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Complex Trans-sphincteric fistula successfully managed with partial fistulectomy using Ksharsutra: A Case Report

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ABSTRACT:

Bhagandara (Fistula-in-Ano) is explained as one among *Ashta Mahagada* in Sushruta Samhita. This disease is recurrent in nature which makes it more difficult for treatment. *Ksharsutra* has been already proved in the management of fistula-in-Ano though *Acharya* Sushruta has been explained in context to *Nadi-Vrana* (sinus). In this case report, 70 year old male patient came to *Shalya Tantra* OPD with complaints of multiple boils at perianal region associated with pain and blood mixed pus discharge since1.5 months. On PRE two external openings were present anteriorly between 12 to 1 o'clock position along with surrounding induration, internal opening palpated at 12 o'clock at dentate line. Inter-sphincteric collection felt between 12 to 3 o'clock with fibrosis in lithotomy position. MR Fistulogram, suggestive of anterior trans-sphincteric fistula-in-Ano. So this complex fistula was treated with partial-fistulectomy with *Ksharsutra* application under sadal block. *Ksharsutra* was changed by weekly interval adopting railroad technique. Whitin time period of 8 weeks, wound healed completely and no any recurrence history found in follow up of 2 months.

KEY WORDS: Anal fistula, *Bhagandar*, Complex fistula-in-Ano, anterior trans-sphincteric fistula-in-Ano, *Ksharasutra.*

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INTRODUCTION:

Sushruta mentioned *Bhagandara vyadhi* in which pain occurs at *Bhaga* (genital area), *Guda* (anal region) and *Basti Pradesh* (Bladder region) with suppurated boil having five subtypes i.e. *Shatponaka, Ustragriva, Parisravi, Shambukavarta* and *Unmargi.* [1] In *Ustragreeva Bhagandara*, the track goes similar to neck of camel which suggest fistula track has sub branch of the track. Fistula-in-ano is an inflammatory track

which has an external opening (secondary opening) in the perianal skin and an internal opening (primary opening) in the anal canal or rectum. This track is lined by unhealthy granulation tissue and fibrous tissue. [2] In rare cases, this track may be extended to base of scrotum in male and in up to vulva in female.

An uncomplicated trans-sphincteric fistula penetrates both the internal and external sphincter and drains through the ischioanal fossa. The level at which the fistula tract crosses the sphincter complex determines options for management. [3] Intersphincteric abscess may extend from the anterior or posterior midline to involve the lateral potential intersphincteric space resulting into horseshoe abscess. A low trans-sphincteric fistula can often be treated simply by division of the lowest portion of the external sphincter without risk of incontinence. [4] . Beside this the main reasons for the failure of any surgical procedure for fistula-in-Ano are untreated or missed internal opening, missed side tracts/branches, inadequate drainage of inter-sphincteric space, and persistent primary tract. [5] So, to overcome this an integrated method of partial fishtulectomy with *Ksharasutra* using *Ksharsutra* is applied in this case report.

Ksharsutra, a medicated seton mentioned by *Acharya* Sushruta which in barbour linen thread coated with *Snuhi* (*Euphorbia nerifolia* Linn.) latex, turmeric (*Curcuma longa* Linn.), and *Apamarga Kshar* (alkaline powder made by burning *Achyranthus aspera* Linn.). [6] It is extensively used by Ayurveda surgeon in India to treat Fistula-in-Ano.Considering many researches on *Ksharasutra* it is also included in bailey text book of surgery. [7] In Japan the fistula treated with same procedure named Kanazawa sutra hence Ksaharasutra is not only benificail in simple and low anal fistula but also complex and recurrent fistula. [8]

CASE HISTORY:

A 70 years old male patient came to *Shalya Tantra* OPD with complaints of multiple boils at perianal region associated with perianal pain and blood mixed pus discharge since, 1.5 months. There was no history of fever. There was no history of DM or HTN. There were three surgical history found which is mentioned below. All the vitals were found within normal limit.

Past History

Surgical history of - Emergency exploration laparoscopy on 26/05/24.

Surgical history of - Transverse loop colostomy on 06/11/12.

Surgical history of - Incision & Drainage over left thigh lateral aspect abscess on 18/11/12.

Diagnostic Criteria:

On per rectal examination, two external openings present anteriorly between 12 to 1 o'clock position with surrounding induration (Figure: 1), internal opening palpated at 12 o'clock at dentate line with surrounding induration. Inter-sphincteric collection felt between 12 to 3 o'clock with fibrosis in lithotomy. MR Fistulogram, suggestive of anterior trans-sphincteric fistula-in-Ano. [Figure :2.1 & 2.2] So, patient was advised to admit in *Shalya Tantra* IPD for further management. Non-united fractures: left superior & inferior pubic rami and malunited fracture: right inferior pubic ramus,Internal opening at 1–2 o'clock (upper anal canal) and trans-sphincteric fistulous tract into left ischio-anal fossa, passing between left pubic ramus fracture fragments with mild marrow edema. (Figure :3.1,3.2 3.3) So, patient was advised to admit

in *Shalya Tantra* IPD for further management.

METHODOLOGY:

Pre-operative: Informed written consent of patient and his relatives were taken prior to procedure with explained prognosis and result. Injection Tetanus Toxoid 0.5 ml intramuscular was given and Inj. Xylocaine intra-dermal sensitivity test was done. Patient was kept NBM (Nill by mouth) for 6 hours prior to surgery. Part preparation was done and proctoclysis enema was given 2 hours prior to surgery.

All preoperative measures were adopted as per routine case of perianal surgery.

Operative: Patient was taken to operation theatre with stable vitals. Spinal anesthesia given with inj. Ropivacaine 10mg in sitting position followed by lithotomy position. Painting with 10% betadine solution followed by draping with sterile cut-sheet. To confirm the internal opening, patency test was done with diluted hydrogen peroxide solution through external opening at 1 O'clock which came out through internal opening at 12 O'clock. A long metallic malleable probe with an eye was introduced through the external opening at 1 O'clock and attempted to pass the tip of probe through the internal opening at 12 O'clock. Incision was made around the external opening with help of surgical blade no. 15. The fistulous tract along with unhealthy tissue curetted till the fibers of external sphincter are reached. The secondary tracts related to the main tracked also identified and excised.

Care was taken not to create false passage. The eye of all probes was threaded with *Ksharasutra* and probe was gently withdrawn, so the tracts were threaded with medicated *Ksharasutra*. One externo-internal *Ksharasutra* were placed. Following which the two ends of the thread were snugly tied using two knots. Proper haemostasis was achieved and wound was packed with gauze pieces soaked with betadine solution.

Post-Operative: Head low given until sensation is restored. Nil by mouth status was discontinued once bowel sound is audible. Oral antibiotics (Tab. Cefizime 200mg BD given for five days. Appropriate analgesic and antacids were also given as per needed. Patient was advised to take daily sitz bath with *Panchavalkala Kwatha* followed by aseptic dressing with *Panchavalkal Malhara* and Orally 1gm *Kanchnar Guggulu* thrice in a day with lukewarm water after meal for two months. *Ksharasutra* was changed by weekly interval by railroad technique.

Timeline of the complete procedure and medication is mentioned in Table no 1.

- The patient was advised to follow this instruction after complete wound healing.

What to do?

- Eat rotis of wheat and jowar.
- Eat sprouted pulses like moong, chana.
- Vegetables: milk, karela, suran, bhindi, galka, tindola, kantola, raw papaya, tori, radish, cabbage, moringa, carrot, cauliflower.
- Greens: methi, dhaniya, dodhi, spinach.
- Salad: carrot, cabbage, cucumber, chibla, tomato, green onion, beetroot.

- Fruits: ripe papaya, mangosteen, pomegranate, apple, orange, chikoo.
- Drink: RO/filtered, pure water, drink milk, drink buttermilk.
- Have regular, timely, small, warm, and light meals.
- Drink thin and fresh buttermilk with meals.
- Keep a gap of six hours between two meals; eat fruits if hungry in between.
- Drink 3 liters (12 glasses) of water daily.
- Do regular exercise or walk 3-4 km, do yoga, pranayama, or surya namaskar.
- Have simple dal/rice, roti, vegetable, salad in meals.
- Have wheat or jowar roti and upma for breakfast.

What not to do?

- Don't eat spicy, fried, sour food.
- Avoid biscuits, bread, khari, cakes, pastries, and other bakery items made with yeast and maida.
- Don't eat gram flour and deep-fried things like bhajiya, chips, samosa.
- Reduce dairy products like curd, paneer, butter, mawa.
- Don't eat pulses that are hard to digest and cause gas like urad, matar, tuvar dal.
- Don't eat too much brinjal, garlic, red chili, chutney.
- Avoid eating food from outside open trucks.
- Don't eat cold and stale food.
- Reduce fast food like pani puri, pav bhaji, Chinese, Punjabi dishes.
- Avoid outside food items (like dhokla, Italian, dosa).

12. Avoid sleeping during the day and staying awake at night.

Table-1: TIMELINE of the procedure and Medication:

Date	Procedure	Medication
20/ 09/2024	Patient visited *Shalyatantra* OPD, TRUS done	Orally 1gm *kanchnar Guggulu* thrice in a day with lukewarm water after meal
22/10/2024	Patient admitted in IPD for further management. CBC, RBS, CT, BT, HIV, HBsAg, HCV, VDRL, Sr. Creatinine, blood urea, uric acid, SGPT, Urine routine & micro, Stool routine & micro were found within normal limit	Orally 1gm *kanchnar Guggulu* thrice in a day with lukewarm water after meal
23/10/2024	Partial fistulectomy with using *Ksharsutra* done under Spinal Anesthesia. Pus Culture- Escherichia coli Present.	Orally 1gm *kanchnar Guggulu* thrice in a day with lukewarm water after meal

Post-operative day 1st	Post-operative NS lavage was given through disposable syringe, wound was cleaned with *Panchvalakala kwatha* and packed with *Panchavalkal Malhara.*	1 *Ksharsutra* present 1 o'clock to 12 o'clock (externo-internal)-7 cm Secondary tracts were flushed with NS
Post-operative day 8th	Wound was healthy, 3 to 4 drops of pus was present on milking from external opening at 1 o'clock	1 *Ksharsutra* changed 1 o'clock to 12 o'clock (externo-internal)-7 cm Secondary tracts were flushed with NS
Post-operative day 16th	Wound was healthy, 1 to 2 drops of pus was present on milking from external opening at 1 o'clock	1 *Ksharsutra* changed 1 o'clock to 12 o'clock (externo-internal)-7 cm Secondary tracts were flushed with NS
Post-operative day 24th	Wound was healthy.	1 *Ksharsutra* changed 1 o'clock to 12 o'clock (externo-internal)-5 cm Secondary tracts were flushed with NS
Post-operative day 32nd	Wound was healthy.	1 *Ksharsutra* changed 1 o'clock to 12 o'clock (externo-internal)-4 cm
Post-operative day 35th	Wound was healthy.	1 o'clock to 12 o'clock (externo-internal)- 1.2 cm (cut through)
Post-operative day 42nd	Wound healed completely.	
Follow- up after 1.5 month	Minimal scar mark present. No any sign and symptom of recurrence.	

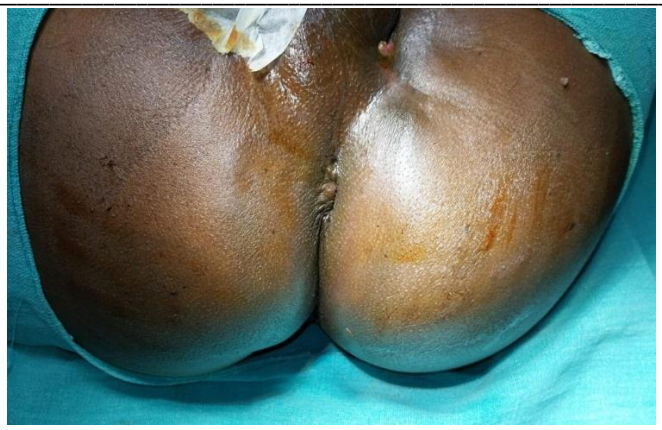

Figure-1: Pre operative condition of patient

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REF. BY: AYURVEDIC HOSPITAL	

3.0 TESLA - MRI OF PERIANAL REGION

Findings:

Non-united fracturs are seen through left sided superior - inferior pubic rami with malunited fracture through right inferior pubic ramus.

Short segmental internal opening is seen at 1-2 o'clock position of anorectal junction - upper anal canal (~3.0 cm proximal to anal verge) and length of defect is about 1.7 cm.

Transphincteric tract from internal opening extends infero-laterally in left ischio-anal fossa and passes between non-united fracture fragments of left inferior pubic ramus.

Resultant mild marrow edema is seen in adjacent non-united fracture fragments. Length of primary tract is about 2.3 cm and diameter is about 0.7 cm. It reveals intrinsic air foci.

Primary tract bifurcates in medial and inferior secondary tracts.

Medial secondary tract extends infero-medially upto the level of junction of perineum with upper thigh with localised external opening. Length of tract is about 3.3 cm and diameter is about 0.6 cm.

Inferior secondary tract is blind ended and reveals intramuscular extension in medial aspect of left upper thigh region with intramuscular edematous changes. Length of tract is about 4.7 cm and diameter is about 1.4 cm.

Mild fluid logging is seen in inter-intramuscular planes of left upper thigh and subcutaneous plane of posterior aspect of upper thigh regions.

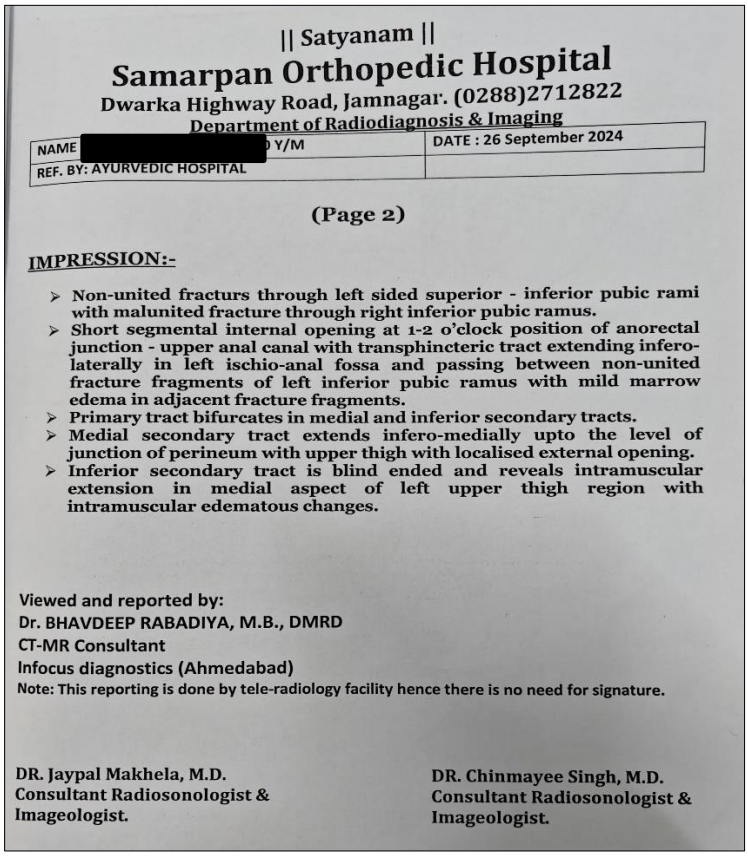
No evidence of supra-levator tract or collection is seen.

Both levator ani muscles appear unremarkable.

Urinary bladder is partially distended and reveals mild trabeculated wall thickening.

Prostate and seminal vesicles appear normal.

Figure :2.1 MRI of Perianal Region



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REF. BY: AYURVEDIC HOSPITAL	

(Page 2)

IMPRESSION:-

- Non-united fracturs through left sided superior - inferior pubic rami with malunited fracture through right inferior pubic ramus.
- Short segmental internal opening at 1-2 o'clock position of anorectal junction - upper anal canal with transphincteric tract extending infero-laterally in left ischio-anal fossa and passing between non-united fracture fragments of left inferior pubic ramus with mild marrow edema in adjacent fracture fragments.
- Primary tract bifurcates in medial and inferior secondary tracts.
- Medial secondary tract extends infero-medially upto the level of junction of perineum with upper thigh with localised external opening.
- Inferior secondary tract is blind ended and reveals intramuscular extension in medial aspect of left upper thigh region with intramuscular edematous changes.

Viewed and reported by:
Dr. BHAVDEEP RABADIYA, M.B., DMRD
CT-MR Consultant
Infocus diagnostics (Ahmedabad)
Note: This reporting is done by tele-radiology facility hence there is no need for signature.

DR. Jaypal Makhela, M.D.
Consultant Radiosonologist & Imageologist.

DR. Chinmayee Singh, M.D.
Consultant Radiosonologist & Imageologist.

Figure :2.2 MRI of Perianal Region

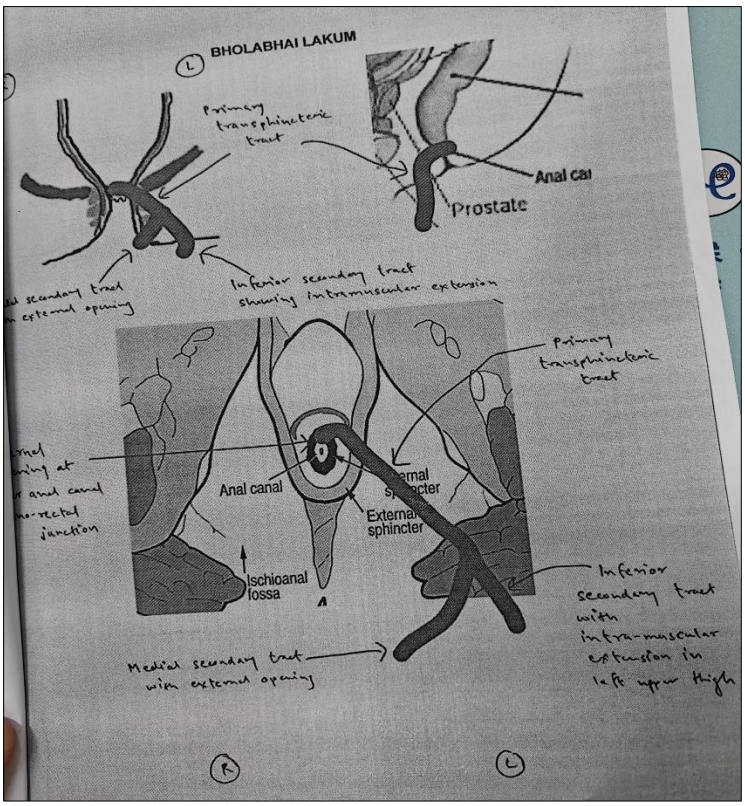
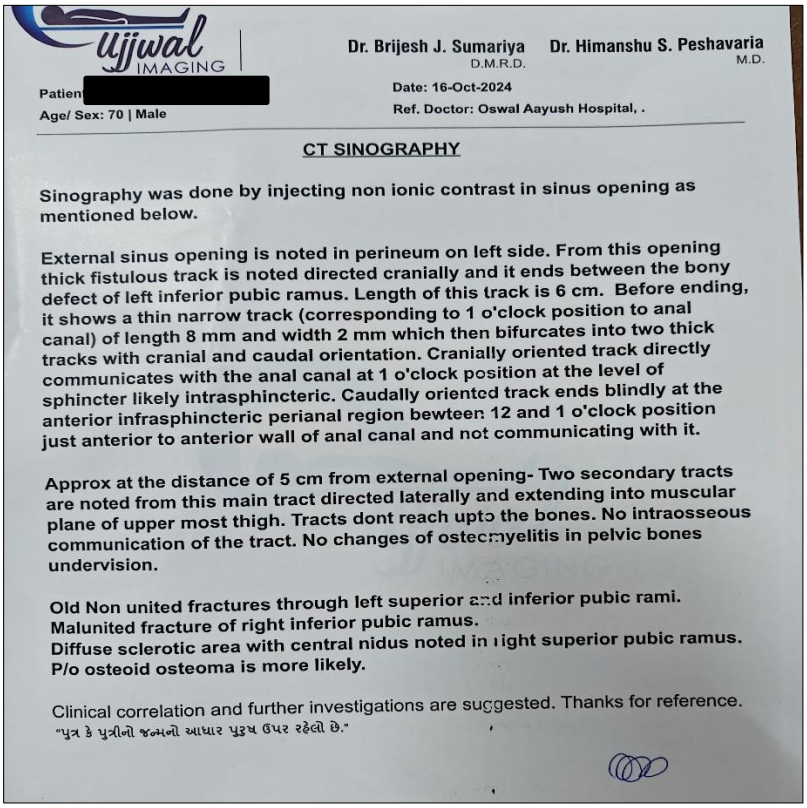


Figure :2.3. MRI of Perianal region



Ujjwal IMAGING

Dr. Brijesh J. Sumariya D.M.R.D. Dr. Himanshu S. Peshavaria M.D.

Patien [redacted]
Age/ Sex: 70 | Male

Date: 16-Oct-2024
Ref. Doctor: Oswal Aayush Hospital, .

CT SINOGRAPHY

Sinography was done by injecting non ionic contrast in sinus opening as mentioned below.

External sinus opening is noted in perineum on left side. From this opening thick fistulous track is noted directed cranially and it ends between the bony defect of left inferior pubic ramus. Length of this track is 6 cm. Before ending, it shows a thin narrow track (corresponding to 1 o'clock position to anal canal) of length 8 mm and width 2 mm which then bifurcates into two thick tracks with cranial and caudal orientation. Cranially oriented track directly communicates with the anal canal at 1 o'clock position at the level of sphincter likely intrasphincteric. Caudally oriented track ends blindly at the anterior infrasphincteric perianal region bewteen 12 and 1 o'clock position just anterior to anterior wall of anal canal and not communicating with it.

Approx at the distance of 5 cm from external opening- Two secondary tracts are noted from this main tract directed laterally and extending into muscular plane of upper most thigh. Tracts dont reach upto the bones. No intraosseous communication of the tract. No changes of osteomyelitis in pelvic bones undervision.

Old Non united fractures through left superior and inferior pubic rami.
Malunited fracture of right inferior pubic ramus.
Diffuse sclerotic area with central nidus noted in right superior pubic ramus.
P/o osteoid osteoma is more likely.

Clinical correlation and further investigations are suggested. Thanks for reference.
"પુત્ર કે પુત્રીનો જન્મનો આધાર પુરૂષ ઉપર રહેલો છે."

Figure :3.1. CT Sinography (3D)

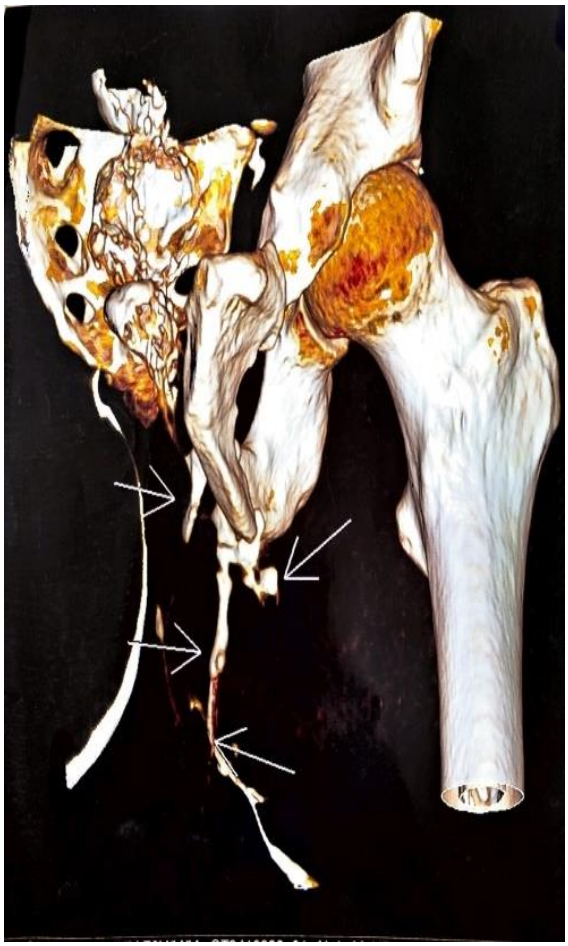


Figure :3.2. CT Sinography (3D)

Figure :3.3. CT Sinography (3D)

Figure: 4. Post-operative

Figure:5. Post-operative day 24th

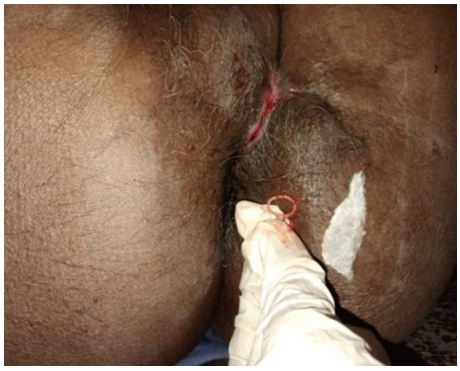


Figure:6. KS Cut through day 35th

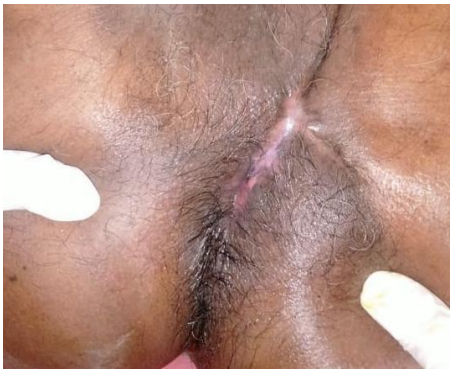


Figure:7. Complete healed

RESULT:

The fistulous tract was completely cut through within 35 days with the application of *Apamarga Ksharsutra*. Complete wound healing was observed by the 42nd day. The calculated Unit Cutting Time (UCT) for this case was 5 days/cm, based on the initial tract length of 7 cm and the total duration of 35 days. Thus, the wound healed entirely within one and a half months, with no complications or recurrence during follow-up.

(UCT = Total number of days taken to cut through the tract / Initial length of the tract in cm. (UCT = 35 days / 7 cm = 5 days/cm).

DISCUSSION:

In this case, patient had complaint of pus discharge daily and also track had also sub branch. So, in this case *Pitta dosha* was main vitiated *dosha.*

As per Acharya Sushruta, *Bhagandara* is *a chhedya* (Exicision) and *bheaya* (incised) *vyadhi.* In *Ushtragreeva Bhagandara, Bhedan karma* (incised) should be done and *pratisaraniya kshara* apply locally. [9] In this case, the internal opening was deep, so after *bhedan karma, kshar sutra* was used to cut the fistulous track.

A trans-sphincteric fistula origin should be drained internally by dividing internal sphincter overlying the abscess cavity. Never hesitate to treat patients with complex fistulas, despite the potential challenges and complications associated with the surgery. Accurate diagnosis of such condition through a combination of thorough investigations and a meticulous per-rectal examination must be done. As the patient had a pelvic fracture history from a road traffic accident, we performed a CT scan (CT Sinography**)** of the pelvic region to investigate whether the fistula was connected to the pelvic rami. Upon discovering that the fistula was a complex fistula, low-lying tract that

remained at dentate line, the surgical approach became significantly more straightforward.

In this case, the fistula was classified as complex due to the presence of multiple external openings, involvement of the trans-sphincteric region with intersphincteric collection, and a history of pelvic fracture that altered the local anatomy. These factors made the surgical management more challenging compared to simple low-lying fistulas.

As the internal opening was present at dentate line, fistulotomy would have created a large raw area therefore partial fishtulectomy was achieved using *Ksharsutra* which was ligated from transanal incision at anal verge to internal opening at 12 o'clock.

Apamarga Ksharsutra prepared in the department of the institute, being a seton carries out all the functions of a seton but it also has advantages over a normal cutting seton due to chemical properties of the *Kshsrasutra* ingredients.

The pH of *Ksharsutra* is alkaline in nature (pH=9.3–10) so it scrapes all the unhealthy granulation lining the fistulous tract. [10]

k*sharsutra* has an antimicrobial property therefore, it promotes wound healing by creating a healthy environment. So, it is a chemical seton working by "excision, scraping, draining, debriding, sclerosing, and healing simultaneously without surgical excision." [11]

The *Ksharsutra* was changed after every seven days till the cut through of tract with complete healing was achieved.

Kanchnar Guggulu has properties like anti-inflammatory, analgesic and antibiotic which might have effect in proper healings. [12]

Panchvalkal Kwatha was given for sitz bath having predominantly of *Kashaya Rasa*. So, it helps in *Vrana Shodhana* (wound cleaning) and *Vrana Ropana* (Wound healing). [13-14] It also helps to maintain local hygiene of the perianal region thus it prevents the chances of secondary infection.

Panchavalkal Malahara prepared in the pharmacy of the institute, having predominantly of *Kashaya Rasa* that helps to reduce the amount of exudates and it acts with Ropana (healing) and Shodhana (cleansing) property. By the property of Vrana ropan it helps to accelerate the wound healing and with quality of Varnya it helps reduce the wound scar. [15] Patient was followed for 2 months after wound get healed and there was no any sign of recurrence. It indicates the efficacy of the iterated approach with Ksharasutra in management complex and recurrence high anal fistula.

CONCLUSION

On the basis this case it could conclude that Apamarga Ksharasutra provide cost effective and minimal invasive management which helps in improvement of quality of life of patient with no recurrence or any complications.

Notes on Patient Consent

Consent was taken from the patient before starting the treatment protocol as well as prior to publication of the case details and pictures without disclosing the personal identity.

Limitation of study:

As this is a single case report, it requires more work on such cases for further scientific validation.

Conflict of interest: The author declares that there is no conflict of interest.

Guarantor*:* The corresponding author is the guarantor of this article and its contents.

Source of support: None

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