
DAY CASE SURGERY FOR SACROCCOCCYGEAL PILONIDAL SINUS USING EXCISION AND PRIMARY MIDLINE CLOSURE

Nizar Hamawandi

MBCHB, DS, CABS, Lecturer in general surgery, Department of Surgery, College of Medicine, University of Sulaymania, Sulaymania, Iraq. e-mail: hamawandi@hotmail.com, P.O box: 128, Sulaymania, Iraq

Abstract

Sacrococcygeal pilonidal sinus (PNS) is a common disease. There are different lines of treatment but the best surgical technique is still controversial. The aim of this study is to show the effectiveness of treatment of sacrococcygeal PNS with excision and primary midline closure as day case surgery. This is the first study on sacrococcygeal PNS to be done in Sulaymania governorate, Iraq.

A prospective study was done over a period of 3 years, between 1st Jan 2003 and 31st Dec 2005 in a private general surgical office, in Sulaymania city, Iraq, where 78 cases of chronic symptomatic, uncomplicated, nonrecurrent sacrococcygeal PNS were seen. From these 78 patients 6 patients refused operation and they were excluded from the study. Data collected from the remaining 72 patients were age, gender, presenting complaint and its duration, operative findings, duration of the operation, time of wound healing, any hospitalization if required, time to return to work, postoperative complications, postoperative pain, wound hematoma, wound infection, wound disruption, recurrence of the sinus, cost of the operation, patient satisfaction about the treatment and follow up compliance of the patients. They were treated with excision and primary midline closure technique. From the total no of 72 patients, 7 patients were unable to complete the follow up period and they were excluded from the study, and we continued the study of the outcome data of the remaining 65 patients.

Of those 65 patients treated excision and primary midline closure, 1 patient (1.53%) developed wound disruption, 4 patients (6.14%) developed surgical site infection (SSI) and only 3 patients (4.61%) had recurrence of the sinus.

It is concluded that excision and primary midline closure technique is simple, convenient, economic and successful treatment as day case surgery for chronic, symptomatic, uncomplicated and non recurrent sacrococcygeal PNS.

Introduction

Sacrococcygeal PNS is a common disease. The true incidence is unknown, but a Norwegian study estimates an incidence of 25 per 100000¹. The peak incidence is among those who are 15–24 years of age and decreases after the age of 25 years; it is rare after 45 years². Three quarters of patients are men³. All races can develop the disease, but it seems more common in those with dark, stiff or auburn hair¹. During the Second World War the condition was common in jeep drivers, which led to it being known as jeep disease⁴. Hodges and authors who came after him believed that the disease was

congenital in origin^{5,6}. But in the last 50 years it has been suggested that the condition is most likely to be acquired and the infection originates within a natal cleft hair follicle and hair is a secondary invader⁷. Sacrococcygeal PNS may be asymptomatic, but symptomatic disease usually presents as pilonidal abscess or chronic pain or discharging sinus⁸. There are many surgical methods for treatment of PNS, like excision and healing by secondary intention (open method)⁸⁻¹⁰. Excision and primary closure (closed method) with the incision can be sited over the midline or displaced laterally^{7,10-13} and excision with

reconstructive flap techniques e.g. such rhomboid flap and Z plasty flap⁸, but there is no clear consensus as to the optimum treatment⁹, the choice of which will typically be based on the surgeon's preference and training background⁸. Variations in current practice reflect the literature, which describes a wide spectrum of inpatient outcomes for different open and closed surgical techniques¹⁴.

Up to our knowledge this is the first study on sacrococcygeal PNS to be done in Sulaymania governorate, Iraq. The aim of this study is to show the effectiveness of treatment of sacrococcygeal PNS with excision and primary midline closure as day case surgery.

Patients and methods

A prospective study was done over a period of 3 years, between 1st Jan 2003 and 31st Dec 2005. During that period, 78 cases of chronic symptomatic, uncomplicated, nonrecurrent sacrococcygeal pilonidal diseases were seen in a private general surgical office, in Sulaymania city, Iraq, and planned for treatment with excision and midline closure technique as day case surgery. From these 78 patients 6 patients refused operation and they were excluded from the study. The remaining 72 patients were studied by taking history and performing physical examination, our preferred technique of treatment (excision and primary midline closure), its possible complications, patients enrollment in the study were explained to the patients and informed consents were obtained. All patients were without coexisting diseases, American society of anesthesiologists (ASA) category 1¹⁵. The following data were recorded: age, gender, presenting complaint and its duration, operative findings, duration of the operation (was defined as the length of time between the first incision and placement of the dressings), time of

wound healing (was defined as full epithelialization over the wound and measured in days), any hospitalization if required, time to return to work, postoperative complications, postoperative pain (was measured by using numerical rating scale, 0:no pain, 10:sever pain), wound hematomas, surgical site infection (SSI), wound disruption, recurrence of the sinus (was defined as a wound that did not heal despite treatment or which healed and then followed by the reappearance of symptoms and sinus), cost of the operation (was measured in Iraqi dinnars, the operation was classified as minor operation according to the list of private hospital operation prices released by Sulaymania health authority), patient satisfaction about the treatment (was measured by using numerical rating scale 0:not satisfied, 10:satisfied) and follow up compliance of the patients was recorded also. The operations were done in a private surgical hospital, all as day case surgery and all cases has been handled by a single surgeon. The patients were instructed to take a bath at home on the day of the operation then admitted to the hospital. At the operating room before induction of anesthesia, prophylactic antibiotics were given, ampiclox 500 mg and metronidazole 500 mg intravenously and continued postoperatively as ampiclox capsule 500 mg every 6 hours and metronidazole tablets 400 mg every 8 hours for 7-10 days. The operation was done in prone position, a sand bag is put under the pelvis, under general anesthesia and endotracheal intubation. The operative area was shaved on the operating table. The buttocks were retracted with adhesive tape to obtain a better visualization of the operative field. The skin was prepared with full strength 10% povidone iodine solution. The drapings were applied and the anus was excluded from the field of the operation. The extent of the sinus was assessed by

probing it with a fine probe. A midline elliptical incision of skin and subcutaneous tissue was done, including the opening of the sinuses, and the incision was carried vertically down to the sacrococcygeal fascia. Additional tangentially placed incisions were sometimes needed to excise sinuses extending laterally. Careful attention was needed to ensure that the skin edges are not undermined and also to remove all the sinuses and the tracts and not to miss any branching parts behind. Meticulous hemostasis was done with packing and pressure and diathermy coagulation. The operative field was irrigated with diluted 1% iodine solution¹⁶. A 12F tube drain was inserted lateral to the midline and brought out at the upper part of the wound. The adhesive plasters were removed. The skin was closed with interrupted mattress 0 proline sutures, taking the sutures deep and passing through the midline of the sacrococcygeal fascia, no subcutaneous sutures were inserted, careful attention was paid to proper edge to edge approximation of the skin margins. The wound was dressed with dry gauze, with pressure application with adhesive plasters across the buttocks. Postoperative analgesia was achieved by giving diclofenac sodium 100 mg IM when the patient recovered from anesthesia, and on the 1st postoperative day paracetamol tab 500mg tablet 4 times daily was given and continued in the following days according to the patient's requirement. The patients were discharged home at the same day. The patients were instructed to contact our private clinic or the private hospital whenever new symptoms appeared. The patients were encouraged not to lie on their back for the 1st 24 hour. They were allowed out of bed in the 2nd postoperative day, there is no restrictions to postoperative activities, but to avoid excessive physical strain for the following 3-4 weeks. Normal bowel

activity takes place as desired. The 1st postoperative visit to the surgical office was on the 5th postoperative day, where the wound was examined, the gauze dressing was removed together with the tube drain and the wound left exposed and dressed with topical povidone iodine 10% solution. Daily bathing was encouraged. The wound is examined weekly for evidence of wound complications [wound hematoma, wound seroma, SSI (surgical site infection) and wound disruption]. The sutures were removed after 10-14 days. Advices were given for general cleanness and hygiene of the sacral area, avoiding sitting or driving for prolonged periods, frequent bathing and regular removal of the hair by shaving the area every 1-2 week until the patient reaches his late thirties when recurrence is unlikely. All patients were followed up in the private surgical office after 1 month, 3 months, 6 months, 1 year, 2 years and 3 years after the completion of the treatment. During the follow period, the time to return to work, recurrence of the sinus, and patient satisfaction with the treatment and the cost of the operation were measured and checked. From the total no of 72 patients treated with midline closure technique, 7 patients (9.72%) were unable to complete the follow up period and they were excluded from the study, and we continued the study on the remaining 65 patients (i.e. compliance of the patients with follow up was 90.28%). Statistical analysis was performed by using SPSS 16 for windows (Statistical package for the social sciences).

Results

We found that age of the patients ranged 13-43 years (mean 23.55 years, SD 6.124). Males were more affected than females, 45 patients were males (71%), 20 patients were females (29%). The most common present complaint was pain (35 patients, 53.85%), followed by

discharge (30 patients, 46.15%). The duration of the present complaints were variable ranged from 2 days to 10 years, the average (mean) period being 10.8

months. Tuff of hair was found in 33 patients (50.77%). The rest of the results are shown in table I.

Table I

| | |
|---------------------------|--------------------------------------|
| Hospitalization | 0 Days |
| Duration of the operation | 23-39 minutes (mean 30.71, SD 3.467) |
| Time of wound healing | 10-22 days (mean 12.8, SD 2.7) |
| Time to return to work | 7-21 days (mean 10.35, SD 2.619). |

The rate of complications was 12.28% as shown in table II. Most complications were minor and needed no hospitalization. The most common complications were surgical site infection (4 patients) and all infections responded well to conservative

treatment. One patient developed wound disruption was treated with simple dressing. Three patients developed sever pain (numerical rating scale score 8) and responded well to analgesia.

Table II

| Complications | No of patients | % |
|-------------------------------|----------------|--------|
| Sever pain | 3 | 4.61% |
| Wound disruption | 1 | 1.53% |
| Surgical site infection (SSI) | 4 | 6.14% |
| Total | 8 | 12.28% |

Regarding recurrence rate, we found that from the 65 patients, only 3 patients (4.6%) had recurrence of the sinus and they were treated with open method. The total cost of the operation was 250 000 ID (208.2 US\$), the cost of the operation of the private hospital was 200 000 ID 166.6 US\$), the cost of postoperative drugs and local wound dressing was estimated by 50 000 ID (41.6 US\$). Out of the 65 patients underwent the operation 55 patients were satisfied with the procedure operation (84.6%).

Discussion

The treatment of sacrococcygeal PNS is controversial¹¹. Regardless of the surgical technique used the morbidity is high and is associated with a recurrence rate of between 5 and 40%¹⁸. There is no single surgical operation that fulfill the criteria of the

ideal operation, which should be simple, with minimal pain and discomfort, accepted by the patient with little impact in body image and self esteem, with rapid wound healing, high rate of cure, low rate of complications, low rate of recurrence, avoidance of hospitalization, early return to work and social life and activities and low cost of the operation and postoperative nursing care^{8,19}. In excision and healing by secondary intention (open method), it causes more discomfort to the patients), hospitalization is required, has long healing time up to 2-3 months²⁰. needs prolonged local care, which puts a significant economic burden on patients and on the health care system^{8,21}, postoperative supervision is necessary to prevent pocketing and to avoid premature closure or bridging of the skin edges over an incompletely

healed cavity¹¹, time to return to work is longer, the excision of the infected tissue may be incomplete and the recurrence rate may be as high as 10-20%²⁰, but it has a role in extensive chronic and recurrent cases⁸⁻¹⁰. Excision and primary closure (closed method), with the incision can be sited over the midline or displaced laterally, has shorter healing time, avoiding prolonged wound care and earlier return to work, it is easy to be taught, learned and practiced, but is hindered by wound-related complications such as failure of the primary wound to heal^{1,11,22,23} and recurrence rate of 10-18%^{1,8,10,14,16}, and it is a favored surgical option by many authors^{7,10-13}. Excision with reconstructive flap techniques, it involves reshaping and flattening of the natal cleft, their use is generally restricted to recurrent and complicated pilonidal disease that necessitate wider excisions e.g. such rhomboid flap and Z plasty flap, they are more technically demanding and are probably best performed by a plastic surgeon or a surgeon with an interest in pilonidal disease⁸.

In this study we used excision and primary midline closure technique as day case surgery for of chronic, symptomatic, uncomplicated and non recurrent sacrococcygeal PNS. We compared our results with previous studies using excision and primary off midline closure, excision and healing by secondary intension, and excision and reconstructive flap techniques. In some studies some data were not available for comparison and comparison were done on the available data.

In our study, hospitalization was not required, all patients were treated as day case surgery, which is more comfortable for the patients, decrease the chance of hospital acquired infections and decrease the cost of the treatment. Karydakias, using excision

and primary off midline closure technique, reported 3 days of hospitalization²¹. Salih, using excision and healing by secondary intension technique, reported 3-5 days of hospitalization, mean 4, SD 1.1²⁴. Katsoulis, using Lemberg's flap, reported 3-7 days of hospitalization²⁵. The time of the operation ranged 23-39 minutes (mean 30.71, SD 3.467). Shekh, using excision and primary off midline closure technique, and performing Karydakias operation, reported operation time (mean 45 minutes, SD1.8)²⁶. Salih, using excision and healing by secondary intension technique, reported operation time ranged 35-52 minutes (mean 43, SD 5.4)²⁴. Akca et al using Lemberg flap, reported operation time 40-60 minutes (mean 45)²⁷. The time of wound healing was varied 10-22 days (mean 12.8, SD 2.7). Abdul-Ghani, using excision and primary off midline closure technique, and performing a technique similar to Karydakias operation, reported 88% of the wound healing within 4 weeks²⁸. Salih, using excision and healing by secondary intension technique, reported wound healing time ranged 39-87 days (mean 42.2, SD 6.2)²³. Tekin, using Lemberg flap with modification, reported 8-10 days²⁹. The time to return to work ranged 7-21 days (mean 10.35, SD 2.619). Karydakias, using excision and primary off midline closure technique, reported time to return to work of 9 days²¹. Salih, using excision and healing by secondary intension technique, reported the time return to work ranged 10-30 days (mean 15.6, SD 3.4)²⁴. Katsoulis, using Lemberg flap reported time to return to work ranged 11-36 days (mean 16 days)²⁵. The rate of complications was 12.28%. Karydakias, using excision and primary off midline closure technique, reported 8.6% complication rate²¹. Kareem, using excision and healing by

secondary intension technique, reported 56.77% rate of complications³⁰. Katsoulis, using Lemberg's flap, reported 16% rate of complication²⁵. Wound seroma or hematoma were not seen in our study, this was achieved with good hemostasis with packing and pressure, electrocoagulation, insertion of tube drain, pressure dressing of the wound. Katsoulis, using Lemberg flap, reported 4% rate of hematoma formation²⁵. Wound disruption developed in one patient (1.53%), which was minor and healed with daily dressing. This good wound strength was achieved by taking good bites of the skin and subcutaneous tissue, taking a deep stitch in the sacrococcygeal fascia and edge to edge approximation of the skin margin, and advising the patient to avoid excessive physical strain for the following 3-4 weeks. Karydakis, using excision and primary off midline closure technique, reported wound disruption rate of 8.6%²¹. Katsoulis, using Lemberg flap, reported 4% rate of wound disruption²⁵. Severe pain occurred in 3 patients (4.61%) and was successfully treated with analgesic. Kareem, using excision and healing by secondary intension technique, reported 5.7% rate of severe pain³⁰. Katsoulis, using Lemberg flap, reported 4% rate of severe pain²⁵. SSI (surgical site infection) rate was 6.14%, which is satisfactorily low, this is achieved by meticulous surgical technique, good hemostasis, prophylactic antibiotic which was continued postoperatively for 7-10 days, irrigation of the wound with 1% povidone iodine solution, which besides its antibacterial effect it has mechanical cleansing effect by removing blood clots and tissue debris from the operative wound. Karydakis, using excision and primary off midline closure technique, reported no SSI²¹. Kareem, using excision and healing by secondary intension technique, reported

43.2% rate of SSI³⁰. Katsoulis, using Lemberg flap, reported 4% rate of SSI²⁵. Recurrence rate was (4.6%), only 3 patients had recurrence of the sinus. Karidakis, using excision and primary off midline closure technique, reported 0.9% rate of recurrence²¹. Kareem, using excision and healing by secondary intension technique, reported the recurrence rate of 13.5%³⁰. Katsoulis, using Lemberg flap, reported 4% rate of recurrence²⁵. The total cost of the operation was 250 000 ID (208.2 US\$), which is a low cost, because the low cost of day case surgery, compared with the cost of hospitalization, also because the prolonged post operative wound care and dressing for months (as in the open method) was not required. The cost of a day case surgery has been calculated by Senapati to be about 60% of the cost for same procedure as in patient care in the United Kingdom³¹. Regarding patient satisfaction, most of our patients (84.6%) were satisfied with the procedure. Kement, using excision and healing by secondary intension technique, reported (54.8%) were completely satisfied with the procedure^{32,33}. Erylimaz, using Lemberg flap, reported that 40% of the patients were not pleased from the appearance of the scar³⁴.

Conclusion

From the comparison mentioned above we found that our results we obtained using excision and primary midline closure are superior in some aspects or comparable in other aspects to the results of other methods used for treatment of chronic, symptomatic, uncomplicated and non recurrent sacrococcygeal PNS. In our study, no hospitalization required, duration of our operations, wound healing time and time to return to work were relatively short, our rate of complications were acceptable, our rate of recurrence was negligible, the procedure was cost

effective and the majority of our patients were satisfied with the procedure. We conclude that excision and primary midline closure technique is simple, convenient, economic and

successful treatment as day case surgery for chronic, symptomtomatic, uncomplicated and non recurrent sacrococcygeal PNS.

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