



DOUBLE Z PLASTY TECHNIQUE FOR CLOSURE OF PILONIDAL SINUS DEFECTS : OUR EXPERIENCE

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ABSTRACT

Principles of surgery of pilonidal sinus treatment require eradication of sinus tract, complete healing and prevention of recurrence. Although several surgical techniques have been described over the years, the management remains controversial. Aim of present study is to assess results of double Z- plasty in terms of hospital stay, recovery time, complications and recurrence rate.

This prospective study conducted on 18 patients of pilonidal sinus disease, operated by double Z plasty, at surgical department of JNUIMSRC, Jaipur. The size of defect ranged between 3.25cm and 7.5cm. sinus was removed in an unblock manner with overlying skin. Closure of wound done in three layers-two layers of subcutaneous tissue by absorbable polyglactin suture and skin by nonabsorbable nylon sutures. Hospital stay range from 4 to 5 days. The mean time before returning to work was 14 days (10-20 days) In all patients, a successful tension free and durable closure of the defect was obtained with reduction of depth of the natal cleft. All patients healed uneventfully, except for two patients (11.1%) who had superficial flap skin tip necrosis, healed with regular dressing of area. A mean follow-up of 6 months revealed superior aesthetic results with fine scars in all patients without any recurrence.

KEYWORDS :

INTRODUCTION :

Sacrococcygeal pilonidal sinus disease is a common and well recognized entity. A critical predisposing factor for pilonidal disease is the existence of a deep natal cleft and the presence of hair within the cleft.

The principles of pilonidal sinus treatment are total excision of the sinus tract, tension free and durable closure of the resultant defect with well vascularized tissue, obliteration of the inter gluteal sulcus, and prevention of recurrence. Although various surgical methods have been described for reconstruction of pilonidal sinus, including shaving, unroofing and curettage¹, open treatment, repair with partial and primary suture², repair with a local flap^{3,4,5}, most of these procedures fail to achieve the above mentioned goals altogether.

In this study, we present a new local flap alternative, namely double Z plasty closure technique, for surgical treatment of pilonidal sinus.

MATERIAL AND METHODS:

All procedures were performed in accordance with the ethical standards of the institutional research committee. Prior to enrolment, each patient provided written informed consent.

From September 2015 to September 2019, double Z plasty closure procedure was successfully used in 18(2female,16 male)cases of pilonidal sinus. The size of defect ranged between 3.25cm and 7.5cm in length.

All patients who were operated on for pilonidal sinus disease during the period mentioned were included in this study. The patients were re-examined the day before surgery. The surgical area was marked and patients were advised to clean and shave the area and to take a bath. On the operative day, a rectal cleansing enema was given 4 hours before surgery.

Exclusion criteria of the study were the following : American society of Anesthesiologists (ASA) group higher than III, obesity (body mass index, 35 kg/m²) and severe allergy to local anesthetics or other medications.

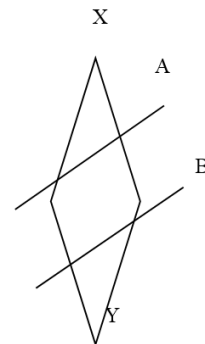
Surgical technique :-

The operation performed with the patient in prone position and under spinal or general anaesthesia. A single dose of first generation cephalosporin group antibiotic (1gm IV) was administered to patients immediately before the skin incision was made. The surgical area was exposed by lateral traction of the buttocks with adhesive tapes and was cleaned with 10% povidone-iodine. To ensure complete resection of

the pilonidal sinus, the lesion is stained with methylene blue, which is introduced in to surface opening at start of operation.

The excision area was delineated according to the sinus orifice localization and the expanse of natal cleft in order to excise all the diseased tissue and to achieve a flattened natal cleft. Then, the sinus is removed in an unblock manner with the overlying skin.

By using a ruler and a sterile skin marker, the flaps are designed on the patient. First upper and lower limits of wound marked as X and Y, and the distance between X and Y is divided in three equal parts with markings as A and B. At A and B points oblique incisions placed, using Z-plasty (45°) design. The distance from point X to A is almost equal to the base of the triangle.



The closure of wound done in three layers – 2 layers of interrupted vicryl suture and one layer of skin by interrupted nylon sutures. We have not used any drain in our cases as we did not do any tunneling under the flaps to achieve closure.

It is suggested that patient rest for 48 hrs. Thereafter, the patient is permitted to start walking step by step. Skin sutures were removed approximately 21 days after surgery. Additionally, patients are instructed on self hygiene, avoiding contact sports for two months. Patients are called for monthly follow-up examinations thereafter until a year has passed.

RESULTS :

A total of 18 patients, including 2 females (11.1%) and 16 males (88.8%), composed the study group. The age distribution of the patients ranged from 20 years to 34 years. The median BMI of the patients was 24.3 +2.8 kg/m²(20-29 kg/m²)

Complaints of patients on admission were discharge, swelling, and pain in natal cleft area. Mean duration of complaints was 6 months (2-9 months). Of the patients, 27.7% (n=5) had one and 72.2% (n=13) had two episodes of pilonidal sinus disease exacerbation prior to surgery. Three patients (16.6%) had pilonidal abscess preoperatively, and the median time between abscess drainage and surgery was 24 days (range 21-28 days)

All patients were operated on under general anaesthesia. The median operative time was 41.03+11.1min (range=30-70 min). The size of the resultant defect ranged from 3.25cm to 7.5 cm in length. A midline sinus outlet was detected in all patients. Hospital stay range from 4 to 5 days. The meantime before returning to work was 14 days (10-20 days).

In all patients, a successful tension free and durable closure of the defect was obtained with reduction of depth of the natal cleft. All patients healed uneventfully, except for two patients (11.1%) who had superficial flap skin tip necrosis, that too healed with regular dressings of the area. A mean follow-up of 6 months revealed superior aesthetic results with fine scars in all patients without any recurrence.

DISCUSSION :

Sacro-coccygeal pilonidal sinus has been surgically managed for many years, but the ideal surgical technique remains controversial⁶. The methods of leaving the wound open until granulation tissue occurs, closing the wound with partial sutures, and covering the open wound secondarily with a skin graft are associated with low recurrence rates but long-term treatment modalities, and these techniques undoubtedly have high direct and indirect costs and require longer healing time (3-8 weeks)^{7,8}. In addition, high risk of infection and poor scar formation are the other disadvantages of these methods of management⁸.

Wide local excision and primary closure have been advocated for the treatment of pilonidal sinus by some researchers, but the resulting scar remains in the midline and is associated with a high incidence of recurrence^{6,7}. In order to solve the problem of midline scar formation and reduce the depth of the natal cleft, the Karydakus technique uses an eccentric elliptical incision for sinus excision and a flap is mobilized from the medial side of the wound, leaving the final suture line at either side of the midline⁶.

In order to reshape and flatten the natal cleft to reduce friction, local warmth, moisture, and hair accumulation, several flap techniques have been used to cover the defect after radical excision of the sinus^{3,9}.

Several authors have described the use of a rhomboid excision and Limberg transposition flap in complex pilonidal disease and reported low recurrence rates and a short period of hospital care when this technique was used^{8,10}. Although the Limberg flap not only reduces the depth of the natal cleft but also transposes the midline incision scar laterally, since all the skin required for resurfacing of the rhombic defect is borrowed from one direction, this technique often results in extensive tension on the suture lines and is associated with poor scar formation in the closure of large excisional defects of the sacrococcygeal region.

Most flap techniques prevent tension of the wound as well as midline scar tissue. Moreover, recurrence rates of 7% to 42% have been reported after a conventional primary closure, although a number of studies have reported a recurrence rate of 0% to 3% for excision and flap repair^{11,12}. In our cases also no recurrence was seen.

Mean hospital stay in open technique group was 31.7days and in Z-plasty group was 15.88 days. Total recovery time in our study was defined as time after surgery until date on which the patient returned to normal activities, including employment. Hospital stay in our cases is 4-5 days only, as our cases are worked up on OPD basis and admitted for surgery prior evening. Further we are making two Z, so lateral extension of Z is just half (roughly 1.25cm) leading to proportionately less stretch on the flaps and also we are not tunneling the flaps which avoids stretch.

Mean recovery time in open technique group was 36.6 and in Z-plasty group was 19.6 days, which also compares favorably with study carried out by Fazeli et al., where wound healed faster in Z-plasty group (15.4 days in Z-plasty group and 41 days in excision and delayed healing group and return to normal activity 17.5 days for conventional

group and 11.9 for Z-plasty group^{13,14}. The mean time before returning to work in our cases was 14 days [10-20days].

Tip necrosis of flaps and partial wound dehiscence was found in 4% of patients in Z-plasty group. These complications were managed conservatively by the broad spectrum antibiotics and daily dressing of the wound with betadine soaked gauze dressings¹⁴. Similarly in present study also two patients (11.1%) had superficial flap skin tip necrosis, that too healed with regular dressings of the area.

Recurrence is defined as the presence of any persistent purulent or blood stained discharge from the previously operated or the nearby area during the follow-up. Recurrence was found in 5.88% in open technique group and there was no recurrence in Z-plasty group¹⁴. Similarly we have no recurrence in our double Z plasty cases. However, Praveen et al. in their experience of Z-plasty technique was noted 5% recurrence¹⁵.

In all 18 patients, a successful tension free and durable closure of the defect was obtained with reduction of depth of the natal cleft. All patients healed uneventfully except for two patients (11.1%), who had superficial flap skin tip necrosis. A mean follow-up of 6 months revealed superior aesthetic results with fine scars in all patients without any recurrence.

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