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AN INTEGRATIVE APPROACH TO THE MANAGEMENT OF SACROCOCCYGEAL PILONIDAL SINUS WITH APAMARGA KSHARSUTRA FOLLOWED BY CYNOACRYLATE GLUE- A CASE STUDY WITH REVIEW OF LITERATURE

Jyoti Shinde[1], Subhash Raut[2]

[1]PhD Scholar, Dept. of Shalya Tantra, Govt. Ayurved College, Nagpur, Maharashtra, India
[2]Guide, Professor (Dept. of Shalya Tantra) and Dean, Govt. Ayurved College, Nagpur, Maharashtra, India

Email: drjyoti.dalal@gmail.com

ABSTRACT

Pilonidal sinus is a tract which occurs most often in the cleavage between the buttocks, from which there may be chronic drainage of pus, due to an embedded tuft of hair. It is an acquired condition, commonly found in hairy males between the ages of 20–30 years. The most recommended surgical techniques include excision and healing with secondary intention, excision with primary closure, and excision with reconstructive flap. However, post-operative recurrence following surgery is high, leading to frequent, and painful time-consuming wound care. Hence, there is a need to evaluate alternative innovative technique for the management of this challenging disease. In 'Sushrut Samhita', the condition *'Shalyaja Nadi Vrana'* is described which has similar features as that of 'Pilonidal sinus'. Sushruta has advocated a very unique minimal invasive treatment i.e. '*Kshar Sutra*' ligation for management of *Nadi Vrana* (Pilonidal sinus). Hence, *Apamarga Ksharsutra* was used in this study. A newer approach was tried in the study where *Apamarga Ksharsutra* was ligated loosely in the sinus tract in order to debride the tract and make it healthy and mature for the further definitive surgical intervention i.e. sealing of the tract with Cynoacrylate glue. With this integrative approach, a very good result was obtained. The Tract was cured completely with no recurrence till date. This integrative approach may be a useful and alternative to conventional techniques for the treatment of pilonidal sinus disease.

Keywords: *Bhagandara, Ksharsutra*, Cynoacrylate glue, Integrative approach

INTRODUCTION

Pilonidal sinus disease is epithelium lined tract, situated short distance behind the anus, containing hairs and unhealthy diseased granulation tissue. It is due the penetration of hairs through the skin into subcutaneous tissue. It forms unhealthy granulation tissue in the deeper plane[1]. It is a chronic inflammatory condition most common in 20 to 30 years of age, mainly affects young hirsute males. Obesity and thick, stiff body hair make people more prone to pilonidal disease. Pilonidal disease is now widely accepted as an acquired disorder based on the observations that congenital tracts do not contain hair and are lined by cuboidal epithelium. Hair

follicles have never been demonstrated in the wall of the sinus. The recurrence after complete excision of the diseased tissue down to the sacrococcygeal fascia and the high incidence of chronic pilonidal sinus disease in hirsute patients further support the acquired theory of pathogenesis.[2] Karydakis suggested three main factors interacting to produce the disease, namely hair, force and vulnerability[3].Acquired theory, may be summed up as:

- Hormones: Sex hormones first produced at puberty are known to affect the pilosebaceous glands, which coincides with the earliest onset of pilonidal disease
- Hair:
- Friction
- Infection

Hairs often grow in the cleft between the buttocks. These hair follicles can become infected. Further, hair can be drawn into these abscesses worsening the problem. Symptoms can vary from very mild to severe.

As per review of the literature, recurrence rate of pilonidal sinus ranges from 20% to 40%, and sometimes more, regardless of the techniques used[4]. Most recurrences occurred within the first year[5].

Many procedures have been described for the management of pilonidal sinus. The most commonly accepted surgical modalities include traditiona excision with healing by secondary intention, excision with primary closure, and excision with reconstructive flap. But the management of pilonidal sinus still remains a challenge. It was observed that recurrences are due to an unrecognized sinus tract at the time of initial excision, repeated infection of the scar at gluteal cleft, anatomy promoting the accumulation of perspiration, friction and the tendency of hair to grow into the scar[6].

In the traditional surgery, after radical excision of the entire sinus, the wound is left open to heal by granulation and epithelialization with regular dressings. Patient has to suffer from painful dressing which requires long recovery time and also the poor cosmetic outcome due to unacceptable wide scar. Besides that, the risk of wound complications is at higher side because of its vulnerable site. Hence, the aim of our study is to evaluate the newer technique for the treatment of Pilonidal sinus which will promote faster healing with minimal scar formation, providing good cosmesis, minimise the duration and discomfort of the treatment, with least chances of recurrence.

In Ayurveda texts, Acharya Sushruta mentioned the concept of '*Nadi Vrana*' which can be categorized under '*Dushta Vrana*' i.e. infected non-healing ulcer[7]. The term "*Shalyaja Nadi"* mentioned in Sushrut Samhita has similar features as that of Pilonidal sinus.[8,9] 'Shalyaja *Nadi Vrana'* is a track which is described to be due to presence of pus, fibrosed unhealthy granulation tissue & hair etc. which are left inside unnoticed[10].Acharya Sushruta has advocated a very unique, minimal invasive treatment i.e. Ksharsutra ligation for the management of Nadi Vrana.[11]

Apamarga Ksharsutra[12] is an alkaline herbal medicated thread having pH value between 9.5 to 11, made by coatings of 3 herbs on linen thread no 20 gauze with tensile strength 5 kg.There are 11 coatings of *Snuhi Ksheer* (latex of Euphorbia neriifolia), followed by 7 coatings of *Apamarga Kshar* (Achyranthus aspera) and lastly 3 coatings of *Haridra Churna* (powder of Curcuma longa). Kshar performs the action of cutting, curetting, draining, cleaning and healing.[12] Kshar applied on the thread exerts anti- inflammatory, anti-slough activity in addition to non-surgical debridement. Anti- bacterial property of *Ksharsutra* doesn't allow the bacteria to multiply in its presence[13]. Thus, *Ksharsutra* performs overall debridement of the Pilonidal sinus uniformly along the whole length of the tract.

In Sushrut Samhita, it is mentioned that *Utsadana* is one of the *Shashthi Upakramas* for the management of wound healing. Acharya Dalhana highlighted in his commentary on Sushrut Samhita in chapter *Bhagandarchikitsa* that *Utsadana* is an intermediate process which occurs in between *Shodhana* and *Ropana* karma[14]. *Utsadana* is indicated in those wounds which have a very little of dried out muscle tissues and the wound which is deep seated. Dalhana further mentioned that, in such kinds of wounds, it is beneficial to elevate the wound floor by performing

Utsadana karma.[15]As pilonidal sinus forms unhealthy granulation tissue in the deeper plane; it is an ideal pathological condition for performing *Utsadana karma.*

Apamarga being the best *Utsadaniya Dravya.*[16] it enhances the process of *Utsadana*[17] i.e. granulation formation besides destruction of unhealthy fibrosed and infected tissues in sinus tract (debridement). A research study on Achyranthus aspera showed that it has a very good wound-healing potential[18]**.** Another research study stated that, in vivo wound healing activity of methanol extract of Achyranthes aspera showed well organized epidermal layer, increased number of fibrocytes, remarkable degree of neovascularization and epithelisation.[19]

Thus, using *Apamarga Ksharsutra*, debridement of the sinus tract followed by wound bed preparation will be achieved in the first phase. This healthy and mature tract will be then obliterated by sealing it with cynoacrylate glue in the second phase.

Nowadays Cyanoacrylate glue is frequently used as a tissue adhesive in various surgical operations.[20, 21] Cynoacrylate glues significantly decrease operative and healing time, don't affect tissue blood supply, they are atraumatic, and reduces the wound infections[22]. The use of Cyanoacrylate glue in wound closure significantly increases patient satisfaction and insignificantly decreases rates of complications and recurrence. It also has an in vitro antimicrobial effect which decreases early postoperative infection.[23]. Hence this glue is used in the second phase to promote faster healing.

Material And Method:

Case Report: An 18 years old male patient came to the hospital with complaint of pain in sacrococcygeal region since 4 months and feeling of discomfort while prolonged sitting which was progressive in last 3 days,

Date of First Visit: 27/5/2018

Date of Recovery: 24/6/2018

Past History: No past history of any major illness.

Nature of work: continuous sitting for long duration, travelling 30 km daily by bike.

General Examination:

GC – Moderate

Afebrile

Temp. 98.2 F

Pulse – 88/ min,

BP- 110/70 mm of Hg

RS- NAD

CVS- ECG normal

Digestive System- Regular bowel habits

Uro -genital System- NAD

Local Examination- Patient was Hirsute with buttocks covered with thick and stiff hairs. Patient was obese with deep gluteal cleft.

Swelling in gluteal cleft with redness, local skin temperature raised and tenderness with two visible openings on the swelling.

On probing, the length of the tract was 4cm approximately with thick pus discharge mixed with blood. Patient was also examined for any other pathology in gluteal and peri-anal region and found nothing.

Diagnosis: Confirmation of the Pilonidal Sinus (*Shalyaja Nadi Vrana)* was done on the basis of clinical findings and MRI report.

Pre- operative– Informed consent was obtained from the patient and relatives and all the probable situations regarding the treatment procedure was well explained. All necessary investigations including CBC,ESR, Blood sugar level, BT, CT,HIV, Hb'sAg, serum creatinine, blood urea, Mantoux test and Urine routine were performed which were found within normal limits. Injection T. T. 0.5 ml was given intramuscularly. Part preparation (shaving of the site), Proper bowel care, Xylocaine sensitivity test were done.

The procedure was performed under local anaesthesia with the patient lying in a prone position.

Operative Procedure for Ligation of *Ksharsutra*-

- Under all aseptic precautions, and under local anaesthesia, parts painted with Betadine solution and draped to isolate the sacrococcygeal area.
- Probe was inserted through the natural opening of the pilonidal sinus and advanced to trace the sinus which was 4 cm in length approximately. The probe was taken out from another opening at the opposite side.

- Bunch of dead hairs and unhealthy devitalized tissues were removed from the tract. Then it was curetted thoroughly by passing sterile dry gauze pieces through the tract with the help of a probe.
- Tract was irrigated with Hydrogen per-oxide and Povidone- iodine solution.
- *Apamarga Ksharsutra* was passed through the sinus tract with a probe and tied loosely outside the tract, covering the entire underlying tract and dressed well.
- Patient was discharged on the same day after being kept under observation for 3 hours. *Ksharsutra* was changed every 5th day till the debridement of the sinus is achieved.
- Here, one important thing to specify is that *Ksharsutra* was tied loosely and not tightly, strictly in order to achieve the debridement only and not simultaneous cutting and healing action.
- After the 3 sittings of *Ksharsutra,* sinus became free of pus with healthy granulation within 15 days.

Operative Procedure for Cynoacrylate glue-

- With all aseptic precautions, and with a patient in a prone position, the cynoacrylate glue was injected in the bed of pilonidal sinus through its openings, in order to fill the dead space and obliterate the tract.
- The skin was then pressed gently onto the sacrococcygeal fascia and pressure was maintained for two minutes until the glue was set.
- A compressive dressing was applied to the area for 24 hours, and thereafter small gauze was used to keep the wound covered.
- The patient was kept under observation for 3 hours after the procedure and then was discharged with suitable oral analgesic and antibiotics drugs that were prescribed for the first few postoperative days.
- Patient's close relative was trained to perform daily dressing on his own with all aseptic precautions.

  Patient was instructed to return to normal daily activities as soon as he felt comfortable**.**

  Patient was strictly advised to reduce the weight, to remove the local hairs frequently by applying standard hair removal cream and to take care of local hygiene.

  Follow-up was taken on alternate days for first week, then weekly for one month, and thereafter monthly for 6 months.

Observations And Results:

After healing of wounds, the patient was observed for recurrence of the disease up to next 8 months. No discharge, swelling, pain or tenderness occurred at the site. There was no recurrence occurred till date. The wound was completely healed with minimal pencil scar.

DISCUSSION

Pilonidal disease is a complex condition that causes both discomfort and embarrassment to the sufferers. Rarely pilonidal sinus may convert into squamous cell carcinoma. Hence early and prompt treatment is mandatory. But, the management of Sacrococcygeal Pilonidal sinus is still a challenge to the medical sciences irrespective of any pathy or technique. Treatment modalities available include Excision and healing by secondary intention, Excision and primary closure and Excision with reconstructive flap techniques, but the fact is that no single procedure is superior in all respects. Wide excision and healing by secondary intention is the most recommended treatment for pilonidal sinus disease. However, post-operative recurrence following surgery is high, leading to frequent and time-consuming wound care. Hence to reduce the prolonged period of treatment, and to promote minimal invasive surgery, a new integrative approach was tried for the management of pilonidal sinus. In this newer approach, initially *Apamarga Ksharsutra* is inserted in the pilonidal sinus tract till the proper debridement and formation of healthy granulation tissue is achieved.

Regardless of the surgical technique concerned, standard principles of healing of the wound are essential to follow during the treatment. The basic principle of wound healing stated by Dalhana is used in this study, which stated that before trying any intervention for *Vrana Ropana* (healing of the wound), *Shodhana karma* followed by *Utsadana karma* of the

wound should be achieved first. This will result in proper healing of the wound with no recurrence. Here, after *Shodhana karma*, the wound bed preparation was achieved by the *Utsadana* property of *Apamarga kshara*. *Apamarga* being best *Utsadaniya Dravya*, facilitated the process of proliferation which encompasses angiogenesis, collagen synthesis and granulation formation. Thus, it provided a healthy and matured platform for the next definitive intervention i.e. application of cynoacrylate glue in order to obliterate the dead space and to promote the prompt wound healing.

This minimally invasive procedure has good potential in the management of Pilonidal sinus. It minimizes the rate of recurrence and enables the patient to resume his routine as early as possible. This integrative approach may offer better treatment options to the patient in terms of minimal invasive surgery with good cosmesis, shorten the time period of treatment and provide maximum comfort.

CONCLUSION

The technique of debridement followed by wound bed preparation of the pilonidal sinus tract with *Apamarga ksharsutra* and then closure of the healthy tract with cynoacrylate glue may-offer better treatment option to the patient in terms of minimal invasive surgery, shorten the time period of treatment and provide maximum comfort and good cosmetic results.

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