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Management of high anal complex Fistula by modified Kshar Sutra therapy: A case report

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Abstract--Fistula-in-ano is an inflammatory track which has an external opening in the perianal skin and internal opening in the anal canal or rectum. The track is lined by unhealthy granulation tissue and fibrous tissue. As per Ayurvedic perspective the condition can be correlated with *Bhagandara*. Acharya Sushruta has described *Bhagandara* in *Ashtomahagada* as it is difficult to cure. According to Charak Samhita *Kshar sutra* ligation is one of the effective procedures for Fistula-in-ano. A single case study of 38 years old male patient, suffering from Fistula-in-ano since 2 months has been illustrated here. Patient had complaints of mild pain at perianal region, P/R

bleeding on and off, pus discharge on and off and boil at perianal region. After taking detailed history and thorough examination, we decided to treat the patient with *Nadi puran* (irrigation with medicated oil) using *Saindhavadi taila* along with internal medications i.e. *Kaishore guggul* and *Shanshamani vati* for six days. *Kshar sutra* and non-cutting plain thread (seton) ligation was done on 7th day along with internal medications. *Kshar sutra* changing was repeated 4 times i.e., on day 14, day 23, day 33 and day 43 till the tract was completely cut and healed. The patient came for follow up on day 54 and showed complete relief in symptoms of pain, pus discharge and size of fistulous tract. This case study revealed that *Nadi puran* followed by *Kshar sutra* ligation and internal medications provided complete relief in symptoms of Fistula-in-ano with special reference to *Bhagandara*.

Keywords---high anal fistula, Kshar sutra, Saindhavadi taila, Nadi puran, Bhagandra.

Introduction

Ano rectal disorders are progressively increasing in the society precisely due to unsalutary lifestyle and food habits. Fistula is the latin word for a reed, pipe or flute. In surgery it implies to a chronic granulating track connecting two epithelial lined surfaces¹. Thus, Fistula-in-ano is an inflammatory track which has an external opening in the perianal skin and an internal opening in the anal canal or rectum. The track is lined by unhealthy granulation tissue and fibrous tissue². Anal Fistulae can have many causes like: Ulcerative colitis, Tuberculosis, Crohn's disease etc. but the most common cause is anal gland infection with recurrent anorectal abscess. The symptoms include persistent seropurulent discharge that keeps the perianal region always wet, presence of external opening which can be single or multiple and may discharge blood³. Fistula-in-ano is classified into high or low depending whether the tract passes above or below the anorectal ring⁴. In high anal fistulae the track rises to a higher level and is in relation to the upper parts of the anal sphincters, but does not extend above the anorectal ring⁴. The true prevalence of Fistula-in-ano is unknown. The incidence of Fistula-in-ano developing from an anal abscess range from 26% to 38%⁵.

Acharya Sushruta has classified *Bhagandara*(~fistula-in-ano) into five types⁶. As per text, the etiological factors of *Bhagandara* are vitiated doshas, engulfing of bony foreign body etc. The symptoms are different types of pain like: pricking, burning etc. around the anus, itching at anal region, mucoid discharge from the wound⁷. In Ayurveda, all the five types of *Bhagandara* are *sashtra sadhya*⁸ i.e., require surgical interventions or *Kshar karma*, *Ksar sutra* ligation and *agnikarma* etc Further, Sushruta advocate that if fistula track is not opened, one can do *Nadi puran* (irrigation with medicated oil) from external opening which help in opening the track. *Saindhavadi taila* has the properties like *Shodana*, *Ropana*, *Shothahara*, *Krimighna*, *Vranahara* and *Bhagandarahara*⁹. Similarly, Acharya Charaka has also described *kshar sutra* in the treatment of fistula¹⁰. *Kshar sutra* helps in Debridement and Lysis of the tissues.

Patient Information

In the present case study, a male patient aged 38 years came to the Department of Shalyatantra (~Surgery) with chief complaints of mild pain at peri anal region, bleeding on and off and pus discharge on and off since 2 months. He visited to Ayurvedic hospital with these complaints and MRI Fistulogram report dated 21/09/2021 showing External opening in the right perianal region midline at around 11 to 12'o'clock position with T2, STIR hyperintense track measuring thickness of about 3.9 mm and ascending postero-laterally for a distance of about 8.5 cm, piercing left external sphincter at 7'o'clock position with short inter sphincteric course of 1.5 cm coursing inferiorly and internal opening at 6'o'clock position (figure no. 1). The patient was working in a private company and had a history of prolonged sitting. He had history of similar episodes 2 months back, no drug history, no relevant disease family history and no surgical history. The personal history of patient revealed mixed diet, good appetite, normal sleep pattern, no h/o any addiction and bowel habits were unsatisfactory.

Clinical Findings

The patient was hemodynamically stable having Pulse 72/min, Respiratory rate 18/min, Blood pressure- 120/80 mmHg. In general examination Pallor, Icterus, Clubbing, Cyanosis, Oedema and Lymphadenopathy were absent. On local examination of anal verge- External opening was seen at 11'o'clock position 8.5 cm away from anal verge. Per rectal digital examination showed no sphincteric spasm and no tenderness. Track was palpable and probe test was partially positive. On proctoscopy no internal opening was seen.

Time Line

Details of timeline is mentioned in table no. 1.

Diagnostic Assessment

It was done with the help of previous MRI fistulogram report and clinical assessment.

Therapeutic Interventions

The patient was treated with specific regimen:

1. *Nadi puran* (irrigation with medicated oil) with *Saindhavadhi taila* along with *Kaishor guggul* and *shanshamani vati* internally.
2. *Kshar sutra* and plain thread (Seton) ligation along with combination of Ofloxacin (200mg) + Ornidazole (500mg), combination of Diclofenac (50mg) + Paracetamol (325mg) + Serratiopeptidase (15mg) and *Gandharvaharitaki churna* internally.

And periodic assessment of prognosis with therapy was observed. Proper counselling, written informed consent was recorded after explanation of proposed line of treatment.

For the therapeutic evaluation, parameters such as pain at peri anal region, pus discharge from external opening, length of fistula tract were assessed before, during and after completion of treatment.

The complete management is divided into two parts:

1. *Nadi puran* (irrigation with medicated oil) with *Saindhavadi taila*:
Nadi puran (irrigation with medicated oil) was divided in three steps:
 - a) *Purva karma* (~pre-operative procedures): Blood pressure and pulse rate was monitored before main procedure. Patient was placed in lithotomy position and local antiseptic care was taken. Sterile disposable syringe (5ml), gauze piece, sterile rubber gloves were taken in instrument tray. *Saindhavadi taila* was filled in 5ml syringe and needle was removed.
 - b) *Pradhan karma* (~main procedure): Anal verge was cleaned with Betadine solution. *Saindhavadi taila* was slowly pushed from external opening at 11'o'clock which came out from internal opening at 6'o'clock position.
 - c) *Paschat karma* (~post-operative procedure): After *Pradhan karma* the site was cleaned and sterile gauze with adhesive sticking tape was applied. The bandage was removed before act of defecation.
2. *Kshar sutra* and Seton ligation: This procedure is divided into three steps:
 - a) *Purva karma*(~pre-operative procedure): The standard pre operative measures include routine blood investigations, radiological investigations like: ECG, Chest X-ray, MRI Fistulogram etc, antibiotics, intravenous fluids and PC Enema.
 - b) *Pradhan karma*(~operative procedure): After giving spinal anaesthesia the patient was placed in the lithotomy position. Painting of the area was done with betadine and the area was covered with sterilized drape. Confirmation of the track was done by pushing betadine solution from external opening.
 For better understanding this innovative (integrated) surgical procedure can be divided into three stages. They are:
 Stage 1: Introducing the probe through internal opening at 6'o'clock position in the anal canal. Track was followed towards external opening and interception of track was done 3.5 cm away from anal canal.
 Stage 2: ligation of *Kshar sutra* was done in the accessible track having internal opening in the anal canal and iatrogenic external opening 3.5 cm away from the anal canal.
 Stage 3: Plain thread (Seton) ligation was done in primary external opening at 11'o'clock up to the site of intercept i.e., 3.5 cm away from anal canal (figure no. 2).
 - c) *Paschat karma*(~post-operative procedure): Sitz bath, pushing of lox 2% jelly into anal canal and cleansing of wound with betadine was advocated and daily dressing under aseptic precaution for 10 days.

To promote healing antibiotics in combination of Ofloxacin (200mg) + Ornidazole (500mg) 1 tablet twice a day, to reduce pain and swelling a combination of Diclofenac (50mg) + Paracetamol (325mg) + Serratiopeptidase (15mg) 1 tablet twice a day and *Gandharvahrutaki churna* 2gm at night orally were prescribed for 5 days. Further, patient was advised ayurvedic medicines: *Gandhakrasayan vati* (250mg) 2 tablets twice a day and *Shanshamani vati* (100mg) 5 tablets thrice a

day and *Gandharvaharitaki churna* 2gm at night for 30 days. The patient was assessed at regular intervals and the details of assessment parameters with gradation criteria (0-3 scale) are mentioned in table no 2.

Follow Up and Outcome

The patient was advised weekly follow up for *Kshar sutra* changing. On day 1, the symptoms were moderate (++) to severe (+++). However, symptoms such as pus discharge reduced from severe (+++) to zero, pain reduced significantly from moderate (++) to zero and fistulous tract was completely cut through and healed after four sittings of *Kshar sutra* changing. The patient came for *Kshar sutra* changing on day 14 (figure no. 3), day 23 (figure no. 3), day 33 (figure no. 4) and day 43 (figure no. 4). On day 54 patient came for follow up with no pain at anal region, no pus discharge and completely healed fistulous track (figure no. 5). During assessment it was observed that the patient got complete relief from the symptoms of High Anal Fistula complex. There were no complications seen during and after treatment. The average U.C.T. was 12.28 days/cm. Table no 3 shows effect of treatment/interventions on assessment parameters.

Discussion

As per Ayurvedic classics, this disease is called *Bhagandara* as they tear the region of perineum (*bhaga*), rectum (*guda*) and pelvis (*basti*)⁷. It is caused when vitiated *vayu* vitiates *rakta* and *mamsa* dhatus, produce several boils (*pitikas*) around the anus. Most of them communicate with one another, penetrates deeper tissues with several sinuses and tracks lined by granulation tissue (*dushtamamsa*) and open ultimately into rectal wall⁸. All the types of *bhagandara* are *shastra sadhya*. Hence, *kshar sutra* ligation is used in treatment of *Bhagandara*.

Unit Cutting Time (U.C.T.)

It is an important parameter to assess the efficacy of the *Kshar sutra*, which indicates the average time in days taken to cut and to heal 1 cm of fistulous tract. The U.C.T. is calculated by following formula:

$$\text{U.C.T.} = \frac{\text{Total number of days taken to cut through the tract}}{\text{Initial length of } Kshar\ sutra \text{ in centimeters}}$$

Thus, U.C.T. is time taken (in days) to cut 1 centimeter of fistulous tract with simultaneous healing.

It was observed that the unhealthy granulation tissue forming fistulous track sloughed out completely after 17 days during third sitting of *kshar sutra* ligation in the fistula connected to anal canal (figure no. 3).

As per MRI report 8.5 cm fistulous track was noted having external opening at 11'o'clock. So, it was planned to perform modified *kshar sutra* treatment intercepting the track by making an iatrogenic opening.

Probable mode of action of therapy:

1. *Saindhavadi taila*:

The major constituent of *Saindhavadi taila* contains: *Saindhav lavana*, *chitraka*, *danti*, *palash*, *indrayava* etc¹¹ having properties like *katu-tikta-*

kashaya rasa, ruksa-tikshna guna, ushna virya, katu vipaka. So, it has properties of *shodhana, ropana, shothhara, vranahara and bhagandarahara*.

2. *Kshar sutra*:

Kshar sutra is medicated thread prepared by repeated smearing of alkali of *Achyranthus aspera*(*apamarg*) plant, latex of *Euphorbia nerifolia*(*snuhi ksheer*) and *Curcuma longa*(*haridra*) powder on 20 no. Barber's surgical linen thread. This combination of medicines on thread helps in debridement and lysis of tissue, exerts antifungal, antibacterial and anti-inflammatory. Another mechanism proposed for the *Kshar sutra* is that it destroys the residual glands in the epithelium¹².

3. Internal medications:

Kaishor guggul is a herbal remedy containing purified guggul and is used as antiallergic, antibacterial and for blood purifier¹³. The guggul with its unique properties clears off the obstruction in the path of *rakhta* and *vata* alleviation takes place¹⁴.

Gandharva haritaki churna contains *eranda taila, bal haritaki, shunthi, saindhava and savarchal lavana*. It helps in *vata anuloman* and cures *mala-vibandha*, helps in smooth action of defecation¹⁵.

Gandhak rasayan vati consists of *gandhak* along with other herbal ingredients. *Gandhak* is mentioned as *krimighna* in ancient ayurvedic texts. Other ingredients attributed additional therapeutic properties and proved to have antimicrobial activity¹⁶.

Shanshamani vati have *guduchi* which supports in the functioning of the immune system by maintaining sufficient levels of WBC. *Sira* and *Snayu* are the bi product of *rakta* and *shanshamani vati* has *Raktaprasadniya* character. Hence, it facilitates formation of healthy newer tissues¹⁷.

Conclusion

The observations revealed that, this novel treatment approach which was a combination of *Nadi puran* with *Saindhavadi taila* and *Kshar sutra* ligation along with plain thread (seton) ligation provided complete relief in the management of symptoms like: pain at peri anal region, pus discharge from external opening at peri anal region and size of fistulous tract. The time taken for complete relief in this complex high anal fistula due to this novel approach was 43 days. It would have definitely been much more if only conventional treatment methods were employed.

Hence it can be concluded that this modified *Kshar sutra* therapy comprising of *Kshar sutra* ligation along with plain thread (seton) ligation proved an effective alternative treatment in the management of fistula-in-ano with minimal scarring. Moreover, many cases need to be treated and evaluated with this specific regimen to establish this alternative treatment modality in the management of fistula-in-ano.

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Tables

Table no. 1: shows timeline

Date	Clinical event/intervention
7/10/2021	Initial assessment and diagnosis
7/10/2021-12/10/2021	<i>Nadi puran</i> with <i>saindhavadi taila</i> along with <i>kaishore guggul</i> (250 mg each) 2 tablets thrice a day, <i>Shanshamani vati</i> (100mg each) 5 tablets thrice a day and <i>Avipattikar churna</i> 2gm twice a day for 6 days
13/10/2021	<i>Kshar sutra</i> and plain thread (seton) ligation
13/10/2021-17/10/2021	Combination of Ofloxacin (200mg) + Ornidazole (500mg) 1 tablet twice a day, combination of Diclofenac (50mg) + Paracetamol (325mg) + Serratiopeptidase (15mg) 1 tablet twice a day, <i>Gandharvaharitaki churna</i> 2gm at night for 5 days
18/10/2021- 17/11/2021	<i>Avipattikar churna</i> + <i>Hingwashtak churna</i> 2gm twice a day, <i>Gandhak rasayan vati</i> (250mg) 2 tablets twice a day, <i>Shanshamani vati</i> (100mg) 5 tablets thrice a day for 30 days
20/10/2021	1 st <i>Kshar sutra</i> changing (only to accessible track)
29/10/2021	2 nd <i>Kshar sutra</i> changing (only to accessible track)
8/11/2021	3 rd <i>Kshar sutra</i> changing (only to accessible track) and plain thread (seton) was removed.
18/11/2021	4 th <i>Kshar sutra</i> changing(only to accessible track)
29/11/2021	Follow up

Table no. 2: Assessment parameters with gradation criteria

S. No.	Symptoms	Absent	Mild	Moderate	Severe
1	Pain at perianal	0	+	++	+++

	region				
2	Pus discharge from external opening	0	+	++	+++
3	Length of fistula tract	0	+	++	+++

Table no. 3: Effect of treatment

Parameters	1 st day	2 nd day	3 rd day	4 th day	5 th day	6 th day	7 th day	14 th day	23 rd day	33 rd day	43 rd day	54 th day
Pain	++	++	++	++	++	++	++	+	0	0	0	0
Pus discharge	+++	+++	+++	+++	+++	+++	+++	++	+	+	0	0
Size of fistulous tract	+++	+++	+++	+++	+++	+++	+++	+++	++	++	+	0

Figures

Figure no. 1: MRI Fistulogram



Figure no. 2: Kshar sutra and plain thread (seton) ligation



Figure no. 3: *Kshar sutra* changing on day 14 and day 23



Figure no. 4: *Kshar sutra* changing on day 33 and day 43



Figure no. 5: Completely healed fistulous track

