A case study illustrating the use of an integrated approach to treat secondary Anal Fistula Post I&D of Perianal Abscess

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Author contributions
The Concept of Partial coring with thread ligation was finalized with an Operative procedure was performed by Dr. Sheetal Asutkar (HOD, Dept of Shalya Tantra) and by Dr. Sandeep Kumar Upadhyay. Ward management of the patient, his I/O access, routine dressings, Data collection, pieces of evidence of treatment i.e. intra operative, and postoperative images, complete drafting, formatting, and case writing in a report form are carried out by Dr. Sandeep Kumar Upadhyay and Dr. Shreya Soni. Dr. Sheetal Asutkar completely analysed, reviewed the article critically. All the 3 authors read and approved the final manuscript and are responsible for this article.

Competing interests
The authors declare no conflicts of interest.

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Abbreviations
OD, Once a day; BD, Twice a day; TDS, Three times a day; HS, At bedtime; OPD, Outpatient Department; IPD, Inpatient Department; CBC, Complete Blood Count; LFT, Liver Function Tests; KFT, Kidney Function Tests; AAP, All Aseptic precaution; IV, Intravenous; IM, Intramuscular; CNS, Central Nervous System; GIT, Gastrointestinal Tract; RS, Respiratory System; NAD, No Abnormality Detected.

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Abstract
Background: Anal fistula is a long-term disease characterized by a tubular structure with one end opening in the anorectal canal and the other end opening on the surface of the perineum or perianal skin with chronic pus drainage. It is linked to Bhagandar in Ayurveda, and in Sushruta Samhita, Acharya has mentioned 5 forms of Bhagandar. The boil in the present case was Shukla, shihara i.e. hard and firm, with Picchila strava and Kandu resembling the features of Parisraavi bhagandar. Aim and objective: The current case was diagnosed as Parisraavi bhagandar, which resembles trans sphincteric or intersphincteric fistula in modern ano. In Ayurveda, the management of Parisraavi Bhagandar, Shastra, kshara, and Agnikarma is advised and the use of Ksharasutra, which contributes to complete cutting and healing of the track without reoccurrence, similarly Modern surgeon depends on surgery i.e radical excision of the track, ligation with Seton, and use of chemical irritants like urethane, silver nitrates, etc. A cutting seton (tight) gently slices the confined muscle to close the fistula with the least interruption to continence. This operation is especially advised when a one-stage fistulotomy poses a considerable risk of incontinence. Material and methods: The method performed here was Core Partial Fistulotomy followed by Ksharasutra application till complete healing of the wound. Discussion and conclusion: This case study provides the successful management of Parisraavi Bhagandara (high anal, trans-sphincteric fistula in ano) in 61-year-old male patient with an integrated surgical & Ayurvedic management approach.

Keywords: Anal fistula; Colonoscopy; ligation of trans-sphincteric fistula; Methylene blue dye; perianal abscess; Radical excision; Sushrut Samhita
Background

Certain clinical conditions, according to Ayurveda, necessitate surgical intervention for a better cure. Gulma, Arsha, Bhagandar, and Ashmari, according to Charaka’s Kayachikitsa treatise, may necessitate surgical intervention. Sushruta has gone over many Shatra karmas and Anushastra karma in depth, including Agnikarma, Jalakavcharana, and Ksharakarma. Kshara is one of the most essential para-surgical procedures since it may perform excision, incision, scraping, and pacification of all three Doshas [1]. Because of its simplicity and low recurrence rate, Kshara application in the form of Kharasutra has grown more popular in the treatment of ano-rectal illnesses. Both mechanical and chemical cutting and healing are induced by Kharasutra. Sushruta makes a direct reference to Kharasutra for the treatment of Nadivrana [2]. In the treatment of Arsha and Bhagandar, Chakradatta mentioned a medicinal thread coated with Snuhi and Haridra powder. The Department of Shalya Tantra, Banaras Hindu University, has re-established the modified kharasutra that is presently available. Snuhi Ksheera coatings for 11 days, Snuhi Ksheera and Apamarga Kshara coating for 7 days, and Snuhi Ksheera and Haridra Churna coating for 3 days makes up the normal Kharasutra. Because of its cutting, curing, and therapeutic properties, as well as its ability to control infection, this Kshara Sutra is employed in the treatment of ano fistula [3].

Fistula in ano is an inflammatory track that has an external opening (secondary opening) in the perianal skin and an internal opening (primary opening) in the anal canal. This track is lined by unhealthy granulation tissue and fibrous tissue. A fistula may be single or multiple. Where there is more than one external opening is called multiple anal fistulae.

Parks categorization: Perianal fistulas can be categorized in a variety of ways depending on where the internal and external openings and canal pathways are in respect to the placement of the anal sphincter complex. This categorization is predicated on the idea that fistulas develop in the Morgani crypts, and the name of a fistula is determined by the location of the canal to the levator ani and sphincter muscles [4]. Inter-sphincteric fistula: Figure 1A shows the internal and external anal sphincters are connected by an inter-sphincteric fistula in the inter-sphincteric space. And Figure 1B is the transverse view showing an inter-sphincteric fistula tracking down in the inter-sphincteric space between the internal and the external anal sphincters (Figure 1). The trans-sphincteric fistula: Figure 2A shows A trans-sphincteric fistula passing between the external anal sphincter and the internal anal sphincter before ending in the ischiorectal fossa. Whereas Figure 2B presents the transverse view showing a trans-sphincteric fistula perforated by the sphincter muscles internal and external. Supra-sphincteric fistulas: It contains three pictures. Figure 3A shows that to reach the skin, a supra-sphincteric fistula travels from the inter-sphincteric gap above the puborectalis muscle via the levator ani muscle. Diagram of the transverse view shows a supra-sphincteric fistula penetrating the levator ani muscle at the level of the rectum and levator ani muscle (Figure 3B). Figure 3C of the transverse view presents a supra-sphincteric fistulas fraction in the inter-sphincteric space at the level of the anal canal. Extra-sphincteric fistulas: An extra-sphincteric fistula extends through the external anal sphincter and enters the rectum through the levator ani muscle (Figure 4A). And the Figure 4B shows the transverse view of an extra-sphincteric fistula at the level of the rectum and levator ani muscle. It penetrates the levator ani muscle into the rectum. Note an internal opening into the rectum. Superficial fistula: The internal and external anal sphincters in the ischioanal fossa are both affected by a superficial fistula. Multiple fistulas were assessed in the same way if they were present. The track was categorized as a sinus rather than a fistula as there was no internal entrance [5] (Figure 5).
Common diagnostic methods of fistula in ano include

There are various methods for diagnosing the disease, of which mainly are a digital rectal exam (DRE) is performed to feel fistulous tracts, probing, Fibre optic Proctoscopy, To pinpoint the precise site of the internal opening, diluted methylene blue dye is injected into the fistula tract, Fistulography, Virtual CT fistulogram, Magnetic resonance imaging (MRI), Flexible sigmoidoscopy, Colonoscopy, Biopsy. An anal ultrasound scan should be performed for primary cases that are thought to be complicated, and if indications of complex fistulation or secondary extension are found, an MRI should be ordered. All recurring fistulas should have an MRI, except those that are uncomplicated on clinical examination or anal ultrasonography [6].

Aim and objective

Parisraavi Bhagandar is one of the 5 types of Bhagandar as mentioned in Sushruta Samhita where Vata and Kapha dosha are vitiated, causing the pidika to suppurate in a longer time thereby persistent lubricious discharge and itching occur in the perianal region. Usually, the track is long horizontal, or high rectal in the course. The boil in the present case was Shukla, sthira i.e. hard, firm, with Picchila discharge (viscous & purulent) and itching resembling the features of Parisraavi bhagandar. In Sushruta Samhita, chikitsa of Parisraavi bhagandar is given as Eshana (probing) then Shastrakarma of Kharjurapatrak akriti incision in the shape of Ardhaachandrakara/ chandramandala/ suchimukhi/ avangamukhi anyone is adopted, Stravamarga is excised followed by Kshara or Agnikarma to achieve hemostasis [7].

Need of study

To evaluate the effect of Udumber stem bark kshara sutra in the case of Parisravi bhagandar (Tans-sphincteric fistula in ano).

Case report

A male patient, 61 years of age, Retired Postmaster came with a boil at
The left perianal region for 2 months, a feeling of hardness around the anal verge with pain and burning sensation during and after defecation for 1 week treated successfully with Shastra-Agni-Ksharakarma as per mentioned in Sushruta Samhita i.e. Surgical and Integrated Ayurveda approach. The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has/has consented to report his images and other clinical information in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Medical history (current and previous)
Boil in the Left perianal region in which he had mild pain and a burning sensation for a few days. As the days passed he felt itching and persistent discharge from the anal region. Also, he felt hardness around the anal verge for 2 weeks. He had an intermittent fever, cough, sleeplessness, pain while sitting, and nausea for 15 days. He was a known case of Perianal abscess, 2 years back and had I and D for the same. But even after I & D, there was little discomfort for 6 months in the perianal region. He is a known case of Hypertension for 10 years (controlled), On Tab. Mukta vati 2 OD AF for 2 years, No H/O DM, asthma, and allergy.

Surgical history
Incision and drainage 2 years back for Perianal abscess.

Family history
Grandfather had a history of Hemorrhoids. Father at the age of 50 years, suffered from Fistula in ano for which he was treated surgically.

Personal history
Appetite Normal, Sleep Mild disturbed for few months. There is no addiction.

General examination
Appearance: Normal, Body built & strength: Moderate, Orientation: well oriented to time, place, and person, Pallor (conjunctiva): Absent, Icterus: Absent, Edema (local): Inflammation in the Left perianal region, Temperature: 97.3 F, BP: 110/70 mm Hg, Pulse: 84/min.

Systemic Examination

Local examination
Inspection. External opening at 1 o’clock position around 3.5 cm of anal verge in the Left perianal region, Perianal skin excoriated with an itchy rash.

Palpation. 1. Digital Per Rectal examination Tenderness 2. Induration is almost up to 3.5 cm below the scrotum on the left side and the external opening feels cord-like. 3. Lubricous discharge from the perianal region 4. Chronic Fissure at 6 o’clock position 5. Spasm +

Investigation
On the 5th of October 2021 (when the patient first visited the hospital) all surgical profile investigations were done including CBC Hb 14.1 gm/dl, Total count 7400/ cumm, ESR 8 mm/1st hr, RBS 96 mg/dl, BT-2 min 15 sec CT 5 min, Serology HIV, HBsAg negative, KFT, LFT normal, Urine R&;M normal, and Radiological investigation Chest X-Ray PA View, ECG: WNL.

Perianal USG. It contains two images, Figure 6A is the Perianal USG, Figure 6B is the reporting of the scanned image, showing a long perianal fistula at 1 o’clock with a cutaneous opening near the scrotum and an anal end at 1 o’clock, 3 cm deep from the anal verge, Transphincteric fistula (Figure 6).

Pre-Operative management
NBM from midnight, Informed written consent taken, local part preparation done, Inj tetanus toxoid 0.5 mL I/M, Inj Xylocaine 2 % 0.5 mL S/C for sensitivity given, soap water enema given at night and early morning on the day of surgery.

On 8/10/2021. Surgery was planned.

Interventions: Core partial fistulectomy & udumber kshara sutra ligation

Procedure. Core fistulectomy (Partial) and Kshara sutra ligation (Figure 7).

Anesthesia type: Saddle block.

Operative procedure. Under all aseptic precautions cleaning, painting, and draping are done. Lord’s Anal dilatation of up to 4 fingers was done. External opening at 1 o’clock position was probed. A radial opening in the anal canal was found. The fistular track was irrigated with Betadine + H2O2. Opening medially towards 1 o’clock coring done through cautery. Partially the tract was excised at a 5cm level (internal sphincter) and then simple thread was ligated. Interrupted suturing was done at the roof of the fistulectomy wound using an Ethylon 3–0 round body suture. Complete hemostasis was achieved, anal packing was given with Betadine and jelly-soaked gauze. Bandaging given. The patient was shifted to the recovery room. The procedure was uneventful.

Figure 6 Perianal USG

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Postoperative management
NBM for 4 hours, Head low position up to 12 hours, Soakage checked. Injection Cefotaxime 1 gm IV BD After food, Injection Pan 40 mg IV OD Before food, Injection Metrogyl 100 mL IV TDS After food* 4 days, IV fluids were administered for 2 days, Injection Diclofenac sodium 75 mg 3 cc IM BD, Fensupp Rectal suppository for dressing SOS, Syp Laxan 30 mL HS from POD-2nd.

18/10/2021 On discharge medication. Syrup Abhayarishta 15mL BD After food with an equal quantity of water, Tab Triphala Guggulu 2bd After food with lukewarm water *15 days, Tab Gandhak Rasayana-2 BD After food with lukewarm water *30 days, Panchavalkal ointment for local application, Sitz bath with Hot water twice a day.

Sutures were removed on 29/10/2021. Subsequent dressing showed a reduction in sloughs and pus discharge. Wound healing is noticed with Healthy granulation tissues. He was given the same internal medications for 15 days with weekly dressing with Ksharasutra change until the complete healing.

On 10/02/2022. The patient had complaints of Fever with pus discharge and pain during defecation from the operated site. So he was admitted for the management of Secondary infection for 3 days. Inj Zone 1.5 gm IV BD After food, Inj Pan 40 mg IV OD Before food, Inj Metrogyl 100 mL TDS After food, Inj Diclofenac 3 cc (75 mg) 1/M BD After food, Local dressing with Betadine and Kshartaila Puran.

Outcome
The patient responded well to the pre-operative, operative measures in the first two weeks. His General conditions improved through all the medications provided successively with regular dressings. He was admitted to the IPD for 10 days and then discharged after which he was regularly called to the OPD for further follow-up & Ksharasutra changing.

Pictorial representations of follow-up. It contains 9 images (Figure 8): A: Postoperative day 1st, where a simple seton was in situ. B: POD 4th, sutures in situ, cleaning with betadine done, cavity wash done, and then Udumber ksharasutra ligated for the first time. C: due to tension around the wound sutures were removed and the wound is left open. Sloughs were seen, so a cavity wash was done with Betadine + H2O2, and Kshara taila puran was started into the cavity. D: Panchavalkal ointment application in the wound margins started. E: On the 45th day of follow-up, after cavity wash, Regular Udumber ksharasutra change was done, kshara tail puran was done and the size of the wound decreased, and granulation in the margins was observed. F: On the 60th day, improvement in depth and size of the wound with healthy granulation due to kshara taila Puran and the application of Panchavalkal ointment regularly. G: On the 75th day no discharge from the track. Wound healthy, granulating. H: 90th day very small track length approx. 2.5 cm. I: On the 120th day, the completely healed wound with minimal scar.

Follow up with Thread length of kshara sutra. The initial length of the track was 13 cm and weekly changing of KS was done. The length of the KS was measured every time and improvement was noted. Till the track length achieved 1 cm the KS was regularly tied and then on the 110th day when the track was 1 cm, under AAP, fistulotomy was done with a Surgical blade. The dressing was done (Table 1).

Table 1 Showing cutting and healing of the Fistular Track

<table>
<thead>
<tr>
<th>Day</th>
<th>Kshara sutra Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>POD-4</td>
<td>Approx. 13 cm</td>
</tr>
<tr>
<td>8/11/2021</td>
<td>Approx. 9 cm</td>
</tr>
<tr>
<td>23/11/2021</td>
<td>Approx. 8.5 cm</td>
</tr>
<tr>
<td>8/12/2021</td>
<td>Approx. 6 cm</td>
</tr>
<tr>
<td>23/12/2021</td>
<td>Approx. 4 cm</td>
</tr>
<tr>
<td>8/1/2022</td>
<td>Approx. 2.5 cm</td>
</tr>
<tr>
<td>23/1/2021</td>
<td>Approx. 1 cm</td>
</tr>
<tr>
<td>28/1/2022</td>
<td>Fistulotomy done</td>
</tr>
</tbody>
</table>

Unit cutting time. UCT is the method followed to assess the efficacy of the treatment in Fistula in ano. UCT was measured as per the following formula: UCT =

\[
\text{Total number of days taken during the treatment} = \frac{110}{13} = 8.46 \pm 1 \text{ day}
\]

Preparation of Udumber Ksharasutra. 11 coatings of Udumber latex + 11 coatings of Udumber stem bark kshara. Freshly collected Udumber latex was coated in the Barbour’s thread no.20 for 11 times and kept for drying. Then Udumber Stem bark was collected, washed, and dried under shade. The powder was formed by grinding the extract and was dissolved in distilled water. The solvent was kept on a low flame for heating. Then the supernatant solution is smeared on the Udumber latex-coated thread 11 times and kept in the KS cabinet for drying. In the postoperative phase, it did not result in any problems like burning sensations or abscess development. But, it also signifies that the Udumber Kshara Sutra is capable of cutting the tract properly, eradicating all Dusha Vrana tissue from the area and allowing for the development of fresh tissue [8, 9].

Discussion
The use of the kshara sutra is a very suitable approach for Bhagandara hence in this case, Udumber kshara sutra has been used which showed the tremendous effect on the fistular track left after Partial Coring. The case of Parisravi Bhagandar i.e. Intersphincteric, high anal fistula in ano, with a known case of Perianal abscess is managed by the initiation of the treatment by Radical excision i.e. Surgical approach of Partial coring of the fistular track under Spinal anaesthesia in which most of the unhealthy granulation tissue is excised and the sample is sent for histopathology [10]. Followed by Udumber Ksharasutra ligation in the remaining track. The Mode of Action of drugs is discussed one by one, Kshara sutra has anti-inflammatory and antiseptic properties and its alkaline characteristics aid in cutting and repair [11]. The local action of kshara, snubi, and the mechanical
stress of the ksharasutra knot are the major causes of cutting. Haridra powder, which has antimicrobial effects, assists in the healing of the intestinal tract. It works by Pressure necrosis, chemical cauterization, and sloughing of the tissues of the walls of the fistulous tract along with adequate drainage. It leads to an easy debridement of unhealthy tissues and pus. Udumber is one of the drugs from Nyagrodhadhi gana that Acharya Sushruta mentions [12, 13]. He stated that Nyagrodhadhi gana drugs are used in the treatment of Bhagandar without any postoperative issues, such as burning sensation or formation of abscesses. Yet, it also shows that the Udumber Kshara Sutra can properly cut the tract, removing all unhealthy tissues from the region and enabling the regrowth of fresh tissue. Although having a higher UCT, Udumber Kshara Sutra was significantly more helpful in reducing pain, a burning sensation, and soreness because of Snigdha, Laghu Guna, Kashaya Rasa, and Sheeta Virya qualities [14]. Triphala Guggulu: Treats the suppurated wound by removing sloughs along with the foul smell [15]. It also reduces swelling around the wound margins and helps in relieving pain. Triphala Guggulu is predominantly discussed in Vranashotha and was initially mentioned in Chakra Dutta (Wound Inflammation). It is also referenced in numerous classical writings for treating ailments like Shotha (Inflammation), Arsha (Piles), Bhagandar (Fistula in Ano), Gulma (Tumor), Vranashotha (Wound Inflammation), and Vrana (Wound). Abhayarishta: Balances Vata has Rechana property reduces the symptoms of Anal fistula and provides relief from constipation, Sarak, Malamutra vibandhahar, pacifies Agni. Abhayarishta has action as easy defecation and relieves Malabaddhata by increasing snigdhat in anatra, and deepaniya [16]. Kshara taila: Apmarga kshara taila due to kshara guna do chhedana, bhedana, and lekhana activity helps in healing of the fistular track. Also used in the treatment of Wound infestation, pus, or infection, balances Vata and Kapha [17, 18]. Gandhak Rasayana helped treat infection owing to its potent antibiotic trait, which also enhanced the body's strength by stimulating the digestion process. Gandhaka Rasayan Vati ingredients is having Kandughna, Kushthaghna, Dahanashak, Raktaprasadan, and Ugra visha doshaghana properties [19]. Panchavalkal ointment for the local dressing of the wound [20]. Regular dressing of the wound enhances wound healing along with the prevention of secondary infection. Sitz bath with hot water 10–15 minutes – Provides relief from pain, and itching in the genital area as it purifies the perineum (space between rectum and vulva/scrotum) by cleaning. As far as the concern for cutting the track, UCT was found to be 8.46 ± 1 day which is quite appreciable in terms of this case, an attempt to use this medicated thread was found to be successful (Table 1). Hence the combination of treatments used had a tremendous effect on the condition and gave a positive outcome.

**Conclusion**

The acute and chronic symptoms of the same disease processes as an inflamed anal gland include perirectal abscesses and fistulas [21]. The case study showed that Parisraavi Bhagandar (Intersphinchteric, high anal fistula in ano) is successfully managed by Udumber Kshara sutra after surgical Core partial fistulectomy because the length of the tract was quite big. The management strategies as per Ayurveda, Shastra (Surgical), Agni (Cautery), and Kshara karma (chemical alkali) proved...
that Ksharasutra aids in debridement, eradication, and prevention of bacterial infection. We may utilize Ksharasutra in any sort of fistula tract since it gives both cutting and healing effects. So, in the case of a fistula in ano, we conclude that treatment with ksharasutra is a superior and prime option as there are fewer complications and the patient may resume regular activities sooner. In smaller tracts simple Ksharasutra ligation can be performed after probing. When the tract length remains less than 1 cm fistulotomy can be done followed by Agnikarma to achieve good hemostasis. The treatment plan has offered no side effects or complications so it is highly recommended in large sample size.

References


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