

Review of Seton Techniques in the Management of Fistula-in-Ano (Bhagandara)

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Abstract

Modified and more efficient seton techniques are widely practiced in the management of fistula-in-ano, particularly in Ayurveda. After constant researches and evolutions ksharasutra is considered to be the gold standard in the treatment of anal fistula. The highlights of the ayurvedic caustic thread are the limited use of local anesthesia, 'simultaneous cutting and healing' of the tract, and that it is an OP based procedure, aiding the patients to rejoin their normal activities during the procedure itself. The standard ksharasutra is prepared by repeated coatings of snuhi ksheera (*Euphorbia nerrifolia*), apamarga kshara (*Achyranthus aspera* Linn.) and haridra churna (*Curcuma longa*) over a sterilized no.20 surgical linen thread. Various modified setons are now in vogue, as also quasi seton techniques like IFTAK and 'tube in tract'. This study aims at a comprehensive review of ksharasutra weighing upon the advantages and disadvantages of different types of setons including ksharasutra, thereby allowing the surgeon to choose the right seton and techniques depending upon the stage, size, location, complication and exact pathology if any.

Keywords

Seton, ksharasutra, snuhi ksheera, apamarga kshara, haridra churna, bhagandara, fistula-in-ano.

Introduction

Fistula-in-ano (bhagandara) is an abnormal communication between the anal canal and peri anal skin and is a tract lined by granulation tissue which opens internally into the rectum or anal

canal and externally to the skin around the anus¹. The disease occurs as a complication of opening up of an abscess located in the perineal region, which has refused to heal by itself².

The current management of fistula involves various types of techniques designed to remove the pus, prevent formation of pus and to heal the tract. In many instances these objectives are achieved by either laying open the tract and allowing it to heal from the base or by removal of significant portion of the whole thickness of the tract itself. To achieve these versatile goals, surgeons have been using many techniques; but the result in terms of complete cure with absence of remission is quite disappointing. Seton, a non absorbable suture material that is guided through the fistula tract and tied exteriorly is in use since BC 5th century in peri-anal fistula management with excellent results. This paper examines various seton techniques done across various Nations from ancient times and tables newer seton based surgical techniques and their benefits.

Methods

The entire literature in this regard was

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reviewed exhaustively. The published articles dealing with different types of seton techniques in fistula-in-ano were studied in depth.

Historical review of seton technique with its benefits

The seton technique is a modification of the linen thread described by Hippocrates, who used horse hair as seton³. In modern era, surgeons continue to use the seton technique in anal fistulae. The word 'seton' is derived from the Latin 'seta' means a 'bristle'. According to the mode of action, the techniques are basically categorized into cutting (tight) and non-cutting (loose) seton. Cutting seton promotes slow transection of the external sphincter muscle as a result of pressure necrosis with minimal separation of the cut ends. Non-cutting seton is for long term palliation, used before advanced techniques, as a part of staged fistulotomy and to preserve the external sphincter, in addition to its use as a drainage technique. The modified seton based technique, 'pulling seton' is an efficient treatment protocol for high level fistula with minimal incontinence and recurrence⁴. The seton technique has been found to be efficacious and safe compared to modern surgical procedures like fistulotomy, fistulectomy etc. It prevents accumulation of pus in the tract and helps in proper drainage. It provides way to internal opening and fistulous tract for staged operation. Seton is especially helpful in dealing with high level fistulae, transphincteric and suprasphincteric fistulae.

Historical review of caustic thread in classical Ayurveda

Although Acharya Susrutha mentions ksharasutra (caustic ligature) in diseases ranging from nadivrana (sinus) to arbuda (lumps)⁵ in his text, its first description in bhagandara management can be seen in Charaka samhitha⁶. Chakrapani datha, in his book Chakradatha has elaborately mentioned the detailed method of preparation with precise indication of its use in bhagandara (fistula-in-ano) and arsha (hemorrhoid)⁷. In Gadanigraha, Sodhala describes a formula for making ksharasutra to be used in anal fistula⁸. In all classical ayurvedic texts like Susrutha samhitha, Ashtangasangraha, Ashtangahrdaya, Chakradatha, Gadanigraha, Vangasena samhitha, Bhavaprakasha, Yogaratnakara, Bhaishajyaratnavali; ksharasutra is mentioned in the context of nadivrana (sinuses).

Much later, in the 1960s, a research team under the leadership of Late Prof. P.J. Deshpande established a standard method of preparation of ksharasutra by fixed thickness of thread by a fixed number of coating⁹. Medicated seton (ksharasutra) used for the drainage, destruction of fibrotic lining of tract from base as well. As it helps simultaneous cutting and healing, it has less chance of recurrence. Ksharasutra can be used for chedana in place of sharp instrument in krsha (thin), durbala (weak) patients and in shastra sadhya marmashritha diseases (operable diseases of vitals). The advantages of the ayurvedic caustic threads are – only a single thread is used, rarely needs local anaesthesia, no blood loss, no need for incising or excising fistula tract before introducing thread.

Different types of ksharasutra

Many studies have already been carried out with variations

in the kshara and the latex. Among them the most remarkable are guggulu ksharasutra, udumbara ksharasutra, gomutra ksharasutra, papaya ksharasutra, tankana ksharasutra, yava ksharasutra, ghrtakumari ksharasutra, aragvadhadi ksharasutra etc. Lot of researches and clinical trials has been done in regard to ksharasutra. Guggulu based ksharasutra helps simultaneous cutting and healing of the tract. Papaya ksharasutra prepared from papaya latex is superior to snuhi ksharasutra¹⁰ in many respects. A study conducted at B.H.U. deals with non caustic thread like aragvadhadi sutra in different types of bhagandara¹¹. Non caustic sutra application reduces burning sensation, local irritation and other skin reactions. Udumbara ksharasutra is having vana shodhaka and vana ropaka properties, it is easy to prepare and is less irritant but with unit cutting time (UCT) being more in comparison to standard ksharasutra¹². Yava kshara is used in place of apamarga kshara which is well known for its lekhana action. It is also shothahara and shita virya in nature. It causes less pain as compared to apamarga ksharasutra. But unit cutting time of yava ksharasutra is more. In ghrutakumari ksharasutra, pulp of ghrutakumari was used in place of snuhi ksheera. Researchers suggest that ghrutakumari possesses local anaesthetic property¹³. It also has shothahara and vranaropaka properties, but it was observed that thread prepared out of it appears to be beaded because drying was not uniform and hence pain was noticed during application. Kadali ksharasutra is considered as a better alternative in place of apamarga ksharasutra, because it has more acceptability, less irritant, was easily available and causes less burning sensation and encourage healing by new granulation tissue formation¹⁴. But its unit cutting time is more as compared to apamarga ksharasutra. Palasha ksharasutra is equally good as standard ksharasutra. It was observed that there was a marked reduction in pain, burning sensation, inflammation and local reaction. The only drawback was that its unit cutting time was more as compared to apamarga ksharasutra. In gomutra ksharasutra, total duration of treatment, pain, burning sensation, itching, discharge and tenderness was reduced. Nimba ksharasutra helps suppurate immature shotha and drains the suppurated vana¹⁵.

Table.1 Different types of ksharasutra

Sl.No	Ksharasutra	Advantages	Disadvantages
1	Apamarga ksharasutra	Standard ksharasutra	Pain, burning sensation, itching, less availability
		Easy availability	
2	Udumbara ksharasutra	Vrana shodhaka and vranaropaka, easy to prepare, less irritant	UCT was more
3	Snuhi ksharasutra	Its tolerance somewhat better, thin scar	Requires more coatings to achieve adequate thickness
4	Gugguluksharasutra	Easy preparation, excellent tolerance, pain, discharge, good wound healing	Due to its soapy nature, it loosens after application.
5	Papaya ksharasutra	Cleansing and healing,	UCT was very long
6	Yava ksharasutra	Fibrolytic and hygroscopic, anti- inflammatory, less painful	UCT more
7	Ghrtakumari ksharasutra	Easy availability and preservation, good wound healing and no allergic reaction	Drying was not uniform, pain during application
8	Aragwadhadi ksharasutra	UCT less, marked reduction in pain, non-irritant and very useful in sensitive patients like children, females and elders.	Drying was not uniform
9	Gomutra ksharasutra	Significant reduction in pain, burning sensation, itching, and discharge	UCT more
10	Kadali ksharasutra	Better alternative for apamarga ksharasutra, less irritant easily available, less burning sensation	UCT more
11	Modified ksharasutra (Arkaksheera, Papaya Ksheer, Tankan kshara, Yashtimadhu churna)	Reduced the total duration of treatment	It is difficult to prepare
12	Nimba ksharasutra	Used instead of apamarga kshara, helps in suppuration	UCT more
13	Palasha ksharasutra	Marked reduction in pain, burning sensation, inflammation, local reaction	UCT more

Novel methods**LIFT technique¹⁶**

Recent reports describe a novel technique called LIFT (Ligation of Intersphincteric Fistula Tract) for the treatment of anal fistulae. This is a Sphincter saving technique with no risk of post-operative incontinence. The technique prevents the entry of fecal material into the fistulous tract and eliminates the formation of sepsis. A success rate of 94.4% was reported in one previous study containing 18 patients. This technique is based on secure closure of the internal opening and removal of infected cryptoglandular tissue through intersphincteric approach. To identify intersphincteric tract an incision is put at intersphincteric groove, through which a ligation is done through the internal opening. Then the intersphincteric tract close to the internal opening is ligated, leaving alone the rest of the fistula tract along with granulation tissue. Later the defect at the external sphincter is sutured. The most common problem experienced by the patient is severe pain during the procedure.

IFTAK technique

IFTAK (Interception of Fistulous Tract and Application of Ksharasutra) is also known as BHU technique or window technique for the treatment of complex fistula-in- ano. The principle of this treatment is based on Park's concept

of cryptoglandular origin of fistula-in-ano. In this technique, the proximal part of fistulous tract is intercepted by making an artificial opening (window) at the level of external or internal sphincter depending on condition and position of fistulous tract either anterior or posterior along with the application of ksharasutra from site of interception to the infected crypt (internal opening) in anal canal. This is aimed to eradicate the infected anal crypt by chemical cauterization of alkali material which is present in ksharasutra. The drainage is made effective by the artificially made window. The residual tract is left to heal by itself. It is ranked as a safe, effective advanced technique, minimizing post-operative pain and creating minimal scar mark.

Necktie fashion vascular loop seton tie

The necktie tightening of the vascular loop seton is a simple, safe, easily performed technique, simplifying the seton management of perianal fistulae. It does not carry the disadvantage of repeated anesthesia and visits to the operating room, has a low morbidity and may be very convenient to the patient.

Hybrid seton for high anal fistula

Hybrid seton is an alternative for the treatment of high anal fistulas, eliminating the need for post-operative adjustments. The slow and stable cutting of the sphincter seems to have a positive effect on the maintenance of continence. The successful outcome is associated with significant improvement in the quality of life (QOL).

Elastic one-stage cutting seton for high anal fistula

The elastic cutting seton may be a valid alternative for the treatment of high anal fistulas. The possible positive contribution of the slow and stable cutting of the sphincter on the maintenance of continence is further supported. An important practical disadvantage of the conventional seton treatment, like tightening thread, changing of the thread etc. can also be eliminated.

Results

The comparison tabled above proves that both the classical ksharasutra and seton techniques work on the process of slow cutting of the fistulous tract minimising damage to the sphincters. But ksharasutra has the added benefit of simultaneous cutting and healing. Ksharasutra is a non-surgical cost efficient treatment with minimal post-operative complications to the patient.

Discussion

Non-medicated setons act principally by the mechanical action of the thread. Kshara sutra or medicated seton act in dual ways: by mechanical action of the ligated setons, and the chemical action of the drugs coated on the thread. The benefits of ksharasutra are automatic cutting, curetting, draining and cleansing of the tract; thus promoting better healing of the wound. IFTAK technique is the latest of seton techniques using ksharasutra. It is held to be a safe, effective and advanced technique minimizing post-operative pain, leaving minimal scar mark.

Conclusion

Various surgical and para-surgical treatment modalities are available for the repair of high anal fistulae. However the venue of surgical options though appears broad, the result in terms of complete cure with absence of remissions is quite disappointing. The ideal treatment for anal fistula should be associated with no recurrence, no incontinence providing good quality of life (QOL). For the patient these goals are achieved by seton techniques; more so by the ksharasutra spectrum of seton techniques. Revert seton researches in India and elsewhere are good indicators in this directions.

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