FLAP CLOSURE FOR GLUTEAL PILONIDAL SINUS- IS IT AN ECONOMICALLY VIABLE OPTION?

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ABSTRACT

BACKGROUND

Flap closure technique for sacrococcygeal pilonidal sinus disease has been conclusively shown to be effective in relieving recurrence rate in many studies, but it is expensive and difficult to perform. Purpose of this study is to find out if simple primary closure is effective in management as claimed by some authors and to determine which of the procedures is easier on the pocket for the patient.

MATERIALS AND METHODS

Patients were enrolled into either of the two groups- Group A- Simple primary closure. Group B- Flap closure and gluteal sulcus obliterative procedures based on their choice after explaining the type of procedure and the approximate cost involved in both. Parameters recorded and analysed by Pearson's Chi-square test for statistical significance.

RESULTS

95 patients were included for the study- 42 in Group A and 53 in Group B. Male-to-female ratio of 5:2 and 11:4, respectively; average age of 25 in both the groups (range 15 to 40 years in group A, 16 to 41 in group B). There were 17 wound dehiscence, 2 seromas and 7 recurrences in group A and 16 wound dehiscence, 8 seromas and 2 recurrences in group B. The difference is the recurrence rate being statistically significant. 12 patients- 8 with non-healing wounds and 4 with recurrences from group A joined group B while 9-6 with dehiscence and 3 recurrences were lost to follow up. Average wound healing time in the simple closure patients was 31 days, while in group B, it was 16.4 days. Average expenditure incurred by patients in primary closure group was Rs. 7,900 compared to Rs. 9,300 in group B, but if the additional expense due to crossing over to group B was added, average jumped up to Rs. 10,700, which was Rs. 1000 more than the flap closure patients.

CONCLUSION

In management of patients with chronic sacrococcygeal pilonidal sinus, even though the average cost of treatment by simple primary closure is less than that by flap closure technique, the significantly higher rate of recurrence and prolonged time to heal in case of wound dehiscence nullifies whatever pecuniary benefits they may have gained and hence flap closure is advisable especially in patients with recurrent disease.

KEYWORDS

Gluteal Pilonidal Sinus, Simple Closure, Flap Closure, Economic Impact.

HOW TO CITE THIS ARTICLE: Ganji R, Ugale A, Vedire N, et al. Flap closure for gluteal pilonidal sinus- Is it an economically viable option?. J. Evid. Based Med. Healthc. 2017; 4(65), 3889-3894. DOI: 10.18410/jebmh/2017/777

Financial or Other, Competing Interest: None.
Submission 11-07-2017, Peer Review 20-07-2017,
Acceptance 04-08-2017, Published 11-08-2017.
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DOI: 10.18410/jebmh/2017/777

BACKGROUND

Sacrococcygeal pilonidal sinus disease may present in many forms- as acute abscess, swelling with occasional discharge, chronic painful swelling or chronic persistent discharge from one or multiple openings, but one thing common to all the above is the presence of opening in the midline of the gluteal cleft usually, but not always, at the bottom of crypt.

Various theories have been proposed and experiments carried out including manometric tracings to determine the aetiology of pressure variations in gluteal cleft area and

arrive at a reasonable conclusion of suction effect created by vibratory movements of thigh, pulling the hairs near the sinus and stretched gluteal skin, opening deep inside them causing a foreign body reaction.

Of all the procedures described down the years, those that have stood the test of time are-

1. Excision and healing by secondary intention.
2. Eccentric excision and primary closure.
3. Primary flap closure techniques - either 'Limberg' or 'Z plasty' flap repair - basically gluteal cleft flattening procedures.

While healing by secondary intention is still being practiced, the long time it takes for the wound to heal makes the treatment no better or often worse than the disease itself, what with the number of visits required for the dressing of wound and the resultant loss of income in the mainly young working population.

While there are many reviews where they have tried to determine the aetiology,[1,2] pathogenesis[3] and the best method of treatment for the pilonidal sinus.[4] Only one to our knowledge[5] has tried to assess the economic impact of various procedures - divided into lay open and primary closure - on the patient population, which showed higher expense in the primary closure group. The higher expenditure in the primary closure patients was attributed to need for general anaesthesia and increased hospital stay in contrast to day case procedure under local anaesthesia for lay open technique.

Flap closure and gluteal cleft flattening techniques require surgical expertise and longer operating times in comparison to simple excision and primary closure and thus are a burden on the patient's finances, but has a lower recurrence rate[4] and lower wound infection rate.[6,7]

MATERIALS AND METHODS

All patients presenting to the Surgical Outpatient Department of the twin hospitals of OHRC and PEH from January 2011 up until October 2016 with complaints of pain, discharge from lower back and gluteal region were evaluated and those found to have pilonidal sinus disease with or without presence of chronic abscess were advised surgery and if willing, admitted in either of the two groups-

A - Excision and primary closure.

B - Excision and flap closure- either Limberg or 'Z' Plasty depending on the patient's choice after a detailed discussion regarding type of procedure and approximate costs incurred for the same and hospital stay.

Patients presenting with acute abscess were excluded from the study as those from faraway places in our opinion would not turn up for follow up and postoperative evaluation.

All the patients (in both the study groups) were administered a third generation cephalosporin half an hour before the procedure and the same was carried out in regional anaesthesia in lateral position for simple primary closure patients and prone position with buttocks strapped apart for flap closure group.

Methylene blue was injected into the primary opening and where it was not evident into the secondary sinus opening and entire tract along with its branches excised with 1 cm margin around the primary opening and if present around the secondary opening. Skin and subcutaneous tissue flaps were raised from the sacral fascia and simple primary closure was done in two layers in case of group A.

In case of Group B patients, Rhomboidal excision was done in those with multiple branches, enclosing all the branches and the gluteal pit and the wound closed by Limberg's flap. In those with linear tracts, excision included both primary and secondary openings and closure by 'Z' plasty or modified 'Z' plasty after raising broad sickle shaped flaps.

Patients were kept on a low residue liquid diet in an attempt to prevent defecation and consequent soiling of the wound for two days postoperatively and discharged after one change of dressing 48-72 hours later; those with a significant drain output were given an option of either staying in the hospital or at home with the drain until the output decreases.

Following parameters were recorded-

1. Operative time.
2. Length of hospital stay.
3. Time taken for the wound to heal completely.
4. Complications- seroma, wound dehiscence and recurrence.
5. Economic impact of either procedure.

Economic impact was assessed taking into consideration operation theatre charges, bed charges and ancillary charges during the hospital stay and dressing charges in the postoperative period depending on the number of visits required before complete wound healing. This did not take into account transport charges and financial impact due to loss of work hours as it varied widely amongst the patients.

Both the groups were operated by the same surgical team and followed up postoperatively until the wounds completely healed, subsequent follow up purely on a need basis, i.e. in case of recurrence of symptoms.

Results were analysed and compared using Pearson's Chi-square test for statistical significance with P value <0.05 being considered significant.

RESULTS

Out of 42 patients in group A, 30 were males and 12 were females. In group B (n=53), 39 were males and 14 were females. Group A patients with mean age of 25 years ranging from 14-40 years. In group B, patients with mean age of 24.9 years ranging from 16-41 years. While it took on an average 35 min. in performing simple closure, more than 1 hr (75 min. ± 10 min.) was required in raising flaps and closure. Postop hospital stay was almost same in both the groups, 4.3 days for simple primary closure and 4.67 days in flap closure mostly to accommodate for delayed removal

of drain to prevent seroma. There was no major morbidity in either group. Only complications were seroma formation, wound dehiscence and recurrence of sinus. While 2 patients in simple closure group had seroma formation (5%) 8 had in group B (5.1%). One patient with chronic abscess of >1 year duration for whom Limberg's flap closure was done having delayed seroma formation after drain removal, which had to be aspirated thrice at weekly interval before finally subsiding.

17 patients in group A had wound dehiscence with one patient a 20 yrs. girl having persistent discharge from the wound following gaping for more than 1 year when she was included in group B and 'Z' plasty repair was done, wound healed completely in 10 days; of 17 patients with wound dehiscence in group A, 8 opted to join group B and 6 were lost to follow up after attending surgical O.P. for dressing from a period ranging from 2-4 months. Even the patients who chose to change groups did so after patiently getting the wound dressed for 4-5 months and in one instance, up to almost 7 months.

In group B, 16 patients (30%) had wound gaping. Most of them at lower margins of wound posterior at the anus and they healed with conservative management - alternate day dressing and advice to keep the area dry and moist free. While it took a significantly long time for the wound to heal completely in group A (31 days), even the recurrence rate was significantly higher 16.6% compared to 3.7% in flap closure group. Of the 7 patients with recurrence in simple closure group, 4 opted to join the flap closure group and rest were lost to follow up. All the four patients were treated with rhomboid excision and Limberg flap repairs and had uneventful recovery (in 2 weeks) no patients from group B were lost in follow up.

While none of the patients were unhappy with the postoperative scar, 7 patients (3 males) were unhappy with the cosmetic outcome of Limberg's flap closure. Average cost of treatment in group A was 7,900, which included operative charges of Rs. 4000. In hospital stay at 500 per day and dressing charges of Rs. 100 in the surgical O.P. ranging from Rs. 5500 for a 3-day stay to Rs. 11,000 incurred due to dressings in the postop period following wound dehiscence. Concomitantly in group B, the average cost per patients was Rs. 9,700 in vein of increased theatre charges of Rs. 7000 ranging from Rs. 8000-13,000.

If the additional expenses increased due to group A patients opting to undergo flap closure following prolonged wound healing time and recurrence were added. The average cost of treatment jumped up by Rs. 1,800 in the group A to Rs. 1000 more than in group B.

Group	Total No.	Male	Female	Operative Time	Hospital Stay Average	Wound Dehiscence	Seroma	Recurrence	Complete Healing
A	42	30	12	35 ± 10 Mins.	4.3 days (R 2-10)	17 (40%)	2	7 (16.6%)	8 joined group B, 6 lost in follow up, 4.8 weeks for 25 patients
B	53	39	14	75 ± 10 Mins.	4.6 days (R 2-10)	16 (30%) not statistically significantly	8 not statistically significantly	2 (3.7%) statistically significantly	2.6 weeks

Table 1. Demographic

Figure 1. Preoperative Picture Depicting a Long Pilonidal Sinus

Figure 2. Modified Z Plasty Technique used to Obliterate the Gluteal Cleft

Figure 3. Healed Wound After 10 Days

Figure 4. Recurrent Pilonidal Sinus Operated One Year Ago by Simple Closure

Figure 5. Wound Excision and Closure by Limberg Flap

Figure 6. Healed Wound after Two Weeks

DISCUSSION

There are innumerable studies published on the best type of treatment for sacrococcygeal pilonidal sinus operation - written and review articles - while operator backed ones. Support a particular type of flap closure method,[4,6,7,8,9,10,] review articles[3,5] leave the field open showing no great difference between conventional lay open methods and the more recent flap closure techniques.

What we have strived to do in the present study is to try to bridge the gap between the patient's expectations and the final outcome of the procedure based on our previous experience.[12] Hence, the study was constructed in such a manner that the patients could switch groups if they were not happy with the progress of the outcome. Even then, quite a few number of patients[6] were lost to follow up.

This is in sharp contrast to all previous studies where patients were followed up for about 60 months and some up to 120 months,[6] which in our experience is found to be almost impossible as the patients shift their loyalties easily more so when the results of the procedures they underwent are not up to their expectations.

So to say, even we started shifting loyalties from standard procedures in the face of failures- in their case, increased incidence of wound dehiscence and prolonged time of wound healing- in 17 patients of Group A and in 16 patients of Group B- after we observed that those patients who underwent rhomboidal excision with primary sinus opening in the centre of the excision specimen had less incidence of wound dehiscence and recurrence. We changed accordingly in the latter part of the study with good results. Hence, we cannot claim to have employed same surgical technique in all the patients. This led to skewed results shifting positively towards Limberg's flap closure as rhomboid excision has to be carried out before lifting the flap.

But, that doesn't change the fact that gluteal pilonidal sinus is multifactorial in origin, seen even in patients with shallow gluteal pit and in those with sparse hair like women.

As the results suggest that there is no significant difference in complication rates between the two groups, except in the rate of recurrence- vertical simple closure group patients tending to take a longer time to heal following wound dehiscence and higher chances of recurrence- almost all from the lower part of the wound at the site of the gluteal pit.

But, in the results reported by Kapan et al,[6] recurrence occurred from the upper end of the flap and that too 24-30 months after surgery, which was attributed to insufficient personal hygiene and inadequate excisions, which is confounding considering the evidence to the contrary.[5,11] Similarly, in the randomised comparative study carried out by Marco Gallinella Muzi et al[12] where 317 patients with pilonidal sinus disease were operated upon within a span of 2 years- i.e. almost 16 patients per month and 270 patients were included in the study, 55 with acute infection, there were only 6 wound dehiscence (2.2%)- 3 in each group and 5 recurrences- all in the primary closure group- which contrasts glaringly with our study where it has taken us close to 6 years to reach a sample size of 95 patients, which included recurrent cases and non-healing wounds referred from other hospitals with wound dehiscence rates of 40% and 30%, recurrence rate of 16.6% (Group A) and 2% (Group B).

This makes us wonder if even half the studies reported in the literature are authentic including the ones published in reputed journals; slightly similar sentiment was expressed by T.G. Allen-Mersh,[5] but regarding flawed design of the study, i.e. absence of randomisations, control group and inadequate followup. Even the supposedly randomised study[12] appeared more of an endorsement for Gentafleece than being a truly objective study; so nothing much can be expected from the study attributing increased recurrence to use of methylene blue causing inadequate excision of sacrococcygeal pilonidal sinus disease.[13]

Ours being a payment hospital run by a trust over with nominal rates, patient population mostly from economically disadvantaged background, on being given an option of choosing between a less expensive and more expensive procedure. Most of them choose the former one and only those who were operated earlier and recurrent or persistent sinus opted for the latter group- flap closure. This group also contained patients with complex fistulas with multiple openings on either side of the gluteal cleft and sinus associated with chronic abscess who could not be treated with simple excision and closure. So, the choice of the patients to join either group was partly influenced by the operators with group B having more recurrent, non-healing and complex pilonidal sinus.

As expected, the average cost of treatment in Group A is less than in Group B (Rs. 8,200 compared to Rs. 9,700) even though the hospital stay is almost the same (4-5 days) and significantly longer time taken for the wounds to heal after dehiscence. But, if taken into consideration, the total cost of the treatment in those who had recurrence or prolonged non-healing of the wound who had switched over to the other group for flap surgery that is significantly higher than in those of Group B.

CONCLUSION

As there is no single pill, which acts on panacea against all ills, there is no single procedure, which can cover all the myriad forms of pilonidal sinus disease. While simple single opening or small sinuses maybe treated effectively with simple excision and primary closure without causing much financial burden to the patients, complex and recurrent fistulas are best treated by flap closure method - either Limberg flap or 'Z' plasty, which flatten the gluteal cleft or create an eccentric scar line thus ameliorating the factors, which cause the sinus in the first place and hence best left at the discretion of the operating surgeon.

ACKNOWLEDGEMENT

We would like to thank Mr. Prasanna Kumar, Statistician, Assistant Professor- Department of Social and Preventive Medicine for his valuable advice in carrying out the study.

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