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Sacrococcygeal Pilonidal Disease

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The ideal treatment for pilonidal disease remains controversial with many accepted procedures in current clinical use. This case series is focused on the results of the Bascom procedure for the treatment of sacrococcygeal pilonidal disease. The records of 127 consecutive patients treated by the authors for sacrococcygeal pilonidal disease were reviewed. The Bascom surgical procedure was performed on 127 consecutive patients in a clinical surgical practice. The series included 98 male and 29 female patients. The mean age of the patients reported in this series was 23 years, with a range of 14 to 49 years of age. The lateral incision healed in a mean of 12 days, with a range of 8 to 30 days. Recurrent disease occurred in 3 patients in this series. The Bascom surgical procedure for the treatment of sacrococcygeal pilonidal disease was found in this clinical practice series to have an excellent cure rate with a low recurrence rate. Patient satisfaction was high.

Key words: Sacrococcygeal pilonidal disease – Bascom procedure

Sacrococcygeal pilonidal disease is a common disease in young active adults. Pilonidal disease includes asymptomatic sinus, acute abscess, chronic sinus disease, and recurrent pilonidal disease. The disease process occurs most frequently in the sacrococcygeal area, although the ailment can occur elsewhere.[1] Pilonidal disease occurs predominantly in men (80%).[2] The peak incidence of pilonidal disease occurs in young adults between the ages of 15 and 25.[3] Its occurrence after the age of 45 is uncommon.[3] Pilonidal disease is now widely accepted to be an acquired phenomenon[3] with a reported incidence of 26 per 100,000 population.[4] Several lines of evidence that suggest an acquired cause of pilonidal disease include (1) the disease does not present at birth but in young adults; (2) it is more frequent in men of hirsute complexion; and (3) certain occupations that involve prolonged sitting, or professional driving, predispose people to develop pilonidal disease.[1]

The current varied theories of the acquired pathogenesis of pilonidal disease are based on the research reported independently by Karydakis[5] and Bascom.[6] Karydakis, in a 35-year study of 6545 cases of pilonidal disease, proposed that hair with chisel-like roots is forced into the depth of the natal cleft.[5] A foreign body reaction develops, which is accompanied by infection and the subsequent development of the primary pilonidal sinus.[5] In his large series, Karydakis described an operative procedure with asymmetric closure away from the midline, which has a reported high curative success rate.[5]

Bascom's research studies demonstrated that a deep natal cleft is the location of the main problem

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where the epidermis is exposed to moisture, anaerobic conditions, hair, debris, and bacteria.[6] Hair follicles in the natal cleft become distended with keratin, which is prone to infection.[6] Research evidence from Bascom's studies demonstrated that the midline pits are distorted hair follicles.[6] Hair is mechanically forced through the midline epidermis by negative pressure created by the moving buttock, which ultimately results in the development of a midline pit.[6] Infected material in the follicle is then pulled and pushed into deeper fat to create the acute abscess of pilonidal disease.[6] A chronic abscess often persists and matures after drainage of the acute pilonidal abscess. The external openings are usually located 4 to 5 cm above the anus in the midline. The external openings are designated ''the midline pits'' by Bascom.[6] The midline pit extends into a subcutaneous fibrous tract (pilonidal sinus). This pilonidal sinus frequently develops a secondary cutaneous opening, located off the midline. This cutaneous fistula, leading from the pilonidal abscess sinus, usually opens 1 to 4 cm from the midline and in approximately 90% of cases opens cephalad to the midline pits.[7]

Despite the frequent occurrence of chronic pilonidal disease, the ideal treatment for the problem remains controversial, with many accepted procedures in current clinical use. Ideally, the optimum treatment should result in a high cure rate with a low recurrence rate, be accomplished without the need for extensive hospitalization, and involve minimal pain, minimal loss of work, and early return to normal physical activity.

Materials and Methods

The Bascom procedure was used to treat 127 consecutive patients with chronic pilonidal disease. The procedure was performed under general endotracheal anesthesia with the patient in the prone position. The sacrococcygeal area was cleared of hair using a hair clipper. The chronic sinus cavity was opened through an incision 2 cm lateral and parallel to the natal cleft. The pilonidal abscess cavity was curetted, which removed all chronic infected granulation tissue and hair. All midline holes were removed using a disposable skin biopsy punch. A 3- to 5-mm disposable biopsy punch was used depending on the size of the midline pit. The midline holes were primarily closed using a subcuticular suture of 3-O polyglactin. A fibrous, fatty tissue flap consisting of the posterior wall of the abscess cavity was mobilized deep to the midline pits. This tissue flap was created by incising the fibrous boundary of the posterior abscess cavity into the fat of the opposite buttock, thus releasing the midline pits from the postsacral fascia. The thickness of this flap was dependent upon the depth of the abscess cavity. This flap was secured to the overlying bridge of skin between the midline pits and the lateral drainage incision with large sutures of 3-O polypropylene. The lateral drainage incision was loosely approximated with interrupted sutures of 3-O polypropylene. Postoperatively, all patients were instructed to shower daily until the surgical site had completely healed. To prevent the development of a postoperative surgical site infection or cellulitis, all postoperative patients were placed on trimethoprim/sulfamethoxazole 60 mg/800 mg daily until all incisions were healed and all sutures were removed. Sutures were removed approximately 2 to 3 weeks after the surgical procedure. All patients were reexamined weekly until the surgical site had completely healed. All patients were instructed in meticulous hair control by weekly shaving of all hair within the natal cleft from 2 cm from the anus to the presacral area after the operative procedure until the age of 40. Patients were encouraged to return to work when (1) drainage from the surgical site had stopped and (2) narcotic pain medication was no longer required.

Results

Bascom's procedure for sacrococcygeal pilonidal disease was performed on 127 consecutive patients in a clinical surgical practice in various community hospitals. The series included 98 male and 29 female patients. The mean age of the patients reported in this series was 23 years with a range of 14 to 49 years of age. All patients in this series had acute and/or chronic sacrococcygeal pilonidal disease, and 5 patients had one previous failed surgical procedure. All patients in this series were seen in office follow-up for at least 1 year after completion of the Bascom procedure. Most patients in this series were then reevaluated yearly. Follow-up of this specific group of patients has been excellent. The only patients lost to follow-up were due to either a patient's death or the patient moving a significantly long distance from our clinical office practice location. Approximately 12 patients in this series have been lost for follow-up evaluation after the initial 2-year postoperative period.

The Bascom procedure was completed as an outpatient in 61 patients and with an overnight hospitalization in 66 patients. The surgical procedure was completed with the patient under general anesthesia and in the prone position. All patients

had at least 2 midline pits, and 93% of patients had a lateral draining sinus cephalad to the midline pits. One hour prior to the surgical procedure, all patients received 500 mg metronidazole and 1 g ceftriaxone intravenously. Postoperatively, the lateral incision healed in a mean of 12 days with a range of 8 to 30 days. Closure of the midline pit removal site by primary healing occurred in 121 patients and by granulation closure in 7 patients. The lateral incision healed primarily without a postoperative infection in each patient. Recurrent disease occurred in 3 patients in this series between 1 and 2 years after the initial surgical procedure. All 3 patients were treated by a repeat Bascom procedure. The cause of failure in all 3 patients was either failure to remove an existing midline pit or the possibility of development of a new midline pit. The repeat Bascom procedure was successful in all 3 patients at the 2-year postoperative examination.

Analysis of the patients' return to work could not be reliably determined from review of the postoperative data from this clinical series. Patients who were students, teachers, or who were employed in a sedentary sitting work environment were able to return to customary employment in a range of 7 to 10 days. Patients employed in construction, long-distance driving, or any strenuous physical labor were instructed to return to work 1 month after the surgical procedure regardless of the rapidity of the healing process.

Discussion

The optimal treatment for sacrococcygeal pilonidal disease has not been clearly defined. Consequently, a spectrum of treatment of chronic pilonidal disease varies from nonoperative treatment[8] to complex advancement flap operations.[9,10] The initial treatment of an acute pilonidal abscess occurring in the sacrococcygeal area is by incision, drainage, and curettage to remove hair and debris, under local anesthesia. The local area is treated with a sitz bath for 15 to 30 minutes once or twice daily. Oral antibiotics are always administered to the patient during the period of acute inflammation and infection associated with an acute abscess. Surgical treatment by the Bascom procedure should be planned when most of the acute inflammation and infection have significantly or completely improved and resolved. Prior to the use of the Bascom procedure, our clinic used a complete surgical excision with primary midline closure of the sacrococcygeal incision. Use of complete excision of chronic sacrococcygeal pilonidal disease was discontinued because of frequent associated postoperative problems and complications. The degree and duration of postoperative pain and disability were also excessive. Wound healing was slow and occasionally associated with a postoperative surgical site infection. Disruption of the surgical incision site due to daily activities occasionally occurred. The recurrence rate of sacrococcygeal pilonidal disease after complete excision with primary closure was approximately 21% in our previous clinical experience prior to conversion to the Bascom procedure. Recurrent disease occurred in only 3 patients in this consecutive series of 127 patients with use of the Bascom procedure for treatment of sacrococcygeal pilonidal disease.

The Bascom procedure is a logical progression from the significant surgical treatment advances developed and reported for the Karydakis procedure.[11] The Karydakis procedure excises the sinus using a vertical eccentric elliptical incision. A thick flap is created by undercutting the medial edge and advancing it across the midline to produce a lateral vertical scar. The entire suture line is lateralized to reduce the risk of recurrence. Bascom recommended and subsequently demonstrated that a radical surgical excision is not warranted.[6] The chronic sinus cavity is approached from a lateral incision 2 to 3 cm from the midline natal cleft. The sinus cavity is cleared of hair and debris with curettage of granulation tissue. Midline pits are excised, with the pit excision sites closed with a subcuticular suture. Failure to remove every midline pit will frequently result in recurrence of the pilonidal disease process. The flap of tissue developed and mobilized in the Bascom procedure clinically decreases the depth of the natal cleft and also widens the natal cleft. The subsequent surgical alteration in the anatomy of the natal cleft decreases the negative pressure and mechanical forces created by the moving buttocks, which force hair through the midline epidermis. The surgical alteration of the depth of the natal cleft decreases moisture, hypoxia, and bacterial burden of the epidermis of this anatomic cleft.

Several modifications of the Bascom technique were developed and utilized with our increasing clinical experience with the procedure. Midline pits were removed using a 3- to 5-mm disposable punch biopsy. The midline pits are more accurately and completely removed with a punch biopsy as compared with excision using a scalpel. The pilonidal cutaneous lateral draining sinus tract was also excised, with loose approximation of the subcutaneous tract with absorbable sutures and loose approx-

imation of the skin with 3-O polypropylene sutures. The flap of fibrous and fatty tissue was clinically found to require placement between the abscess cavity and the lateral draining sinus. Failure to place this subcutaneous tissue exactly will frequently result in a chronic draining sinus, which will heal only after a prolonged postoperative treatment period. To prevent the development of postoperative surgical site infections or cellulitis, all postoperative patients were placed on trimethoprim/sulfamethoxazole 60 mg/800 mg daily until all incisions were healed and all cutaneous sutures were removed. Postoperative oral antibiotics were found in our experience to prevent the development of a surgical site infection or cellulitis in this series of patients. Each patient was instructed to take a shower daily for the first month after the surgical procedure. Each patient was instructed to shave the hair from the natal cleft on a weekly basis postoperatively until age 40.

A large series of 161 patients treated by Bascom with drainage and pit excision was reported in 1983.[12] Bascom described healing in 3 weeks, disability of 1 day, no hospitalization, and satisfactory long-term control of pilonidal disease.[12] Mosquera and Quayle reported in 1995 a series of 41 patients treated with the Bascom procedure for pilonidal disease.[13] General anesthesia was used in this series. The median hospital stay in this series was 2 days. The lateral incision healed at a mean of 39 days. A recurrence occurred in 3 patients (7.3%) in this series.[13] Senapati *et al* reported in 2000 a clinical series of the Bascom procedure of 218 patients.[14] Their reported recurrence rate of 10% occurred in a large clinical series in which the Bascom procedure was completed as an outpatient procedure with local anesthesia in 84% of patients.[14] Postoperative abscess formation occurred in 8% of this clinical series.[14] Parvaiz and Kennedy reported a similar experience with the Bascom procedure in 2001.[15] They related a postoperative infection rate of 11% and recurrence rate of 9%.[15] All patients in this clinical series were treated with the Bascom procedure as an outpatient procedure with general anesthesia.[15] McCallum *et al* reported in 2008 a systematic review and meta-analysis of the relative effects of open healing compared with primary closure for pilonidal sinus as an optimal closure method (midline versus off-midline).[4] Surgical incisions took longer to heal after midline closure as compared with off-midline closure.[4] Also, the rate of infection and rate of recurrence were higher with a midline closure.[4] McCallum *et al* concluded from this meta-analysis that surgical off-midline incisions heal more quickly after primary closure as compared with midline closure for treatment of sacrococcygeal pilonidal disease.[4] Off-midline closure procedures were found to have significantly decreased healing time, decreased recurrence rate, and decreased surgical site infection rate.[4]

The clinical results obtained after a review of this series of the treatment of sacrococcygeal pilonidal disease utilizing the Bascom procedure are clearly encouraging. Patients were very satisfied with the results of the surgical treatment of their sacrococcygeal pilonidal disease utilizing the off-midline Bascom procedure. The clinical results of this series demonstrated an excellent cure rate with a low recurrence rate comparable with the published results of other clinical studies using the Bascom procedure. This report of the use of the Bascom procedure in clinical practice adds additional evidence to support its use as a primary surgical procedure for the treatment of sacrococcygeal pilonidal disease.

References

1. Hull TL, Wu J. Pilonial disease. *Surg Clin N Am* 2002;**82**(6):1169–1185
2. Guyuron B, Dinner MI, Dowden RV. Excision and grafting in treatment of recurrent pilonidal sinus disease. *Surg Gynecol Obstet* 1983;**156**(2):201–204
3. Lee PJ, Raniga S, Biyani DK, Watson AJ, Faragher IG, Frizelle FA. Sacrococcygeal pilonidal disease. *Colorectal Dis* 2008;**10**(7):639–652
4. McCallum LJ, King PM, Bruce J. Healing by primary closure versus open healing after surgery for pilonidal sinus: systematic review and meta-analysis. *BMJ* 2008;**336**(7649):868–871
5. Karydakis GE. Easy and successful treatment of pilonidal sinus after explanation of its causative process. *Aust N Z J Surg* 1992;**62**(5):385–389
6. Bascom J. Pilonidal disease: origin from follicles of hairs and results of follicle removal as treatment. *Surgery* 1980;**87**(6):567–572
7. Velasco AL, Dunlap WW. Pilonidal disease and hydradenitis. *Surg Clin N Am* 2009;**89**(3):689–701
8. Armstrong JH, Barcia PJ. Pilonidal sinus disease. The conservative approach. *Arch Surg* 1994;**129**(9):914–917
9. Lasheen AE, Saad K, Raslan M. Crossed triangular flaps technique for surgical treatment of chronic pilonidal sinus disease. *Arch Surg* 2008;**143**(5):503–505
10. Unalp HR, Derici H, Kamer E, Nazli O, Onal MA. Lower recurrence rate for Limberg vs. V-Y flap for pilonidal sinus. *Dis Colon Rectum* 2007;**50**(12):1436–1444
11. Karydakis GE. New approach to the problem of pilonidal sinus. *Lancet* 1973;**2**(2):1414–1415
12. Bascom J. Pilonidal disease: long term results of follicle removal. *Dis Colon Rectum* 1983;**26**(12):800–807
13. Mosquera DA, Quayle JB. Bascom's operation for pilonidal sinus. *J R Soc Med* 1995;**88**(2):45–46
14. Senapati A, Cripps NP, Thompson MR. Bascom's operation in the day-surgical management of symptomatic pilonidal sinus. *Br J Surg* 2000;**87**(9):1067–1070
15. Parvaiz A, Kennedy R. Bascom's procedure in the day-surgical management of symptomatic pilonidal sinus. *Br J Surg* 2001;**88**(2):155–156