Evaluation of excision and midline repair of sacrococcygeal pilonidal sinus

Ahmed El Kholy (MD), Mustafa Salama (MD) and Mohammed Ali

Department of General Surgery, Faculty of Medicine, Al-Azhar University, Egypt
Zooka_star@yahoo.com

Abstract: Background: Pilonidal sinus is a considered a common disabling condition of young adults. Observed most commonly in people aged 15-30 years, with a 3:1 male-to-female ratio, it occurs after puberty, when sex hormones are known to affect the pilosebaceous gland and change healthy body hair growth. **Objectives:** evaluation of excision with primary midline closure of sacro-coccygeal Pilonidal sinus disease in terms of assessment disease recurrence and patient discomfort. **Patient and Methods:** Male or female patients with 1st or recurrent Pilonidal sinusin the period between January and April 2016. Operations were done in Defense Industries Medical Center. All patients were admitted in the morning on the day of the surgery. They were all counseled and fully informed in the outpatient clinic and before the operation about the nature of the procedure and complications. The cases ranged from simple chronic midline sinuses to long branched ones. The mean age of the patients was 33.45 (range 17–33). All patients were followed up in the outpatient clinic 6 months after the operation. **Results:** In 40 patients, post-operative complications were as follow: Infection occurred in 4 patients (10%). No hematoma occurred. Healing by secondary intention occurred in 2 patients (5%). Recurrence within 6months occurred in 4 patients (10%) six months post-operatively. 20% of 1ry pilonidal cases developed recurrence, while 40% of recurrent pilonidal cases developed recurrence. All patients developed recurrence already had proceeded by infection. Wound dehiscence developed after the removal of sutures in 2 patient (5%). These 2 patients were obese & diabetic. These factors delay wound healing, elongate duration of drainage and favor infection &recurrence. **Conclusion:** Alternative operative techniques for pilonidal sinus repair creating a lateral wound or the various skin flap procedures may be promising alternatives.

[Ahmed El Kholy, Mustafa Salama and Mohammed Ali. **Evaluation of excision and midline repair of sacrococcygeal pilonidal sinus.** *Nat Sci* 2017;15(3):55-59]. ISSN 1545-0740 (print); ISSN 2375-7167 (online). http://www.sciencepub.net/nature. 7. doi:10.7537/marsnsj150317.07.

Keywords: Evaluation; excision; midline; repair; sacrococcygeal; pilonidal; sinus

1. Introduction

Pilonidal sinus is a considered a common disabling condition of young adults. The first record of surgical cure of pilonidal cyst was made by **Anderson** in 1847, which described incision and removal of hairs from the cavity. **Hodges** introduced the name pilonidal sinus disease in 1880 & is derived from the Latin Pilus, which means hair, and nidus, which means nest. It is only a descriptive term and has no histological or etiological basis and only applied to the post sacral type ***(Bascom, 1980 and Beck, et al. 2011).***

Sacrococcygeal pilonidal sinus is a common disorder among young adults. Observed most commonly in people aged 15-30 years, with a 3:1 male-to-female ratio, it occurs after puberty, when sex hormones are known to affect the pilosebaceous gland and change healthy body hair growth. The onset of pilonidal disease is rare in people older than 40 years ***(Doll, et al. 2008).***

Predisposing factors to pilonidal disease are believed to include obesity, sedentary life style or occupation, deep natal cleft and family history of pilonidal disease ***(Spivak, et al. 1996).***

It was formerly described to a defect in development leading to subcutaneous inclusion of epidermal structures, but it now seems more likely that they are acquired lesions, resulting from penetration of skin by hairs or infection within a hair follicle ***(Edward, 1977 and Mattei, 2011).***

Most of the pilonidal sinuses occur in the post sacral region but they may be found in the axillae, groins, interdigital webs and feet. There are often two or more sinus openings, leading to tracks of varying depth ***(Edward, 1977 and Mattei, 2011).***

A variety of techniques have been described for treatment of this condition, phenol injection, diathermy coagulation, cryosurgery and simple incision and drainage ***(Kronberg, et al. 1985 and Al-Khamis, et al. 2010).***

Excision either without suture or combined with one of several methods for primary closure is a major alternative. However, the stubborn resistance of this condition to a surgical cure is well recognized whichever technique is practiced. The ideal treatment is therefore controversial. As the recurrence rate following various procedures is almost similar, a shortest inpatient stay and minimal inconvenience and off-work time become important consideration ***(Kronberg, et al. 1985 and Al-Khamis, et al. 2010).***

2. Patient and Methods

The study included 40 patients in the period between January and April 2016. Operations were done in Defense Industries Medical Center. All patients were proven by examination to have pilonidal sinus. All patients were treated surgically by excision and midline repair.

All patients were admitted in the morning on the day of the surgery. They were all counseled and fully informed in the outpatient clinic and before the operation about the nature of the procedure and complications.

The cases ranged from simple chronic midline sinuses to long branched ones. The mean age of the patients was 33.45 (range 17–33). All patients were followed up in the outpatient clinic 6 months after the operation.

Inclusion criteria:

All patients presenting to outpatient clinic with chronic pilonidal sinus, whether primary or recurrent whatever it is simple chronic sinus or long branched ones.

Cases with extensive or bilateral gluteal involvement, having more lateral, caudal or cephalic pits or openings, multiple recurrences and unhealed chronic wounds with paramedian fistula after pilonidal surgery were included.

Exclusion criteria:

Patients presenting with acute pilonidal abscess, asymptomatic pilonidal sinus, simple pilonidal sinus and cases combined with perianal fistula.

Operative technique:

•All operations were done under general or spinal anesthesia with the patient in the prone jack knife position. Table slightly flexed at the level of hips, the buttocks were always taped apart by an adhesive plaster.

•The hair around the natal cleft is cleanly shaven before the operation.

•The pathologic area to be excised is marked.

•The operative site is prepared with nonalcoholic clear antiseptic solution.

•All patients received an initial intravenous dose of 3rd generation Cephalosporines & Metronidazole at the start of operation.

•Simple biconvex ‘elliptical’ excision only just crossing the midline to excise the sinus or sinuses. This is guided by methylene blue injection and / or probing. Methylene blue in a 5 ml syringe connected to a 22 French cannula is injected into the sinus orifices just before the incision is placed.

•The pilonidal sinuses together with all secondary orifices are encircled by an elliptical incision" caudal and cranial ends". The incision was carried vertically down to the fascia overlying the sacrum. Careful haemostasis with diathermy was fulfilled.

•Midline repair in natal fold by non-absorbable, interrupted sutures without closure of S.C. layers to avoid any S.C. reaction preventing collection, infection & recurrence.

•Suction drain 18 is a routine lateral to the lower end of the wound.

Postoperative Instructions:

•Antibiotics: continued until removal of the drain. Oral 3rd generation Cephalosporines & Metronidazole.

•Analgesics: NSAID.

•Dressing: every day from the 3rd day postoperative.

•Suction drain 18 to be removed when drain > 25cc /day or within 7-10 days postoperative.

•Patient is encouraged to lie on his back straightaway, which helps to obliterate any dead space underneath the approximated edges and also helps hemostasis.

•The dressing applied in the operating theatre is not removed till the 3rd day.

•Nearly all patients were discharged home the next postoperative day and the rest within 48 hours.

•Patient should be instructed to avoid sitting or squatting at all in the first week to avoid wound tension.

•Half number of stitches to be removed 10 days postoperative & the other half to be removed after 3weeks.

•Patient should be instructed to avoid driving rough cars.

•Local hygiene of natal fold:

-Shower 2-3 times /day.

-Shaving every 3-4 weeks.

- Destruction of hair follicles by laser.

- Rubbing the furrow daily with a rough towel after bathing to remove loose hairs.

- Regularly eliminate the hairs in the pilonidal sinus region with depilatory cream.

3. Results

All patients were treated surgically by excision and midline repair. Duration of symptoms ranged from 1 to 18 months with a mean of 5.65 months. 75% of patients (30 patients) presented by 1ry pilonidal sinus, while 25% of patients (10 patients) presented by recurrent pilonidal sinus.

The duration of hospital stay ranged from 3 to 5 days with a mean of 3.90 days. The duration of drain ranged from 3 to 8 days with a mean of 4.25 days.

Post-operative complications were as follow: Infection occurred in 4 patients (10%). No hematoma occurred. Healing by secondary intention occurred in 2 patients (5%). Recurrence within 6months occurred in

4 patients (10%) six months post-operatively. 20% of 1ry pilonidal cases developed recurrence, while 40% of recurrent pilonidal cases developed recurrence.

All patients developed recurrence already had proceeded by infection. Wound dehiscence developed after the removal of sutures in 2 patient (5%). These 2 patients were obese & diabetic. These factors delay wound healing, elongate duration of drainage and favor infection &recurrence.

4. Discussion

Pilonidal disease is an infection under the skin in the gluteal cleft, which is a common source of morbidity and loss of work productivity in healthy young adults ***(Khanna, et al. 2011).***

The origin of pilonidal sinus has been a subject of interest for many years. It was thought to be of congenital origin, but most authors now believe that the majority of pilonidal disease cases are acquired and as a result of a foreign body response to entrapped hair ***(Bendewald, et al. 2007).***

Natal cleft pilonidal disease is prevalent worldwide, although it is probably more common in hot humid regions such as the Middle East and Mediterranean basin. Patients may present after months and even years of repeated episodes of infection, resulting in deep branching tracks and multiple skin pits ***(Marzouk, et al. 2008).***

Principles of management need eradication of the sinus tracts complete healing of the overlying skin, and prevention of recurrence ***(Lee, et al. 2008).***

After more than half a century, the best surgery for sacro-coccygeal pilonidal sinus disease is still a subject of debate, and methods ranging from extensive excisions with complicated reconstructive procedures to limited debridement are being recommended with equal enthusiasm ***(Inan, et al. 2011).***

Treatment of pilonidal sinus includes surgical& non-surgical methods. Non-surgical methods as: Phenol injection ***(Dag, et al. 2012)***, Fibrin glue ***(Isik, et al. 2014)*** & ND-YAG laser ***(Jensen, 2012).***

A large number of surgical techniques (with varying complexity) have been described in the literature for the treatment of this disease. These include: Excision and healing by open granulation ***(Wiley, 2011),*** Marsupialization ***(Abramson, 1978)***, Excision and primary closure ***(Wiley, 2011),*** Excision and modified Limberg flap reconstruction ***(Mahdy, 2008),*** Excision and adipo-fasciocutaneous flap ***(Mahdy, 2008),*** Z- Plasty for treatment of pilonidal sinus ***(Mahdy, 2008),*** Karydakis procedure ***(Anderson, et al. 2008),*** Bascom's technique ***(Gips, 2008),*** Endoscopic Pilonidal Sinus Treatment ***(Meinero, et al. 2013).***

Primary closure was reported to be the method of choice in treatment of pilonidal disease. It has the advantage of shorter wound healing and less time off from work. However, the recurrence potential of the disease is still a major problem ***(Unalp, et al. 2007; Mentes, et al. 2006 and Akinci, et al. 2000).***

The present study included 40 patients, 36 (90%) were males and 4 (10%) were females. These results are in agreement with that reported by ***(Mentes, et al. 2006),*** of the 493 patients, 490 (99.4%) were males and 3 (0.6%) were females. Their results reflected a fact that the disease is nearly exclusive to males and the percentages of males are higher than reported in the present work. This difference may be attributed to different socio-cultural factors and to small sample size of the present study in comparison to their study.

In this study, the most observed symptoms alone or together were pain in 30 cases (75%), swelling in 20 cases (50%) and occasional discharge in 16 cases (40%). These results are comparable to those reported by ***(Mentes, et al. 2006)*** who reported that, the most observed symptoms alone or together were pain in 82%, mass or swelling in 80% and occasional discharge in 36%. On the other hand, ***(Sondenaa, et al. 1995***) noted discharge in 66%, swelling in 50% and pain in 35% of patients with chronic pilonidal disease at presentation. This difference reflects the wide variation of presentation of chronic pilonidal sinus.

In this study, Fluid diet for 3-5 days with a Suction drain 18. These results are shorter than those reported by ***(Mentes, et al. 2006)*** who reported that, the mean duration of hospital stay was 5.51±2.85 (range 2-17) days. This may attributed to the large number of cases they included in their study with increased number of complicated cases that needs other surgical interference. Average hospital stay was 1.63±0.67 days with modified Limberg's flap for 30 patients as reported by ***(Shabbir, et al. 2014).*** The hospital stay ranged from 3-5 days (mean = 4 ±1.1 days) in open technique as reported by ***(Al-Salamah, et al. 2007).***

In this study, the duration of drain ranged from 3 to 8 days with a mean of 4.25 days. ***(Kumar, et al. 2014)*** reported drain removal at a median of 7 days with Karydakis flap repair.

In this study, no hematoma occurred due to presence of suction drain ***(Krand, et al. 2009)*** believed that performing a hemostasis by electrocautery and reduction of dead sections in the surgical area reduces the development of hematoma to a minimum and eliminates the need for drainage.

In this study, wound dehiscence developed after the removal of sutures in 2 patients (5%). These 2 patients were obese & diabetic. These factors delay wound healing, elongate duration of drainage, favor infection &recurrence. These results are in agreement with that reported by ***(Saber, 2014),*** off-midline flap

closures. Wound dehiscence occurred in 12 patients (6%) of total 200 patients.

In this study, infection occurred in 4 patients (10%). Healing by secondary intention occurred in 2 patients (5%). These results are in agreement with that reported by ***(Ommer, et al. 2004).*** Their study included 34 patients whom undergone midline closure from total 45 patients. Wound infection occurred in 5 patients (15%). On the other hand, our results are more than that reported by ***(Saber, 2014),*** off-midline flap closures. Infection occurred in 12 patients (6%) of total 200 patients. Also, our results are more than open techniques which had 5% infection rate as mentioned on Pilonidal **org (2010).** This low infection rate because during the wound is normally cleaned out and re-packed with gauze at least twice daily.

In this study, recurrence occurred in 4 patients (10%) six months post-operatively. These results are less than those reported by ***(Iesalnieks, et al. 2003)*** who reported that, recurrent pilonidal sinus occurred in 18 cases (42%); Follow-up was possible for 65 patients (82%) for a median of 50 months.

This difference may be attributed to small sample size & short follow-up of the present study in comparison to their study.

(Onder, et al. 2012) reported recurrence rate for flap reconstruction was 9% (1 patient among 11 patients) and 10% (3 patients among 30 patients) for the open technique.

In conclusion, alternative operative techniques creating a lateral wound or the various skin flap procedures may be promising alternatives ***(Iesalnieks, et al. 2003)***

The midline excision was reported to have a high rate of complications and recurrences. The depth of the intergluteal sulcus and the vacuum effect created between the buttock and incision scar in the intergluteal line are responsible for recurrence ***(Mentes, et al. 2008).***

References

1. Al-Salamah, Hussain, Mirza (2007): Excision with or without primary closure for pilonidal sinus disease. Journal of Pakistan medical association Aug; 57(8):388-91.
2. Anderson J. H., Yip C.O., Nagabhushan J. S., and Connelly S. J. (2008): "Day-case Karydakis flap for pilonidal sinus," Diseases of the Colon and Rectum, vol. 51, no. 1, pp. 134–138.
3. Bascom J (1980). Pilonidaldisease: originfrom follicles of hairs and results of follicle removal as treatment. Surgery; 87(5):567–72.
4. Bascom J, Bascom T (2002). Failed pilonidal surgery. New paradigm and new operation leading to cures. Arch Surg; 137(10):1146–1150.
5. Beck David (2013): Handbook of Colorectal Surgery, Second Edition - Page 392.
6. Cameron John L., Cameron Andrew M (2013): Current Surgical Therapy, p295.
7. Dag A, Colak T, Turkmenoglu O, Sozutek A, Gundogdu R. (2012): Phenol procedure for pilonidal sinus disease and risk factors for treatment failure. Surgery, 151(1):113-7.
8. Davis LS and Starr KW (1945): Infected pilonidal sinus. Surg. Gync. Obstet.; 81:309-19.
9. Edward ME. (1977): Pilonidal sinus. A five year appraisal of millar – lord treament. Birt. J. surg.; p 67.
10. Foss MVL (1970): Pilonidal sinus excision and closure. Proc. Soc. Med.; 63:8.
11. Givel Jean-Claude, Mortensen Neil J. Mc. (2009): Anorectal and Colonic Diseases, p374:382.
12. Goligher JC (1980): Pilonidal sinus. Surgery of the Anus, Rectum and Colon. 4th edition, London, Bailliere Tindall; pp 200:14.
13. Harold Alexander, Lehar P.A., Klaus E. Matzel (2008): Coloproctology, p77.
14. Horwood, J., Hanratty, D., Chandran, P., & Billings, P. (2012). Primary closure or rhomboid excision and Limberg flap for the management of primary sacrococcygeal pilonidal disease? A meta‐analysis of randomized controlled trials. Colorectal Disease, 14(2), 143-151.
15. IesalnieksI, Fürst A, Rentsch M, Jauch KW (2003): Primary midline closure after excision of a pilonidal sinus is associated with a high recurrence rate. Chirurg. May; 74(5):461-8.
16. Inan A, Surgit O, Sen M, Bozer M, Dener C (2011): One day surgery for pilonidal disease. Bratisl Lek Listy; 112:572-574.
17. Jeffrey A. Plugh, Vivek Mehta, Ravi Bhargava, and Keith Aronyk (2008): Surgery of the Pediatric Spine, p190.
18. Jensen Lindholt (2012): Lasers Med Sci. Mar; 27(2):505-8.
19. Keighley MR and William NS (1993): Anal disease, Pilonidal sinus: Surgery of anus, rectum and colon; Saunders WB Co., London; 17:467-90.
20. Khanna A and Rombeau JL.(2011): Pilonidal disease. Clin Colon Rectal Surg 2011; 24:46-53.
21. Kumar and Sutradhar (2014): Karydakis procedure for sacrococcygeal pilonidal sinus disease. Indian J Plast Surg. Sep-Dec; 47(3):402-6.
22. McCallum IJ, King PM, Bruce J (2008): Healing by primary closure versus open healing after surgery for pilonidal sinus: systematic review and meta-analysis. BMJ 336:868–871.

23. Meinero, P., Mori, L., & Gasloli, G. (2014). Endoscopic pilonidal sinus treatment (EP Si. T.). Techniques in coloproctology, 18(4), 389-392.
24. Maghsoudi, H., Nezami, N., & Ghamari, A. A. (2011). Ambulatory treatment of chronic pilonidal sinuses with lateral incision and primary suture. Canadian Journal of Surgery, 54(2), 78.
25. Onder A, Girgin S, Kapan M, Toker M, Arikanoglu Z, Palanci Y. (2012): Pilonidal sinus disease: risk factors for postoperative complications and recurrence. Int Surg. 97(3):224–229.
26. Saber Aly (2014): Modified Off-Midline Closure of Pilonidal Sinus Disease. N Am J Med Sci. 2014 May; 6(5): 210–214.
27. Shabbir F, Ayyaz M, Farooka MW, Toor AA, Sarwar H, Malik AA. (2014): Journal of Pakistan medical association Nov; 64(11):1270-3. Modified Limberg's flap versus primary closure for treatment of pilonidal sinus disease: a comparative study.

2/7/2017