

# Fistula-in-Ano and Bhagandara: A Review of Classical Ayurvedic Concepts and Modern Understanding

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**Abstract:** *Background: Fistula-in-ano is a chronic and debilitating anorectal disorder characterized by an abnormal epithelialized tract connecting the anal canal to the perianal skin. It commonly develops as a sequela of cryptoglandular infection and is associated with persistent discharge, pain, and a high tendency for recurrence. Despite considerable advancements in modern surgical techniques, challenges such as recurrence and the risk of fecal incontinence continue to affect long-term outcomes<sup>1</sup>. In Ayurveda, this condition is described as Bhagandara in classical texts such as the Sushruta Samhita, where it is considered one of the Ashta Mahagada (eight grave diseases) due to its chronicity and difficulty in management<sup>2</sup>.*

*Objective: To critically review and compare Ayurvedic and modern perspectives of fistula-in-ano, with particular emphasis on classification and treatment approaches, and to evaluate the potential scope of integrative management.*

*Materials and Methods: This narrative review is based on a comprehensive study of classical Ayurvedic texts, including the Sushruta Samhita and the Charaka Samhita, along with standard modern surgical reference books. Concepts related to etiology, pathogenesis, classification, and management were systematically analyzed and organized to facilitate a structured comparative evaluation.*

*Results: Ayurvedic literature provides a detailed classification of Bhagandara based on Dosha predominance and morphological characteristics, whereas modern classification systems, such as the Parks classification, are primarily based on anatomical relationships with the anal sphincter complex<sup>1</sup>. Modern surgical management offers effective and relatively rapid resolution, particularly in simple fistulae; however, it is associated with complications such as recurrence and potential impairment of continence in complex cases<sup>3</sup>. In contrast, Ayurvedic approaches emphasize minimally invasive interventions, gradual tract management, promotion of wound healing, and correction of systemic factors, which may contribute to reduced recurrence and better preservation of sphincter function<sup>4</sup>.*

*Conclusion: Both Ayurvedic and modern systems offer valuable insights into the management of fistula-in-ano. While modern surgical techniques provide prompt and standardized treatment, Ayurvedic management demonstrates advantages in terms of sphincter preservation, cost-effectiveness, and holistic healing. An integrative approach combining the strengths of both systems may enhance therapeutic outcomes and reduce complications. Further well-designed comparative studies are required to establish evidence-based integrative protocols..*

**Keywords:** Fistula-in-ano; Bhagandara; Ayurveda; Anal fistula; Integrative medicine; Ksharasutra; Surgical management; Sphincter preservation



## **I. INTRODUCTION**

Fistula-in-ano is defined as an abnormal epithelial-lined tract that connects the anal canal or rectum to the perianal skin, most commonly arising as a consequence of cryptoglandular infection of the anal glands<sup>1</sup>. It represents the chronic phase of anorectal sepsis and is frequently preceded by an anorectal abscess. The condition typically presents with persistent or intermittent purulent discharge, perianal pain, irritation, and recurrent swelling, significantly impairing the patient's quality of life<sup>2</sup>.

The widely accepted pathogenesis of fistula-in-ano is based on the cryptoglandular hypothesis, wherein infection of the anal glands located in the intersphincteric space leads to abscess formation. If the abscess fails to resolve completely, it progresses to form a fistulous tract that maintains communication between the internal opening in the anal canal and the external opening on the perianal skin<sup>1</sup>. Depending on the course of the tract and its relationship with the sphincter complex, fistulae may vary in complexity, thereby influencing both prognosis and management.

The management of fistula-in-ano remains challenging despite significant advancements in surgical techniques. Conventional procedures such as fistulotomy and fistulectomy are effective in simple fistulae; however, they are associated with a risk of recurrence and potential damage to the anal sphincter, leading to fecal incontinence<sup>3</sup>. In complex fistulae, sphincter-preserving techniques such as ligation of intersphincteric fistula tract (LIFT), advancement flap procedures, and newer minimally invasive methods have been developed, yet no single technique has proven universally superior<sup>4</sup>.

In Ayurveda, fistula-in-ano is described as Bhagandara in the Sushruta Samhita. The term "Bhagandara" is derived from "Bhaga" (perineal region), "Guda" (anus), and "Basti" (pelvic region), indicating the anatomical area involved. It is classified among the Ashta Mahagada (eight major diseases), emphasizing its chronic nature and complexity of management<sup>5</sup>. Ayurvedic texts provide a detailed description of the etiology (Nidana), pathogenesis (Samprapti), classification, and management of the disease.

According to Ayurvedic principles, Bhagandara develops due to vitiation of Doshas, particularly Vata and Pitta, leading to inflammation and suppuration in the anorectal region. The formation of a perianal abscess (Pidaka) followed by its rupture results in the development of a sinus tract, which corresponds closely to the modern understanding of fistula formation<sup>6</sup>. This conceptual similarity highlights the depth of clinical observation in classical Ayurvedic literature.

While modern surgical approaches focus primarily on anatomical correction and eradication of the fistulous tract, Ayurvedic management adopts a more holistic approach, addressing both local pathology and systemic factors. This includes principles of Shodhana (cleansing) and Ropana (healing), along with minimally invasive interventions aimed at gradual tract management<sup>7</sup>.

Despite the strengths of both systems, each has its limitations. Modern surgical methods, though effective, may be associated with recurrence and sphincter-related complications, whereas Ayurvedic approaches, although promising in terms of healing and recurrence prevention, require further validation through high-quality clinical studies<sup>4</sup>. Therefore, a comprehensive understanding and comparison of both systems is essential to explore the potential of integrative management.

The present review aims to critically analyze Ayurvedic and modern perspectives of fistula-in-ano, with particular emphasis on classification and treatment approaches, and to evaluate their relative advantages and limitations in clinical practice.

## **II. MATERIALS AND METHODS**

Materials and Methods:

This narrative review is based on a comprehensive study of classical Ayurvedic texts, including the Sushruta Samhita and the Charaka Samhita, along with standard modern surgical reference books. Concepts related to etiology, pathogenesis, classification, and management were systematically analyzed and organized to facilitate a structured comparative evaluation.



### **Ayurvedic Perspective of Bhagandara**

Bhagandara, described extensively in classical Ayurvedic literature, is considered one of the most challenging anorectal disorders due to its chronicity, tendency for recurrence, and complexity of management. The condition is elaborately discussed in the Sushruta Samhita, where it is included among the Ashta Mahagada (eight grave diseases), indicating its severity and difficulty in treatment<sup>5</sup>. The Ayurvedic understanding of Bhagandara encompasses a comprehensive approach involving Nidana (etiology), Samprapti (pathogenesis), and therapeutic principles.

#### **Nidana (Etiology)**

According to Ayurvedic texts, Bhagandara arises due to multiple etiological factors that lead to the vitiation of Doshas, particularly Vata, Pitta, and Kapha. These causative factors can be broadly categorized into dietary, behavioral, traumatic, and infective origins<sup>6</sup>.

Dietary factors include excessive intake of incompatible foods (Viruddha Ahara), heavy, unctuous, and spicy food items, as well as irregular eating habits, which disturb the equilibrium of Doshas. Behavioral factors such as prolonged sitting, excessive physical exertion, suppression of natural urges (Vega Dharana), and poor hygiene also contribute to disease development.

Trauma to the anorectal region, including injury due to surgical procedures or external factors, is considered an important causative factor, particularly in the development of Agantuja Bhagandara. Additionally, the neglect or improper management of perianal abscess (Pidaka) is highlighted as a major etiological factor leading to fistula formation.

These causative factors result in the vitiation of Doshas, which localize in the Guda Pradesh (anal region) and initiate the disease process.

#### **Samprapti (Pathogenesis)**

The pathogenesis of Bhagandara involves a sequential process beginning with Dosha vitiation and culminating in the formation of a fistulous tract. The vitiated Doshas, particularly Vata and Pitta, localize in the anorectal region and affect the surrounding tissues (Mamsa and Rakta Dhatu)<sup>6</sup>.

Initially, this leads to the development of localized inflammation and swelling, resulting in the formation of a perianal abscess (Pidaka). The abscess is characterized by pain, redness, and suppuration. If the abscess is not adequately treated or spontaneously resolves without proper drainage, it progresses further.

Due to the continued action of vitiated Doshas, the abscess ruptures either internally into the anal canal or externally onto the perianal skin. This rupture leads to the formation of a communicating tract, which is the hallmark of Bhagandara. The persistence of Dosha-Dushya Sammurchana (interaction between vitiated Doshas and affected tissues) results in chronic discharge, non-healing sinus formation, and recurrent infection.

Vata Dosha plays a significant role in the formation of multiple tracts and irregular pathways, while Pitta Dosha contributes to inflammation, suppuration, and tissue destruction. Kapha Dosha is responsible for induration, chronicity, and persistent discharge. The involvement of all three Doshas leads to more complex and difficult-to-treat conditions.

This detailed description of pathogenesis closely correlates with the modern concept of fistula formation following abscess rupture, highlighting the advanced clinical understanding present in classical Ayurvedic texts.

### **Classification of Bhagandara and Fistula-in-Ano**

A clear understanding of classification is essential for accurate diagnosis, prognostic assessment, and selection of appropriate management strategies. Both Ayurvedic and modern systems provide detailed classification methods based on their respective conceptual frameworks. While Ayurveda emphasizes Dosha predominance and morphological features, modern classification is primarily anatomical and clinically oriented.

#### **Ayurvedic Classification of Bhagandara**

##### **Classification according to the Sushruta Samhita**

The Sushruta Samhita provides one of the most elaborate classifications of Bhagandara based on the morphological characteristics of the fistulous tract and the predominance of Doshas. It describes five distinct types<sup>5</sup>:



### 1. Shataponaka Bhagandara

This type is characterized by multiple external openings around the perianal region, resembling a sieve (Shata = hundred, Ponaka = openings). The tract is often irregular and branching, associated with severe pain due to predominant Vata Dosha. Clinically, it may correspond to complex fistulae with multiple secondary tracts and high recurrence potential.

### 2. Ushtragreeva Bhagandara

In this type, the tract is elongated and curved, resembling the neck of a camel (Ushtra = camel, Greeva = neck). It is predominantly associated with Pitta Dosha and presents with burning sensation, inflammation, and discharge. The tract may extend deeper into surrounding tissues, indicating moderate complexity.

### 3. Parisravi Bhagandara

This type is characterized by continuous discharge of pus (Parisrava) with relatively mild pain. It is associated with Kapha Dosha predominance and shows a chronic, indolent course. The tract tends to be less painful but persistent, often leading to prolonged morbidity.






### 4. Shambukavarta Bhagandara

The tract in this type follows a spiral or circular course, resembling a conch shell (Shambuka). It involves multiple Doshas and is often associated with recurrent episodes. The tortuous nature of the tract makes management difficult and increases the likelihood of recurrence.

### 5. Unmargi Bhagandara

This type represents abnormal or aberrant tract formation, often resulting from trauma, improper surgical intervention, or neglected disease. The tract may follow unusual paths and is considered the most difficult to manage due to its unpredictable nature.

## AYURVEDIC CLASSIFICATION OF BHAGANDARA (ACCORDING TO SUSHRUTA SAMHITA)

| A. ACCORDING TO SUSHRUTA SAMHITA |  |  |
|----------------------------------|--|--|
| 1                                | <b>SHATAPONAKA BHAGANDARA</b><br>Multiple external openings like the holes of a sieve.     |  |
| 2                                | <b>USHTRAGREEVA BHAGANDARA</b><br>Tract is long and curved like the neck of a camel.       |  |
| 3                                | <b>PARISRAVI BHAGANDARA</b><br>Continuous discharge of pus with multiple pain.             |  |
| 4                                | <b>SHAMBUKAVARTA BHAGANDARA</b><br>Tract follows a spiral or circular course like a conch. |  |
| 5                                | <b>UNMARGI BHAGANDARA</b><br>Irregular or abnormal tract due to trauma or neglect.         |  |

### Classification according to the Charaka Samhita

The Charaka Samhita classifies Bhagandara primarily based on Dosha predominance, which has significant therapeutic and prognostic implications<sup>6</sup>:

Vataja Bhagandara – characterized by severe pain, dryness, and irregular tract formation

Pittaja Bhagandara – associated with inflammation, suppuration, burning sensation, and rapid progression

Kaphaja Bhagandara – presents with thick discharge, induration, and chronicity

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Sannipataja Bhagandara – involves all three Doshas, leading to severe and complicated disease

Agantuja Bhagandara – caused by external factors such as trauma

This classification is particularly useful in guiding individualized treatment based on Dosha involvement.

**Modern Classification of Fistula-in-Ano**

Modern classification systems are primarily anatomical and are crucial for surgical planning, especially in relation to the anal sphincter complex.

**Parks Classification**

The most widely accepted classification is the Parks classification<sup>1</sup>, which categorizes fistulae based on their relationship to the internal and external anal sphincters:

**1. Intersphincteric Fistula**

The tract lies between the internal and external sphincters and opens externally near the anal verge. It is the most common type and generally considered simple.

**2. Transsphincteric Fistula**

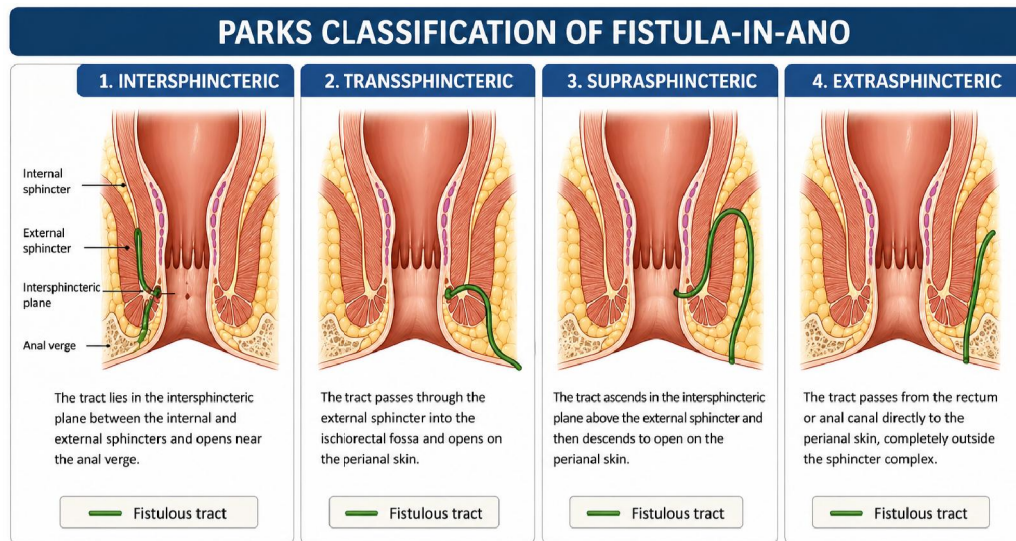
The tract passes through both the internal and external sphincters into the ischiorectal fossa before opening externally. These fistulae are more complex and carry a higher risk of sphincter involvement.

**3. Suprasphincteric Fistula**

The tract extends upward in the intersphincteric plane above the external sphincter and then curves downward to the perianal skin. These are relatively uncommon but more complex.

**4. Extrasphincteric Fistula**

The tract extends from the rectum to the perianal skin without involving the sphincter complex directly. These are rare and often associated with trauma or secondary pathology.



**High and Low Anal Fistula**

Another clinically important classification is based on the extent of involvement of the external anal sphincter<sup>2</sup>:

**Low Anal Fistula**

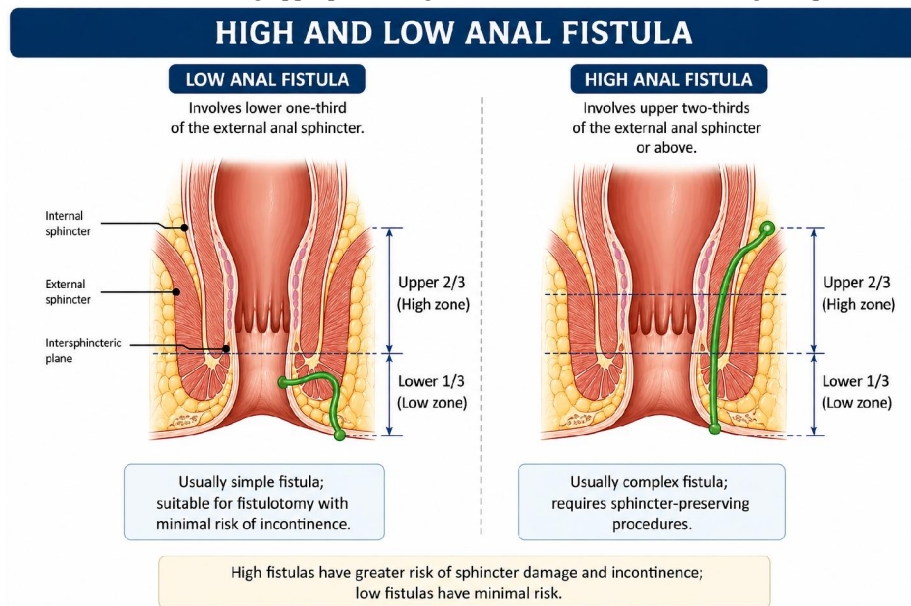
Involves only the lower one-third of the external anal sphincter. These fistulae are generally simple and can be managed safely by fistulotomy with minimal risk of postoperative incontinence.

**High Anal Fistula**

Involves the upper two-thirds of the external anal sphincter or extends above it. These fistulae are complex and require sphincter-preserving procedures to prevent fecal incontinence.



This classification is crucial in selecting appropriate surgical intervention and minimizing complications.



**Goodsall’s Rule**

Goodsall’s rule is a useful clinical guideline for predicting the course of the fistulous tract based on the location of the external opening relative to the anal verge<sup>3</sup>:

External openings located anterior to the transverse anal line usually follow a straight radial tract to the nearest point in the anal canal.

External openings located posterior to the transverse anal line typically follow a curved tract opening into the posterior midline (6 o’clock position).

**Exception:**

External openings situated more than 3 cm from the anal verge, even if anterior, tend to follow a curved course to the posterior midline.

Although Goodsall’s rule is helpful in clinical assessment, it is not absolute and may not apply in complex or recurrent fistulae.

**Treatment of Bhagandara (Fistula-in-Ano)**

The management of fistula-in-ano remains challenging due to its recurrent nature and the need to eradicate the fistulous tract while preserving anal sphincter function. Both modern surgical science and Ayurveda provide well-established therapeutic approaches, each with distinct principles and clinical implications. A detailed understanding of both systems is essential for evaluating their relative advantages and limitations.

**Modern Surgical Management**

Modern treatment of fistula-in-ano is primarily surgical and is aimed at complete eradication of the fistulous tract, closure of the internal opening, and preservation of continence. The choice of procedure depends on the anatomical classification, complexity of the fistula, and involvement of the sphincter complex<sup>8</sup>.

**A. Conventional Surgical Procedures**

**1. Fistulotomy**

Fistulotomy involves laying open the entire fistulous tract, converting it into a superficial wound that heals by secondary intention. It is considered the gold standard for low anal fistulae, as it provides high success rates with



minimal recurrence<sup>9</sup>. However, its use is limited in high fistulae due to the risk of sphincter damage and subsequent fecal incontinence.

## **2. Fistulectomy**

Fistulectomy involves complete excision of the fistulous tract. Although it ensures total removal and allows histopathological examination, it results in a larger wound, prolonged healing time, and increased risk of sphincter injury compared to fistulotomy<sup>10</sup>.

## **3. Seton Placement**

Seton therapy involves placing a thread or similar material through the fistulous tract. It may be used as a cutting seton, which gradually divides the sphincter while allowing fibrosis, or as a draining seton to control sepsis. This technique is particularly useful in high and complex fistulae where preservation of sphincter function is critical<sup>11</sup>.

## **B. Sphincter-Preserving Procedures**

### **1. LIFT (Ligation of Intersphincteric Fistula Tract)**

The LIFT procedure involves identification and ligation of the fistulous tract in the intersphincteric plane. It is a minimally invasive technique designed to preserve sphincter integrity while effectively closing the internal opening<sup>12</sup>. It has shown promising results in selected cases.

### **2. Advancement Flap Procedure**

This technique involves excision of the internal opening followed by closure using a rectal mucosal or mucocutaneous flap. It is particularly useful in high fistulae and recurrent cases, offering the advantage of sphincter preservation<sup>13</sup>.

## **C. Minimally Invasive and Emerging Techniques**

### **1. Fibrin Glue Injection**

Fibrin glue is injected into the fistulous tract to promote closure. It is a minimally invasive, sphincter-preserving method but is associated with variable success rates and higher recurrence<sup>14</sup>.

### **2. Anal Fistula Plug**

A bioprosthetic collagen plug is inserted into the tract to facilitate healing. This method preserves sphincter integrity but has shown inconsistent outcomes across studies<sup>15</sup>.

### **3. VAAFT (Video-Assisted Anal Fistula Treatment)**

VAAFT is an endoscopic technique that allows direct visualization of the tract and internal opening, enabling precise treatment with minimal tissue damage<sup>16</sup>.

### **4. FiLaC (Fistula Laser Closure)**

FiLaC utilizes radial laser energy to obliterate the fistulous tract. It is a minimally invasive, sphincter-saving technique with promising short-term outcomes<sup>17</sup>.

## **Limitations of Modern Management**

Despite advancements, modern surgical techniques are associated with certain limitations, including:

Recurrence of fistula

Risk of fecal incontinence, particularly in high fistulae

Requirement of specialized surgical expertise and infrastructure<sup>3</sup>

## **Ayurvedic Management of Bhagandara**

Ayurvedic management of Bhagandara is based on the principles of Shodhana (cleansing) and Ropana (healing), aiming not only at elimination of the fistulous tract but also at restoration of tissue integrity and correction of underlying Dosha imbalance<sup>6</sup>.

General Principles of Management

Ayurvedic treatment focuses on:

Removal of the diseased tract (Dushta Nadi)

Drainage of accumulated pus

Promotion of wound healing

Prevention of recurrence through systemic correction



These principles reflect a holistic approach addressing both local and systemic aspects of the disease.

#### Para-surgical Approach

Among the various treatment modalities described in the Sushruta Samhita, the use of medicated seton (Ksharasutra) is considered an important para-surgical technique<sup>18</sup>. It involves the application of a medicated thread within the fistulous tract, leading to gradual cutting, drainage, and healing.

The mechanism includes:

Chemical cauterization of unhealthy tissue

Controlled debridement of the tract

Simultaneous healing of surrounding tissue

This gradual approach minimizes damage to the sphincter complex and reduces the risk of incontinence.

#### Comparative Perspective

Both Ayurvedic and modern approaches aim at eradication of the fistulous tract; however, they differ significantly in their methodology and clinical outcomes.

Modern surgical management offers rapid resolution, particularly in simple fistulae, and is supported by well-established anatomical classification and standardized protocols<sup>9</sup>. However, in complex cases, it is associated with recurrence and risk of sphincter damage, leading to fecal incontinence<sup>3</sup>.

In contrast, Ayurvedic management provides a gradual and controlled approach, minimizing trauma to the sphincter complex. This results in better preservation of continence and may contribute to reduced recurrence rates in certain cases<sup>18</sup>. Additionally, Ayurvedic treatment is generally more cost-effective and feasible in outpatient settings.

However, Ayurvedic management may require a longer duration of treatment and sustained patient compliance. Modern techniques, on the other hand, offer quicker results but may involve higher costs and postoperative complications<sup>8</sup>.

Overall, Ayurvedic approaches appear to be advantageous in terms of sphincter preservation, cost-effectiveness, and holistic healing, whereas modern surgical techniques are beneficial for rapid and definitive management, especially in simple cases.

#### Discussion

Fistula-in-ano continues to pose a significant therapeutic challenge due to its chronic course, high recurrence rate, and the need to preserve anal sphincter function. Both Ayurvedic and modern medical systems provide detailed descriptions of the disease, and a comparative analysis reveals notable similarities as well as important differences in their conceptual understanding and management strategies.

The classical description of Bhagandara in the Sushruta Samhita demonstrates a sophisticated understanding of the disease process, particularly the progression from perianal abscess (Pidaka) to fistulous tract formation<sup>5</sup>. This closely parallels the modern cryptoglandular theory, which describes infection of anal glands leading to abscess formation and subsequent fistula development<sup>1</sup>. Such conceptual overlap indicates that the fundamental pathological processes were well recognized in ancient Ayurvedic literature.

In terms of classification, Ayurveda provides a dual framework based on Dosha predominance and morphological characteristics of the tract, while modern classification systems such as the Parks classification focus primarily on anatomical relationships with the anal sphincter complex<sup>1</sup>. Although modern classification is more directly applicable to surgical planning, Ayurvedic classification offers additional insight into disease behavior, chronicity, and prognosis, which can be valuable in individualized patient management<sup>6</sup>.

The major distinction between the two systems lies in their therapeutic approaches. Modern surgical management emphasizes complete eradication of the fistulous tract, often through procedures such as fistulotomy, fistulectomy, and various sphincter-preserving techniques<sup>9</sup>. While these methods provide rapid and effective treatment, particularly in



low fistulae, they are associated with limitations such as recurrence and the risk of fecal incontinence, especially in complex or high fistulae<sup>3</sup>.

Ayurvedic management, on the other hand, adopts a more gradual and holistic approach. The principles of Shodhana and Ropana focus not only on removal of the diseased tract but also on promotion of tissue healing and restoration of physiological balance<sup>6</sup>. The use of medicated seton techniques, as described in classical texts, reflects a controlled method of tract management that minimizes damage to the sphincter complex and thereby reduces the risk of incontinence<sup>18</sup>.

One of the key advantages of Ayurvedic approaches is the emphasis on preserving sphincter integrity. This is particularly important in the management of high and complex fistulae, where modern surgical procedures may compromise continence. Additionally, the incorporation of systemic therapy, dietary regulation, and lifestyle modification in Ayurveda may contribute to improved wound healing and reduced recurrence rates.

However, it is important to acknowledge that the evidence base for Ayurvedic management, although promising, is still evolving. Many studies are limited by small sample sizes and lack of standardized methodologies<sup>18</sup>. In contrast, modern surgical techniques are supported by more extensive clinical research and standardized protocols<sup>8</sup>. Therefore, while Ayurvedic approaches offer several potential advantages, further well-designed comparative studies are necessary to establish their efficacy conclusively.

From an integrative perspective, combining the strengths of both systems may provide optimal outcomes. Modern diagnostic tools and surgical precision can be effectively complemented by Ayurvedic principles of holistic healing and minimally invasive management. Such an approach may help in reducing recurrence, preserving continence, and improving overall patient satisfaction.

## II. CONCLUSION

Fistula-in-ano is a complex anorectal disorder that continues to challenge clinicians due to its chronicity, recurrence, and potential complications. Both Ayurvedic and modern medical systems offer valuable insights into its understanding and management.

Modern surgical techniques provide effective and rapid treatment, particularly in simple fistulae, but are associated with risks such as recurrence and sphincter-related complications. Ayurvedic management, based on principles of Shodhana and Ropana, emphasizes gradual tract management, preservation of sphincter function, and holistic healing, offering advantages in terms of reduced recurrence and improved functional outcomes.

A comparative evaluation suggests that neither system is universally superior; rather, each has its own strengths and limitations. An integrative approach that combines the precision and rapidity of modern surgery with the holistic and minimally invasive principles of Ayurveda may represent a more effective strategy for managing fistula-in-ano.

Further high-quality clinical studies are required to validate such integrative approaches and to establish standardized treatment protocols that can optimize patient outcomes.

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