

Original Research Article

A prospective randomized trial comparing MUTAF technique with Limberg flap technique in surgical treatment of chronic pilonidal sinus

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Abstract

Introduction: Pilonidal sinus is a common condition usually seen in young adult. Although several methods have been described all have been associated with high recurrence rate. This study is a prospective randomized trial comparing MUTAF technique with Limberg flap reconstruction in the management of chronic pilonidal sinus.

Materials and methods: This prospective study was conducted in Department of General Surgery in Al Azhar Medical College, from June 2018 to June 2019 who were treated for chronic pilonidal sinus by comparing MUTAF technique with Limberg flap technique.

Results: A total of 60 patients were included in our study. They were randomly divided into two groups. The demographic data: mean age and sex ratio were not statistically different when compared between two groups. Duration of symptoms in both the groups was 18 months. Mean follow up duration was almost 12 to 18 months in both groups. Mean operative time was less in group 1 with 34.5 +/-14.7 and 46.3 +/- 10.3 in group 2. When length of hospital stay compared there was significant difference between the groups ($p < 0.001$). Mean hospital stay time was more in group 2 (3.8+/- 1.6) than group 1 (2.1+/-1.2). Between the groups there was no significant difference in recurrence rate. In our study we had no recurrence in both groups. Most common complication was seroma (group 1 =02, group 2 =03) and wound infection (group = 01, group 2 = 03). The seroma patient was treated with wound aspiration without wound open. One patient had wound dehiscence in group 2 and was treated with local wound care and improved in a month.

Conclusion: MUTAF technique can be a good alternative for the treatment of chronic pilonidal sinus because of excellent surgical outcome. In Mutaf technique due to double flap there is less flap tension reduced postoperative pain and early return to work. In both Flap techniques natal cleft is flattened and displace the incision scar from midline resulting in low recurrence.

Key words

Pilonidal sinus, Mutaf technique, Limberg flap technique.

Introduction

Pilonidal sinus disease (PNS) is a common chronic disease occurring in the natal cleft of the sacrococcygeal region and it is more common among young adults [1]. It is generally considered an acquired pathology caused by the presence of hair within a deep natal cleft [2]. Thus, for treatment and prevention, these causative factors must be eliminated [3].

Surgery represents a therapeutic option for patients with Pilonidal Sinus and despite many different techniques described in the literature for the surgical treatment of this condition; no consensus has been reached regarding the best strategy. Low recurrence rates reported in recent publications for off-midline closure techniques have led to the routine recommendation of this management strategy [2].

The primary prerequisite in an ideal surgical technique involves low recurrence and surgical complication rates, as well as other attributes such as the simplicity of the technique, low-cost, short duration of hospital stay, quick recovery and return to daily activities, and minimum adverse cosmetic and psychological effects

In this regard, Limber flap technique (LFT), an off-midline closure method, has long been considered a standard surgical approach by many experts and is commonly recommended for the surgical treatment of this condition. On the other hand, the Mutaf triangle closure technique (MT), originally described by Mutaf, was first used in patients with large myelomeningocele defects [3]. Thanks to unequal z plasty, two different flaps can be formed that have been reported to provide better tissue relaxation, which allows

both the primary closure of the donor area and better vascularization of the flap tissue and tension free closure. [3]. Thus, in this study our aim was to compare this novel technique with Limberg flap technique.

Materials and methods

This prospective study was conducted in Department of General Surgery in Al Azhar Medical College, from June 2018 to June 2019 who were treated for chronic pilonidal sinus by comparing MUTAF technique with LIMBERG flap technique. A total of 60 patients with symptomatic pilonidal disease were referred to our outpatient clinics were included in the study.

Exclusion criteria

- Acute pilonidal abscess
- Recurrent pilonidal sinus
- Diabetic patients
- Age group less than 20 and more than 60 years

Before starting our study, approval was obtained from the ethics committee and each patient was informed about the goal and nature of the study, and written consent was obtained. The randomization scheme was based on the outpatient attendance number such that those with an odd number were assigned into group 1 and those with an even number into group 2, who were treated with Limberg flap technique and MUTAF triangular defect closure technique, respectively.

Surgical procedure

All patients were admitted to the hospital on the day of surgery. The natal cleft was shaved at the time of surgery. Patients underwent surgery under spinal anesthesia. A dose of prophylactic

cephalosporin was given intravenously during the induction of anesthesia. The patient was placed in the prone position with two adhesive straps in each gluteal region to allow better visualization of the natal cleft. The operation side was cleaned with 10% povidone iodine.

Group - 1: Modified Limberg Flap Technique (LFT)

At the beginning of the procedure we marked the incision and wide rhomboid excision including post sacral fascia, taking care to remove all sinus tracts en block plus a rim of healthy tissue surrounding the cyst and sinuses. The inferior apex of the excised rhomboid area was placed 1.5–2 cm lateral to the midline on the side opposite to the donor area. A right or left fascio cutaneous Limberg flap was elevated off the gluteal fascia. Then the flap was transposed medially to fill the defect without tension. The defect on the gluteal region was closed primarily with drain. The subcutaneous layers were approximated with 2-0 vicryl interrupted over a vacuum drain, and the skin was closed with 3-0 prolene interrupted sutures, which were removed on postoperative day 14.

Group - 2: Mutaf Triangular Defect Closure Technique (MT)

Pilonidal sinus tract is stained by methylene blue. Sinus tract is excised the defect created by excision is converted to a triangular shape. Two fascio cutaneous flaps are raised at 45 and 60 degrees one flap is used for closure of the defect and other for donor site. The defect on the gluteal region was closed primarily with drain. The subcutaneous layers were approximated with 2-0 vicryl interrupted over a vacuum drain, and the skin was closed with 3-0 prolene interrupted sutures, which were removed on postoperative day 14.

Postoperative care and follow up

Vacuum drain was removed when 24 h output was 10 ml or less; patients were kept in the hospital for one more day to observe the wound and then discharged. Patients were instructed to avoid prolonged sitting until 4 weeks

postoperatively to avoid wound disruption, to avoid heavy activities for 3 months, and were asked to improve local hygiene and to depilate hair around their gluteal area. Patients were seen at our outpatient 2 weeks and 1 month after discharge and regularly examined every 3 months for the first year, and annually thereafter. Data obtained during the in hospital period included patient demographics, duration of operation, length of hospital stay, surgical drain use and removal time, and early complication.

During follow up, patients were asked to answer a questionnaire that included:

- Post-operative visual analogue scale for pain from 0 (no pain) to 10 (worst pain)
- Questions on time taken to be able to sit without pain
- Time taken to be able to walk without pain
- Time taken to feel completely healed
- Degree of satisfaction

Post-operative complications (seroma, hematoma, flap edema or necrosis, wound dehiscence) and recurrence were recorded. Healing time was defined as the duration of time from the day of surgery to the removal of stitches (or to complete healing when complications were present).

Statistical analysis

Data on both groups were collected and statistically analyzed using SPSS for Windows 10. Quantitative data were described as mean \pm SD and qualitative data as frequency and proportion. To test the statistically significant difference between groups, the Student test was used to compare quantitative data and the chi square test and Fisher's exact test were used for qualitative data. A p value of less than 0.05 was taken to indicate statistical significance.

Results

A total of 60 patients were included in our study. They were randomly divided into two groups.

The demographic data: mean age and sex ratio were not statistically different when compared between two groups. Duration of symptoms in both the groups were 18 months. All patients presented with sinus in natal cleft and most common presentation was discharge from sinus and pain in both the groups. Mean follow up duration were almost 12 to 18 months in both groups. Mean operative time was less in group 1 with 34.5 +/-14.7 and 46.3 +/- 10.3 in group 2. When length of hospital stay compared there was significant difference between the groups (p < 0.001). Mean hospital stay time was more in group 2 (3.8+/- 1.6) than group 1 (2.1+/-1.2). Between the groups there was no significant difference in recurrence rate. In our study we had no recurrence in both groups. Most common complication was seroma (group 1 =02, group 2 =03) and wound infection (group = 01, group 2 = 03). The seroma patient were treated with wound aspiration without wound open. One patient had wound dehiscence in group 2 and was treated with local wound care and improved in a month (Table – 1 to 4).

Table - 1: Demographic data.

	Group 1 (LFT)	Group 2 (MT)
Age	23 (18- 44)	22 (19 -52)
Male	24	25
Female	06	05

Table - 2: Presentation of disease.

	Group 1 (LFT)	Group 2 (MT)
Symptoms duration (months)	18	17
Preoperative symptoms		
Discharge	28	25
Pain	25	22
Granulation tissue	9	5
Sinus	30	30
Follow up duration (months)	11.5 ± 3.8	12±5.8

Table - 3: Comparison of the results obtained using questionnaire.

	Group 1 (LFT)	Group 2 (MT)
Use of analgesia (days)	5.2 ±1.3	4.3 ±1.2
Sitting without pain(days)	10 ± 5.3	9.2 ±3.2
Degree of satisfaction		
Excellent	28	27
Good	02	03
Unsatisfied	00	00

Discussion

Pilonidal sinus (PNS) is an acute or chronic infectious disease arising from hair follicles on the natal cleft in sacrococcygeal region. Treatment options vary from simple surgical excision to closure of defect by flaps (off midline techniques) like limberg flap, karyadakis flap, v –y advancement flaps, Z plast, perforator flaps.

The primary requisites of surgery should have low surgical complication rates, low recurrence, and low cost, short duration of hospital stay, fast recovery and early return to daily activities.

PNS is more common in males with predominance in 2nd or 3rd decade of life. In our study 81.6% were males and 18.4% females and mean age group in our study was 23 years.

Open surgical technique is simple to perform with low recurrence but it requires a longer time for wound healing and postoperative wound care among the flapping techniques, Limberg flapping was found to produce best results. Various studies has compared LFT with other flapping procedure and open technique and proved to be LFT has less recurrence rate. In our study involving comparison of LFT and MT shows similar in recurrence rates, so MT can be used as an alternative to LFT as off midline technique in treatment of PNS.

All flapping procedures incidence of postoperative complications is one of the significant factors that need to be considered.

Ideal surgery for PNS should be associated with low risk of surgical site infection.

In our study seroma formation was more in MT (10%) as compared to LFT (3.3%). This may be due to use of two different flaps (One flap for

defect and other for donor site) and more prolonged need for surgical drain. Wound infection rate was more in LT (10%) compared to LFT (3.3%). This may be due to more seroma formation and more prolonged need for surgical drain.

Table - 4: Outcome after surgical treatment.

	Group 1 (LFT)	Group 2 (MT)	P value
Operation time (minutes)	34.5±14.7	46.2±10.3	< 0.001
Pain score (VAS)	3.7±1.6	3.4±1.6	0.415
Hospital stay period (days)	2.1±1.2	3.8±1.6	<0.001
Healing time (days)	21±7.3	26±9.5	
Early complications			
1. Seroma	02	03	
2. Hematoma	00	00	
3. Wound infection	01	03	
4. Wound dehiscence	00	01	
Recurrence	00	00	
Drain removal time (days)	3.2±1.2	4.5± 1.6	

Minimal pain is one of the main prerequisites of all surgical procedures. In our study VAS score show lesser intensity of pain in patients with MT, this may be due to presence of Tension free flap prepared using two separate flaps.

Duration of surgery in both groups were group 1 (34.5+/-14.7) and group 2 (46.3 +/- 10.3) and shows no significant difference. MT group operative time is bit more may be due to two separate flaps needed.

Healing time and hospital stay period is relatively more in group treated with MT and may be due to longer time to removal of drain and postoperative surgical complications.

Conclusion

MUTAF Technique can be a good alternative for the treatment of chronic pilonidal sinus because of excellent surgical outcome. In MUTAF technique due to double flap there is less flap tension reduced postoperative pain and early return to work. In both Flap techniques natal cleft is flattened and displace the incision scar from midline resulting in low recurrence.

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