



**ORIGINAL RESEARCH PAPER**

**General Surgery**

**DIFFERENT MODALITIES OF TREATMENT OF PILONIDAL SINUS**

**KEY WORDS:** Z-Plasty, Limbergs flap, Pilonidal sinus, excision and primary closure.

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**ABSTRACT**

**INTRODUCTION:** The pilonidal sinus implies a cavity or sinus containing hairs (pilus = hair, Nidus = nest). Presentations range from asymptomatic pits to painful draining lesions in the intergluteal region. Pilonidal disease has a male preponderance and usually effects patients from mid teens into early thirties. Numerous surgical techniques are employed for postnatal sacrococcygeal pilonidal sinus. The exact procedure is determined by nature of the disease presentation and surgeons choice.

**MATERIALS AND METHODS:** The materials for this study was taken from the patients admitted to Krishna Hospital, from Jan 2016-dec 2018(2yr period). 28 patients with pilonidal sinus, who were admitted to Krishna Hospital during the period Jan 2016-Dec 2018 were introduced into the study. All cases were surgically managed.

**RESULTS:** In this study 28 patients with pilonidal sinuses were operated, of which 15 were operated by excision with lay open method and 13 patients were operated with excision and primary closure.

**CONCLUSION:** Excision with lay open method and excision with primary closure (simple closure, Z-Plasty or Limbergs flap) are both radical methods for treating pilonidal sinus. All cases where primary closure is possible should be treated with primary closure. The ideal operation should be simple, not require a prolonged hospital stay, have low recurrence, failure rate and postoperative complication.

**INTRODUCTION**

The pilonidal sinus implies a cavity or sinus containing hairs (pilus = hair, Nidus = nest)

In 1830 Herbert mayo would never would have imagined that this description would be debate in 21<sup>st</sup> century. This seemingly minor disease process has baffled physician, as demonstrated by multiple theories of its etiology and management.

Presentations range from asymptomatic pits to painful draining lesions in the intergluteal region. Pilonidal disease has a male preponderance and usually effects patients from mid teens into early thirties<sup>4</sup>. Congenital and acquired theories have been proposed. Initially, the entity was referred to as jeep riders disease over 80,000 US army soliders hospitalized during world war II contributed much information about the disease, what we have today<sup>1</sup>.

The pathology of pilonidal sinus is an established one. There are one or more pits in the midline of the natal cleft. These pits lead to a cavity lined by granulation tissue and contains hairs<sup>9</sup>.

Usually, from this cavity one or more tracks run cranially or caudally and opens either on the right or left side of the midline. This secondary sinus is always laterally placed while the primary sinus in the midline. Numerous surgical techniques are employed for postnatal sacrococcygeal pilonidal sinus<sup>1</sup>. The exact procedure is determined by nature of the disease presentation and surgeons choice.

**AIM**

To study age and sex incidence, various predisposing factors and compare surgical procedures.

**METHODS**

The materials for this study was taken from the patients admitted to Krishna Hospital, from Jan 2016-dec 2018(2yr period)

Twenty eight patients with pilonidal sinus, who were admitted to Krishna Hospital during the period Jan 2016-Dec 2018 were introduced into the study.

All cases were diagnosed in the out-patient department and admitted in surgical inpatient wards. In the wards detailed history was taken which included occupation, age, sex, complaints like duration of sinus, discharge, presence of pain and other associated illness.

On general examination, apart from routine examination, special attention was given to the presence and distribution of hair over the body and also obesity. On local examination the site , number, type of sinuses (primary and secondary), discharge from the sinuses, tenderness, any hair protruding from the sinuses, condition of the skin surrounding the sinus were examined. Digital rectal examination, proctoscopy were done in all patients to rule out fistula in ano.

All the patients were subjected to routine investigations along with X-ray of the lumbosacral spine and sonogram in few cases. No case was treated conservatively. All cases were surgically managed. Preoperatively surgical technique was planned either an excision with primary closure or excision with lay open method.

**CASE SELECTION FOR PRIMARY CLOSURE :-**

- a) Midline single sinus
- b) Minimal or no discharge
- c) No swelling
- d) Surrounding skin normal
- e) Intraoperatively when there is no wide ramification of secondary track while injecting methylene blue in the sinus track as a guide in all cases.

**IN THE REMAINING CASES EXCISION WITH LAY OPEN METHOD WAS ADOPTED.**

**PREOPERATIVE PREPARATION:-**

- a) written consent was obtained after explaining the surgical procedure and its results.
- b) Nil by mouth after 10 p.m the previous night of operation.
- c) Injection Tetvac 0.5ml intramuscular.
- d) Xylocaine test dose.
- e) Preparation (shaving) of back, intergluteal region and suprapubic region.
- f) Neotomic enema the previous night and morning on the day of surgery.

g) IV Ciprofloxacin and IV Metroglol given in all cases one hour before surgery.

All 28 patients were operated under spinal anaesthesia. Patients were put in jack knife position. The natal cleft was exposed by strapping and separating the gluteal region. The parts were painted with savlon followed by betadine solution and surgical spirit.

In all cases methylene blue was injected through the primary sinus, and elliptical incision was placed longitudinally circling the sinus/sinuses and deepened vertically till the fascia covering the sacrum and coccyx<sup>6</sup>. By sharp dissection the tissue enclosed within the incision was separated from the sacrococcygeal fascia and removed. The ramification from the secondary sinus track was inspected by observing the methylene blue extension and excised. After obtaining the hemostasis by ligating the bleeding points(in case of primary closure) the deep wound was approximated and closed with No. 1 chromic catgut after removing the strapping which exposed the natal cleft<sup>6</sup>. Chromic catgut No. 1 stitches were taken from the subcutaneous tissue of one side to the other by taking midline bite. The skin was approximated with ethilon and pressure bandage was applied in the midline firmly reinforced with T-bandage.

In case of excision with lay open method, wide excision of the track was carried out and the wound was packed with the betadine ribbon gauge. After obtaining hemostasis the skin was approximated with tension suture over gauge, dressed and pressure reinforced with T-bandage. The specimen was cut open in the operation theatre and looked for the presence of hair in the pilonidal sinus and then sent for histopathological examination.

**SINUSOGRAM**

Sinusogram (of the sinus over the right gluteal region, to the right of the gluteal cleft) done, by passing a jelco 24G or 26G catheter, and injection of contrast under pressure AP & prone shoot through lateral view were done. The sinus tract appears to be shallow , extending into the superficial gluteal muscle. No evidence of any communication seen with rectum.

The second sinus at the cranial end of gluteal cleft itself, appears to be very superficial ( with the injected contrast leaking out immediately).Post operatively all the patients kept nil orally till next day morning and all cases were treated with ciprofloxacin, metronidazole and analgesic for 5-7 days<sup>7</sup>. All patients were allowed to sleep on their back only. In all patients the wound was inspected after 48 hours removing the T-bandage and pressure bandage.

In case of primary closure, no postop complication noticed. Otherwise , the primarily sutured wound was cleaned with spirit and dressed. Suction drain was kept in cases of Z- Plasty and Limbegs flap<sup>1</sup>. The wound was inspected once in two days till the sutures were removed and patients were discharged from the hospital.

In case of excision with lay open method, the pressure packing was removed after 48 hours and cleaned with hydrogen peroxide and betadine. The wound was then packed and dressed with sterile pad and bandage. The wound inspection was done alternate days and dressed till patients were discharged from the hospital.

In case of excision with primary closure, sutures were removed on 8<sup>th</sup> to 10<sup>th</sup> of post operative period and then the patient discharged the next day with advised to come for check up once in 15 days for first 3 months and then once a month for first 1 year.

In postoperative period out of 13 primary closures no post op

complications were noted. In case of Lay open technique one recurrence was noticed out of 15 and two postoperative complications, in all other cases postoperative period was uneventful.

In case of excision with lay open method the patients were discharged, usually on 8<sup>th</sup> to 12<sup>th</sup> day with advice to come twice weekly for wound inspection and dressing till the wound healed. In postoperative period one recurrence and 2 failures were noted which were treated by conservative management overall recurrence rate is 22%

**RESULTS**

Majority of patients are in the age group of 16-30 years and only few are above 30 years. The 16-25 age group incidence is more which comprising almost 75% of the aptients.

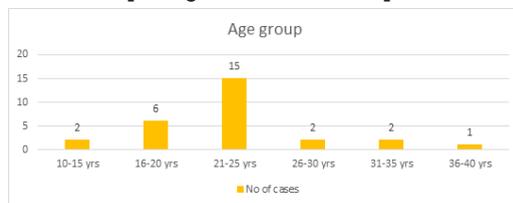


Figure 1; Age Incidence

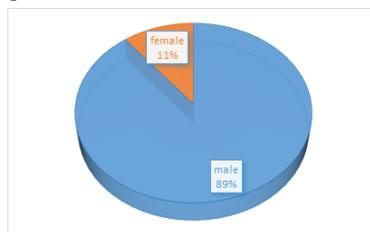


Figure 2; Sex incidence

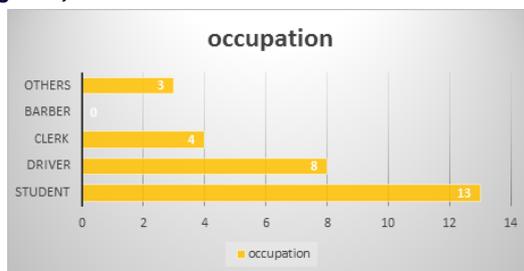


Figure 3; Pilonidal sinus in relation to occupation

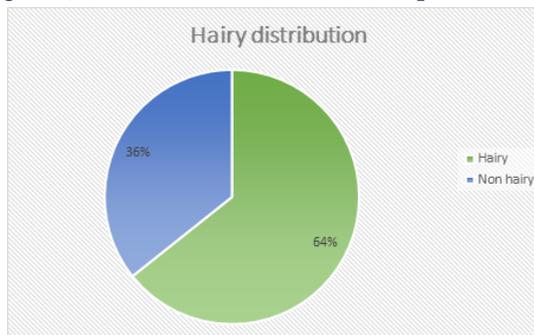


Figure 4; Hair distribution over body in patients.

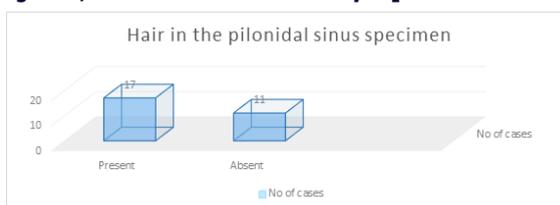


Figure 5; Hair in pilonidal sinus specimen.

**Table 1; Pilonidal sinus in relation to the non-hairy individual who showed hairs in the specimen.**

Types of patients	No of cases	Percentage
Non-hairy individuals	10	100%
Hair present in the pilonidal sinus specimen	3	30%
Hair absent	7	70%

**Table 2; Pilonidal sinus in relation to operative procedures.**

Operative procedure	No of cases	Percentage
Excision and lay open	15	53.5%
Excision and primary closure	13	46.5%
	28	100%

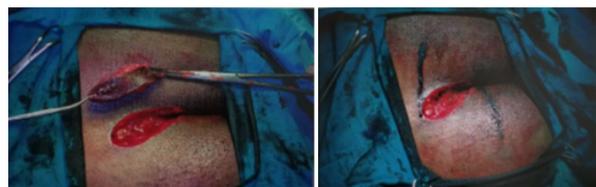
**OPERATIVE PROCEDURES PHOTOS**

**Z-PLASTY**



\* Injecting methylene blue

\* Hair coming out of the sinus



\*Excision of the specimen

\* Marking of Z



\*Raising of Flaps

\*After the closure

**LIMBERG'S FLAP PROCEDURE PHOTOS**



\*Marking of the specimen

\*Excision of the specimen



\*Raising of the flap

\* Mobilising of the flap



\*Beginning of the closure

\* Completion of the closure

**EXCISION AND SIMPLE CLOSURE PHOTOS**



\*Injecting methylene blue into the sinus

\*Excision of the specimen



\*Simple closure of the wound.

**DISCUSSION**

In the present study 28 patients of pilonidal sinus were inducted:

The commonest age of presentation was between 16-25 years with male to female ratio of 8.3:1 and majority were students (46.4%), drivers (28.5%), clerks (14.4%) & others (10.7%). Only 2 (8%) patients were obese though obesity is predisposing factor.

Majority were hairy individuals (64.2%) and 35.8% non-hairy individuals. Overall hair in the pilonidal sinus was seen in 17 (60.7%) of excised specimen which also included 30% of non-hairy individuals.

Almost all presented with pain, discharge and sinus except three who in addition presented with swelling, hence swelling is an unusual presentation in the pilonidal sinus.

Out of 28 cases 15 were operated by excision with lay open method no postoperative complication were observed in the postoperative period and all patients discharged within 8-14 days. The time required for the wound to heal was 44 days to 68 days (average 49 days). One recurrence and 2 failures was noticed during follow up period of 1 year. Totally 22.6% failure noticed. All patients abstained from work till complete wound healing, that is for 44-66 days (average 48 days).

13 patients were selected for primary closure and operated with excision and primary closure. All patients were discharged between 9<sup>th</sup> and 13<sup>th</sup> day of the postoperative period. Out of the 13 cases no recurrence was noticed and no patient developed postoperative complications (local wound sepsis). The sutures were removed on 7<sup>th</sup> postoperative day all wounds healed well. But all patients returned to work 7 days after discharge from the hospital voluntarily.

**CONCLUSION**

Excision with lay open method and excision with primary closure (simple closure, Z-Plasty or Limbergs flap) are both

radical methods for treating pilonidal sinus.

In the present study 15 out of 28 cases were treated by excision and lay open method. The mortality was nil but 1 recurrence and 2 failures were noticed (totally 22.6% failure), in terms of morbidity, patients abstained from work till the wound healed i.e., 44-68 days (average 49.5 days).

The remaining 13 cases were operated by excision and primary closure (simple closure, Z-Plasty or Limbergs flap). The mortality was nil, the recurrence rate and postoperative complication nil and all patients returned to work early with in 7 days.

Hence all cases where primary closure is possible should be treated with primary closure. The ideal operation should be simple, not require a prolonged hospital stay, have low recurrence, failure rate and postoperative complication.

Deep gluteal cleft is flattened by Z-Plasty and Limbergs flap technique hence the suction effect is obliterated<sup>3</sup>. All the predisposing factors are countered by flap technique hence flap techniques are ideal for treatment of pilonidal sinus.

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