

OUTCOME OF LIMBERG'S PROCEDURE FOR PILONIDAL DISEASE

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ABSTRACT

Objectives: To study the outcome of Limberg's Rhomboid Flap Procedure for Pilonidal Sinus Disease (PND) in terms of Pre operative and Post-operative variables.

Material and Methods: This Prospective study was conducted in Surgical A ward, Khyber Teaching Hospital Peshawar from June 2014 to June 2015. Twenty-three patients of both gender with primary or recurrent PND were using simple random sampling technique.

Results: Age range was 18-47 years (mean $31.07 \pm 7.7SD$), 95.7% patients were male and 4.3% were female. Twenty-one had primary disease while 2 had recurrence after other surgical procedure for PND. Mean operating time was 70 minutes, mean length of hospital stay was 3.30 days. The mean return to work in weeks was $3.5 \pm 1.02 SD$. Only one patient had a minor recurrence and one had superficial wound infection.

Conclusion: Quicker healing time, short hospital stay, early return to daily life, low complication and recurrence rate are the important advantages of the Limberg's flap procedure.

Key Words: Pilonidal Sinus disease, Limberg's Procedure, Rhomboid Flap.

INTRODUCTION

Pilonidal disease is described as far back as 1833, when Herbert Mayo described a hair-containing cyst located just below the coccyx. Hodges coined the term "Pilonidal" from its Latin origins in 1880, and, today, pilonidal disease describes a spectrum of clinical presentations, ranging from asymptomatic hair-containing cysts and sinuses to large symptomatic abscesses of the sacro coccygeal region that have some tendency to recur.¹

The onset of PND is rare both before puberty and after the age of 40. Males are affected more frequently than females, probably due to their more hirsute nature. In a study of risk factors the following associations were found: sedentary occupation (44%), positive family history (38%), obesity (50%) and local irritation or trauma prior to onset of symptoms (34%).² Pilonidal Sinus is essentially a surgical disease with very limited role of non-interventional management. Several procedures have been described in literature in the last century but no single treatment has been declared gold standard.

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This reflects the highly recurrent nature of the disease. The earliest surgeries include the Karydak's procedure and Bascom's operation.^{3,4}

Some authorities advocated the application of fibrin glue as a minimally invasive method to treat uncomplicated PND. Ninety percent of patients had no recurrence one year later (95% confidence interval: 0.85-0.95). This procedure was suggested as a first line of treatment for patients with no prior history of infection and who have only one sinus orifice.⁵ Due to the highly recurrent nature of the disease some surgeons also advocated more radical excisions and healing by secondary intention such as 'D' Excision for sacrococcygeal pilonidal sinus disease, excision with or without primary closure for pilonidal sinus disease, radical excision and primary wound closure, excision and marsupialization.⁶⁻⁹

Several plastic surgery techniques have also been adopted such as the Z-plasty and elliptical rotation flap but the most recent amongst these is the rhomboid or limberg's flap which was originally designed by Professor AA Limberg of Leningrad; who devoted his entire career to flap design, publishing first on the subject in 1928.¹⁰⁻¹² Azab et al first utilized a rhomboid transposition flap to cover the defect left after radical excision. The results showed healing by first intention in 29 out of 30 patients. No recurrences were encountered in 3 years follow up.¹³

Several international and regional studies have shown favorable outcome of Limberg's procedure in comparison to conventional treatments, the aim of our study is to introduce a new procedure in our setup and ascertain its benefits at local level.

MATERIAL AND METHODS

This was a prospective study conducted on patients who presented to Surgical OPD of Khyber Teaching Hospital with symptoms of Pilonidal disease subsequently confirmed by clinical examination. Both primary and recurrent cases were included in the study. This study was conducted over a period of one year from June 2014 to June 2015; both male and females were included in the study. Sample size was 23 patients and sampling was done using simple random sampling. Informed Consent was taken from all the patients.

After induction of general anesthesia in prone position, all patients were put in supine position, keeping one pillow under the chest and another to lift the pelvis. Measurements were taken using skin marker and measuring ruler. Dissection was done using electro cautery up to the pre-sacral fascia, hemostasis was secured, a Rhomboid shaped flap was raised from left or right gluteal area; to avoid flap damage fine sharp scalpel dissection was done up to the gluteal muscle fascia. Flap was rotated, subdermal anchoring sutures using Vicryl 2/0 were taken, suction drain was kept and fixed, skin was stitched using fine polypropylene 3/0 using partial subcuticular interrupted stitches. A small bolster pack was stitched just behind anal orifice to prevent fecal soiling of the wound. Pressure packing was done. The operating time was recorded in minutes from the time of induction till recovery from anesthesia. Patients were advised to lie in supine/prone position or walk but avoid sitting for at least a week; till healing was achieved. Routine antibiotics and analgesia was used. Patients were asked about pain and discomfort at operative site on 1st post -op day using the Visual Analogue Scale and wound was examined for flap necrosis. All patients were discharged when stable and called after 10 days for removal of stitches and drain, followed by a further 3 month follow up to look for any recurrences.

In order to define post-operative "Return to Work Period", the patients were asked when they felt comfortable and convenient to start work and full daily activities. "Postoperative infection" was defined as the purulent discharge, inflammation and pain around the wound site that prolongs dressing time. "Recurrence" was defined as admittance to a health center and to be diagnosed or to be operated as recurrent PND.¹⁵

Data was entered and analyzed using statistical program SPSS version 17.0. Qualitative data (fre-

quencies and percentages) such as gender, primary/recurrent disease, complications and recurrence were presented as n(%). Numerical variables like age, operating time, duration of hospitalization, post operative pain score were presented as Mean + SD. All the data was calculated on 95% confidence interval.

RESULTS

The preoperative characteristics are shown in Table 1. Both the drain and stitches were removed on the tenth post op day, the wounds were found normal and healing in 91.3% cases. The average healing time was recorded between 7-16 days (mean $11.5 \pm 2.5SD$). One patient returned 3 months later with a stitch sinus. While in another patient, there was wound dehiscence and mild infection, this patient had resumed activity earlier than advised and was obese. Only one patient had a minor recurrence in the lowermost corner 4 months after surgery which was treated with local open excision

Table 1: Preoperative Characteristics

Variable	Frequency & percentage
Age (years)	42.51+3.6
Gender	
Male	22(95.7%)
Female	1(4.3%)
Disease	
Primary	21(91.3%)
Recurrent	2(8.6%)
Occupation	
Sitting work	13(56.5%)
Non sitting work	10(43.5%)

Table 2: per and post -operative variables

Variable	Duration
Operating time (minutes)	70 mins (60-80)
Drain Output	77.5 ml (5-150)
Length of Hospital Stay(days)	3.30 days (2-4)

Table 3: The distribution of complications and recurrence rate

Complication	Frequency & percentage
Wound infection	1(4.3%)
Seroma/hematoma	Nil
Flap necrosis	Nil
Wound dehiscence	1(4.3%)
Stitch sinus	1(4.3%)
Recurrence	1(4.3%)

and secondary healing was achieved, all other cases were symptom free and high patient satisfaction was observed. The preoperative and post operative variables are shown in Table 2. The average period of return to work in weeks was recorded between 2-5 weeks (mean $3.5 \pm 1.02SD$). The distribution of complications and recurrence rate is shown in Table 3.

DISCUSSION

In our study Limberg's operation was performed on 23 patients with excellent results, the total length of hospital stay was a mean 3 days. The average return to work was 3.5 weeks and only 1 patient (4.3%) had a minor recurrence. One had mild superficial wound infection and dehiscence. These results are comparable to local and international studies such as conducted on 110 patients by Aslam et al, who also quoted an average hospital stay of 3 days and most patients returned to work within 3 weeks and only one recurrence was seen.¹⁴ However according to Jamal and Kumar's study, the mean hospital stay was as high as 7 days.¹⁵ Patients were discharged earlier in our study and were kept on regular follow up visits this helps to reduce hospital stay without compromising patient outcome.

Similarly El-Khadrawy applied limberg's procedure on 40 patients in Egypt and found a longer mean hospital stay of 6 days, average operating time was 120 minutes as compared to our study where operating time was a mean of 70 minutes and a healing time to 11-14 days which was similar to our study with a mean of 11.5 days.¹⁶ The VAS on 1st post op day was 3.65 measured by Fahim et al while in our study patients pain scores were lower in the range of VAS=2.¹⁷

One of the largest studies on limberg's flap procedure was conducted on 353 patients by Montes O who found a recurrence rate of 3.1% (n=11) thus proving that it is not a recurrence free procedure; even after the wound is shifted from the midline, and natal cleft is flattened, recurrences still exist.¹⁸ The main cause of recurrence is the hirsute nature of the patient thus re-emphasizing and counselling the patient about the importance of regular epilation and personal hygiene even after Limberg's procedure is important to keep them recurrence free.

Limberg's procedure has also been declared as a gold standard by one of the fewest comparative studies done on PND, according to a Turkish study by on 767 patients by G. Osmanoglu, Limberg Flap Repair Technique is recommended because of an acceptable "short" Return To Work Outcome when compared with open techniques. Low postoperative infection rate, a low recurrence rate and earlier healing all contribute to its success.¹⁹

CONCLUSION

Limberg's procedure for PND offers quicker healing time, short hospital stay, early return to daily life, low complication and recurrence rate.

Recommendations

We recommend that Limberg flap surgical technique may be considered as an ideal operation for pilonidal sinus disease and should be adopted by all surgeons in our local setup.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Akhunzada TS: Concept and operating surgeon.

Khan MA: Data collection and statistics.

Reham M: Followup.

Muqim R: Operating surgeon.

Zarin M: Literature review and operating surgeon.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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