



Day-Care Surgery for Pilonidal Sinus Using Sinotomy Technique and Fibrin Glue Injection

Selim Sozen¹, Vedat Ozturk², Koray Das¹, Hasan Erdem¹, Suleyman Cetinkunar¹, Ilhan Bali¹

¹Department of General Surgery
Adana Numune Training and
Research Hospital
Adana, Turkey

²Department of General Surgery
Medibafra Hospital
Samsun, Turkey

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Corresponding Author:

Selim Sozen, MD

Department of General Surgery

Adana Numune Training and

Research Hospital

Adana, Turkey

selimsozen63@yahoo.com

Abstract

Background: Pilonidal disease is a common chronic disorder mainly seen in the sacrococcygeal region, especially in young males. Different surgical methods have been described for the treatment. However, none of the methods has emerged as being superior to the others. An ideal treatment should be simple, lead to minimal disability, and have a rapid return to normal activity. We present the preliminary finding, an operative technique using fibrin glue in day-care surgery patients with a pilonidal sinus.

Methods: 40 consecutive patients with a primary pilonidal sinus seen between September 2008 and February 2009 were prospectively submitted to sinotomy and fibrin glue injection under local anesthesia as day surgery cases. There were 35 males and 5 females (M:F 7:1) with a mean age of 26.8 years (range 17–50 years).

Results: The mean duration of symptoms was 16.4 months (range 4–36 months). Mean operative time, including local anesthesia infiltration, was 17.3 min (range 15–25 min). Postoperatively, the patient was observed for 15 minutes, then was discharged on oral analgesics containing paracetamol and codeine. All patients reported little or no discomfort after the procedure and were able to return to normal activities on the following day. There were no complications reported after surgery.

Conclusion: An ideal surgical procedure for a pilonidal sinus should be one aiming at reducing hospital stay, minimizing tissue assault, promoting early work resumption, and preventing recurrence. The method described in this paper was found to be simple, safe, and feasible as day-care surgery. The technique of sinotomy with a good wound and surrounding skin care is an ideal approach with a high chance of cure. The patients returned to their routine within a short duration of time.

Key words: Pilonidal sinus, fibrin sealant, excision, sinotomy, recurrence, local anesthesia

Introduction

A pilonidal sinus is a common condition affecting young-to-middle-aged adults. It occurs more commonly in males. The pathogenesis remains uncertain and there are both congenital and acquired suggestions for the etiology of this condi-

tion [1]. Pilonidal sinus disease is caused by hairs that penetrate the skin of the gluteal cleft, causing cyst and sinus formation due to foreign body reaction, followed by secondary infections and abscesses [2]. Many methods of surgical and nonsurgical treatment described in the literature [1] in-

clude: excision and laying open, excision and primary closure of the wound [1], and a rhomboid flap procedure [3,4]. However, there is not yet a consensus about the optimal treatment [5]. Recurrence after any procedure is not uncommon and may be 20 percent or more. The lowest recurrence rates have been described for lateral approach techniques, such as those described by Bascom [6] and Karydakos [7]. Over the last decades, fibrin glue has been used extensively by surgeons for treatment of various conditions [8]. It acts by supporting angiogenesis, fibroblast proliferation, and collagen production [9], and reduces intraoperative blood loss. The ideal approach for treating pilonidal disease should be simple, inflict minimal pain, have the best chance for cure and least local recurrence rate, avoid admission to the hospital, avoid general anesthesia, require minimal wound care, and have minimal inconvenience and time off work for the patient [1,10]. The aim of this study is to present the preliminary results of the management of a pilonidal sinus by sinotomy and application of fibrin glue in a day surgery setting.

Patients and Methods

40 consecutive patients with a primary pilonidal sinus seen between September 2008 and February 2009 were prospectively submitted to sinotomy and fibrin glue injection under local anesthesia as day surgery cases. There were 35 males and 5 females (M:F 7:1) with a mean age of 26.8 years (range 17–50 years). The criteria for inclusion in this study were:

- all patients with a non-infected pilonidal sinus;
- no previous surgery and the number of the tracts varies from 1 to 3.

All patients were treated as day cases. The procedure was performed under local anesthesia, with the patient lying prone. Iodine antiseptic solution (Betadine) was applied to the shaved skin of the buttocks, and sterile drapes were used to expose only the sacrococcygeal area. A small quantity of methylene blue was injected into the sinus opening in order to stain the diseased tissue and to identify the sinus extensions. The technique of sinotomy followed the following steps: the main orifice was identified, then was cannulated with a suitably sized metal probe. This was followed by probing the main track and laying it open on the probe. Any cyst wall was dissected out and hair tufts were removed. The

cavity was then curetted to remove infected granulations and debris, followed by washing with hydrogen peroxide and dilute betadine solutions. Finally, it was irrigated copiously with saline. Hemostasis and light packing concluded the operation. 2–4 ml of fibrin glue (CryoSeal FS System, Thermogenesis, Rancho Cordova, USA) was injected through to the sinus bed in order to obliterate the dead space. The skin was then pressed gently onto the sacrococcygeal fascia and pressure was maintained for two minutes until the glue was dry. Postoperatively, the patient was observed for 15 minutes, then was discharged on oral analgesics containing paracetamol and codeine. No antibiotics were given. The pain level of the patients was assessed in the pre- and post-treatment period with a visual analog scale (VAS) score. VAS scores were marked by patients on a horizontal scale, where “0” indicated painless condition and “10” denoted the worst pain. Baseline VAS scores (VAS-0), and VAS scores at the 3rd week (VAS-3W) and 6th month (VAS-6M) of the patients were calculated and recorded. The patients were instructed to return to normal daily activities as soon as they felt comfortable. Patient satisfaction measurement was detected as follows:

1. Significant pain relief and improvement in daily activities: Excellent.
2. Less pain but requires intermittent analgesics: Good.
3. Using the same analgesia as before the procedure, and only mild or no improvement: Poor.

Results

The mean duration of symptoms was 16.4 months (range 4–36 months). Mean operative time, including local anesthesia infiltration, was 17.3 min (range 15–25 min). All patients were discharged on the same day after surgery. The mean follow-up was 36 months. There were no complications and recurrences reported after surgery. All patients reported little or no discomfort after the procedure and were able to return to normal activities on the following day. No infection had occurred postoperatively. The mean period for returning to daily activities and to work for patients was 1 day. The median VAS pain score was significantly lower (2 (1–3)). The mean time for complete healing of the wound after sinotomy plus fibrin sealant was 8.7 ± 7.88 days (range

7-25 days) (Table 1). There were no admissions from the day surgery unit and no unplanned re-admissions. Patients expressed satisfaction with the procedure. The evaluation of postoperative disability and social disruption showed that 38 (95%) patients were satisfied. The reason for dissatisfaction of the two patients was the same as cosmetic results.

Table 1. Operative and postoperative outcomes.

No. of patients	40
Duration of operation (min)	17.3 (range 15– 25 min)
Anesthesia	local
Pain VAS score	2 (1–3)
Mean healing time (days)	8.7±7.88 (range 7-25 days)
Recurrence %	0
Complications %	0
Time to return to work	Following day

Discussion

Surgical treatment of a chronic pilonidal sinus is: open excision; primary closure; lay open; excision and flap closure. Primary closure has the potential to produce early wound healing if infection does not develop, but this requires restriction of activity because of tissue tension and usually a longer hospital stay. In 1970, Foss [11] reported a collective series of 1129 pilonidal sinuses treated by excision and primary closure by different investigators. Failure of primary healing was 16%; the length of hospitalization averaged was 21.7% days, and the recurrence rate was 16%. Another important issue in the chronic pilonidal sinus and recurrent pilonidal sinus management is flap procedures. Several flap techniques have been described with various recurrence rates ranging from zero to 6–8% [3,4,12]. There was no recurrence in this study. The open wound method required aggressive management by both the patient and the surgeon to keep the wound clean and to prevent premature skin closure. Weinstein et al. [13] reported a recurrence rate of 20.9% and an average healing time of 2 months in a series of 129 patients treated with the open wound technique. The average healing time in our study was two weeks. Wound complications were also encountered when excision with marsupialization was performed in order to speed up the repair [14]. The new technique of using fibrin glue to seal the cavity after sinotomy was adapted for this study. The ideal op-

eration for a pilonidal sinus should be simple, require short hospitalization, minimal postoperative disability, and have a low recurrence rate [1].

Fibrin glue is a biological adhesive material that is made from human fibrinogen and its multiple components. Fibrin glue promotes wound healing by enhancing homeostasis and angiogenesis, and by stimulating macrophages, which have a role in fibroblast proliferation and collagen production in the wound site [15]. Fibrin sealant is a biological adhesive that imitates the final stage of coagulation. Fibrin glue has been used as sealant for the treatment of anorectal [15,16] and rectovaginal fistulae [17]. Fibrin sealant has also been shown to be effective in reducing seroma formation in animal models of mastectomy and in reducing drainage after axillary dissection [18,19].

Al Naami reported his experience with the sinotomy technique [20]. The procedure was carried out under local anesthesia on an outpatient basis, with a complication rate of 3% and a recurrence rate of 2%. Healing was complete in 1 month in 90% of the patients and in 2 months in the remaining 10% of patients, and almost all the patients were able to return to work the following day. Rabie et al. found the recurrence rate of sinotomy of 12.5% at a mean duration of 36.8 months follow-up [21]. Yalcin [22] reported that sinotomy has the advantages of simplicity, and the possibility to operate under local anesthesia with an excellent recurrence rate of 0% and a complication rate of 1.69% (Table 2). In this study, there were no complications and recurrences reported after surgery. This technique is simple and safe. The procedure was carried out under local anesthesia on an outpatient basis.

Table 2. Summary of studies of pilonidal sinotomy.

Studies	Yalcin et al.	Al-Naami et al.	Rabie et al.
Year	2010	2005	2007
No. of patients	59	100	14
Anesthesia	local	local	local
Mean healing time (days)	30	90%.....30 10%.....60	-
Recurrence %	0	2 %	12.5 %
Complications %	1.69 %	3 %	0
Time to return to work	Following day	Following day	-

Conclusions

An ideal surgical procedure for a pilonidal sinus should be one aiming at reducing hospital stay, minimizing tissue assault, promoting early work resumption, and preventing recurrence. The method described in this paper was found to be simple, safe, and feasible as day-care surgery. The technique of sinotomy with a good wound and surrounding skin care is an ideal approach with a high chance of cure. The patients returned to their routine within a short duration of time.

Conflict of interest statement

The authors do not declare any conflict of interest or financial support in this study.

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