms

## SNEHA KALPANA

Taila Kalpana is a pharmaceutical process which comes under Sneha Kalpana. Sneha Kalpana may be defined as –

‘A pharmaceutical formulation prepared from the substances like *Kalka*, *Kwatha*, *Drava dravyas* and suitable *sneha* (fats) as a base in specific proportions by subjecting to a unique heating pattern and duration to fulfil certain pharmaceutical parameters, according to the need of therapeutics’.

It is an important formulation to get especially lipophilic action of the cell epithelium overlying the whole body surface; externally & internally. This action is only possible by the formulation which is prepared by using medicines made up of lipids, proteins, & water i.e. “*Sneha Kalpana*.”

### Types of *Snehapaka*<sup>93,94,95,96</sup>

**Based on stages during *Agnisanskar*, *Snehapaka* is divided into three categories**

- 1) *Mridu paka* (*Manda paka*)
- 2) *Madhyama paka* (*Chikkana paka*)
- 3) *Khara paka* (*Khara Chikkana paka*)

*Harita* adds one more stage of oil, ***Visesa paka***– which succeeds *Khara paka*<sup>97</sup>.

*Vagbhata*<sup>98</sup> and *Sarangadhar*<sup>95</sup> have mentioned two more stages preceding and succeeding to above 3 stages respectively.

#### a) ***Ama paka***

It is due to incomplete heating and does not have potency. It causes *Agnimandya*.

- Water content persists in both *kalka* and *Sneha*.
- Oil shows heterogeneous media of water and oil.
- *Kalka* is very soft in consistency.
- Produces cracking sound when put on *Agni*.

**b) *Mridu paka (manda paka.)***

- Trace amount of water persists in *kalka* and *Sneha*.
- *Kalka* is sticky on touch.
- It shows heterogeneous media of *kalka* and oil.
- Produces cracking sound when put on *Agni*.

**c) *Madhyama (Chikkana) paka***

- *Kalka* is not sticky and free of water content.
- Can be made into *Varti* when rolled between the fingers.
- No cracking sound when put on *Agni*.
- Froth appears on oil.
- Oil has good colour, odour and desired taste of drugs.

**d) *Khara (khara Chikkana) paka***

- *Kalka* is free of water, dry.
- Paste is hard, rough, blackened.
- Colour and odour of oil may alter.

**e) *Dagdha paka***

If the heating process is further continued after *Kharapaka*, it results in *Dagdha.Paka* which is not suitable for therapeutic use and if used it causes burning sensation.

- Burnt *Kalka*, Rough, dry, black often charred with Burnt smell.
- Essential contents of oil partially lost with Loss of colour, odour, and taste.

## METHOD OF PREPARATION

### TRIPHALA TABLETS

<b>Ingredient</b>	<b>Quantity</b>
Haritaki (Terminalia chebula)	500 gm (1 part)
Bibhitak (Terminalia bellerica)	500 gm (1 part)
Amalaki (Emblica officinalis)	500 gm (1 part)

All three ingredients were taken in equal part and pulverised to obtain 60 mesh powder. All powders were blended thoroughly and quantity was weighed. Inert binding solution was added to the blend and granules were prepared from the mixture. After drying the granules were compressed to tablets (each measuring 500 mg).

Triphala tablets were sent to the laboratory for QC check.

### YASTIMADHU TAILA

General principles advocated by Sharngadhara<sup>99</sup> in Sneha Kalpana have been adapted here i.e. the ratio of Kalka: Sneha: Drava Dravya as 1:4:16.

Yastimadhu kalka	1 part
Teel taila	4 part
Yastimadhu kwatha	16 parts

Yastimadhu kwatha choorna is prepared with the roots and stolons of Yashtimadhu. To this 16 parts of water is added and kwatha is obtained which was reduced to Chaturamsha i.e.  $\frac{1}{4}$  of the quantity. This is subjected to filtration. To this 4 parts of Teel taila is added along with 1 part of Yastimadhu Kalka i.e. in the ratio of 1:4 has to be maintained.

The mixture is then boiled till the quantity is of 4 parts. The boiling is carried out till the Samyak-Paka Lakshana of Taila is obtained. It is collected after Swangasheeta.

### **Taila Siddhi Lakshana**

Kalka pariksha was done to confirm the sidhilakshana of taila. Kalka burnt under fire burnt without producing crackling sound and when rolled between fingers it formed in to varti like.

If *Kalka* is non sticky and can be made into *Varti* form when rolled between fingers and no cracking sound appear when put on *Agni* are the characters of *Sneha siddhi* found in *Kalka*.

- The appearance of desired smell, colour and taste of added drug in the *Sneha*.
- Appearance of *Phena* (bubbles in the frying pan while heating) is *Sneha Siddhilakshana* for *Taila*.

# **Chapter 4**

## **METHODOLOGY**

## **MATERIALS**

- Triphala Tablets (For ingestion)
- Yashtimadhu Taila (For Matra Basti)
- Fissure Management Device (FMD) (For minimally invasive para-surgical measure)

॥ पुष्पं पुष्पं विचिन्वीत मूलच्छेदं न कारयेत् ॥

**Dr. S. S. Deokule**

Prof. & Head

वनस्पतिशास्त्र विभाग

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Date : 7/12/2012.

## AUTHENTICATION CERTIFICATE

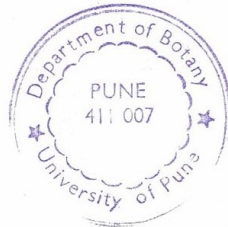
This is to certify that **Vd. Mayur Amar Pawaskar** student of Tilak Maharashtra Vidyapeeth, Pune-411018. He has selected research topic for his Ph.D. (Ayurveda-Shalyatantra) degree which is a given below-


**“TO EVALUATE THE ROLE OF A PARA-SURGICAL MEASURE FOR THE  
MANAGEMENT OF FISSURE IN ANO VIS-À-VIS PARIKARTIKA”**

Under this study the specimens which he has submitted to me for the botanical authentication were identified & confirmed as:

Drug Name	Botanical name	Name of Family	Parts/ Used
Haritki	<i>Terminalia chebula</i> Retz.	Combretaceae	Fruits
Vibhitak	<i>Terminalia belerica</i> Roxb.	Combretaceae	Fruit
Amalaki	<i>Emblica officinalis</i> Linn.	Phyllanthaceae	Fruit
Yashtimadhu	<i>Glycyrrhiza glabra</i> Linn.	Fabaceae	Root

The herbal drug samples were submitted in an organ form and are identified as above. The authentication of the drugs were done by using the botanical parameters such as Organoleptic/ macroscopic (organ and sense), microscopic, histochemical & phytochemical evaluation. This is for information and necessary action.



  
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## MANUFACTURING PROCESS

### A) TRIPHALA TABLETS

<b>Ingredient</b>	<b>Quantity</b>
Haritaki (Terminalia chebula)	500 gm (1 part)
Bibhitak (Terminalia bellerica)	500 gm (1 part)
Amalaki (Emblica officinalis)	500 gm (1 part)

All three ingredients were taken in equal part and pulverised to obtain 60 mesh powder. All powders were blended thoroughly and quantity was weighed. Inert binding solution was added to the blend and granules were prepared from the mixture. After drying the granules were compressed to tablets (each measuring 500 mg).

Triphala tablets were sent to the laboratory for QC check.

### B) YASHTIMADU TAILA

<b>Ingredient</b>	<b>Quantity</b>
Yashtimadhu kalka	250 gm (1 part)
Teel taila	1 liter (4 parts)
Yastimadhu kwatha	4 liters (16 parts)

Yashtimadhu kwatha choorna was prepared with the roots and stolons of Yashtimadhu. To this choorna, 16 parts of water was added and kwatha was obtained by heating the mixture on low flame with intermittent stirring till water part is reduced to  $\frac{1}{4}$  of the quantity. This was subjected to filtration. Then 4 liters of Yashtimadhu Kwatha was taken in a stainless steel pan. To this 1 liter of Teel taila was added along with 250 gm of Yastimadhu Kalka i.e. in the ratio of 1:4 was maintained. The mixture was then again boiled on low flame with consistent stirring till the quantity of liquid part was reduced to one-fourth. The boiling was further continued till the Samyak-Paka Lakshana of Taila were obtained. It was collected after Swangasheeta (cooling on its own).

### **Taila Siddhi Lakshana**

- Varti-pariksha was done to confirm the siddhilakshana of taila. Kalka was rolled to make varti (thin slender roll) which was burnt. There was no crackling sound produced indicating that no water part is remaining in the siddha-taila.
- The appearance of desired smell, colour and taste of added drug in the *Sneha*.
- Appearance of *Phena* (bubbles in the frying pan while heating) is *Sneha Siddhilakshana* for *Taila*.

Yashtimadhu Taila was sent to the laboratory for QC check.

॥ पुष्पं पुष्पं विचिन्वीत मूलच्छेद न कारयेत् ॥

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## STANDARDISATION CERTIFICATE

This is to certify that **Vd. Mayur Amar Pawaskar** student of Tilak Maharashtra Vidyapeeth, Pune-411018. He has selected research topic for his Ph.D. (Ayurveda-Shalyatantra) degree which is a given below-

**“TO EVALUATE THE ROLE OF A PARA-SURGICAL MEASURE FOR THE MANAGEMENT OF FISSURE IN ANO VIS-À-VIS PARIKARTIKA”**

He has submitted to me a herbal preparation in the form of Vati and Taila of authenticated plant material for standardization.

**Table 1. Organoleptic Characters**

Parameters	Yashtimadhu Taila
Colour	Yellowish brown
Odour	Characteristic
Appearance	Oily viscous liquid
Touch	Greasy

**Table 2. Physicochemical Parameters**

Parameters	Yashtimadhu Taila
Specific Gravity	0.89
Viscosity	62.85
Refractive index	1.448
Total Fat	95.86%
Saponification value	147.22
Acid Value	11.13
Iodine value	121.03
Weight per ml	0.930

**Table 1. Organoleptic Characters**

Parameters	Triphala Vati
Colour	Greyish black
Odour	Characteristic
Texture	Rough
Taste	Astringent

**Table 2. Physicochemical Parameters**

Parameters	Triphala Vati
pH	5.2
Moisture Content	0.65 %
Total Ash Value (w/w)	4.5%
Water soluble ash (w/w)	3.3%
Acid Insoluble ash	0.56 %
Water Soluble Extractive	60 %
Alcohol Soluble Extractive	12.8 %
Loss on Drying	5.8 %
Friability Test	0.93%
Disintegration Time	15-20 min
Total Hardness	2.3 kg/m <sup>2</sup>
Average Thickness	1.30 mm

Based on these results of standardization, he may be allowed to use above Vati and Taila for clinical trials. This is for information & necessary action



*S. S. Deokule*  
**Dr. S. S. Deokule**  
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## **FISSURE MANAGEMENT DEVICE**

**Description of usage** - The intervention involves usage of a device, which was used for a dual purpose of administration of medicine as well as anal dilatation. The device has a balloon at one end. The device also contains a central bar for injecting oil/medicine; the side bar is useful to introduce liquid/air to inflate the balloon.

**Length of the device** - 14 inches

**Material used for preparation of device** - Rubber



### **STUDY DESIGN**

A comparative clinical trial between two therapeutic study groups was conducted.

### **CENTRE OF STUDY**

Padmashree Dr. D. Y. Patil Ayurvedic College & Hospital, Nerul, Navi Mumbai.

### **SELECTION OF THE SUBJECTS**

Patients of either gender diagnosed to have fissure-in-ano were selected randomly. A detailed Case Record Form (CRF) was prepared considering all the points pertaining to history, signs, symptoms & examinations as mentioned in classical Ayurvedic texts & allied sciences to confirm the diagnosis.

Minimum of 200 patients were selected for the study who fulfilled the inclusion criteria and were randomly divided into two groups.

## **INCLUSION CRITERIA**

Subjects fulfilling following criteria were selected for the study

- Subjects of either gender
- Age group between 20 and 60 years
- Subjects diagnosed with Parikartika (fissure-in-ano)
- Subjects willing to give written consent
- Subject is not involved in any other trial.

## **EXCLUSION CRITERIA**

Subjects fulfilling any of the following criteria were not selected for the study

- Age below 20 years and above 60 years
- Pregnant or lactating woman
- Subjects diagnosed with Parikartika along with other associated ano-rectal diseases like fistula, hemorrhoids etc.
- Subjects not willing to give written consent
- Subjects having systemic disease like TB/ DM/ HTN
- Subjects having serious infections like Leprosy (Any type of Kushtha), or Serological disease like HIV, HBsAg

## **ALLOCATION OF SUBJECTS**

In all 200 patients were selected for the study who fulfilled the inclusion criteria. The subjects were randomly divided into two groups with 100 subjects in each group.

**GROUP A** - Subjects in Group A were intervened with a dilatation device viz. FMD (Fissure Management Device) with matrabasti of Yashtimadhu Taila

**GROUP B** - Subjects of Group B were intervened only with Matrabasti of Yashtimadhu Taila.

## **DURATION OF THE STUDY**

Six weeks' procedures for each group followed by 6 months (24 weeks) follow up (total 3 follow-ups with interval of 2 months or 8 weeks each)

Total duration of the study = 30 weeks (6 weeks' procedure + 6 months)

## **INTERVENTIONS**

There were 2 different sets of interventions practiced in each group

### **GROUP A**

The Intervention was two-stepped 'Pre-procedure' and 'Minimally Invasive Para-surgical Procedure' (Experimental procedure).

#### **Step 1 - Pre-procedure**

Triphala tablets (2nos) were given with lukewarm water at bedtime every night starting two days prior to the application of "Minimally Invasive Para-surgical Procedure".

#### **Step 2 - Minimally Invasive Para-surgical Procedure (Experimental procedure)**

- The patient, after some counselling, was given the left lateral sleeping position with right knee-bent.





- Yashtimadhu Taila was administered in form of matrabasti in quantity of 60 ml.
- After an hour, fissure management device (FMD) was slowly inserted into the anus.
- The balloon of the FMD was inflated with 5cc of fluid. The position along with inserted FMD was maintained for another 5 minutes.

Post-Procedure even after removing the FMD, the patient was advised to lie in the same position till he is comfortable.

The same procedure was repeated 6 times at weekly intervals.

The fluid for inflation was increased by 5cc in every sitting to have a gradual incremental dilatation.

Rest of the regimen remained the same.

## **GROUP B**

The Intervention was two-stepped 'Pre-procedure' and 'Matrabasti' (Experimental procedure).

### **Step 1 - Pre-procedure**

Triphala tablets (2nos) were given with lukewarm water at bedtime every night starting two days prior to the application of "Matrabasti".

### **Step 2 - Matrabasti (Experimental procedure)**

- The patient, after some counselling, was given the left lateral sleeping position with right knee-bent.
- Yashtimadhu Taila was administered in form of matrabasti in quantity of 60 ml.

After Matrabasti, the patient was advised to lie in the same position till comfortable.

The same procedure was repeated 6 times at weekly intervals.

- The Patients in both the groups were advised to take a high fiber diet and consume water adequately.

## **ASSESSMENT PARAMETERS**

The patient's response was assessed (before treatment and on every follow up) on the following parameters

- Nature of pain was assessed on visual analogue scale (VAS).
- Difficulty in passage of flatus - Present or Absent
- Constipation - Present or Absent
- Pruritus - Present or Absent
- Bleeding - Present or Absent

## **DATA COLLECTION AND ANALYSIS**

Data of each patient was collected and analyzed thoroughly to draw the conclusion.



**Chapter 5**

**OBSERVATIONS,  
ANALYSIS &  
INTERPRETATION**

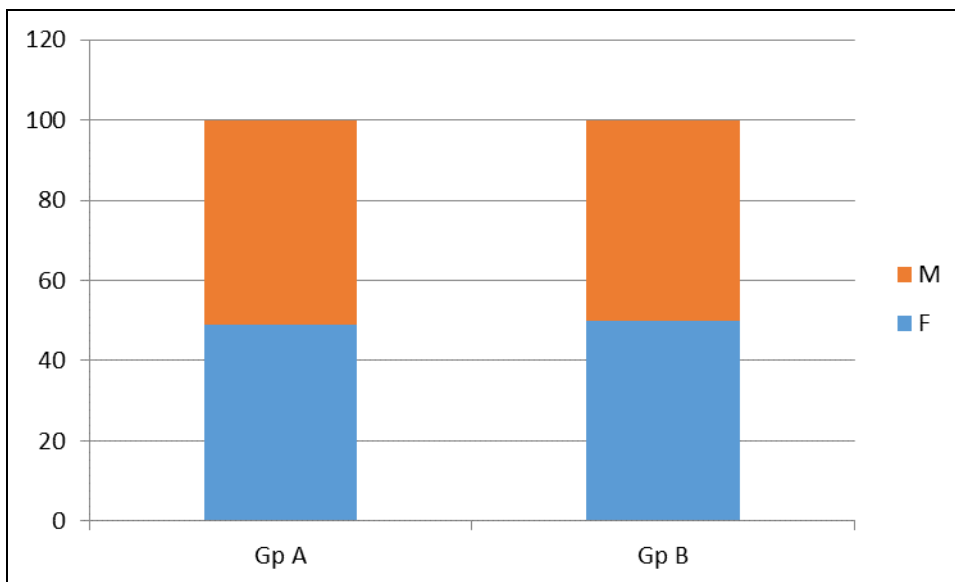
## GENDER WISE DISTRIBUTION (CHI SQUARE)

The patients were divided gender wise in both groups. The distribution is as shown in Table 1 and Figure 1.

Tab 1 Gender wise distribution of patients

	Females	Males
Gp A	49	51
Gp B	50	50

Fig 1 Gender wise distribution of patients



There was no significant difference between both the groups in terms of gender of the patients.

## RELIGION WISE DISTRIBUTION (CHI SQUARE)

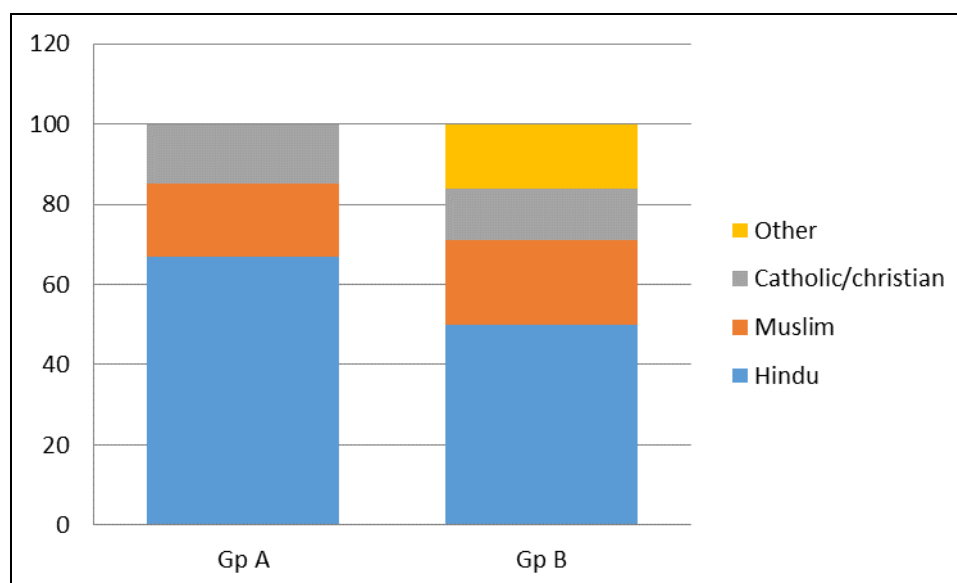
The patients were divided into different religions they belong to. The distribution is as shown in Table 2 and Figure 2.

Tab 2 Religion wise distribution of patients

	Hindu	Muslim	Catholic/Christian	Other
Gp A	67	18	15	0
Gp B	50	21	13	16

Although there was a significant difference between both the groups, since religion was not an important criterion to assess the results, it was not considered for further analysis.

Fig2 Religion wise distribution of patients



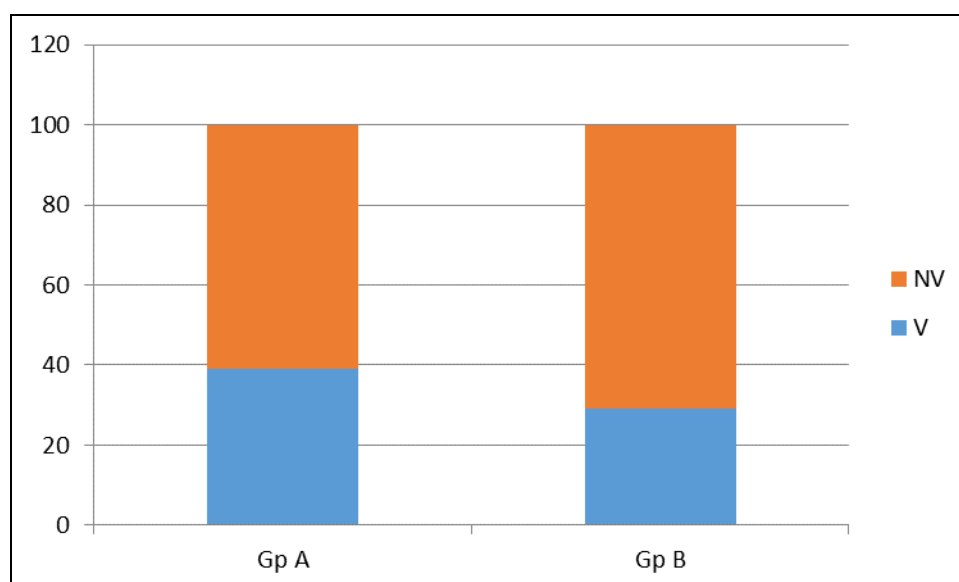
## DIET WISE DISTRIBUTION (CHI SQUARE)

The patients were divided according to diet they consume regularly viz. vegetarians and Non-vegetarians. The distribution is as shown in Table 3 and Figure 3.

Tab 3 Diet wise distribution of patients

	V	NV
Gp A	39	61
Gp B	29	71

Fig 3 Diet wise distribution of patients



There was no significant difference between both the groups in terms of diet of patients.

### Age and weight (Unpaired t test)

The average age and weight of patients in both groups is as shown in Table 4.

Age	Age (years)	Weight (kg)
Gp A	35.11±7.61	71.25 ± 13.14
Gp B	35.78 ±10.19	68.99 ± 14.08

There was no significant difference between both the groups.

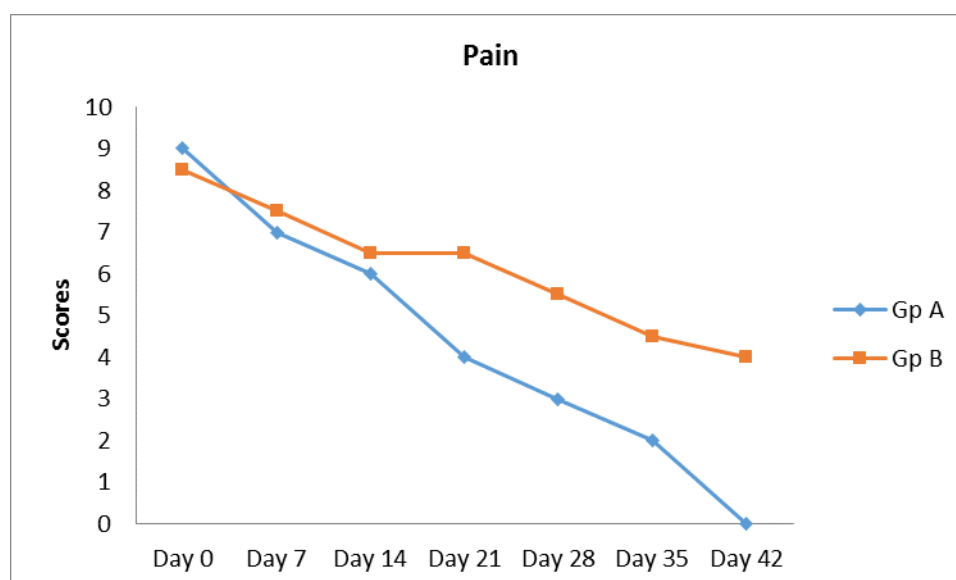
## EFFECT ON PAIN (MANN WHITNEY TEST)

Pain experienced by patients at different time points was measured on VAS ranging from 0 to 10. There was gradual decrease in pain in both the groups. The results are shown in Table 5 and Fig 4.

Tab 5 Effect on Pain (Median)

	Day 0	Day 7	Day 14	Day 21	Day 28	Day 35	Day 42
Gp A	9	7*	6***	4***	3***	2***	0
Gp B	8.5	7.5	6.5	6.5	5.5	4.5	4

Fig 4



Though both the groups were comparable at baseline, there was significant difference between the 2 groups from Day 7 onwards. In group A, median pain score was significantly less than Group B.

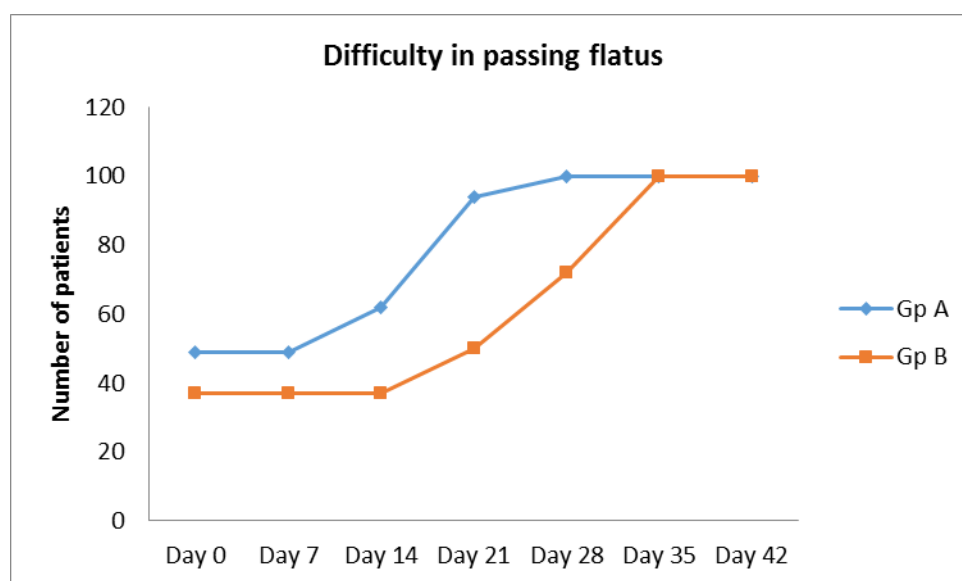
## EFFECT ON DIFFICULTY IN PASSING FLATUS (CHI SQUARE)

	Day 0	Day 7	Day 14	Day 21	Day 28	Day 35	Day 42
Gp A	49	49	62	94	100	100	100
Gp B	37	37	37	50	72	100	100

In all patients, the symptom of difficulty in passing flatus was documented as present/absent. In both the groups, number of patients not having the symptom at different time points, was counted and analyzed using chi square test. The results are shown in Table 6 and Fig 5.

Tab 6 Effect on difficulty in passing flatus (Number of patients)

Fig 5



$p < 0.05$

The groups were found significantly different from each other.

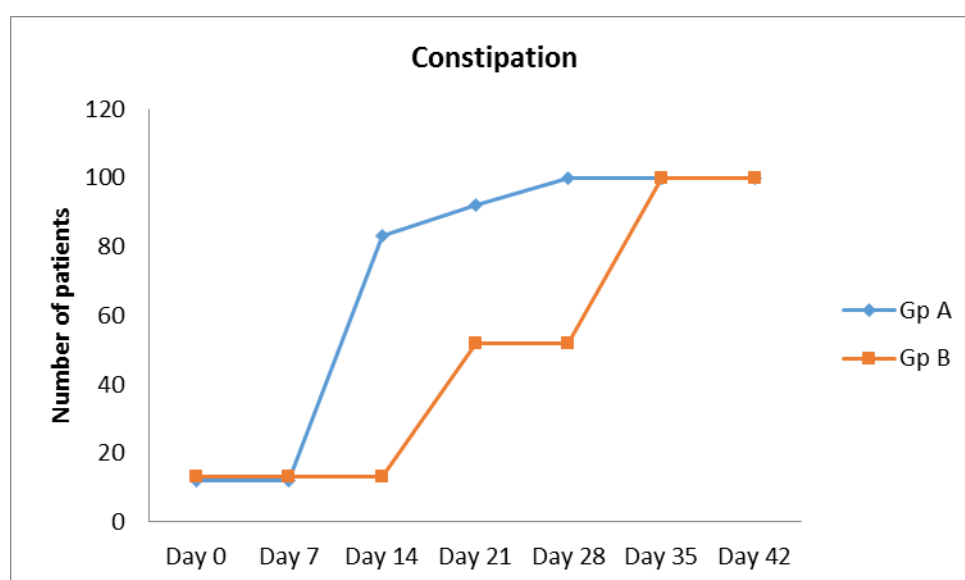
## EFFECT ON CONSTIPATION (CHI SQUARE)

In all patients, the symptom of constipation was documented as present/absent. In both the groups, number of patients without symptom at different points, was counted and analysed using chi square test. The results are shown in Table 7 and Fig 6.

Tab 7 Effect on constipation (Number of patients)

	Day 0	Day 7	Day 14	Day 21	Day 28	Day 35	Day 42
Gp A	12	12	83	92	100	100	100
Gp B	13	13	13	52	52	100	100

Fig 6



$p < 0.0001$

The groups were found significantly different from each other.

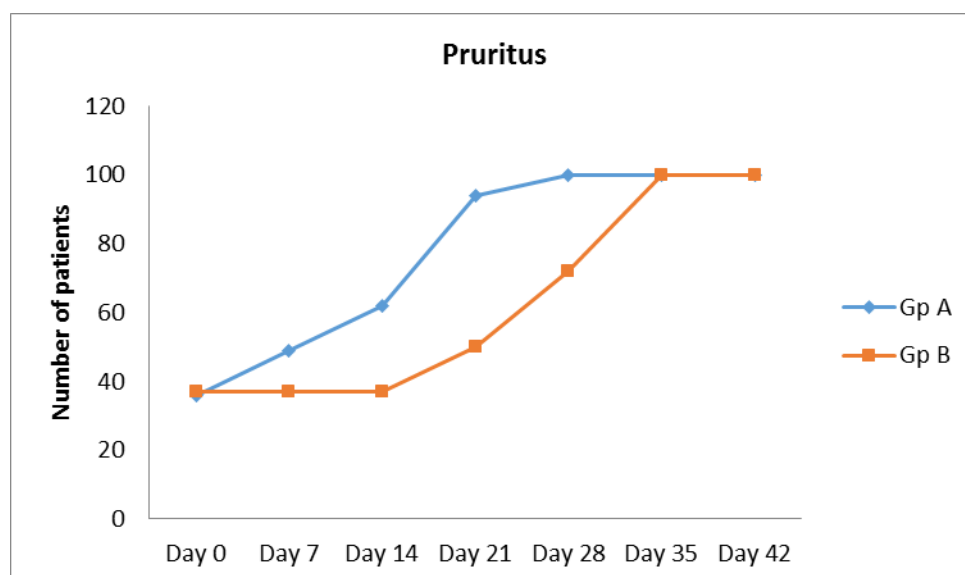
## EFFECT ON PRURITIS (CHI SQUARE)

In all patients, the symptom of pruritis was documented as present/absent. In both the groups, number of patients without symptom at different points, was counted and analysed using chi square test. The results are shown in Table 8 and Fig 7.

Tab 8 Effect on pruritis (Number of patients)

	Day 0	Day 7	Day 14	Day 21	Day 28	Day 35	Day 42
Gp A	36	49	62	94	100	100	100
Gp B	37	37	37	50	72	100	100

Fig 7



$p < 0.05$

The groups were found significantly different from each other.



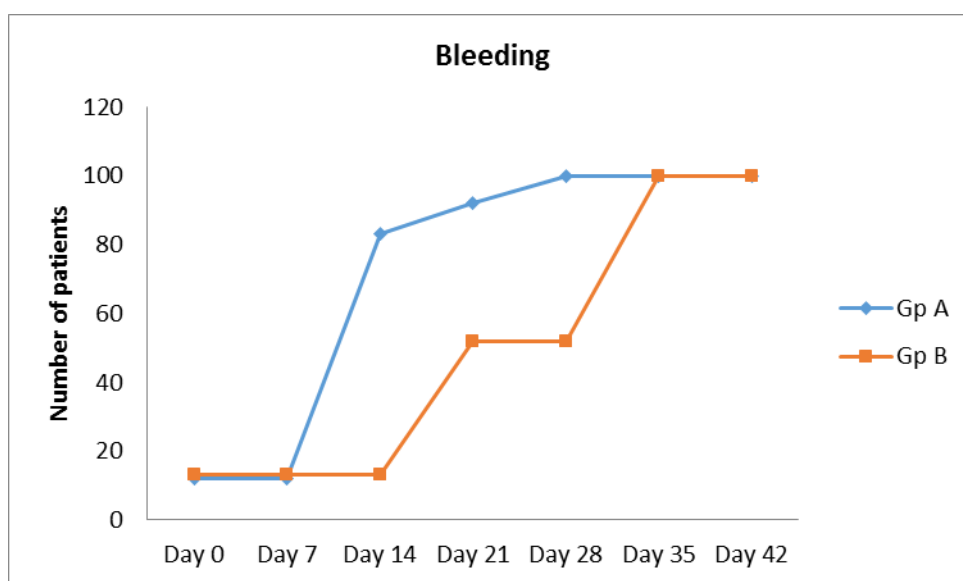
## EFFECT ON BLEEDING (CHI SQUARE)

In all patients, the symptom of bleeding was documented as present/absent. In both the groups, number of patients without symptom at different points, was counted and analysed using chi square test. The results are shown in Table 9 and Fig 8.

Tab 9 Effect on bleeding (Number of patients)

	Day 0	Day 7	Day 14	Day 21	Day 28	Day 35	Day 42
Gp A	12	12	83	92	100	100	100
Gp B	13	13	13	52	52	100	100

Fig 8



$p < 0.001$

The groups were found significantly different from each other.

### Points for discussion

Number of non-vegetarian patients more, whether the disease is more prevalent in these individuals?

The weight of patients is on higher side, whether the disease is more prevalent in obese patients?

Pain score is reduced more in Group A

On other symptoms, faster relief in Group A and more patients benefited

**Chapter 6**

**DISCUSSION,  
SUMMARY &  
CONCLUSION**

Parikartika is a word which has been referred to in Bruhatrayi (earlier three Samhitas of Ayurveda) not as separate entity, but as a complication of other diseases pertaining to ano-rectal and oesophageal regions and their therapies. Description of this condition is very much suggestive of the modern ailment fissure-in-ano when it is limited to anal-region.

Acharya Susruta has described the signs and symptoms of the disease as Guda sadaham parikartanam (cutting and burning sensation in guda), Nabhi medhra basti shirasu sadaham parikartanam (pain to umbilical region, penis and fundus of bladder), Nabheradho ruja (pain in para umbilical region), Anila sanga, and Vayu vishatambha. Vigunata in vayu (abnormalities of Apana Vayu) Vibandha (constipation) and Aruchi (Anorexia). Also vrana (wound) is an essential symptom of Parikartika which is having Dirghakriti shape<sup>100</sup> and Srava<sup>101</sup> (discharge) may be present. Also bleeding occurs either mixed with, before or after elimination of faeces accompanied with pain.

This description of Parikartika resembles the signs and symptoms described for anal fissure. The symptoms include cutting or burning pain in anus, pain in umbilical region and radiating pain in the penis and thigh. Constipation may be habitual or due to disease because patient is apprehensive to relax the sphincters and defecate.

One of the most upsetting disorders of the ano-rectal region is Fissure in ano or anal fissure. This is a tear in the anal skin at or inside the anal verge which causes severe pain and bleeding after defecation. It has been suggested that the nature of chronic anal fissure is ischemic in nature.<sup>102</sup>

Anal fissure induces high resting anal pressures and infrequent spontaneous relaxation of the internal anal sphincter, which can impede blood supply to the anoderm.<sup>103</sup> It has been proved that Fissurectomy and lateral internal sphincterotomy are the gold standard treatments for fissure in ano.<sup>104</sup> Therefore decrease in the anal pressure by anal dilatation or by lateral sphincterotomy can form a significant method in the treatment of fissures. However, these procedures can cause permanent sphincter defects and may also result in subsequent continence disturbances in most of the cases with high recurrence rates.<sup>105</sup>

It was concluded in one of the Meta analysis that medical applications did not achieve satisfactory results while anal stretch methods resulted in high degree of sphincter damage.<sup>106</sup>

It was noted that the shortcomings in the application of anal dilatation may be due to uncontrolled approaches. The need for standardization of the application procedures has been stressed (Cochrane database Syst. Rev 2005; 2 CD002199).

This calls for the need to develop standardized methods for anal dilatation and also correct the abnormalities of Apana Vata which is the main cause for the disease.

Therefore, in the present study an attempt was made to compare the effect of fissure management device which was be used for dual purpose of administration of Matrabasti of Yashtimadhu taila as well as gradual anal dilatation and administration of only Matrabasti of Yashtimadhu taila. The Matra basti would help resolve symptoms associated with abnormalities of Vata Dosha and gradual anal dilatation would help in decreasing resting anal pressures and infrequent spontaneous relaxation of the internal anal sphincter.

### **Demography**

The study was conducted in two groups of 100 patients each. Group A was administered with the fissure management device with Matrabasti of Yashtimadhu taila and Group B was administered only Matrabasti of Yashtimadhu taila for duration of 6 weeks in both the groups followed by 6 months follow up at every 2 months' interval.

It was noted that the age of the patients in Groups A & B were  $35.11 \pm 7.61$  and  $35.78 \pm 10.19$  respectively which justifies the fact that anal fissures are more common in middle aged groups because the muscles are toned and this tonicity resists the passage of hard stools and results in the formation of fissures.<sup>107</sup>

Literature mentions that anal fissures develop equally in both the genders and our study validates the fact.<sup>108</sup>

### **Causes of Parikartika**

Parikartika has not been described in the Ayurvedic literature as a separate disease entity. The description of this condition is found in the ancient treatises only as a complication of Virechana or Basti therapies<sup>109 110</sup> which goes by the name of “Parikartika”. But in practice we find that excessive Virechan or improper uses of Basti are not the only causative factors of this disease. Out of all the cases recruited for the study, most of the patients did not give any history of either diarrhea or recent use of enema. On the contrary majority of the cases in this series suffered from habitual constipation and often passed thick and hard column of stool.

Review of modern literature suggests that alteration of bowel habits is a predisposing factor and passage of hard faeces causes direct trauma to the posterior aspect of anal canal which results in a crack in the muco-cutaneous junction. This junction is rich in the somatic nerve supply.<sup>111 112</sup> Constipation is the greatest contributing factor in the development of fissure-in ano.

However, the development of fissure due to traumatization from the enemas nozzle is a common sequel even in the modern days. Therefore, this observation described in the ancient books is very much justified and correct. In Kashyapa Samhita, which is a very late book, this disease has been described as a complication of pregnancy in women which is again a very correct observation from the modern point of view and also is seen in everyday practice.<sup>113</sup>

Acharya Sushruta describes that the debilitated person with mrudu koshta or mandagni, when indulges in excessive rooksha (increasing dryness), teekshna (pungent), ushna (hot) and lavana (salty) ahara or consumes virechana aushadhi that causes vitiation of pitta and vata dosha leading to parikartika.

It was noted that the number of patients who consumed non-vegetarian diet were more in number in both the groups. (Group A – n= 61 and Group B – n= 71) although there was no significant difference between both the groups.

The properties of generally consumed mamsa i.e. of Kukkuta is snigdha (unctuous), Brimhana (nourishing), Ushna veerya (hot potency), Kaphakaraka (increases Kapha) and Kashaya Rasa (astringent taste).<sup>114</sup> The mamsa of goat is however Laghu (light

for digestion), Snigdha (unctuous), Madhura Rasa and Vipakayukta, slightly Sheeta (cold potency).<sup>115</sup> The mamsa of sheep is Pitta & Kaphakaraka and Guru (heavy for digestion).<sup>116</sup> On the whole it can be concluded that, mamsa is said to be Guru (heavy for digestion), generally Ushna (hot potency) and Kapha- pittakaraka. The irregular and excess intake of mamsa may be the possible reason for the increased number of people consuming non-vegetarian diet suffering from Parikartika.

Another study quotes that diet holds a significant role in the causes of anal fissure. Consumption of spicy food like hot chili peppers aggravates symptoms in patients with an acute anal fissure.<sup>117</sup>

However, despite the extensive advancements in modern medicine, exact aetiology of fissure is still unknown. Trauma due to passage of hard stool is said to be the chief cause of initiation of fissure in ano.<sup>118 119</sup>

The weight of the patients in both the groups were on the higher side although not significant, which points towards the fact that there is the risk of anorectal disorders in the overweight individuals which is well supported by literature.<sup>120 121</sup>

### **Methodology**

Acute anal pain which is of cutting or burning type is the predominant symptom of parikartika. The pain starts with the act of defecation and is described as a sharp/cutting or tearing; which subsequently continues as a burning or gnawing discomfort for several hours (3 to 4 hours) following stool. Constipation may be habitual or due to disease because patient is apprehensive to relax the sphincters and defecate. Bleeding is also seen either mixed with, before or after elimination of faeces accompanied with pain. All these symptoms correlate well with the contemporary texts.<sup>122 123 124</sup>

The subjective symptoms such as nature of pain were evaluated on the visual analogue scale (VAS) on a scale of 1 to 10. Difficulty in passage of flatus, Constipation, Pruritis and Bleeding were assessed as Present or absent before treatment and on every follow up visit.

The degree of pain, the amount of bleeding and the gross healing of the ulcer are the criteria on which the progress of the case could be assessed. The healing of ulcer was

the directive criteria but this was difficult to assess in all patients, because the ulcer in these cases is very small and is located in the puckered folds of the anal orifice. The improvement in the healing of the ulcer, therefore, was appreciable with the gradual diminishing of pain and other symptoms, till the ulcer completely vanished and it was possible to stretch the anal folds without producing any pain.

### **Discussion on observations**

It was observed in the present study that maximum patients (65%) did not have addiction. While 63.27% had ulcer in the posterior midline of the anal canal which is well documented in the literature.

The chronicity of fissure is defined by symptoms lasting more than 8 to 12 weeks in patients. In our study maximum patients (65%) had persistent complains for a duration of 1-3 months.<sup>125</sup> Hence it can be concluded that the maximum number of patients in our study were those having chronic anal fissure.

### **Effect of treatment**

Observations were made in 100 patients before treatment & after treatment with minimally invasive para surgical technique usage of fissure management device with along with Yastimadhu taila matrabasti & Yashtimadhu taila matrabasti alone in group A & group B respectively with regard to the different subjective & objective criteria listed in the case proforma.

Pain experienced by patients at different time points was measured on VAS ranging from 0 to 10. The median pain scores before treatment were 9 and 8.5 in group A and B respectively which indicate that pain was the predominant symptom. There was gradual decrease in pain in both the groups. Though both the groups were comparable at baseline, there was significant difference between the 2 groups from Day 7 onwards. In group A, median pain score was significantly less than Group B.

In all patients, the symptom of constipation was documented as present/absent. In both the groups, number of patients without symptom at different points, was counted and analyzed using chi square test. The groups were found significantly different from each other.

Parikartika is a disease where pain is the predominant symptom which is caused due to Vataprakopa and is associated with Pitta. The Apana Vata vikruti causes pain in the guda pradesh. Furthermore, the apana vata vikruti also results in obstruction to the passage of feaces which is its normal karma (A. Hr. Su 12/9). The localization of Doshas occurs in Twak between Payudwaram and Gudaushta. As a result of the Pathogenesis, the Twak becomes Ruksha and shows tendency to crack. Sushruta and Vagbhata have clearly stated that similar changes occur in skin when Vata vitiates from the skin.

In all patients, the symptom of difficulty in passing flatus was documented as present/absent. In both the groups, number of patients not having the symptom at different points was counted and analyzed. The groups were found significantly different from each other. Since there is a disruption in the skin, the patient is apprehensive to relax the sphincters and pass flatus.

In all patients, the symptom of pruritis was documented as present/absent. In both the groups, number of patients without symptom at different points, was counted and analyzed. The groups were found significantly different from each other. Pruritis ani is a common symptom found in many colorectal disorders especially fissure in ano which may generally result due to perianal faecal contamination.<sup>126</sup> However at the end of the study the patients in both the groups were free from Pruritis.

In all patients, the symptom of bleeding was documented as present/absent. In both the groups, number of patients without symptom at different points, was counted and analyzed. The groups were found significantly different from each other.

Parikartika is a disease of the Pureeshavaha Srotas where pain is the predominant character. The mula of the Pureeshavaha srotas is the Pakwashaya and Sthula guda,<sup>127</sup> and Pakwashaya is the main seat of the Vata Dosha.<sup>128</sup> Therefore Dalhana has rightly commented that this cutting type of pain is because of Vata dosha.<sup>129</sup>

The dosha undergoes chaya as a normal physiological response to various endogenic and exogenic stimuli. When the person continues to indulge in the use of specific etiological factors mentioned for the vitiation of a particular Dosha, they undergo



vitiating and Agni-Vaishamya also occurs, which causes Avipaka and Malasanchaya, resulting in Vitiating of Apana Vayu.<sup>130</sup>

In another context of virechana vyapat Dalhana quotes Parikartika presents with cutting type of pain all around the anus. By the above references we can infer that Parikartika presents with Vrana.<sup>131</sup> Acharya Sushruta has mentioned predominance of vata and pitta-dosha in the pathogenesis of Parikartika.

In this disease Vataprakopa is predominant with associated Pitta. The localization of Doshas occurs in Twak between Payudwaram and Gudaushta. As a result of the Pathogenesis, the Twak becomes Ruksha and shows tendency to crack. Sushruta and Vagbhata have clearly stated that similar changes occur in skin when Vata vitiates from the skin.

The peculiar anatomical structure of this area also plays an important role in the manifestation of this disease. The twak over this area is devoid of hair, sebaceous glands and sweat glands which are normally present in the skin. This indicates that, this area is more ruksha in normal individuals, which is further aggravated during the pathology predominant to Vata.

Ācārya Kāśyapa has described the involvement of all the three Doṣas e.g. Vāta, Pitta and Kapha in the Adhyāya of Garbhīṇī Cikitsā while giving the detailed Cikitsā of the disease Parikartikā.<sup>132</sup> However, in the present study in all the recruited patients' pain was the predominant symptom in both the groups.

### **Discussion on the probable mode of action**

In fissure-in-ano there is preponderance of mainly two Doshas viz. Vata and Pitta. Due to this doshic predominance the two major symptoms of pain and burning sensation are present. Therefore, the drugs used should possess the properties such as Vata pitta shamaka and vrana ropaka.

Yashtimadhu is an ingredient of almost all the yoga described in the management of Prikartika.<sup>133 134 135</sup>

Yashtimadhu is also reported to alleviate Vata, Pitta and Rakta dosha, useful in healing of Vrana (wounds/ulcers), Shotha (Inflammation), is Sheeta veerya yukta (cold) in potency and possess Madhura Rasa.<sup>136</sup> Therefore it is an apt drug in the treatment of Parikartika and explains the reason, why almost all the ancient authors including Charaka, Sushruta, Vagbhata and Kashyapa have equivocally prescribed Yastimadhu preparations both for local and general application in Parikartika.

Matra Basti was chosen as it alleviates doshas, does not need strict regimen, and eliminates waste easily & comfortably.<sup>137</sup>

Yashtimadhu is also reported to possess anti-inflammatory, anti-ulcerative, and antimicrobial properties.<sup>138</sup>

Since most of the patients in this study were suffering from these symptoms for a period of 2 to 3 months, it can be concluded that the patients were suffering from chronic anal fissure. Chronic anal fissures are generally managed with lateral sphincterotomy or anal dilatation. It has been noted that these procedures cause weakening of the anal sphincter and may lead to incontinence.<sup>139</sup>

The method adopted by this new technique is intended to provide anal dilatation along with the administration of Basti. This provided dual effect of gradual anal dilatation along with the alleviation of the abnormalities of the Vata Dosha. This is evident from the fact that the relief in symptoms is faster in Group A and more patients are benefited when compared to Group B.

No cases of incontinence or sphincter insufficiency were reported among patients.

Therefore, it can be concluded that this technique of gradual anal dilatation with the administration of Matra Basti can prove effective in the treatment of Parikartika. This procedure caused anal dilatation and also effectively alleviated vitiated Apana Vata.

## SUMMARY

The fissure-in-ano is very common and painful condition. On the basis of symptoms, the disease fissure-in-ano can be compared to the disease Parikartikā described in Āyurveda. According to Tridoṣa theory, Parikartikā has been mentioned under the Vātika disease along with Pitta Doṣa. Guda is the site of Apāna Vāyu and severe pain and burning sensation in the ano-rectal area the two major symptoms are due to Vāta and Pitta Doṣa only. Though, Ācārya Kāśyapa has made an effort but detailed description was not given by him also. However, Kāśyapa had mentioned this condition in relation to a pregnant woman which is quite logical. The general line of management for Fissure is anal dilatation which further leads to complications such as sphincter insufficiency and it has been reported that the sphincter insufficiencies are caused due to no standardized methods for dilatation Therefore it was decided to conduct the present clinical research to evaluate the comparative efficacy of usage of fissure management device with Matrabasti of Yashtimadhu taila and Matrabasti of Yashtimadhu taila alone. The main objective of the study was to find out efficacious and cost effective treatment for the patients of Parikartikā, as an alternative to surgery with minimum adverse events.

Most of the Acharyas have indicated Basti chiefly made of Ghṛta, Madhu, Tila Kalka and Yaṣṭimadhu for this condition. Total 100 patients in each group were selected. In group A, 100 patients were given usage of fissure management device with Matrabasti of Yashtimadhu taila and Group B –only Matrabasti of Yashtimadhu taila for a duration of 6 weeks followed by a follow up of 6 months at an interval of 2 months.

Criteria used were Nature of Pain, Constipation, Pruritis, Difficulty in passing flatus and bleeding before and at every follow up visit. In both groups statistically significant difference was found in all criteria. However, pain score was more reduced in Group A. All symptoms showed faster relief & more patients benefited in Group A.

## **CONCLUSION**

It can be concluded that the usage of fissure management device with Matrabasti of Yashtimadhu taila can provide faster relief in symptoms of Parikartika such as pain, constipation, difficulty in passing stool, Pruritis and bleeding without any sphincter insufficiencies.

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# APPENDICES

**WRITTEN INFORMED CONSENT 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 Investigator \_\_\_\_\_

Name: \_\_\_\_\_

**CONSENT BY SUBJECT**

I have been informed to my satisfaction, by the 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 functions.

I am also aware of my right to opt out of the trial at any time during the course of the trial without having to give the reasons for doing so. I am willing to undergo any risk for inclusion in this study.

I, exercising my free power of choice, hereby give my consent to be included as a subject in the research project **“To Evaluate the Role of A Para-surgical Measure for the management of Fissure in ano *vis- a- vis* Parikartika..”**

Date: \_\_\_\_\_ Name of the Subject: \_\_\_\_\_

Signature or Thumb impression \_\_\_\_\_



## **PRESENTING COMPLAINTS**

Pain or burning sensation during or after defecation  
Bleeding per rectum during or after defecation  
Associated with Itching or irritation around the Anus  
A visible crack in the skin around the Anus (Fissure-in-ano)  
Bright red blood on the outside of the stool or on the toilet paper  
Constipated bowels

## **Medication**

- a. Whether received any treatment previously
- b. Any surgical interventions made for any disease

## **CLINICAL EXAMINATION**

General Examination

Blood Pressure:

Temp:

Pulse:

Resp rate:

Height

Weight

Chest:

Auscultation: Heart:

Lungs:

Abdomen:

Extremities– Clubbing of fingers:

Pedal Oedema:

Varicose veins:

## **Local / Peri-anal Examination:**

1. Condition of skin around anus:

2. Condition of the fissure:

Acute Chronic

Presence of Sentinel pile: Yes / No

Position of the fissure in 'O'clock position:

3. Digital examination

Tenderness: Present / Absent

Sphincter tone: Hyper tonic /Normal /Hypo tonic

Any mass palpated in the canal

4. Anoscope/Proctoscopic examination (not in acute cases)

**Assessment Parameters**

Parameter	Day 0	Day 7	Day 14	Day 21	Day 28	Day 35	Day 42	After 2 months	After 4 Months	After 6 Months
Pain										
Difficulty in Flatus Passage										
Constipation										
Pruritis										
Bleeding										

Complications if any:

**Status of the patient:**

Completed:

Drop out: Reason: \_\_\_\_\_

Died: Cause \_\_\_\_\_

**Overall clinical assessment**

Improved

No change

Deteriorated

**Overall impression of well-being by the Subject:**

Improved

No change

Deteriorated

Date:

Signature of the Investigator