

Management of high anal Fistula by Kshar Sutra

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Abstract: Anal fistula has been viewed as a surgical issue for ages due to its complex pathophysiology. Perianal fistulas affect 0.01 to 0.05% of the population and are frequently accompanied by patient pain and morbidity. Fistulae may also result from HIV, lymphogranuloma venereum, sacrococcygeal teratoma, Crohn's disease, trauma, TB, hidradenitis suppurativa, immunosuppression, sacrococcygeal teratoma, rectal duplication, and perianal actinomycosis. Long-term management of an anal fistula involves a significant risk of repeated recurrence and incontinence. In this study, 3 cases that represent a type of anal fistula with their treatment options, objectively weighed the advantages and disadvantages of each advancement in light of clinical outcomes, and attempted to identify the most successful anal fistula treatment methods

Background:

Anal fistula is a common surgical complain that seen frequently by surgeons, caused by an acute perirectal abscess that has a persistent expression. An epithelialized track connecting the anus (or rectum) abscess with the perirectal skin might develop when the abscess ruptures or is drained. The symptoms of an anal fistula include pruritus, recurrent abscesses, fever, and perianal discomfort from an obstructed tract. Patients may also complain of repeated malodorous perianal discharge. A granulating tract runs between the anorectal and the perianal area (or perineum). Anus or rectum and perirectal skin serve as the secondary (external) openings of a tract that makes up a typical fistula ⁽¹⁾. Each year, 20,000 to 25,000 new confirmed cases are reported in the USA. Anal fistula incidence was found to be 1.69 instances per 10,000 people in the UK ⁽²⁾, according to a statistical analysis based on a sizable population database. Anal fistula patients are typically adults between the ages of 30 and 40, and males are more likely than women to have this illness ⁽³⁾. Anal fistula negatively impacts patients' psychological health as well as their quality of life since they frequently experience sadness or anxiety symptoms.

Anal fistula is mostly managed with surgical surgery. The optimal treatment goal is to eliminate the infected lesion, provide adequate drainage, and encourage the fistula's closure while causing the least amount of harm to the anal sphincter ⁽⁴⁾. The most crucial assurance for maintaining patients' normal anal function is the integrity of the internal and external anal sphincters (IAS and EAS). Fistulotomy, fistulectomy, and cutting seton are examples of partial sphincter-preserving surgeries ⁽⁵⁾, as are sphincter-conserving treatments (eg. ligation of intersphincteric fistula tract also known as LIFT procedure, drainage seton or mucosal advancement flap) ⁽⁶⁾.

According to the severity of the lesions, anal fistula can be categorized into simple and complicated forms. The American Society of Colon and Rectal Surgeons (ASCRS) has established categorization standards. The former comprises low transphincteric and intersphincteric fistulas, which make up less than 30% of the sphincter complex. Fistulotomy can be done to treat uncomplicated anal fistula, particularly in situations that are distal ⁽⁷⁾. Complex anal fistula, however, is one of the refractory conditions that colorectal surgeons encounter; it is a transphincteric fistula, which accounts for more than 30% of sphincter complex and includes anal fistulas related to cancer, inflammatory bowel disease, radiation, chronic diarrhea, or preexisting fecal incontinence.

Complex anal fistulas have a wide range of origins and manifestations, making treatment difficult and frequently associated with a high risk of recurrence and probable incontinence issues. There is also currently no clinical agreement on the most effective surgical strategy.

Literature review:

Ancient Indian literature mention the use of "chemical" Seton (Ksharasutra) for the treatment of fistula-in-ano. These stenosis are created by layering plant extracts soaked with latex and cotton thread. The Kshara (caustics) used on the thread have chemical curing capabilities in addition to being anti-inflammatory and anti-slough substances. The fistulous tract can collapse and heal as a result of the Ksharasutra's continued direct contact with the tract, which physically and chemically cures out the tract and sloughs out the epithelial lining. There are additional documented changes to this method.

50 patients were involved in a prospective randomized control research; 26 were in the Ksharasutra group and 24 were in the fistulotomy group. In the fistulotomy group, there was a higher rate of severe postoperative discomfort (7.7% vs. 25%), whereas the Ksharasutra group had a higher rate of wound discharge (15.3% vs. 8.3%). Infection rates, bleeding, and scarring from wounds were comparable across the two groups. Despite experiencing less disturbance to their regular work schedules (2.7 vs. 15.5 days of time off, $P = 0.001$), the Ksharasutra group required longer to recuperate (mean: 53 vs. 35.7 days, $P = 0.002$). Interestingly, there was no open incision in the Ksharasutra group as opposed to the fistulotomy group, and it was substantially more affordable (166 vs. 464) ⁽⁸⁾.

In A prospective research with 60 patients who reported having fistula-in-ano was designed and carried out. The current study examined and compared postoperative complications as a secondary variable and operating time, healing time, and hospital stay as major factors. When compared to the fistulotomy group, the operating time in the ksharasutra group was considerably reduced ($p=0.0021$). Patients who received fistulotomies saw an average recovery time of 22 days, compared to 43 days for the Ksharasutra group ($p=0.014$). In the fistulotomy group, the length of the hospital stay was longer, but in the ksharasutra group, the surgery was performed in the outpatient clinic, with one to two hours of post-surgical supervision ($p=0.001$). In terms of postoperative consequences, patients with fistulotomies had considerably greater pain (36.7%) than those with ksharasutras (13.3%), whereas the infection rate was marginally higher in the fistulotomy group. 16.7% of patients in the fistulotomy group had recurrence, compared to 3.3% in the ksharasutra group ⁽⁹⁾.

Regarding causes of anal fistula recurrence, in a meta-analysis research 20 distinct observational studies with 6168 patients were included in the data synthesis from 3514 citations that were examined. High-quality data indicated that internal opening unidentified (RR, 8.54; 95% CI, 5.29 to 13.80), horseshoe extensions (RR, 1.92; 95% CI, 1.43 to 2.59), and high transsphincteric fistula (RR, 4.77; 95% CI, 3.83 to 5.95) were all linked with anal fistula recurrence AFR. Prior anal surgery (RR, 1.52; 95% CI, 1.04 to 2.23), seton implantation surgery (RR, 2.97; 95% CI, 1.10 to 8.06), and numerous fistula tract (RR, 4.77; 95% CI, 1.46 to 15.51) were all associated, according to moderate-quality evidence. Neither gender nor smoking was found to be significantly associated, and moderate-quality evidence also found no correlations with age, tertiary referral, alcohol use, diabetes mellitus, obesity, preoperative seton drainage, high internal opening, postoperative drainage, mucosal advancement flap surgery, supralelevator extensions, location, or type of anal fistula ⁽⁶⁾.

In another Clinical information study for 1783 hospitalized patients who were treated for anal fistulas. The postoperative recurrence rate was 2.6% (45/1720), and there was a significant difference between the rates for high and low anal fistulas ($P=0.000$). The results of multivariate logistic regression analysis revealed that the height of the anal fistula (OR=5.475, 95% CI:2.230 to 13.445, $P=0.000$), treatment history (OR=2.671, 95% CI:1.315 to 5.424, $P=0.007$), seton placement history (OR=4.707, 95% CI:1.675 to 13.232, $P=0.003$), and concurrent colitis (OR=10.300, 95% CI:1.187 to 89 High anal fistula recurrence was independently associated with Seton implantation history (OR=6.476, 95% CI:1.116 to 37.589, $P=0.037$) ⁽¹⁰⁾.

The only successful treatment for this condition is still surgical surgery. Although eliminating the fistula is the main focus of treatment, it's also critical to maintain anal continence, reduce postoperative complications, and lower the likelihood of recurrence ⁽¹¹⁾. The anal sphincter muscle's participation and the structure of the fistula might provide the surgeon with substantial difficulties. Fistulotomy, fistulectomy, endorectal advancement flap, anocutaneous flap, fibrin glue injection, anal fistula plug, seton drainage, and closure of the intersphincteric fistula tract are among the surgical procedures ⁽¹²⁾. The selection of an operation is

dependent on patient-related criteria, the patient's surgical history, and the surgeon's skill and knowledge with the procedure. There is no standardized protocol to guide the management of patients with anal fistula.

Operative failure, postoperative incontinence, and septic complications had respective rates of 15.6%, 15.6%, and 7.3%. In comparison to the younger group, being older than 45 years was linked to a greater postoperative incontinence rate (adjusted OR, 2.8 [95% CI, 1.0-7.7; P =.04]). Contrary to subcutaneous fistulas, high transsphincteric and suprasphincteric fistulas were independent predictors of incontinence (adjusted OR, 22.9 [95% CI, 2.2-242.0; P =.009] and 61.5 [4.5-844.0; P =.002], respectively). Plugging as opposed to fistulotomy was the sole indicator of septic consequences (adjusted OR, 15.1; 95% CI, 2.3-97.7; P =.004) (13).

Case presentation:

Case 1:

A 45 years old female who presented due to perianal pain during and after defecation for 10 days duration with incomplete bowel evacuation for 3 month duration, the complain is associated with burning sensation and discharge during and after defecation.

Physical examination revealed perianal swelling at 1 o'clock position, probe examination was not done. Pelvic magnetic resonance imaging (MRI) show small abscess collection in left perianal area at 2-12 o'clock. In T2W on STIR, lower margin of abscess is 17mm below anal verge, extend just abuts the lower fiber of external anal sphincter and involve the sphincter then extend to intersphincteric plane to involve internal anal sphincter, anal canal communication can be seen at 12-1 o'clock and the opening near anal verge. The abscess measure 12 × 13 × 21 with no extension to supralelevator extension.

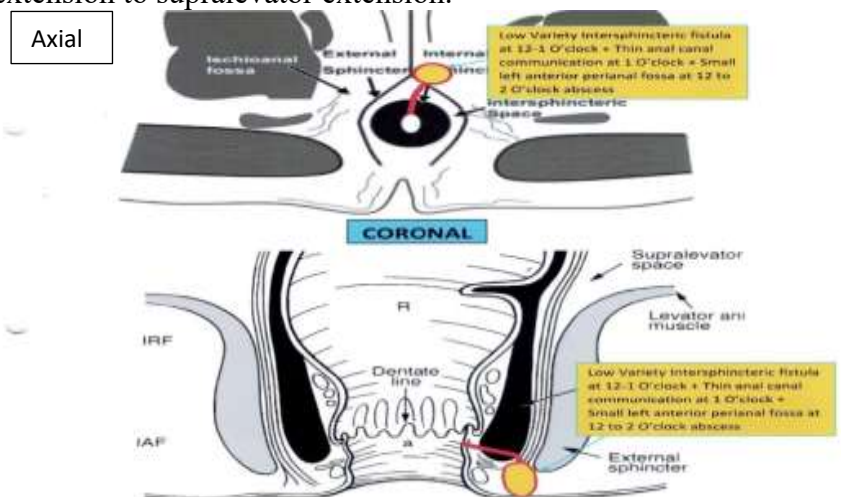


Figure 1: diagram of abscess location

The case was treated by laser I&D with fistulectomy with ksharasutra ligation under spinal anesthesia (14). The location of any external openings was determined while the patients were in the lithotomy posture. To locate the internal orifice, an anal speculum was used. An effort was made to slide the tip of a long, metallic, pliable probe with an eye through the interior hole after being inserted via the exterior entrance. No false passages were intentionally made. The whole tract was threaded with medicated Ksharasutra after the probe's eye was threaded with Ksharasutra and gently withdrew. The two ends of the thread were then tightly knotted together using two knots outside the anal canal. Follow up the patients revealed healing. The patient received prophylactic oral antibiotic treatment for three days. The krastra was then replaced twice at intervals of seven days.

Without intending to completely cut through the tract since it would have taken longer and been unpleasant, the thread was pulled out to promote the tract's recovery. The whole tracts have totally healed with barely any scars by the next appointment.



Figure 2: healing process of case 1

Case 2:

47 years old male presented with anorectal pain during and after defecation. The patients had a boil around the anus that heal for a temporal period and reappear again. Incomplete bowel evacuation with purulent discharge during and after defecation. Regarding physical examination was done using a probe passing upward and vertically through external opening. MRI with perianal contrast was done, at T2-STIR a trans- sphincter fistulous tract at 6 o'clock position in right perianal area that run inferiorly and posteriorly to bifurcate just before its insertion, the length of tract was 5.1 cm and width 3 mm and surrounded by mild subcutaneous fat edema. The external opening is single at 7 o'clock.

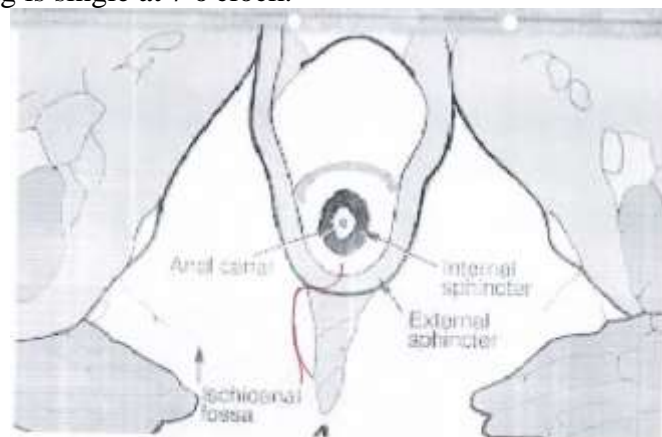


Figure 3: diagram of location trans- sphincter fistulous tract

Laser fistulectomy was decided as treatment choice with Ksharasutra ligation. A typical 3 mm copper probe with a blunt tip and an eye was used to gently probe the exterior aperture. Since copper is very pliable, it is utilized as a probe. With clinical judgment, coring was then began, and the fistulous tract was cored out till the external sphincter. Next, the copper probe was passed through the internal aperture, and the infrasphincteric portion of the fistulous tract was excised as was done in low anal fistulas. The copper probe is then pulled out through the anal canal while being attached to a Ksharsutra, which is also dragged down the fistulous tract during the procedure. Now, the Kshar sutra, which was delivered through just a portion of the anal sphincters to the internal aperture, is linked by the Kshar sutra. This is solely a sphincter-saving technique. It took around six weeks to entirely cut through a section of track that is knotted over by 3–4 cm. The patient was instructed to visit for a Kshar sutra change once each week.



Figure 4: healing process of case 2

Case 3:

65 years old male who presented due to constant perianal pain deep in the buttock throbbing in nature aggravating by walking, sitting and defecation with difficulty in sitting. Patients mention a perianal boil that temporary recovery, then reappearance. Incomplete bowel evacuation for 4 months. Purulent discharge commonly presented after defecation on fistula external opening.

Physical examination revealed the fistulous opening at 3 o'clock, above transverse line. A large size edematous papilloma and edematous anal papilla. Digital examination revealed cord like indurate structure, with internal fistulous opening at 6 o'clock position and spasmodic anal sphincter. Probe introduction through external opening which pass vertically downward (8.5cm) most likely open above dentate line.

MRI show well defined peripheral fluid filled tract (measure 7cm) in the left ischial region, external opening in the left Para-median gluteal cleft. Extending superiorly to anorectal junction, to forming well define collection of abscess (measure 3 × 1.5 × 2.7) in the levator ani muscle and abutting adjacent anal wall. A well-defined filled sinus tract in inter-sphincteric at 8 and 10 o'clock, 1.6cm from anal verge.

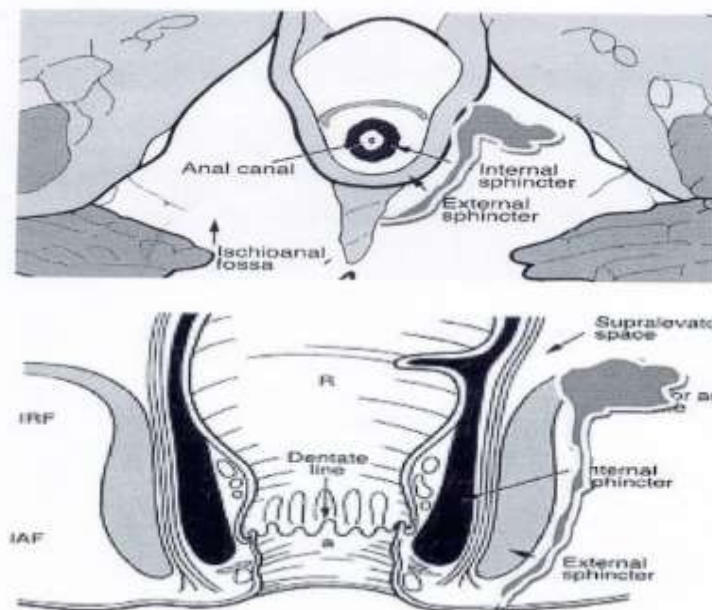


Figure 5: diagram showing location of abscess in case 3

Supralavator anal abscess commonly treated with fistulotomy, Internal opening electrocauterization: A new wound was made by electrocauterizing the mucosa that surrounds the internal opening. Secondary aim supported the healing of the resultant wound (granulation tissue). The interior hole was intended to be permanently sealed off (healed), as well as tract curettage Each tract was carefully curetted and had its lining removed with a curette. The external incision in the ischioanal fossa was used to drain and curet the transsphincteric supralelevator tract/abscess. By the external opening already existent or through a tiny fresh incision in the intersphincteric groove, the intersphincteric supralelevator tract/abscess was treated. A blunt curette was inserted into the intersphincteric space through the incision once the intersphincteric space had been made accessible. Using the MRI imaging as a guide, the curette was moved closer to the supralelevator tract/collection. To avoid unintentionally damaging the rectal wall, a finger was retained in the rectum.



Figure 6: process of healing in case 3

Discussion:

A prior anorectal abscess almost usually results in the great majority of fistulas-in-ano. Other fistulas can form as a result of trauma, Crohn's disease, anal fissures, cancer, radiation treatment, actinomycoses,

tuberculosis, lymphogranuloma venereum secondary to chlamydial infection, carcinoma secondary to radiation therapy, and lymphogranuloma venereum secondary to radiation therapy⁽¹⁵⁾.

Anal fistula can only be treated surgically. The use of seton, fibrin glue, collagen plugs, rectal advancement flaps, fistulotomy with sphincter repair, and rerouting the fistula tract are just a few of the surgical methods that have been discussed. For optimal treatment and to lower the risk of recurrence or incontinence, the precise method selection among the available surgical treatments, based on unique pathological features of the lesion, is crucial⁽¹⁶⁾.

The St. James University Hospital Categorization is another popular classification scheme that groups perianal fistulas into the following categories. Simple linear intersphincteric fistula in grade 1. Grade 2: Intersphincteric with secondary track or abscess. Trans-sphincteric, grade 3. Grade 4: Transsphincteric with secondary track in the ischio rectum or ischioanal fossa or abscess. Supralevator and Translevator, Grade 5.

In the current study, three cases were presented each one of them presented a single type of anal fistula according to the previously mentioned classification system. The first case is simple linear intersphincteric fistula in which patients was presented due to visible perianal swelling with single external opening, while the second case was trans-sphincter fistula with internal and external opening.

Both cases were treated using fistulectomy and Ksharasutra ligation. Ksharasutra has developed into a secure, minimally invasive, and non-recurrence treatment that is widely recognized. The primary goal of the Ksharasutra treatment is to eliminate the root causes, specifically the infected anal gland. After the reason is removed, it might not be necessary to lay the track open, thus the track heals by secondary intention⁽¹⁷⁾.

3rd case was supralevator abscess. The glandular crypts are the primary site of genesis for supralevator abscess. The fundamentals of therapy are the same regardless of the etiology: adequate radiological characterization and appropriate drainage. To prevent iatrogenic development of a complicated fistulae, it is crucial to do an adequate radiological characterization⁽¹⁸⁾.

A supralevator abscess requires complicated medical care. The patient should unquestionably have drainage, but if the anatomy of the abscess is unclear, it should not be done aggressively and may be postponed until a suitable radiological scan is available⁽¹⁹⁾. The drain has many benefits, including assisting with abscess cavity collapse, enabling abscess cavity washing, enabling MRI imaging to track the abscess's development, and enabling visualization of the abscess's course for potential definitive treatment while allowing the patient to go about his daily activities as usual. Drainage times might vary, thus they should be determined using clinical, analytical, and radiological information.

It is still debatable whether definitive surgery should be performed at a second surgery⁽²⁰⁾. When final treatment is carried out using fistulae marsupialization, a number of published studies have demonstrated the lack of recurrence or incontinence (The use of an endostapler). Because primary failure of the flap is the anticipated result, advancement of the flap following abscess draining is not recommended.

Conclusion:

The study presented three type of anal fistula with their management surgical choice, Ksharasutra is the preferred therapy for high anal fistulas because it has the lowest recurrence rate when compared to other treatment modalities and is the preferred method for treating the majority of high anal fistulas.

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