

THE INFLUENCE OF DRAINAGE IN THE TREATMENT OF CHRONIC PILONIDAL SINUS DISEASE USING MIDLINE CLOSURE

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SUMMARY

Unsatisfactory postsurgical end results in the treatment of chronic pilonidal sinus disease caused by long term healing, pain, inconvenience and recurrences of the lesion still remain problem after various surgical techniques have been described and used. This study was designed to show results of several aspects of midline closure technique with respect for surgical complications, hospitalization length and recurrence. This study included 90 patients with pilonidal sinus treated by surgery with midline closure at the department of General surgery of Clinical Hospital Mostar between January 2004 and January 2009. The patients were divided in three groups considering the type of drainage used. Data collected retrospectively included demographics, positive diagnosis of chronic pilonidal sinus, operative technique, type of drainage, complications, hospital stay and recurrence of the disease. Mean hospital stay after excision and midline closure technique was 4.68 days. Complication rate was 18/90 (20%). Infection occurred in 18 patients (20%), dehiscence occurred in 10 patients (11.1%). Mean recurrence rate during follow up period was 12/90 (13.3%); range, 24-84 months. There was no statistically significant difference among three groups in hospital stay length ($p > 0.05$), in complication rate ($\chi^2 = 1.66$, $p > 0.05$), nor in recurrence rate ($\chi^2 = 1.91$, $p > 0.05$). Statistically significant difference was shown between complication rate among non drained and actively drained patients ($\chi^2 = 1.11$, $p < 0.05$).

Primary midline closure is not a satisfactory method in the treatment of chronic pilonidal sinus, especially without drainage, leading to numerous complications and high rate of recurrence.

Key words: pilonidal sinus disease – surgery - midline closure

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INTRODUCTION

Pilonidal sinus is a disease that most commonly arises in the hair follicles of the natal cleft of the sacrococcygeal area (AL-Khamis et al. 2010). It is a common disabling disorder that causes considerable suffering, inconvenience, and time lost from work. Unsatisfactory postsurgical end results caused by long term healing, pain, inconvenience, long time off work and finally, recurrences of the lesion, still remain problem after various surgical techniques described and used. An operation that results in reliable primary wound healing and few wound management problem, a short period of hospitalization, minimal postoperative pain and morbidity, rapid return to normal daily activity and low risk of recurrence are seen as requirements to optimal therapy (Sakr et al. 2006). Numerous surgical procedures have been described, but treatment failure and disease recurrence are frequent, leading to considerable morbidity in these otherwise healthy patients (Bendewald et al. 2007).

In our institution two procedures have been in wider use for a respectively long time: wide excision and open granulation which had been abandoned recently due to a long healing process and unsatisfactory cosmetic results and sinus excision with primary midline closure, with or without drainage. Only recently we have started to use

asymmetric or oblique closure techniques or plasty techniques.

This study was designed to show results of several aspects of midline closure technique with respect for surgical complications, hospitalization length and recurrence.

SUBJECTS AND METHODS

This study included 90 patients, with pilonidal sinus surgically treated with midline closure at the department of General surgery of Clinical Hospital Mostar between January 2009 and January 2014. There were 9 (10%) women and 81 (90%) men. Data collected retrospectively included demographics, positive diagnosis of chronic pilonidal sinus (CPS) and operation technique, type of drainage, complications, hospital stay and recurrence of the disease.

Patients were categorized in three groups, in each group there were 30 patients. Patients in group one were treated with excision and midline closure technique without drainage. Patients in group two were treated with the same operative procedure using active drainage whereas patients in group three were under passive drainage, using Penrose drains. All patients received postoperative antibiotic therapy (metronidazole + first generation cephalosporin).

Differences between three groups were observed in number of complications (wound infection and dehiscence), hospital stay length and number of recurrence. Mean follow-up was 54 months, range 24-84 months.

Patients with the presence of acute pilonidal sinus, also as patients treated with surgical methods other than midline closure were excluded from this study.

Statistical analysis was performed using SPSS/PC version 7 software. Descriptive statistic was used in data analysis, Anova variance analysis to determine the difference between groups in hospital stay and Chi-square test for comparison between categorical qualitative values. The 5% level was set as the level of significance.

RESULTS

Average age of patients was 28.8 years; range, 15-66 years. Overall mean hospital stay after excision and midline closure technique was 4.68 days; range, 2-13 days. Complication rate was 18/90 (20%). Infection occurred in 18 patients (20%) whereas dehiscence occurred in 10 patients (11.1%). All wound dehiscence occurred after surgical site infection. Recurrence rate during follow-up period (24–84 months) was 12/90 (13.3%). First group: Excision and primary closure without drainage (n=30).

Mean hospital stay after this procedure was 4.33 days; range, 2-9 days. Complication rate was 8/30 (26.6%) Recurrence rate was 5/30 (16.6%) during follow up period.

Second group: Excision and primary closure with active drainage (n=30). Mean hospital stay was 4.93 days; range, 2-13 days. Complication rate was 4/30 (13.3%). Recurrence rate was 3/30 (10%).

Third group: Excision and primary closure with passive drainage (Penrose drain) (n=30).

Mean hospital stay was 4.8 days; range, 2-13 days. Complication rate was 6/30 (20%). Recurrence rate was 4/30 (13.3%) (Table 1).

There was no statistically significant difference among three groups in hospital stay length ($p > 0.05$). There was no statistically significant difference among three groups in complication rate ($\chi^2 = 1.66$, $p > 0.05$), nor in recurrence rate ($\chi^2 = 1.91$, $p > 0.05$). Statistically significant difference was shown between complication rate among non-drained and actively drained ($\chi^2 = 1.11$, $p < 0.05$).

DISCUSSION

As seen, our study showed poor results towards midline closure as a treatment for CPS. Considering that CPS disease is not as common in our region as in the Mediterranean and Gulf region (Akinci et al. 2009) recurrence rate of 13.3% is not at all satisfying. High percentage of wound infection and consequently, dehiscence, significantly increased hospital stay length and time off work, not mentioning patient's discomfort. We tried to make some difference using active or passive drainage to decrease "the dead space" after the excision, prolonging hospital stay length till the end of secretion, but, as our research showed, some difference between active drainage and simple closure had been accomplished in reducing overall morbidity. Still, complications number and recurrence rate even using drainage go highly above the results of other authors using off midline closure. Off midline closure techniques have been described by Karydakisi (Karydakisi 1973, Karydakisi 1992) and Bascom (Bascom & Bascom 2002, Bascom & Bascom 2007) as very perspective methods offering less complications and recurrence. Other authors show promising results using these techniques where infection rate has been reported from 0% to 6% and recurrence rate from 0% to 4.6% while research about midline closure report the infection rate from 0% to 12% and recurrence rate from 0% to 11% (AL-Khamis et al. 2010, Sakr et al. 2006, Akinci et al. 2000, Can et al. 2009, Morden et al. 2005). Nevertheless, regarding many meta-analysis and reviews, midline closure and lay open techniques are still wide used and recommended as simple and effective procedures in the surgical treatment of uncomplicated CPS (Tocchi et al. 2008, Hølmekbakk & Nesbakken 2005, Kareem 2006, Lorant et al. 2011). In our clinic lay open technique is not commonly used in the treatment of uncomplicated CPS because of prolonged hospital stay, patient's and surgeon's discomfort considering long healing process, need for long term specialist wound care and patient's complaints about poor quality of life, although open healing was associated with a significantly lower recurrence rate than primary surgical closure, reducing the risk of recurrence by 35% when compared with any closed method (AL-Khamis et al. 2010).

Table 1. Results after excision and midline closure

Type of surgery	Days of hospitalization (mean)	Complication rate (%)	Recurrence (%)
MC* without drainage (n=30)	4.33	26.6	16.6
MC* + active drainage (n=30)	4.93	13.3	10
MC* + passive drainage (n=30)	4.80	20	13.3
Total (n=90)	4.68	20	13.3

*MC – midline closure

For many years our institution had a capacity and regional importance of a general hospital. Due to a regional and political split it has grown recently into The University clinical hospital. Its capacities in equipment, space and staff had grown for at least three times in the last ten years. Even though new techniques and knowledge were accepted, we are still in a lack of a uniform opinion regarding the treatment of CPS which brings us to non satisfactory results. Only recently we have started to use off midline closure and we are still missing adequate data to make a conclusion, but preliminary results are promising.

CONCLUSION

With this study we aimed to make a small contribution in solving dilemma about the method of choice for the treatment of CPS. General conclusion is that primary midline closure is not a satisfactory method in the treatment of CPS, especially without drainage, leading to numerous complications and high rate of recurrence. And, regarding other scientific papers, we should move towards implementing excision and off - midline closure as a method of choice in the treatment of CPS.

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References

1. AL-Khamis A, McCallum I, King PM, Bruce J: Healing by primary versus secondary intention after surgical treatment for pilonidal sinus. *Cochrane Database Syst Rev* 2010; 20: CD006213. doi: 10.1002/14651858.CD006213.pub3.
2. Sakr M, Habib M, Shaheed A: Female Pelvic & Med Reconstr Surg 2006; 12:201.
3. Bendewald FP & Cima RR: Pilonidal disease. *Clin Colon Recta Surg* 2007; 20:8695.
4. Akinci OF, Kurt M, Terzi A, Atak I, Subasi IE, Akbilgic O: Natal cleft deeper in patients with pilonidal sinus: implications for choice of surgical procedure. *Dis Colon Rectum* 2009; 52:1000-2.
5. Karydakis GE: New approach to the problem of pilonidal sinus. *Lancet* 1973; 22:1414-5.
6. Karydakis GE: Easy and successful treatment of pilonidal sinus after explanation of its causative process. *Aust N Z J Surg* 1992; 62:385-389.
7. Bascom J & Bascom T: Failed pilonidal surgery: new paradigm and new operation leading to cures. *Arch Surg* 2002; 137:1146-50.
8. Bascom J & Bascom T: Utility of the cleft lift procedure in refractory pilonidal disease. *Am J Surg* 2007; 193:606-9.
9. Akinci OF, Coskun A, Uzunköy A: Simple and effective surgical treatment of pilonidal sinus: asymmetric excision and primary closure using suction drain and subcuticular skin closure. *Dis Colon Rectum* 2000; 43:701-6.
10. Can MF, Sevinc MM, Yilmaz M: Comparison of Karydakis flap reconstruction versus primary midline closure in sacroco-cygeal pilonidal disease: results of 200 military service members. *Surg Today* 2009; 39:580-6.
11. Morden P, Drongowski RA, Geiger JD, Hirschl RB, Teitelbaum DH: Comparison of Karydakis versus midline excision for treatment of pilonidal sinus disease. *Pediatr Surg Int* 2005; 21:793-6.
12. Tocchi A, Mazzoni G, Bononi M, Fornasari V, Miccini M, Drumo A, et al.: Outcome of chronic pilonidal disease treatment after ambulatory plain midline excision and primary suture. *Am J Surg* 2008; 196:28-33.
13. Holmebakk T & Nesbakken A: Surgery for pilonidal disease. *Scand J Surg* 2005; 94:43-6.
14. Kareem TS: Surgical treatment of chronic sacroco-cygeal pilonidal sinus. Open method versus primary closure. *Saudi Med J* 2006; 27:1534-7.
15. Lorant T, Ribbe I, Mahteme H, Gustafsson UM, Graf W: Sinus excision and primary closure versus laying open in pilonidal disease: a prospective randomized trial. *Dis Colon Rectum* 2011; 54:300-5.

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