Open Excision versus Limberg Transposition Flap in the Management of Sacrococcygeal Pilonidal Disease.

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ABSTRACT

INTRODUCTION: To compare the outcome of Open excision and Limberg transposition flap in the management of sacrococcygeal pilonidal sinus disease (SPD).

METHODS: A prospective, analytical, comparative study using randomized controlled trial (RCT) was conducted in western regional hospital, from June 2011 to June 2014. In total 36 patients were enrolled in the study, 5 were excluded who had pilonidal sinus with abscess and managed with incision and drainage. Out of 31 patients who had pilonidal sinus, open excision (group A: 16 patients) and Limberg flap (group B: 15 patients). Postoperative pain, duration of hospital stay, healing time, wound infection, and recurrence were noted. The inclusion criteria were all patients with primary or recurrent SPD. The exclusion criteria was pilonidal sinus with abscess.

RESULTS: Out of 31 patients, 27 were males and 4 were females. 16 patients were enrolled in group A and 15 patients in group B. Pain perception was markedly reduced in group B (p<0.05). Mean duration of hospital stay was shorter in patients in group B (4.43 vs 2.53 days) and the time for complete healing of the wound was shorter in group B (p<0.05, 45.12 vs 11.93 days). Wound infection and recurrence rate were also significantly lower in patients who underwent Limberg rotation flap (p<0.05, 4 vs 1; 2 vs 0).

CONCLUSION: Because of less pain perception, shorter hospital stay, earlier healing of wound and lower rates of infection and recurrence, Limberg flap was found to be better than open procedure in the management of SPD.

KEY WORDS: Sacrococcygeal pilonidal sinus disease, open excision, Limberg transposition flap.

INTRODUCTION

Sacrococcygeal pilonidal sinus disease is a commonly encountered condition in adult primary care, and it causes significant morbidity. The estimated incidence is 26 per 100,000, people. Men are affected twice as often as women and the condition is most frequent in the third decade of life. Etiology is uncertain but relates to the implantation of loose hair into the depth of natal crease. Other associated factors include increased sweating with sitting and friction, poor personal hygiene, obesity, local trauma, narrowness of natal cleft, etc. Implantation of hair leads to infection and abscess formation and later one or more discharging sinuses as a sequela.

The management of this condition is quite challenging due to infections, delayed wound healing and high rates of recurrence. The optimal surgical method should be simple, associated with short hospital stay and low recurrence rates. A number of surgical options are available. The simplest are incision and drainage, laying open, open excision, excision and primary closure. The more complex ones include Bascom’s, Kardaykis and rhomboid excision with Limberg flap. All of these complex techniques are aimed to prevent recurrence by reducing the presence of natal cleft by
placing the suture line away from intragluteal sulcus, hence are associated with early wound healing and low recurrence rates. Simple excision techniques are associated with high morbidity and recurrence due to presence of natal cleft. Different studies have reported recurrence rates of 0-5%. These high recurrence rates are attributable to a persistence natal cleft (scar) in the midline which provides a portal for hair entry. Once the hair is inside, the vicious circle of abscess formation and discharging sinuses begins.

METHODS

This study was conducted at western Reginal Hospital from June 2011 to June 2014. It was a prospective, analytical, comparative study using randomized controlled trial (RCT). Blocked randomization was used for allocation of patients in 2 groups (A and B). The patients are divided in blocks of two and the first patient was allocated in group A and the second patient in group B. A total of 36 patients were enrolled in the study, 6 patients with pilonidal sinus with abscess were excluded and managed with incision and drainage. Total 31 patients, Group A, comprised of 16 patients, who underwent open excision and Group B had 15 patients, subjected to Limberg transposition flap. The inclusion criteria were all patients with primary or recurrent SPD. The clinical presentation included chronic discharging sinus, pain, recurrent abscess formation and bleeding. The exclusion criteria were: cases with abscess who underwent only incision and drainage.

An informed consent was taken and patients were counseled about the procedure. Postoperative pain, duration of hospital stay, wound infection and time to recurrence were noted. Severity of pain was defined using visual analogue scale (VAS). The statistical analysis was done using SPSS windows version 16. P value <0.05 was considered statistically significant.

Operative Procedure

All the patients were operated under spinal anaesthesia. Antibiotic prophylaxis was given injection ceftriaxone 1 gm, at the time of induction of anaesthesia. The dose was repeated at eight hours interval twice in postoperative period. Patients were placed in Jack-knife position with hips strapped apart. Patients in group A underwent excision of ellipse of skin incorporating all the diseased tissue and the wound was allowed to heal by secondary intention. Patients were discharged on 4th-5th postoperative day and alternate day dressing was done till complete epithelialization of the wound. The y were then followed up at monthly interval for 3 month and then once after 6 months. In group B, a skin marker was used to define the limberg flap and the area of the skin to be excised (fig.1). Rhomboid excision of the tissue was done incorporating the whole sinus tract and extending deep up to pre-sacral fascia (fig.2)
The Limberg flap was then rotated and defect was closed (fig. 3). A suction drain was placed beneath the flap. Subcutaneous tissue was sutured using polyglactin 2/0 suture and skin by prolene 3/0 suture (fig. 4). Drain was removed after 48 hours. Patients were discharged from the hospital on 2nd-3rd post operative day. Skin sutures were removed on 12th post-operative day. The follow-up schedule included a monthly follow up for 3 months and once after 6 months.

The severity of pain was defined using Visual Analogue Scale. Statistical analysis was done using SPSS version 16.

**RESULTS**

Out of 16 patients in Group A, 14 were males and 2 were females, mean age was 29.06 years (range 19-42). Out of 15 patients in group B, 13 were males and 2 were females with a mean age of 27.93 years (range 21-37).

![Figure 6: Total patients in group A and B with ratio of male and female patients.](image)

The severity of pain on VAS was significantly reduced in group B (p = 0.003). Mean hospital stay of patients in group A was 4.43 days and was 2.53 days in group B. This was statistically significant. The mean time for complete healing of wound in Group A was 45.12 days and in Group B was 11.93 days. This was markedly decreased in Group B. Wound infection developed in 2 patients in group A and none in group B. Recurrence was found in 2 patients in group A while none in group B.

**DISCUSSION**

Pilonidal sinus is a condition found in the skin of the natal cleft, a short distance behind the anus, consisting of one or more pits that communicate with a fibrous epithelial tract and generally contains hair lying loose within the lumen. Other factors include increased sweating associated with buttock friction, obesity, and local trauma. Increased depth, narrowness of the natal cleft along with the friction movements of the buttocks promotes loose hair to collect and insert in deep cleft. The hair is perceived as a foreign body initiating an inflammatory response and can then lead to a pocket of infection leading to abscess or sinus formation.

Surgical treatment of pilonidal sinus disease includes open excision, excision with primary closure, just lay open, and excision and flap closure. The goals of the ideal procedure should be reliable wound healing with a low risk of recurrence, a short period of hospitalization, minimal inconvenience to the patient, and low morbidity and early return to normal daily activities.

Open excision technique requires greater wound care and prolonged hospital stay. Wound breakage is another complication, observed due to premature closing of skin edges in a premature wound.

The Limberg flap reconstruction is easy to perform and design. It has a large, well-vascularised pedicle which can be sutured without tension at the natal cleft and flatten it. It maintains local hygiene, avoids hair insertion by reducing the friction between buttocks, reducing humidity, maceration, erosions and scar formation at the natal cleft. Midline dead space is obliterated and thus avoiding a midline scar. It is a useful technique for complex sinuses and multiple primary and secondary pits where radical excision leaves a large defect and for cases where other simpler operations have failed. The use of local flap accelerates healing. Disadvantage with flap construction is early development of seroma and haematoma formation which predisposes to wound infection and flap failure. Use of suction drain has been advocated to prevent this. However, a study published by Erdem et al, suggested no considerable difference in complication rates between two groups who underwent Limberg flap rotation with or without suction drainage.

In our series the patient perceived less pain after Limberg procedure (group B) than group A because the skin cover was provided at the place of excision. We also observed that the total duration of hospital stay...
was shorter in patients who underwent Limberg flap technique as compared to those in group A. Urban et al.\(^1\) and Bozkurt & Tezel\(^1\) had reported a mean hospital stay of 3.7 days and 4.1 days respectively. This is similar to our study.

In our study, healing time was significantly reduced group B as compared Group A. Other similar studies support this finding.\(^1\) Different series have reported wound infection rates of 1.5-7%.\(^1\) In the present study, it was nil with Limberg flap (group B) 8.5% with open technique.

In our study recurrence was 8.5 % in Group A while nil in Group B which is similar to study conducted by Katsoulis et al.\(^1\)

Patients with open excision technique take longer period to resume their routine work as healing by secondary intention takes longer time. So patient will have a shorter period of incapacitation with limberg flap due to shorter hospital stay and early wound healing,

**CONCLUSION**

Patients with limberg flap reconstruction have less post-operative pain, shorter hospital stay, earlier healing, lower rates of infection and recurrence. So Limberg flap was found to be better than open procedure for SPD.

**REFERENCES**