



A STUDY OF PRIMARY OPEN TECHNIQUE AND LIMBERG RHOMBOID FLAP TECHNIQUE IN MANAGEMENT OF PILONIDAL SINUS AT TERTIARY CARE HOSPITAL

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ABSTRACT

Objectives- This study aims at assessing the use of Limberg rhomboid flap technique and Enblock excision of pilonidal sinus and open healing (Open technique) in the treatment of pilonidal sinus in terms of: 1. Duration of procedure. 2. Post-operative pain. 3. Total recovery time. 4. Complications. **Materials and methods-** This was a Prospective study carried out between September 2018 to September 2020. This study includes 50 patients of Pilonidal sinus and were divided randomly in two groups Group A and Group B. (Group A: Odd Numbers, Group B: Even Numbers) Group A were operated by Open technique and Group B were operated by Limberg rhomboid flap technique and both procedures were evaluated by above said four parameters. The statistical analysis of data was done and results were obtained. **Results-** Out of the 50 patients, 42 were male (84%) and 8 were female (16%) with mean age of 29.48 ± 5.12 years. The mean duration of procedure for open technique was 39.40 mins and that for Limberg rhomboid technique was 62.60 mins. Post-operative pain experienced by the patients who underwent Limberg rhomboid flap was significantly lower as compared to the patients who underwent open technique. The total recovery time was noted to be significantly lower in patients who underwent Limberg flap technique (mean 14.56 days) than patients who underwent open technique. (mean 26.88 days). 3 patients out of 25 (12%) who underwent Limberg rhomboid flap technique developed wound discharge and no patient came with recurrence during follow up. While 4 patients out of 25 (16%) of open technique had developed wound discharge and 2 patients (8%) had recurrence during follow up period. **Conclusion-** Among the two surgical techniques that we studied, Limberg rhomboid flap technique is the most effective surgery to treat pilonidal disease.

KEYWORDS : Pilonidal sinus, Limberg rhomboid flap, Open technique, Total recovery time.

INTRODUCTION-

Pilonidal sinus disease was first reported 150 years ago. The incidence of pilonidal sinus disease is approximately 0.7%. This is likely to be underestimation of prevalence of the condition, because of untreated disease in the community. ⁽¹⁾ The term Pilonidal sinus describes a condition found in natal cleft overlying the coccyx, consisting of one or more; usually non infected midline openings which communicates with a fibrous tract lined by granulation tissue and containing hair lying loosely within the lumen ⁽¹⁾. Pilonidal sinus was first reported in 1833 by Herbert Mayo and Hodge coined term pilonidal; pilos meaning hair and nidus meaning nest in 1880. ⁽²⁾ In the second world war, the number of servicemen admitted to US army hospital with pilonidal sinus went up to 80,000, where average stay for treatment was 55 days ⁽³⁾. The disease is extremely common in young adults, mostly males even though the condition is also seen in females ⁽⁴⁾. The disease is rare after 50 years of age. The entity was referred to as "jeep riders' disease or jeep disease" ⁽⁵⁾. Pilonidal sinus disease whose pathogenesis was not completely understood for long time, is today known to be caused by hairy back, warm sweaty conditions, obesity leading to friction and negative suction at natal folds. Pilonidal sinus over a long period has remained a disease where recurrent abscess, recurrent sinuses are extremely common. The etiology and pathogenesis of pilonidal sinus is remaining unclear by this time. Both theories of congenital and of acquired mechanisms ^(6, 7) causing the disease are in debate. So far it is not clear how pilonidal sinus disease is developed during early adolescence, in its most vulnerable state with the peak of incidence, specifically if sinuses and tracts are evolved while that time or if pre-existing asymptomatic sinuses are converting into symptomatic lesions. In the 70 years of literature, congenital theory of pilonidal sinus dominated. Over the last 25 years many treatments have been advocated for pilonidal sinus but no consensus has emerged, and there have been few studies comparing relative treatment cost, discomfort and time off work. Various methods of treating pilonidal sinus have been evolved since 1965, in the form of: - • Tract curettage/brushing with excision of follicle opening • Phenol injection into tract

• Diathermy of pilonidal pit • Laying open of pilonidal sinus and healing by secondary intention • Excision of pilonidal sinus down the sacral fascia • Excision and primary closure • Excision up to sacrum and skin flap. Excision of sinus and skin flaps appears most promising, as there is fast recovery and low recurrence rate, minimal patient inconvenience and minimum time off work.

MATERIALS AND METHODS-

This was a Prospective study carried out in Department of Surgery, Smt. Kashibai Navale Medical college and Hospital, Pune from September 2018 to September 2020. This study includes 50 patients of Pilonidal sinus admitted during study period. These were divided randomly in two groups Group A and Group B. (Group A: Odd Numbers, Group B: Even Numbers) Group A were operated by Open technique and Group B were operated by Limberg rhomboid flap technique.

Inclusion criteria: - All patients having: - 1. Pilonidal sinus in natal cleft of sacrococcygeal area. 2. Patient aged between 14-45 years.

Exclusion criteria:- All patients having: - 1. Pilonidal abscess 2. Patients on cancer chemotherapy 3. Patients on immunosuppressant drugs.

All patients were subjected to complete history taking and routine clinical, local examination and laboratory investigations. Written consent was obtained from all patients after explanation of the procedure and expected results.

Specific Investigations:- MRI pelvis

Anaesthesia and Position:- All surgeries were done under Spinal anaesthesia in Jack Knife Position.

Pain assessment:- Assessment of the pain was done by using Visual analogue scale (VAS) on Postoperative day 1, Postoperative day 3 and on the day of discharge.

Total recovery time:- We have considered total recovery time as a time period from admission in the hospital till the resumption of his/her duty.

Surgical procedure:-

1. Limberg rhomboid flap technique:- This surgical approach was introduced and came in use during the 1980s and 1990s beside Bascom's cleft lift procedure, the Limberg rhomboid flap.⁽⁸⁾ After the positioning of the patient in jack-knife position and the preoperative preparations the planned excision site is marked with a pen in the shape of a rhombus with 60 degrees vertically and 120 degrees horizontally containing the sinus orifices and tracts. Following that the subsequent mobilized flap is marked with a pen on the contralateral side. This is achieved by drawing a vertical line off the medial corner of the former defined rhombus across the midline to the opposite side. That vertical line is prolonged within that procedure medially and caudally with an angle of 60 degrees, until it is corresponding to the edge length of the rhombus respectively to the same dimension.⁽⁹⁾ As the required tissue can be estimated better after the removal of the affected area, this step should be performed after the excision of the rhombus down to the sacrococcygeal fascia. In the next step haemostasis is achieved by diathermy, the fasciocutaneous flap is mobilized below the gluteal fascia and transposed tension free medially to cover the excised area. Wound closure is performed after the implementation of a suction drain.



Fig 1) Marking of the Limberg flap



Fig 2) Final outcome after suturing

2. Primary Open technique:- Pilonidal sinus cases affected by severe manifestation of the disease with a higher number of sinus openings show a distinctive higher recurrence rate. Excision with open healing plays a vital role in the treatment of these cases as the complete excision of all sinuses facilitates complication-free wound healing and decreases the recurrence rate furthermore.⁽¹⁰⁾ Patients were positioned in prone jack-knife position and the whole intervention was performed under spinal anaesthesia. To detect the precise margins of the sinuses and tracts methylene blue was injected if necessary. The sinuses were excised with an elliptical incision down to the level of the sacrococcygeal fascia if

required. Diathermy was used to control occasional bleedings.

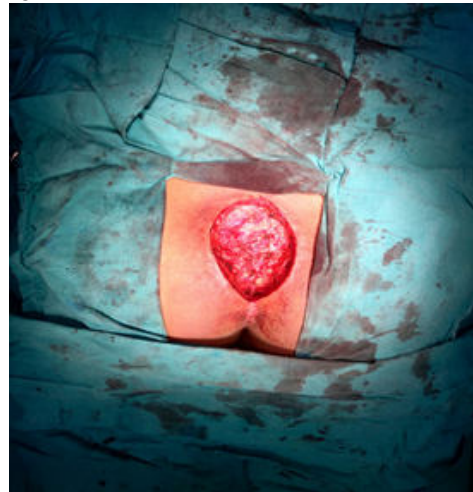


Fig 3) Final outcome after open technique.

RESULTS:-

The inter-group statistical comparison of distribution of categorical variables is tested using Chi-Square test or Fisher's exact probability test for 2 x 2 contingency table with cell frequency less than 5. The inter-group statistical comparison of means of continuous variables is done using independent sample t test. The intra-group statistical comparison of means of continuous variables is done using paired t test. In the entire study, the p-values less than 0.05 are considered to be statistically significant. All the hypotheses were formulated using two tailed alternatives against each null hypothesis (hypothesis of no difference). The entire data is statistically analysed using Statistical Package for Social Sciences (SPSS ver 22.0, IBM Corporation, USA) for MS Windows.^(11,12,13)

Among 50 patients, 42 were male (84%) and 8 were females (16%). The mean age of presentation was 29.48 ± 5.12 years.

1.Duration of procedure: The mean ± SD of duration of procedure among the cases studied in Group A and Group B was 39.40 ± 5.65 mins and 62.60 ± 10.01 mins respectively.

2.Post-operative pain: On Post-operative day 0: The mean ± SD of pain score (VAS) in Group A and Group B was 8.12 ± 0.44 and 6.08 ± 0.64 respectively and on Post-operative day 3: mean ± SD of pain score (VAS) in Group A and Group B was 5.88 ± 0.53 and 3.84 ± 0.75 respectively, while on the day of discharge: mean ± SD of pain score (VAS) in Group A and Group B was 4.12 ± 0.67 and 2.08 ± 0.64 respectively. Inter-Group Distribution of Mean Pain Score (VAS) is shown in figure 4.

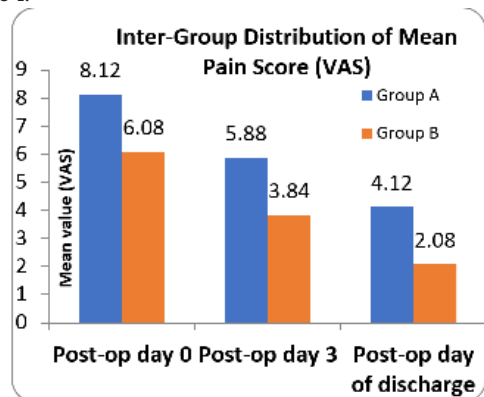


Fig 4) Inter-group comparison of mean pain score (VAS).

3. Total recovery time: The mean \pm SD of total recovery time among the cases studied in Group A and Group B was 26.88 ± 1.17 days and 14.56 ± 1.29 days respectively. Inter-Group Distribution of Mean Recovery Time is shown in Figure 5.

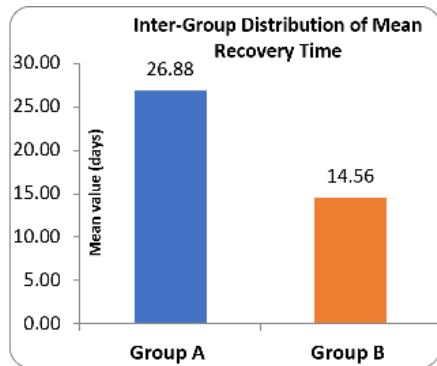


Figure 5) Inter-group comparison of mean total recovery time.

4. Complications: Of 25 cases studied in Group A, 4 (16.0%) had wound discharge, 2 (8%) had recurrence and no other complication. Of 25 cases studied in Group B, 3 (12.0%) had wound discharge, none had flap necrosis, none had collection and none had recurrence.

DISCUSSION:-

Pilonidal Sinus Disease has become a common disease affecting the young. ⁽⁴⁾ It is under reported and yet it does significantly cause discomfort and morbidity to the patients that draws them to the surgeons mostly when complications of the disease arise. Definitive treatment is best provided when the patient initially presents to the surgeon to prevent loss of time from work and distress to the patient. The ideal treatment should ensure low pain, short hospitalization period, low risk of complications, rapid return to normal activities, better cosmesis, and should have a low recurrence rate.

In our study, pilonidal sinus was found to be common in age group 20-39 years. The youngest was of 20 years and oldest was of 39 years. The average age of patients at the time of presentation was 29 years. A study conducted by Oner Montes et al ⁽¹⁴⁾, pilonidal sinus was found to be common in age group of 18.95 – 32.16 years and the average age of the presentation was 25 years of age. The male to female sex ratio in our study was 5.25:1. In a study by Sheeraj Shakoor et al ⁽¹⁵⁾ noted male to female ratio as 3:1 and in population study at Minnesota, male to female ratio was found to be 4:1.

The mean duration for open technique was 39.40 mins and that for Limberg rhomboid technique was 62.60 mins. So Limberg rhomboid technique takes longer time to perform than open technique.

Post-operative pain was compared using Visual analogue scale (VAS). It was compared on post-operative day 1, post-operative day 3 and the day of discharge. In our study, we found that pain experienced by the patients who underwent Limberg rhomboid flap was significantly lower as compared to the patients who underwent open technique.

We considered total recovery time as a time duration from admission in the hospital till the resumption of his/her duty. In our study, the total recovery time was noted to be significantly lower in patients who underwent Limberg flap technique (mean 14.56 days) than patients who underwent open technique. (mean 26.88 days). So, patients who underwent Limberg rhomboid flap technique decreases longer hospital stay and it takes less time for recovery than open technique.

The most common complication that were noted were wound

discharge. 3 patients out of 25 (12%) who underwent Limberg rhomboid flap technique developed wound discharge. No patient had developed collection or flap necrosis and no patient came with recurrence during follow up. While 4 patients out of 25 (16%) of open technique had developed wound discharge and 2 patients (8%) had recurrence during follow up period. So, complication and recurrence rate are higher in patients who underwent open technique in our study which is same a western literature. ⁽¹⁶⁾ In patients undergoing Limberg flap, our study shows no recurrence while western literature shows a recurrence rate of 4.18 %. ⁽¹⁶⁾ This low recurrence rate may be due to the small sample size of our study.

CONCLUSION:-

In our study of 50 patients who presented with various presentations of pilonidal disease the following observations were made: - Pilonidal disease is a disease of the natal cleft affecting young adults with a male preponderance. Among the two surgical techniques that we studied, although Limberg rhomboid flap technique takes longer time to perform but it has low complication rate, less duration of hospital stays, early return to work and less post-operative pain as compared to open technique. Hence Limberg rhomboid flap technique is the most effective surgery to treat pilonidal disease.

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