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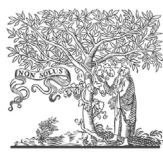

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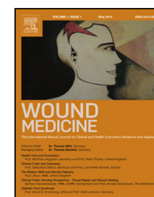

Original research article

Factors affecting the outcome and duration of healing of the laid open wound for sacrococcygeal pilonidal sinus: A prospective cohort study of 472 patients

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ABSTRACT

Objectives: Recent clinical reports showed excellent results when the lay open method was used for the treatment of chronic sacrococcygeal pilonidal sinus, despite keeping the wound open for a considerable time which increases the risk of infection, delayed closure, and recurrence. In this study, we aim to analyze the factors influencing the outcome of the laid open sacrococcygeal pilonidal wound regarding wound infection, complete wound closure, and recurrence.
Methods: A prospective cohort study of 472 patients with chronic sacrococcygeal pilonidal sinus who had the lay open procedure between January 2000 and December 2012 was done. 326 were male and 146 were female. Lay open was performed to all patients. Postoperative care and follow-up methods were similar in all patients. Preoperative, intraoperative, and postoperative factors affecting the outcome were analyzed.
Results: The mean age was 27.6 years. Male gender, smoking, BMI ≥ 30 kg/m^2, diabetes mellitus, the sinus number, wound depth of more than 3 cm, packing the wound, the cleaning material for wound irrigation, regular postoperative shaving of hair around the wound, postoperative complications mainly pus discharge from the wound, and poor postoperative body hygiene were the factors statistically found to represent a significant difference in association with longer wound healing time ($P \leq 0.01$). The recurrence rate was 0% after four years of follow-up.
Conclusion: We concluded that many factors could affect the outcome of the laid open wound of the chronic sacrococcygeal pilonidal sinus. For the best outcome, careful consideration of these factors could help achieve an excellent result.

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1. Introduction

Sacrococcygeal pilonidal sinus is an infection under the skin in the gluteal (natal) cleft that usually affects young adults. Males are affected three times than females, probably due to their more hairy nature. The reported incidence was 26 per 100,000 population [1–3]. The etiology remains controversial. The scientific evidence postulates that it is an acquired disease and suggests two important causes: deep natal cleft predisposing to buttock friction and poor personal hygiene leading to accumulation of loose hair and debris in the cleft [4]. In addition, many factors were linked to the pathology such as hirsutism, deep natal cleft, obesity, local trauma, familial predisposition, smoking, and sedentary lifestyle [5]. Also, Anaerobic bacteria predominate over aerobic bacteria in the process of infection development of the follicles and the subsequent abscess formation [6,7].

Surgery is the main treatment, but up to 40% of the patients may develop recurrence. This has lead to the development of different surgical approaches with no agreement on the optimal approach that could minimize the recurrence rate, and controversies are still common [8,9]. Marsupialization, lay open, excision and primary closure, Limberg flap, and rhombic excision have been performed. Despite these methods, the disease usually leads to postoperative complications and recurrence [10]. Recent clinical studies have shown increasing interest in the lay open technique as the most efficient operation in terms of low morbidity and less recurrence rate [11–13].

Several primary risk factors for postoperative complications and recurrence have been confirmed in some studies. They include

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male sex, obesity, smoking, a family tendency, poor body hygiene, sinus size, sedentary occupation, local irritation or trauma prior to onset of symptoms, and the surgical procedures performed. Complicated pilonidal surgical wounds are often associated with a considerable morbidity, such as a chronic sacral wound and consequently, loss of work time and lifestyle limitation [1–13].

Although the postoperative care of the lay open wound has a high impact on the outcome of the lay open method, a thorough literature search resulted in very few articles investigating the factors affecting the laid open wound outcome, and in general, most of them were discussing a single or two factors each. During 20 years of clinical experience in performing lay open to sacrococcygeal pilonidal sinus patients in our local community, we observed that factors such as body hygiene habits and daily wound cleaning using only normal saline had contributed to an increased rate of wound infection, delayed wound healing, and recurrence. Therefore, in this study, we aim to evaluate and analyze the factors influencing the outcome of the laid open chronic sacrococcygeal pilonidal wound.

2. Methods

A prospective cohort database analysis of the results of the first consecutive 472 patients who elected the lay open procedure for the treatment of chronic pilonidal sinus between January 2000 and December 2012 was done. Ethical approval was granted from Al-Ansar hospital ethical committee and the management guidelines and clinical pathway subcommittee of the quality care program at the same hospital.

The preoperative workup, selection of patients, surgical procedures, and follow-up were carried out by the same surgical team according to a standardized clinical pathway protocol at Al-Ansar general public health hospital, Medina, Saudi Arabia. Inclusion criteria included adult patients (12 years and older according to our hospital policy) selected from the outpatient clinic and presented with a chronic disease (472 patients). Exclusion criteria included patients who presented with an acute form (sinus + abscess) because they were managed by the on-call duty team (78 patients), patients who refused the lay open procedure and preferred excision and primary closure (537 patients), and recurrent cases (79 patients).

All the patients had the same preoperative workup (complete blood count, coagulation profile, blood chemistry, chest x-ray, and electrocardiogram). Patients who had co-morbid diseases were referred to the appropriate specialty physician for preoperative evaluation and preparation. The procedure and postoperative wound care were carefully discussed with the patients preoperatively. The patients were admitted to the surgical floor one day before surgery, and discharged on the first postoperative day. No antibiotics were used for all the patients at any stage of the treatment.

The procedure was done under general anesthesia in the prone position. The visibility of the intergluteal area was maintained by lateral traction from the lateral margin of the gluteus using adhesive tape. Inspection to locate and numerate the external openings was done followed by probe insertion through the external opening of the sinus to map the tract. Then lay open using cutting diathermy with removal of hair tufts and debris from the wound was done followed by inspection to identify any other tracts and curettage of the wound wall by surgical curette to remove any remnants of the sinus sac and to establish a healthy tissue for healing. Hemostasis was secured by coagulation diathermy. At that stage, the longitudinal length of the resulting wound was measured by a medical measuring tabe (end to end) while the depth of the wound was measured by a medical measuring blade (from the center of the wound). The wound was cleaned by normal saline, packed with vaseline gauze, and covered by the surgical dressing.

Postoperative care consisted of sitz bath three times daily at home (using warm water and mineral salt or normal saline for 10 min), and wound packing by Vaseline gauze to keep the wound open and help the growth of healthy tissue from below upward.

The factors affecting the laid open wound were classified as gender, smoking, obesity, co-morbid diseases, the longitudinal length of the wound, the depth of the wound, the cleaning material for wound irrigation, packing the wound, regular postoperative shaving of hair around the wound, and postoperative body hygiene.

Follow-up was done in the outpatient clinic once every week until complete healing and closure of the wound (complete wound healing through whole depth and all layers to complete skin closure), then once every three months for one year to evaluate for recurrence, then once every six months for one year and all the patients were given an open appointment whenever recurrence occurs. All the patients completed four years follow-up, no drop out recorded.

A digital database form (part of the clinical pathway forms) structured to evaluate preoperative, intraoperative, and postoperative factors affecting the outcome of the laid open wound was kept in the patient's file. Statistical Package for Social Science (SPSS) program (Release 22) was used for data analysis. Results were represented by absolute percentages, average, and mean. $P \leq 0.01$ was considered to represent a statistical significant difference. The analysis was done regarding symptoms, duration of the disease, co-morbid conditions and medications, method and duration of postoperative care until complete healing, quality of life postoperative (pain and discomfort, complications like bleeding or puss discharge), and recurrence of the disease.

3. Results

Between 2000 and 2012, 472 patients were diagnosed to have chronic sacrococcygeal pilonidal sinus and agreed to be treated by lay open technique, 326 (69.1%) males, and 146 (30.9%) females, male to female ratio (2.23:1). The mean age was 27.6 years, range 16–39. Age group analysis showed that 17 (3.6%) were below 20 years old (the youngest was 16), 368 (78%) were between 20 and 30 years, 87 (18.4%) were between 31 and 40 years, (the oldest was 39).

The presenting symptoms were reported as pain alone in the sacrococcygeal area in 74 (15.7%) patients, pain and bloody discharge in 96 (20.3%), pain and pus discharge in 129 (27.3%), painless discharge (bloody or pus) in 173 (36.7%). Co-morbid diseases were present in 79 (16.7%) patients; 34 (7.2%) had high blood pressure, 29 (6.1%) had diabetes mellitus in which 21 (4.4%) had type I and 8 (1.7%) had type II, 13 (2.8%) had cardiac conditioned controlled by medications, 3 (0.6%) had hypothyroidism controlled by medications.

Disease duration was more than one month in 177 (35.5%) patients, more than three months in 196 (41.5%), and more than six months in 99 (21%). Postoperative care duration until complete healing was three weeks in 24 (5.1%) patients, four weeks in 189 (40%), five weeks in 151 (34.1%) six weeks in 69 (14.6%), and seven weeks or more in 29 (6.1%) (all twenty-nine patients had diabetes).

Regarding the effect on quality of life, 17 (3.6%) patients complained of pain postoperative for more than one week and required analgesia, 208 (44.1%) complained of discomfort only not requiring analgesia, and 247 (52.3%) had no complaints. Postoperative minor bleeding from the surgical wound was reported by 14 (3%) patients and spontaneously stopped within one week, and pus discharge was reported by 26 (5.5%) patients, all were patients with diabetes, in which the longest duration was two weeks in 8 (1.7%) patients.

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