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ORIGINAL ARTICLE

Fibrin glue in the treatment for pilonidal sinus: high patient satisfaction and rapid return to normal activities

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Abstract
Background Pilonidal sinus is a common condition often managed with invasive surgery associated with a significant morbidity and often a prolonged recovery time. Fibrin glue has been used in our institution as an alternative to conventional surgery. The purpose of this study was to perform a service evaluation of patient satisfaction and recovery following fibrin glue treatment for pilonidal sinus.
Methods All pilonidal glue procedures for a single surgeon were identified from theatre and consultant diary records from March 2007 to September 2011. A questionnaire was sent by post to all patients. Patient satisfaction, time to return to normal activities, the need for further procedures and whether they would recommend a glue procedure to a friend were evaluated.
Results Ninety-three patients were identified, accounting for a total of 119 glue procedures and 57/93 responses were received (61 %). The median age of respondents was 26 (17–70) years. Seventy-nine per cent ($n = 45$) were satisfied, pleased or very pleased with the result of their procedure. Fifty-four per cent ($n = 31$) were back to normal activities within a week with a further 17 % ($n = 10$) back to normal activities within 2 weeks. Seventy-four per cent ($n = 42$) required no further treatment. Of the 15 patients requiring a further procedure, 3 went on to have a repeat glue treatment which resulted in complete healing. Eighty-two per cent ($n = 47$) would recommend a glue procedure to a friend.
Conclusions Fibrin gluing for pilonidal sinus should be considered as first-line treatment for most pilonidal sinuses. It has a high level of patient satisfaction and allows a rapid return to normal activities in this group of patients of working age.

Keywords Pilonidal sinus · Fibrin glue · Bascom · New treatment

Introduction

Pilonidal sinus is a common and often difficult condition to treat. It most frequently affects men (male-to-female ratio 3:1) between the ages of 18–40 years [1]. It is a chronic inflammatory condition with hairs found in midline natal pits and associated secondary tract extensions. The presentation of the disease varies from acute abscess formation to chronic non-healing pits. Its aetiology is uncertain: broken hair, either local or from the scalp, becomes abnormally inserted in the natal cleft with a localised inflammatory, foreign body reaction resulting in the formation of a cyst and subsequent pits and/or abscess or there is a focus of follicular infection from a hair follicle lying in the midline natal cleft [2].

This condition is managed with surgery, often associated with significant morbidity and prolonged recovery times. Many surgeons still choose a midline excision with or without primary closure as first-line surgical management [3]. This approach is frequently complicated by infection, wound breakdown (or prolonged wound dressing if left to heal by secondary intention) and recurrence. Development of techniques to flatten the natal cleft and move the line of closure

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away from the midline has led to lower, but still appreciable, rates of recurrence of up to 20 % [1]. Several more aggressive rotational flap techniques have also been described [4–6]. All of these techniques frequently result in post-operative pain, immobility, need for prolonged time away from work and risk of chronic wounds requiring packing.

Fibrin glue as a definitive treatment for pilonidal sinus disease (rather than an adjunct to wound healing and dead space obliteration) was previously described by our group in a small case series [7]. Fibrin glue is a tissue sealant which uses the activation of fibrinogen to form a fibrin clot [8]. It has been used as an adjunct to wound closure in excisional pilonidal surgery, its suggested benefit being in obliterating potential space underneath the wound [9]. The technique used by the senior author (JNL) is with fibrin glue as monotherapy. When used in a pilonidal sinus or tract, the fibrin clot seals the tract after diligent curettage.

We report a service evaluation [10] of patient satisfaction and recovery following fibrin glue treatment.

Materials and methods

Patients were selected for fibrin glue treatment on a case-by-case basis by the operating surgeon (JNL). Patients were excluded if there were signs of an acute abscess, but patients with chronic low-grade suppuration, as frequently seen in pilonidal sinus, as well as those with occasional weeping were included. There were no patients with asymptomatic pilonidal sinus disease. Patients with very scarred natal clefts, after repeated episodes of sepsis and surgery were more likely to be offered alternative treatments (such as a lateral closure technique or a rhomboid flap). Previous surgery in the absence of significant induration and scarring was not, however, a contraindication to treatment with glue.

Operative technique

The procedure is performed under general anaesthesia with the patient in the left lateral position. After skin shaving, preparation and draping, the pilonidal sinus complex is thoroughly curetted with a small Volkmann's spoon to remove hair, debris and granulation tissue. Secondary tracts are also curetted. Fibrin glue (TISSEEL^{TM} Baxter, Illinois, USA) is then injected into the pit and along the tract. No additional dressings are used. Antibiotic prophylaxis is not used and local anaesthetic is not administered. Procedures are performed as day cases and patients discharged with paracetamol and a non-steroidal anti-inflammatory drug to be taken as required. Patients are offered outpatient review after 8 weeks, and in the event of recurrence, patients are offered repeat glue as part of their treatment options as well as alternatives, usually an excision and lateral closure procedure.

All procedures performed by a single surgeon were identified from operative records between March 2007 and September 2011. A questionnaire was sent by post to all patients with five questions and multiple answer options (Fig. 1).

A second questionnaire was sent to non-responders 2 months later.

Results

Ninety-three patients were identified, accounting for a total of 119 glue procedures. Fifty-seven responses were received (61 %). Median (range) age of respondents was 26 (17–70) years. Forty-two patients were male. Median time from glue treatment to questionnaire was 23 months.

Forty-five patients (79 %) were satisfied, pleased or very pleased with the result of their procedure. Those who were dissatisfied or very dissatisfied were patients who required further treatment with an alternative surgical technique (Fig. 2). Four of the 13 patients who were very dissatisfied or dissatisfied would still recommend the glue treatment to a friend.

Thirty-one patients (54 %) had returned to normal activities within a week. A further 10 patients (17 %) were back to normal activities within 2 weeks (Fig. 3). The small group of patients with a recovery time of more than 4 weeks were those that had early breakdown of their wound and a failed glue procedure.

Seventy-four per cent ($n = 42$) of respondents required no further treatment. Of the 15 patients requiring a further procedure, 3 chose to have a repeat glue procedure, which resulted in complete healing.

Eighty-two per cent would recommend treatment for pilonidal sinus disease with fibrin glue to a friend. Those who would not recommend pilonidal glue to a friend, all had subsequent excision and lateral closure following recurrence after gluing.

Discussion

Ideal treatment for pilonidal sinus disease should be simple, effective and relatively pain-free allowing a quick recovery and return to normal activities. Using fibrin glue as monotherapy for pilonidal sinus, disease appears to offer this as judged by patient opinions gathered from the questionnaire.

Traditional surgical techniques are frequently complicated by wound breakdown, infection, prolonged pain and immobility. Reported recurrence rates vary widely between

Fig. 1 Patient satisfaction questionnaire

1. **How pleased are you with the result of your procedure? (Please circle)**
   Very Dissatisfied Dissatisfied Satisfied Pleased Very Pleased
2. **How soon after the glue procedure were you back to your normal daily activities?**
   1 day 2-4 days 5-7 days 8-13days
   More than two weeks
3. **Have you had further symptoms from the pilonidal sinus since the glue procedure?**
   Yes No
4. **If yes, have you undergone a further surgical procedure? (Please circle all that apply)**
   No Yes- Drainage of abscess Yes- Repeat Glue Yes- Other surgical procedure
5. **Would you recommend this treatment to a friend with the same problem?**
   Yes No

Any other comments:

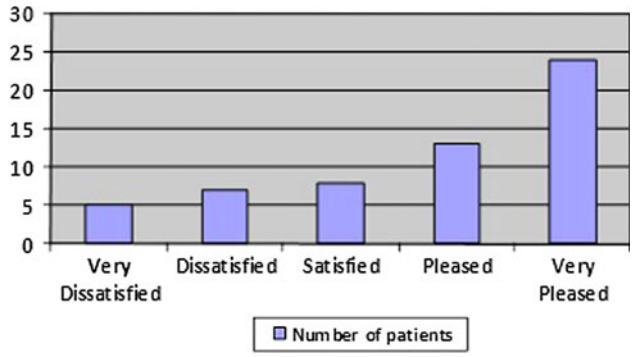

Fig. 2 Patient satisfaction

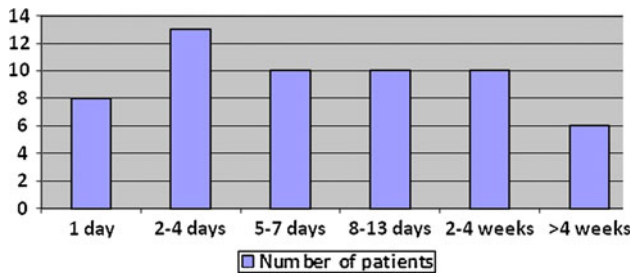

Fig. 3 Time to normal activities

reported studies of midline excision with and without primary closure (either midline or off-midline closure). A meta-analysis [3] found an overall reported recurrence rate of 8 %. Open healing was associated with a 58 % lower risk of recurrence but clearly has a large impact on time spent recovering from surgery with wound dressings and prolonged pain.

When comparing midline with off-midline closure, it is accepted that midline closure techniques are associated with significantly higher rates of pilonidal sinus disease recurrence. Off-midline closure is also associated with a shorter time to healing as compared to midline closure with a median difference of 5.4 days (95 % CI 2.3–8.5) [11].

Treatment for pilonidal sinus disease with fibrin glue can be performed as day case surgery. Neither dressings nor aftercare are required. Young patients can return to normal activities rapidly, and although not measured in this service evaluation, it is likely that there will be significant quality of life and health economic benefits as a consequence. This would appear to compare favourably with results from traditional surgical techniques.

Although not a primary outcome for this evaluation, most patients can be treated successfully with fibrin glue as a primary procedure. Recurrence rates are similar to other, more invasive treatments, but without the discomfort of an incision in the natal cleft.

If not initially successful, fibrin glue treatment can be repeated after discussion of the alternatives with the patient. One patient had the glue procedure three times with a successful result at the third attempt and was still highly satisfied. Two patients had a successful glue procedure after a failed excisional procedure in another centre. Those unhappy following the glue procedure, all had early recurrence of the sinus and were the same patients who reported a lengthy return to normal activities following surgery.

The limitation of this evaluation is the same as that of any report using a postal patient questionnaire to gather data. Our response rate of over 61 % is high for such a study, but the views of 39 % of those operated upon remain unknown. The reason for non-response is not known but is a frequent limitation in studies of this type. In view of the incomplete response to the questionnaire, conclusions have to be interpreted with a degree of caution. Although some

patients did not respond, we know that they have not re-presented to the reporting institution with pilonidal sinus disease.

This report of a service evaluation is not a randomised controlled trial: merely support of the potential of fibrin glue as a novel monotherapy first-line treatment for pilonidal sinus disease, and results presented should be viewed in this context. Data from this service evaluation will inform a future prospective randomised trial.

Conclusions

Fibrin glue treatment for pilonidal sinus is associated with high patient satisfaction and rapid return to normal activities. A prospective randomised trial of fibrin glue against best alternative surgical treatment will now be performed.

Conflict of interest None.

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