

Surgical treatment of chronic sacrococcygeal pilonidal sinus

Open method versus primary closure

Tayeb S. Kareem, FICMS (GS), FICS.

ABSTRACT

Objectives: To study the comparison between the primary closure and open technique after excision of chronic sacrococcygeal pilonidal sinus.

Methods: A randomized study was designed and 77 patients with chronic sacrococcygeal pilonidal sinus were included in this study. This study took place in Rizgary Teaching Hospital, Erbil, Kurdistan, Iraq, from January 1997 to August 2003. The patients were separated into 2 groups; Group A (37 patients) were treated by open method (excision and healing by secondary intention) and Group B (40 patients) for whom primary midline suturing was performed after excision of the pilonidal sinus. The follow up ranged from 1.5-5.5 years (mean 4.16) was through outpatient visits.

Results: The Student t test was applied for statistical

analysis for the operating time, hospital-stay, time off from work and wound healing time; and the results show extremely significant differences between the 2 groups ($p < 0.0001$). The statistical analysis of the total number of postoperative complications of both techniques showed a significant difference ($p = 0.0401$), while the differences were insignificant for each complication when analyzed separately.

Conclusion: Excision and primary closure for chronic sacrococcygeal pilonidal sinus is superior to excision and healing by secondary intention. We believe that primary midline suturing is a useful method for management of chronic sacrococcygeal pilonidal sinus.

Saudi Med J 2006; Vol. 27 (10): 1534-1537

Pilonidal sinus (PNS) was first described by Hodges in 1880.^{1,2} It is a well-known complex surgical problem. It is an unglamorous condition that is often difficult to treat.³ Many surgical methods have been advocated for its treatment because of high recurrence rate.⁴ Different approaches ranging from a conservative treatment to an extensive surgical excision have been in practice for a long time.⁵ The majority of procedures can be classified

in one of the 4 categories:² (i) Incision and drainage. (ii) Excision and healing by secondary intention. (iii) Excision and primary closure. (iv) Excision with reconstructive flap techniques. There are other methods such as injection of phenol (phenolization),⁶ cryosurgery, electrocauterization⁷ and Nd-YAG laser⁸ or Ruby lasers.⁹ While all these treatment options are available, the ideal therapy should be simple to perform, inflict minimal pain and shorter hospital

From the Department of Surgery, Rizgary Teaching Hospital, College of Medicine, Hawler Medical University, Erbil, Kurdistan, Iraq.

Received 12th March 2006. Accepted for publication in final form 24th June 2006.

Address correspondence and reprint request to: Dr. Tayeb S. Kareem, Department of Surgery, Rizgary Teaching Hospital, College of Medicine, Hawler Medical University, Erbil, PO Box 0116-09, Kurdistan, Iraq. Tel. +964 (66) 2260250. E-mail: tayebks@yahoo.com

stay. The healing process should be minimum wound care, simple, allow rapid return to normal activity, have a low recurrence rate, and cost effective.^{10,11} In this paper, we study the comparison between primary closure and open technique after excision of chronic sacrococcygeal PNS.

Methods. From January 1997 to August 2003, 84 patients were admitted for excision of chronic sacrococcygeal PNS in Rizgary Teaching Hospital in Erbil by a single surgeon. The patients were randomized in 2 groups: group A were treated by open method (excision and healing by secondary intention) and group B for whom primary midline suturing was performed after excision of the PNS. Seven cases (2 cases from group A and 5 cases from group B) were excluded from the study as they were lost for follow up. The follow up of the other 77 patients, ranged from 1.5-5.5 years (mean 4.16), was through outpatient visits. Generally, follow up was carried out on the 5th, and 10th postoperative days, then weekly until complete healing occurred and then annually (**Figures 1, 2a & 2b**). Blood sugar estimation was carried out for all patients preoperatively. We recorded the following data: operating time, duration of hospitalization, period taken to resume routine activities, time taken for complete wound healing, wound complications, and recurrence rate. Operations were performed under general anesthesia and the patients were placed in a jack knife position. Patients received Amoxicillin 500 mg 3 times a day and Metronidazole 500 mg 3 times a day intravenously for 24 hours and oral administration for 5 days. The surgical procedure in group A was wide excision of an elliptical wedge of the skin and subcutaneous tissue down to the presacral fascia, including removal of all the inflamed tissues and debris. Packing of the wound was carried out without suturing, allowing the wound to granulate from its base. The wound was managed by daily cleaning with



Figure 1 - Close method 15 days after the operation, with good healing.

antiseptics until complete healing. Group B patients were treated by wide excision and primary midline suturing of the wound without draining. Excision of an elliptical wedge of the skin and subcutaneous tissue down to the presacral fascia was performed. Hemostasis was achieved by electrocoagulation without using any ligature. Elimination of dead space was carried out without undue tension. Three to four tension sutures were laid and the wound closed with interrupted sutures in one layer (**Figure 3a**). Tension sutures were tied over a gauze soaked partially with povidone iodine (**Figure 3b**). The suture material used for wound closure was zero nylon. All stitches were removed on the 10th postoperative day.

Statistical analyses were performed using t-test and Chi square test. We used quickcalcs program of graphpad software (<http://graphpad.com/quickcalcs>) for statistical software.

Results. We included 18 females and 59 males in this study. The female to male ratio was 1:3 and the age ranged was 15-36 years with a mean age of 25.9 years. All of them were non diabetics. Group A comprised 37 patients and group B comprised 40



Figure 2 - Close method 4 years after operation: a) before shaving b) after shaving. The bleeding spots are due to recent shaving of the area.

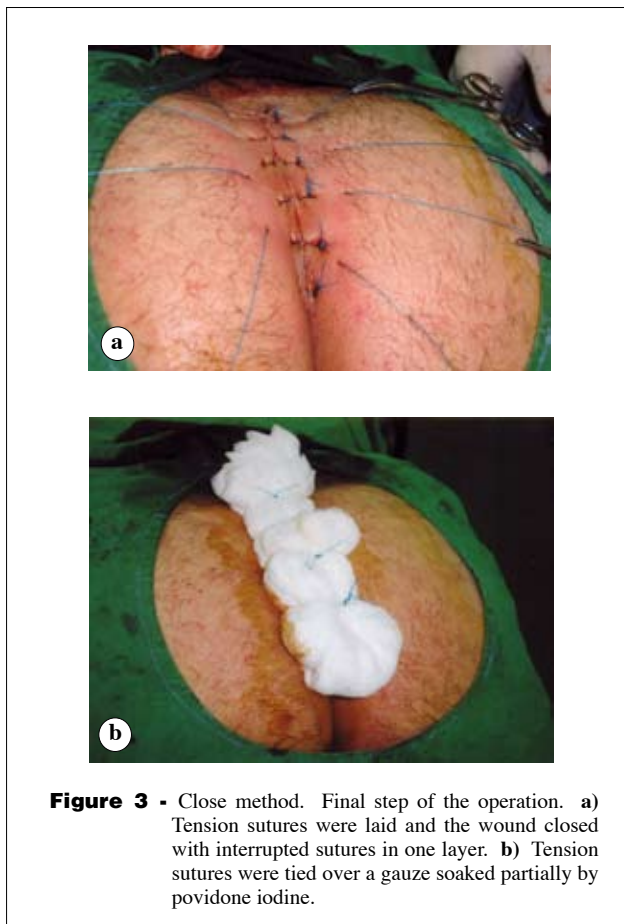


Table 1 - Mean periods of operation time, hospitalization, time off work and wound healing in both groups of the patients.

Mean periods	Group A	Group B	<i>p</i> value
Operation time (minutes)	14.77	23.58	<0.0001
Duration of hospitalization (days)	4.27	1.00	<0.0001
Time off work (days)	35.51	10.35	<0.0001
Time taken for complete wound healing (weeks)	6.86	2.85	<0.0001

Table 2 - Wound complications in both groups of the patients.

Complications	Group A (N=37) n (%)	Group B (N=40) n (%)	<i>P</i> value (double-sided)
Sever pain	2 (5.4)	3 (7.5)	0.7097
Infections	16 (43.2)	12 (30)	0.2274
Bleeding	3 (8.1)	0	0.0791
Recurrence	5 (13.5)	4 (10)	0.634
Total	26 (70.27)	19 (47)	0.0401

patients. Follow-up reports are shown in **Tables 1 and 2**. The operation time for group A ranged from 8-20 minutes (mean 14.77, SD 3.425), and that of group B ranged from 12-31 minutes (mean 23.58, SD 5.175). The duration of hospitalization of group A ranged from 1-9 days (mean 4.27, SD 2.52), that of group B was one day for all the patients. The time off work of group A ranged from 25-40 days (mean 35.51, SD 5.06), while group B ranged 7-15 days (mean 10.35, SD 2.72). The time for wound healing ranged 4-9 weeks (mean 6.86, SD 1.62) in group A and it ranged 2-4 weeks (mean 2.85, SD 0.89) in group B. The statistical analyses of the data in **Table 1**, for comparison between the 2 groups by t-test shows that the 2-tailed *p*-values were less than 0.0001. This indicates extremely statistically significant differences. The wound complications in both groups are shown in **Table 2**. The most common complication was wound infection after both procedures. All patients with infection responded to conservative treatment. Statistical analysis showed no significant differences regarding single postoperative complication in both groups while there was a significant difference in the total number of complications of each group, *p*-value was 0.0401 (**Table 2**).

Discussion. Pilonidal sinus is a many-faceted disease, which mainly affects active male patients. Studies of various surgical techniques have been published but none of them have been considered as gold standard. The literature published during the last 4 decades, emphasize that the complete excision of the whole PNS is the treatment of choice. However, several methods for treating wound after excision have been described, the management remains controversial.¹¹ Many surgeons emphasize that excision and primary suturing is the best way for treatment of chronic PNS,¹²⁻²³ although there is a controversy about the way of primary suturing by midline suturing or by various skin flap procedures. Some surgeons believe that the primary suturing can be useful even for pilonidal abscess.¹⁵ Despite the controversy about the best surgical technique for the treatment of PNS, an ideal operation should be simple, offer patients short hospitalization as well as rapid wound healing, a low recurrence rate, and should be associated with minimal pain, and wound care to reduced time off work and make treatment more cost effective.¹¹ Our study shows extremely statistically significant differences (*p*<0.0001) (**Table 1**) between group A and group B in the mean time of operation, hospitalization, time off work, and wound healing. However, there were no statistically significant differences between the 2 groups regarding

the postoperative complications including recurrence rate and wound infection, while there was a significant difference in the total number of complications of each group ($p=0.0401$) (Table 2). In comparison between our results and that of flap procedures carried out by other studies, it appears that primary midline suturing is superior to flap procedures namely wound dehiscence occurred in 42% of flap procedures carried out by Lee et al²⁴ while no dehiscence occurred in our cases. Mean hospital stay and time off work of our cases were one day and 10.35 days respectively while Aydede et al²³ study were 5.95 days and 2.9 weeks respectively.

In conclusion, this study emphasize that excision and primary closure is superior to open technique by the fact that there was relatively shorter surgical time, hospitalization, time off work and wound healing although there was no difference in terms of postoperative complications. We believe that primary midline suturing is a useful method for management of chronic sacrococcygeal pilonidal sinus.

References

- Hodges RM. Pilonidal sinus. *Boston Med Surg J* 1880; 103: 485-586.
- Miller D, Harding K. Pilonidal sinus disease. Available from URL: <http://www.worldwidewounds.com/2003/december/Miller/Pilonidal-Sinus.html>
- Purkiss SF. Decision making in surgery: a pilonidal sinus. *B J Hosp Med* 1993; 50: 5594.
- Kudaka M. Surgical treatment for pilonidal sinus: a fourteen year experience. The 45th annual congress of ICS-JS; 1999 Nov 6; Tokyo, Japan. Available from URL: <http://www.nch.naha.okinawa.jp/member3/pilonidal/pilonidal.htm>
- Gupta PJ. Radio frequency incision and lay open technique of pilonidal sinus (clinical paper on modified technique). *Kobe J Med Sci* 2003; 49: 75-82.
- Duchateau J, De Mol J, Bostoen H, Allegret W. Pilonidal sinus excision – marsupialization – phenolization? *Acta Chir Belg* 1985; 85: 325-328.
- Shafik A. Electrocauterization in the treatment of pilonidal sinus. *Int Surg* 1996; 81: 83-84.
- Palesty JA, Zahir KS, Dudrick SJ, Ferri S, Tripodi G. Nd: YAG laser surgery for the excision of pilonidal cysts: a comparison with traditional techniques. *Lasers Sur Med* 2000; 26: 380-385.
- Lavelle M, Jafri Z, Town G. Recurrent pilonidal sinus treated with epilation using a ruby laser. *J Cosmet Laser Ther* 2002; 4: 45-47.
- Hull TL, Wu J. Pilonidal diseases. *Surg Clin North Am* 2002; 82: 1169-1185.
- Werkgartner G. Invited commentary to: Knowledge-based therapy of the pilonidal sinus. *Eur Surg* 2004; 36: 170-171.
- Perruchoud C, Vuilleumier H, Givel JC. Pilonidal: how to choose between excision and open granulation versus excision and primary closure? Study of a series of 141 patients operated on from 1991 to 1995. *Swiss Surg* 2002; 8: 255-528.
- Al-Jaberi TMR. Excision and simple primary closure of chronic pilonidal sinus. *Eur J Surg* 2001; 167: 133-135.
- Testini M, Piccinni G, Miniello S, Venere BD, Lissidini G, Nicolardi V et al. Treatment of chronic pilonidal sinus with local anaesthesia: a randomized trial of closed compared with open technique. *Col Rec Dis* 2001; 3: 427.
- Ommer A, Pitt C, Albrecht K, Marla B, Peitgen K, Walz MK. Pilonidal sinus – Primary Closure also in case of abscess? *Zentralbl Chir* 2004; 129: 216-219.
- Patel H, Lee M, Bloom I, Allen-Mersh TG. Prolonged delay in healing after surgical treatment of pilonidal sinus is avoidable. *Col Rec Dis* 1999; 1: 107.
- Al-Bouq Y, Fazili FM, Fawzi HAG, Parwez T. Surgical management of pilonidal Disease: our experience. *JK Practitioner* 2004; 11: 17-20.
- Tritapepe R, Padova CD. Excision and primary closure of pilonidal sinus using a drain for antiseptic wound flushing. *Am J Surg* 2002; 183: 209-211.
- Cihan A, Menten BB, Tatlicioglu E, Ozmen S, Leventoglu S, Ucan BH. Modified Limberg flap reconstruction compares favourably with primary repair for pilonidal sinus surgery. *ANZ J Surg* 2004; 74: 238-242.
- Zorcolo L, Capra F, Scintu F, Casula G. Surgical treatment of pilonidal disease. Results with the Bascom's technique. *Minerva Chir* 2004; 59: 387-395.
- Destito C, Romagnoli A, Pucello D, Mercuri M, Marin AW. Pilonidal sinus: long term results of excision and closure technic. Review of the literature. *G Chir* 1997; 18: 441-446.
- Iesalniaks I, Furst A, Rentsch M, Jauch KW. Primary midline closure after excision of a pilonidal sinus is associated with a high recurrence rate. *Chirurg* 2003;74: 461-468.
- Aydede H, Erhan Y, Sakarua A, Kumkumoglu Y. Comparison of three methods in surgical treatment of pilonidal disease. *ANZ J Surg* 2001; 71: 362-364.
- Lee HC, Ho YH, Seo CF, Eu KW, Nyam D. Pilonidal disease in Singapore: clinical features and management. *ANZ J Surg* 2000; 70: 196-198.