



Research Article

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A COMPARATIVE STUDY TO EVALUATE THE EFFICACY OF STANDARD FISTULECTOMY PROCEDURE AND KSHAR-SUTRA LIGATION IN THE MANAGEMENT OF FISTULA-IN-ANO

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ABSTRACT

The disease, fistula in ano, which is considered to be a minor ailment, has high morbidity. Besides fistulectomy; the father of surgery, Sushruta, has also described its treatment in his text Sushruta samhita by kshar sutra method considering it as nadi vrana (wound with tract). The aim of the study was to compare the effectiveness, hospital stay, post operative pain between fistulectomy and kshar sutra procedure. 30 patients underwent fistulectomy and 30 patients underwent kshar sutra procedure according to the inclusion and exclusion criteria of study. Post operative assessment of pain was done using VAS score, fecal incontinence, gas incontinence, wound healing, follow up complaints and recurrence. Mean hospital stay and recurrence was more in fistulectomy procedure and duration of healing of fistula was more in kshar sutra ligation procedure and there was significant difference in pain on 1st, 2nd and 3rd post operative day. Kshar sutra procedure is safe, feasible and effective. In Ksharsutra procedure immediate post operative pain was much less with early discharge from the hospital, complete healing of wound was delayed with decreased morbidity, as compared to open method of fistulectomy.

Keywords: fistula in ano, fistulectomy, kshar sutra, recurrence, incontinence

INTRODUCTION

Fistula-in-ano is a common surgical problem. Hippocrates (460 B.C.) described the use of seton to cure fistula in ano. They also favoured use of knife if not cured by seton. The first surgical lay open of fistula in ano as practised today was performed by John of Arderne in 1337.¹ Conventional surgical options for a low anal fistula in ano include fistulotomy and fistulectomy.^{2,3} A fistulectomy involves complete excision of the fistulous tract, thereby eliminating the risk of missing secondary tracts and providing complete tissue for histopathological examination. A fistulotomy lays open the fistulous tract, thus leaving smaller unepithelialized wound, which hastens the wound healing. Both fistulectomy and fistulotomy leave a raw unepithelialized endo and peri-anal tissue to heal over, which may require hospitalization for irrigation and dressing, risk of bleeding and recurrent sepsis. Moreover, the need of prolonged hospitalization may arise due to extensive mutilation of anorectal region, chances of recurrence and anal incontinence in some of the cases of fistula. Great Indian Surgeon Sushruta narrated in his teachings the use of Kshara for cure of fistula in ano. The work of Sushruta was later compiled as "Sushrut Samhita" in the 5th century A.D. (as quoted by Sharma⁴). Acharya Chakrapani Datta (10-11 Century A.D.) and Acharya Bhavmishra (16-18 century A.D.) have described in their classical Ayurvedic texts, the method of preparation and treatment of fistula in ano by use of Kshara Sutra (K.S.).^{5,6} Kshara sutra is a medicated alkaline thread. Application of this thread in fistulous tract causes simultaneous cutting and healing of the wound and allows better wound drainage.

MATERIAL AND METHODS

The aim of this study was to compare the post operative course and the recurrence in patients who underwent either fistulectomy or kshar sutra procedure for low anal fistula in ano. It is a comparative study done at Government hospital Sarwal (Jammu, J & K, India), in which 60 patients were selected with complaint of low anal Fistula-in-ano. The Inclusion criterion was an established as case of low anal Fistula-in-ano where as high anal fistula-in-ano were excluded. The patients were divided into two groups. 30 Patients were treated with standard fistulectomy procedure and 30 Patients were treated with application of Apamarga Kshar sutra ligation of the fistulous track connected to the anal canal which also allows drainage of the abscess cavity if present. Kshar sutra was replaced on every seventh day. Systemic oral medications were continued in both the groups and follow up of patients was done up to 6 months. Statistical Analysis was done by using SPSS (Statistical Package for Social Sciences, Version 16.0 Standard Version. SPSS incorporated 1989-2007). The results were presented as percentages and means. Continuous data were analyzed with Student's *t*-test. The drug material used under Kshar sutra ligation procedure was Standard Kshar sutra with 21 coatings (11 coatings of Snuhi latex plus seven coatings of Apamarga kshara mixed with Snuhi latex followed by three coatings of Haridra Powder mixed with Snuhi latex).

Preparation of Kshar sutra

Surgical linen Barbour thread gauge number 20 was manually coated eleven times with the latex of *Euphorbia neriifolia*, followed by seven coatings of the latex and the

alkaline powder of *Achyranthes aspera* alternatively, and dried. In the final phase, three coatings of latex and powder of *Curcuma longa* were given alternatively. The thread thus prepared was sterilized by ultra violet radiation and placed in a polythene bag, which was transferred to a glass tube containing silica gel as a desiccant, before sealing the tube. The pH of the thread was ensured to be about 9.8, while the length was about 25 cm.

Plan of Work

Pre-operative: The standard pre operative measures included routine blood investigations, radiological investigations including fistulogram, pus culture & sensitivity and proctoscopy for confirmation of diagnosis. Main procedure: After giving spinal anaesthesia, the patient was placed in the lithotomy position. Painting of the area is done with 10 % betadine solution and the area was covered with sterilized drape. Confirmation of the track was done by pushing betadine mixed with Hydrogen peroxide from the external opening.

Fistulectomy Group

- Excision of the fistulous tract.
- Patients discharged after 2 days, were asked to attend the Surgical Outpatient Department (SOPD) for dressing and follow-up medication after every alternate day till the complete healing of the wound.
- However, it takes approximately three months for complete recovery of the deep wound.

Kshar sutra Group

- Kshara sutra ligation of the fistulous tract which was connected with the anal canal with the help of malleable metallic probe. Kshar sutra replaced on every seventh day.
- Patients discharged on next day and were asked to attend the Surgical Outpatient Department (SOPD) for dressing and follow-up medication.

- Kshar sutra, which was ligated in the track communicating to the anal canal, was changed weekly till complete cutting of the tract.

Post-operative management: Sitz bath with betadine and cleansing of wound was advocated followed by Roller gauze wrung with betadine packing and daily dressing under aseptic precaution till complete healing of the wound. To promote healing and reduce pain, oral antibiotics as per pus sensitivity and anti-inflammatory drugs and multivitamins were also prescribed in both the groups.

RESULTS

Total 60 cases of fistula in ano treated by fistulectomy and kshar sutra procedure were studied at Government hospital Sarwal, Jammu, India from June 2009 to December 2011. Majority of patients suffering from disease were males. In fistulectomy procedure there were 32 % male and 18 % female whereas in kshar sutra procedure 38 % male and 12 % female patient. In fistulectomy group 40 % patient had a symptom of perianal discharges and in kshar sutra group it was 50 %. Pain was present in 32 % patients in fistulectomy group and 39 % in kshar sutra group. On aetiology, the most common cause for fistula formation was due to perineal sepsis in 86 % of patients and tuberculosis was the cause in 6 % of patients and was started on antitubercular drugs. On per anal examination, 88 % had single external opening while 12 % had multiple openings. 22 % patients had haemorrhoids that underwent haemorrhoidectomy along with fistulectomy. On proctoscopy Internal opening was present in 62 % of patients and 22 % had haemorrhoids. 23 % fistulae were subcutaneous, 13 % sub mucous, 48 % intersphincteric and 16 % were of transsphincteric variety. The effect of the two surgical procedures are given below;

Table 1: Effect of Surgery on Continence

Operative method	No. of patients	Major Fecal incontinence	Minor fecal incontinence	Flatus incontinence
Fistulectomy	30	0	04	9
Kshar-sutra ligation	30	0	0	5

Table 2: Effect of Surgery on Recurrence

Operative method	No. of patients	Recurrence	% age
Fistulectomy	30	03	10.00 %
Kshar-sutra ligation	30	1	03.33 %

Table 3: Pain Score at Immediate Post-Operative Period (After 6 h)

VAS pain score	Fistulectomy		Kshar-sutra		Total	
	N	% age	N	% age	N	% age
0-3	0	0 %	0	0 %	0	0 %
4-7	23	76.66 %	30	100 %	53	88.33 %
8-10	7	23.33 %	0	0%	7	11.66 %
Total	30	100 %	30	100 %	60	100 %
t- test	Mean = 6.633		Mean = 5.433		P = < .001	

Table 4: Pain Score at 1st Post-Operative Day

VAS pain score	Fistulectomy		Kshar-sutra		Total	
	N	% age	N	% age	N	% age
0-3	0	0 %	7	23.33 %	7	11.66 %
4-7	26	86.66 %	23	76.66 %	49	81.66 %
8-10	4	13.33 %	0	0 %	4	6.66 %
Total	30	100 %	30	100 %	60	100 %
t- test	Mean = 6.142		Mean = 4.892		P = < .001	

Table 5: Pain Score at 2nd Post-Operative Day

VAS pain score	Fistulectomy		Kshar-sutra		Total	
	N	% age	N	% age	N	% age
0-3	5	16.66 %	19	63.33 %	24	40 %
4-7	23	76.66 %	11	36.66 %	34	56.66 %
8-10	2	6.66 %	0	0 %	2	3.33 %
Total	30	100 %	30	100 %	60	100 %
t- test	Mean = 5.500		Mean = 3.285		P = < .00001	

Table 6: Pain Score at 3rd Post-Operative Day

VAS pain score	Fistulectomy		Kshar-sutra		Total	
	N	% age	N	% age	N	% age
0-3	9	30 %	25	83.33 %	34	56.66 %
4-7	21	70 %	5	16.66 %	26	43.33 %
8-10	0	0 %	0	0 %	0	0 %
Total	30	100 %	30	100 %	60	100 %
t- test	Mean = 4.964		Mean = 3.035		P = < .00001	

DISCUSSION

The conventional surgical treatment of fistula in ano is fistulectomy or fistulotomy. Many modifications have been added to these operations. In the present study, all the cases were ambulatory after initial application and subsequent changes of kshar sutra. The duration of treatment in the kshar sutra study was more when compared to conventional surgical treatment of fistula in ano. Deshpande *et al*⁷⁻¹⁰ have advocated the application of kshar sutra without anaesthesia but it was noticed that initially, the procedure of changing kshar sutra was painful and was done under local anaesthesia but after about three subsequent sittings of changing kshar sutra, the visual analogue scale (VAS) for pain has decreased and we changed the kshar sutra without local anaesthesia. The reason might be the increased circumference of external opening, fistulous tract and internal opening after repeated subsequent changing kshar sutra. Bennet¹¹ has reported 8.47 % recurrence rate after conventional treatment of fistula in ano and in the present study, it was found 10 %. The rate of recurrence in the present study by kshar sutra procedure is almost similar to Deshpande *et al*⁷⁻¹⁰ are almost similar. The author have reported 96.5 %⁸ and 96 %⁹ cure rate in two different studies, while in the present study it is 96.67 %.

Mode of Action of Kshar Sutra

- Debridement and lysis of the tissues.
- The presence of Kshar sutra in the fistulous tract does not allow cavity to close down from either ends and there is a continuous drainage of pus along the Kshar sutra itself.
- The Kshar sutra slowly and gradually cuts through the fistulous tract from apex to the periphery. There is a simultaneous cutting and healing of the tract and no pocket of pus is allowed to stay back.

- The Kshara (Caustics) applied on the thread are anti-inflammatory and they have property of chemical curetting. The Kshar sutra remains in direct contact of the tract and therefore, it chemically cures out the tract and sloughs out the epithelial lining, thereby allowing the fistulous tract to collapse and heal.^{12,13}

Benefits of Ksharsutra Ligation over Fistulectomy

- Early ambulation and minimum hospitalization.
- Almost no blood loss during operative procedure
- Low recurrence rate
- Cost effective.
- Have good cosmetic results.
- The treatment can also be employed to hypertensive and diabetic patients.

Disadvantages of Ksharsutra Ligation over Fistulectomy

- Patient has to come every week in hospital for changing Kshar sutra till complete healing of the wound.
- Initially the procedure of changing Kshar sutra was painful and was done under local anesthesia but after 2-3 sittings, patient VAS for pain was improved.

CONCLUSION

Kshar sutra procedure is simple, easy, safe, feasible and equally effective in the management of fistula in ano as compared to open method of fistulectomy. Immediate post operative pain is much less with early discharge from the hospital, early return to normal activity, low recurrence rate and decreased morbidity. Healing of wound is faster in open method of fistulectomy. No doubt, there is a definite need to do more number of cases using this technique, in order to establish this line of treatment for the challenging disease.

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