

Comparative evaluation of various surgical options for pilonidal sinus.

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Abstract ; Objectives; The objective of the study was to evaluate the best method with least recurrence rate. The various surgical methods employed were, excision with primary repair, excision with healing by secondary intention and excision with closure by limbergs flap/ Z pasty .Material and methods; this is a cross sectional study conducted in department of surgery in Hindu Rao hospital dehli from Dec. 2014 to Jan 2016. 80 patients were evaluated.

Results; There were 78(97%) males and 02(3%) females. Majority were in the age group of 21 – 30 years (64%). The operating time ranged between 40-65 minutes. Mean postoperative stay was 3.5 days (2- 5 days) and return to work was between 10– 24 days (Mean 16.5 days). Complications observed in 15 (18.7%) cases. Six of them (7%) had superficial wound infection which was treated conservatively. seven(8%) patients had complete wound dehiscence and in two (2.5%) recurrence occurred after 4 months of surgery

Conclusions; Thus it is concluded from study that the various modalities of treatment had its own advantages and shortcomings. Z-plasty/ Rhomboid flap has more operative time , less hospital stay and least recurrence, while as open excision with healing by secondary intention has less operative time but more healing time but same recurrence rate as that of flaps and excision with primary repair has more complication and recurrence rate.

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I. Introduction

The diagnosis of pilonidal disease is most often a clinical one, based on the patient's history and physical findings in the gluteal cleft, especially in patients with chronic or recurrent disease.

It is important to distinguish pilonidal disease from alternative or concurrent diagnoses such as hidradenitis suppurativa, infected skin furuncles, Crohn's disease, perianal fistula, and infectious processes including tuberculosis, syphilis, and actinomycosis.

The presence of characteristic midline pits in the gluteal cleft in patients with pilonidal disease is almost always visible, sometimes with hair or debris extruding from the openings. Additionally, whereas in the acute setting patients may present with cellulitis or a painful, fluctuant mass indicating the presence of an abscess, the chronic state is most often manifested by chronic draining sinus disease in the intergluteal fold and/or recurrent episodes of acute infections. It is also important to perform a thorough anorectal examination to evaluate for concomitant fistulous disease, Crohn's disease, or other anorectal pathology. Even though rare, a presacral mass should be ruled out by digital rectal examination. Adjunctive laboratory or radiological examinations are not routinely necessary.¹ Shaving along the intergluteal fold and surrounding region has also been used as a standard component of the postoperative treatment comparing various surgical techniques.^{9,11,12} Although this limits the ability to determine its exact contribution to overall healing, shaving has clearly been safe with, at most, minimal additional morbidity. The most effective frequency and extent of shaving have yet to be clarified, because most series have used an arbitrary manner and method for this practice. Similar to shaving, successful results have been demonstrated for laser epilation in the setting of both primary and recurrent pilonidal disease,^{13–15} although there is insufficient evidence to date to provide a general recommendation for this technique. The use of phenol solution involves one or more injections into the sinus tract until filled, with cautious protection of the surrounding normal skin, removal of sinus hairs and debris with forceps, as well as local shaving. Small series have demonstrated success rates ranging from 60% to 95%.^{16–19} Even in the setting of recurrent chronic sinus disease, phenol injection and local depilatory cream application on a weekly basis have shown low subsequent recurrence rates (0%–11%) at extended follow-up.²⁰ Fibrin glue has been used in a variety of manners: after simple curettage of the tracts,²²

in the primary closure bed after excision, and along the original sinus following lateral excision and primary closure.⁰⁵ Although the majority of the studies are small, healing rates of 90% to 100% are reported with minimal morbidity and low recurrence at early and moderate-length follow-up. The utility of antibiotics has been evaluated in 3 discrete situations: perioperative prophylaxis, postoperative treatment, and topical use. In the prophylactic role, limited data reported that an intravenous single dose before excision and primary closure of chronic pilonidal disease resulted in no difference in wound complication or healing rates in comparison with those not receiving antibiotics.^{11,12} One small, randomized, blinded study comparing single-dose prophylactic metronidazole versus cefuroxime and metronidazole preoperatively followed by 5 days of oral Augmentin demonstrated no difference in wound infections at 1 week (although higher rates of wound infections at weeks 2 and 4 for the single-dose group). No difference in overall wound healing was identified in a comparison of 1- and 4-day courses of perioperative metronidazole and ampicillin following excision and primary closure. In the postoperative setting, antibiotics have shown mixed results, although large-scale data are lacking. As an adjunct to primary excision in chronic pilonidal disease comparing those left to heal by secondary intention, following primary closure, or undergoing primary closure plus 2 weeks of clindamycin therapy, there was no difference in healing or recurrence rates with the addition of clindamycin. Of the 3 groups, only secondary intention was associated with delayed healing. On the other hand, the addition of metronidazole for 14 days or metronidazole with erythromycin following excision and secondary intention wound healing of a chronic pilonidal sinus tract showed a slightly shorter healing time for the antibiotic group than those without antibiotics.⁰⁶ In addition, there was no difference in wound healing with the double-coverage erythromycin therapy. Additional studies using longer durations of a variety of single- and double-coverage antibiotic regimens have failed to demonstrate any clear advantage. Limited and somewhat conflicting data currently exist on the use of topical antibiotic regimens in the treatment of pilonidal disease. One report demonstrated significantly higher wound-healing rates (86% vs 35%, $p < 0.001$) after excision of chronic disease or previously drained acute pilonidal abscess and packing with an absorbable gentamicin-impregnated collagen-based sponge with overlying primary wound closure than those without the antibiotic packing. Unfortunately, the contributions of the gentamicin could not be separated from the potential role of the sponge material itself. A more recent study comparing primary closure over a gentamycin-soaked sponge versus secondary healing showed quicker healing and lower overall cost to the closed group. Finally, a third study investigating the effectiveness of the gentamycin sponge concluded that there was no benefit to closure over the sponge versus closure without it.⁰⁷ Other data have shown no clear benefit to a variety of topical antimicrobial strategies. Overall, the utility of antibiotics in topical or systemic formulations remains unclear. Adjunctive use should be considered in the setting of severe cellulitis, underlying immunosuppression, or concomitant systemic illness, despite limited evidence in this specific venue.⁰⁸ For a pilonidal abscess with or without associated cellulitis, the mainstay of treatment is adequate surgical drainage. Following simple incision and drainage for first-episode acute pilonidal abscesses, overall successful healing has been reported to be ~60%, whereas the remaining patients required a second definitive procedure to address excess granulation before wound closure. Recurrent disease after complete healing occurs in approximately 10% to 15%, with the presence of multiple pits and lateral sinus tracts corresponding to higher recurrence rates. In 1 report, the overall cure rate at a median follow-up of 60 months was 76%.³⁵ In a randomized trial of patients with acute abscesses undergoing incision and drainage with or without curettage of the abscess cavity and removal of the inflammatory debris, curettage was associated with significantly greater complete healing at 10 weeks (96% vs 79%, $p = 0.001$), and lower incidence of recurrence up to 65 months postoperatively (10% vs 54%, $p < 0.001$). The use of local excision of both the abscess and the midline pits during the treatment of the acute pilonidal abscess, allowing healing by secondary intent as a way of eliminating all potential for future disease, has not been shown to alter recurrence rates, length of hospital stay, or overall time of healing. Chronic disease can encompass recurrent abscesses with interval periods of complete resolution or a persistent non healing, draining wound. The surgical treatment of chronic pilonidal disease is generally divided into 2 categories: excision of diseased tissue with primary closure (including various flap techniques) versus excision with a form of healing by secondary intention (including marsupialization). In the comparison of excision with primary midline closure versus excision with healing by secondary intention, there is a uniform significant trend toward faster median healing rates (range, 23–65 days) following primary closure in multiple prospective, randomized trials.⁰⁹ In addition, there is some evidence to indicate a more rapid return to work following primary closure.¹⁰ Despite these benefits, the 2010 Cochrane systematic review demonstrated no obvious advantage comparing open healing versus surgical closure, although the open group had lower recurrence rates (relative risks, 0.42; 95% CI, 0.26–0.66). This is offset by non pooled data demonstrating significantly longer healing times for open groups (range, 41–91 days) versus primary closure (range, 10–27 days). For patients who underwent surgical closure, there was a clear advantage to off-midline closure in comparison with midline closure. Eleven individual studies, including 9 that directly compared midline primary

closure with open healing, demonstrated an estimated 60% reduction in the risk of recurrent disease after healing by secondary intention in comparison with primary closure after excision^{11,12} Limited and conflicting data are available directly comparing the efficacy of excision with marsupialization to primary closure; primary closure, in general, is associated with improved healing times with higher recurrence.¹⁴ The 1 principle that seems to provide a clear benefit is to close the wound off-midline rather than direct midline when performing primary repair. This has consistently demonstrated faster healing times, lower rates of wound morbidity, and lower recurrence rates.¹⁵ Drain use has been described following primary closure, both for removing effluent and irrigating the wound bed.⁵⁷ One nonrandomized study in chronic pilonidal disease found that drain placement following primary closure was associated with lower rates of complete wound dehiscence and faster rates of healing, although recurrence rates were similar.⁵⁸ Additional case series using mostly suction drains for 2 to 6 days following primary closure demonstrated low complication rates (0%–10%), with no morbidity directly attributed to the drain, and >85% rate of healing.¹⁶ When used in conjunction with flap techniques, drains are most commonly associated with a decreased incidence in wound fluid collections, but no difference in wound infections or recurrence rates.^{61–64} Drain use may be considered on a case-by-case basis per surgeon preference. The rhomboid or Limberg flap, in which all sinuses are excised down to the presacral fascia, with rotation of a fasciocutaneous flap that results in flattening of the gluteal cleft, has been used extensively in the treatment of refractory pilonidal disease. Overall results are favorable with respect to disease recurrence (0%–6%) and patient tolerance.^{18,19} Data from randomized trials found low (0%–6%) overall rates of surgical site infections.^{20,24} Additional data indicate significantly lower recurrence after rhomboid flap versus V-Y advancement, although no differences in wound complications, seroma formation, or hospital admission duration²³

II. Methodology

This cross-sectional study was carried out in the Department of Surgery, Hindu Rao hospital dehli from Dec 2014 to Jan 2016. All patients who presented with pilonidal disease above the age of 12 years were included. Patients were diagnosed clinically and admitted through outpatient department after preoperative assessment. Written informed consent was taken and surgery was performed by the same surgical team. Patients were discharged on 2nd to 5th postoperative day and followed in outpatient department after every second day for first 10 days. Subsequent visits were scheduled at 1,3 and 6 months for recurrence. All patients were operated under local/ regional anesthesia in Jack- knife position with buttocks / natal cleft separated. The excision was carried out till the presacral fascia. The subcutaneous layers were approximated with polyglycolic 2/0 interrupted sutures and a vacuum drain placed in some cases where cavity was deep and skin was closed with 2/0 polypropylene interrupted sutures. Drains were removed when suction output was less than 5ml and patients discharged after changing the dressing. Stitches were removed on 14t h postoperative day.

III. Results:

A total of 80 patients were operated. There were 78(97%) males and 02(3%) females. Majority were in the age group of 21 – 30 years (64%). The operating time ranged between 40-65 minutes. Mean postoperative stay was 3.5 days (2- 5 days) and return to work was between 10– 24 days (Mean 16.5 days). Complications observed in 15 (18.7%) cases. Six of them (7%) had superficial wound infection which was treated conservatively. seven(8%) patients had complete wound dehiscence and in two (2.5%) recurrence occurred after 4 months of surgery. 95% confidence interval of overall complication was 13.4- 40.1 (table I).

Complications	No. of Patients	%age
Wound infection	06	07
Wound dehiscence	07	08
Recurrence	02	2.5
total	15	18.7

IV. Discussion:

Sacroccygeal pilonidal disease occurs in the midline. Increased depth of the intergluteal sulcus leads to an anaerobic media and increased anaerobic bacterial content.^{8,9} Although many surgical and non- surgical treatments have been described, the ideal treatment method has not yet been established for pilonidal disease. It is recommended to excise the midline pits with lateral open drainage of any associated abscess.² Karydakos used an asymmetric excision and primary closure to prevent hair penetration into the natal cleft. Excision with Z-Plasty in Pilonidal Sinus Open excision technique needs long hospitalization and daily wound dressings. Wound dehiscence is another disadvantage caused by premature closure of skin edges before complete wound

healing.¹² The high incidence of pilonidal disease in 3rd decade with male preponderance, in this study correspond with other reports.¹³⁻¹⁵ Z- plasty techniques have been associated with lower infection and recurrence rates and shorter hospital stay because with this technique the suture line placed away from midline,¹⁶ which alters scar direction, disrupts scar linearity and lengthens scar contracture. This study has also supported these suggestions. The higher morbidity of surgical techniques was naturally reflected by hospital stay and time off work. In this study, the hospital stay for patients treated with Z-plasty was 3.5 days which was shorter than 5.7 days as reported by Singh et al for adipo fasciocutaneous. In our study 7% of patients developed wound infection and 8% developed wound dehiscence. This compares well with the results of another study (12%).¹⁸ In this study recurrence was observed in 2.5% cases. Patients treated with flaps were found to walk and sit on toilet earlier than patients where wound was left open. In this study the average healing time was 12.5 days with recurrence of 2.5% which correlates well with the reported healing time of 14.5 days and 10% recurrence in close technique and 10 weeks of healing time with 1.5% recurrence rate in open technique.²⁰ The extremely low complication rate following Zplasty/open technique for pilonidal sinus results from the fact that operation was planned with true pathophysiology of the disease in mind, that it is the deep intergluteal fold which predisposes to pilonidal sinuses and this architecture is materially altered with Z-plasty. In pilonidal disease, the Z- plasty/ rhomboid flap eliminates the deep natal cleft by bringing healthy, lateral skin and subcutaneous tissue into the midline. Excision and Z-plasty together can lead to a low recurrence rate with rapid healing.²¹⁻²⁵ Z-plasty excises the inflammed area as well as converts the deep natal cleft into a plateau. It is known that pilonidal sinus does not occur on a flator a convex surface. Also the directions of the hairs are altered away from the midline. It leaves no midline scar, largely prevents maceration, reduces suction effects in the soft tissues of the buttocks, and minimizes friction between two adjacent surfaces.^{24, 25}

V. Conclusions:

Thus it is concluded from study that the various modalities of treatment had its own advantages and shortcomings. Z-plasty/ Rhomboid flap has more operative time , less hospital stay and least recurrence, while as open excision with healing by secondry intention has less operative time but mor healing time but same recurrence rate as that of flaps and excision with primary repair has more complication and recurrence rate.

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