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A single center retrospective series analysis



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Pilonidal sinus disease. A single center retrospective analysis

The surgical approach to chronic pilonidal disease has been significantly changed by minimally invasive and targeted procedures, with the aim to minimize costs and favoring less dressings, faster recovery, and prompt return to work or to school activity. Less invasive procedures are gaining wide acceptance as first approach. We present a single-center experience with the Gips technique, also called Israeli technique or trephine technique, and a brief review of the literature, focusing on minimally invasive procedures.

KEY WORDS: Pilonidal Disease, Punch, Minimally Invasive Surgery, Trephines

Pilonidal disease (PD) is a condition that typically affects the teenage to young adult population up to 3rd decade¹. The disease is two to three times more frequent in male sex. The exact pathogenesis is not entirely understood, but increasing evidence indicates an acquired etiology². According to Bascom³ the increased production of pilosebaceous glands in the natal cleft due to pubertal hormones causes distension of hair follicles with keratin, and tears in hair follicles form crevices where hairs and debris collect. Karydakos proposed a mathematic model with three primary variables². The variables were: 1) Hair related factors (H) like number of loose hairs collected in the natal cleft, the kind, the shape and the scaliness of the hair 2) force-related factors (F) like depth, narrowness of the natal cleft or friction movements and 3) vulnerability-related factors (V),

like softness, maceration erosions, splits, wild pores, wounds, scars of the natal cleft. PD represents a significant disease burden, affecting young people with huge socioeconomic implications. Rarely chronic pilonidal disease can lead to malignant degeneration⁴.

A wide range of treatment have been proposed during the last decades, with less invasive procedure gaining wide acceptance as first approach. We present a single-center experience with the Gips technique⁵.

Materials and methods

Over a 4 years period time (2017-2021), 63 unselected consecutive patients with primary or recurrent PD received surgery at a single community hospital in Velletri, Italy. All procedures were performed by the same surgeon (IP). All patients were scheduled for day-case surgery.

SURGICAL APPROACH

The patient is placed in prone position, with buttocks held apart to expose the operative field. Antibiotic prophylaxis is used only in selected patients with acute sup-puration. Local anesthesia with 2% mepivacaine and 10% naropin is administered. Each visible pilonidal pit

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Fig. 1.



Fig. 2.

is identified and injected with methylene blue to assess the direction and the depth of underlying tracts. Each pit is excised with 4 mm and 8 mm disposable dermal punch (Fig. 1). All residual underlying disease with hairs and debris are removed with a combination of dermal punch and scissors. No lateral incisions are made. The surgical field is generously irrigated with saline and hydrogen peroxide. Dermal punch skin openings are left open (Fig. 2).

A light gauze bandage is applied on the wound and is removed the day after the intervention. Patients are invited to sleep in supine position and to resume their habitual daily activities. In the first postoperative days they received a prescription to take paracetamol 1000 mg as needed. Preoperative and postoperative data were collected by means of a dedicated database. Postoperatively the patients were followed up in 1 to 2 weeks interval until the wounds had healed. Telephone interviews were conducted to assess recurrence and postoperative comfort.

Results

Patients' characteristics, clinical findings and surgical outcomes are presented in (Table I).

Seventeen patients had previous surgery for PD, including incision and drainage, conventional surgical excision, or endoscopic treatment.

There were no serious intraoperative complications. All patients were discharged on the same day of surgery. Few patients experienced postoperative complications. Two patients presented postoperative bleeding which was treated conservatively with external compression alone. One patient presented a wound infection treated with oral antibiotics and medication and one patient required prolonged analgesic assumption with paracetamol. The median time to complete wound epithelialization was 3 weeks.

All patients could return quickly to daily activities within a median of 1 days.

TABLE I - Baseline patients' characteristics and main surgical outcomes

Total patients	63
Males patients	42 (66.7)
Females patients	21 (33.3)
Age, years	22 (18-30)
Previous procedure	17 (26.9)
Drainage procedure	10
Excision (various type)	7
Duration of symptoms, months	12 (6-12)
Time from previous procedure, months	15 (9-30)
<i>Operative findings</i>	
Chronic pilonidal disease	51 (80.9)
Pilonidal abscess	12 (20.1)
Number of pits and opening	3 (1-3)
Hair presence in the pilonidal complex	22 (34.9)
Postoperative complications	4 (6.3)
Bleeding	2
Prolonged analgesic assumption	1
Wound infection	1
Time to daily activities, days	1 (range 1-2)
Time to wound healing	3 weeks (3-4)
Delayed wound healing	2
Recurrence	3 patients (4.8)

All patients were subjected to a phone long term follow-up with a median interval of 18 months (12-24). Total recurrence was observed in 3 patients (4%), who were subjected subsequently to conventional excision. Two of these patients experienced an early recurrence within one month from the surgical intervention. All patients expressed satisfaction with treatment and good cosmetic results.

STATISTICAL ANALYSIS

The collection and analysis of data were performed using MedCalc® Release 14.8.1. Continuous variables are reported as median and interquartile range (IQR), qualitative variables are reported as number (percentage) of patients.

Discussion

The management of PD is variable and subjected to debate. Traditionally, PD has been treated by wide excision of the sinus down to the post sacral fascia combined with either primary or flap closure ⁶. “Off-midline” primary closure compared to “midline” closure is advocated by current literature in terms of surgical site infections (SSI) and recurrence rate ⁷. Excision of the pilonidal sinus with primary closure has the advantage of rapid healing, but the recurrence rate is also relatively high - up to 38% ⁸ as well as the chances of wound infection, wound dehiscence and recurrence.

The surgical approach to chronic PD has been significantly changed by minimally invasive and targeted procedures, with the aim to minimize costs and favoring less dressings, faster recovery, and prompt return to work or to school activity. However, until now, few RCTs have compared minimally invasive techniques with classical surgical treatment ⁹⁻¹¹.

The less invasive surgical procedures use one or more of the following techniques:

- mechanical cleansing of the sinus and cavity of hairs and granulation tissue;
- filling of the sinus and cavity with an antiseptic, sclerosing, or space holding agent;
- minimal excision of sinuses and/or cavity through separate excisions, leaving the wounds open or closed.

Synthetically, the minimally invasive approaches in order of time are the following:

1) Lord-Millar intervention ¹²: all pits are excised down to the underlying cavity through small separate incisions, removing as little of the normal skin as possible. No attempt is made to remove the cavity. The cavity is cleansed of hairs using forceps or a tiny bottle brush with nylon bristles, and the cavity is mopped clean of granulation tissue. The wounds are left open for healing by secondary intention.

2) Bascom I intervention: Beside excising the sinuses through small separate excisions, he made a complementary incision lateral to the midline, through which he removed the inflamed tissue from the cavity and its eventual capsule. The midline wounds were closed and the lateral incision left open for drainage ^{3,13}.

3) Al Naami technique: incision and lying open (sinotomy) procedure involves local excision of the midline sinuses, extending into the central cavity and laying open lateral tracts. Any hairs contained in the sinus are removed and the wall of the cavity is scrapped free of granulations ¹⁴.

4) Gips procedure is also based on the same principles of Bascom, with the utilization of trephines or disposable biopsy punches of various diameters instead of a small scalpel to excise the pits and debride the sinus cavity ⁵.

5) Filac: The probe destroys the epithelium lining the fistula and simultaneously obliterates the tract by a shrinkage effect ¹⁵.

6) Sinusectomy: Soll described a limited excision procedure, consisting of selective resection of the sinus by means of scalpel or scissors ¹⁶.

7) VAAPS and EPSiT: in 2014, Milone et al ¹⁷ and Meinero et al ¹⁸ described independently an endoscopic approach to chronic PD (VAAPS and Endoscopic pilonidal sinus treatment (EPSiT)). A fistuloscope is inserted through a 0.5 cm circular incision once the external opening is excised, hair and hair follicles are removed under direct vision using endoscopic forceps.

Some authors have proposed application of crystallized phenol through the sinus opening either in primary or in recurrent disease with high success and low recurrence rate ¹⁹.

Ideally, the optimal intervention for PD should be easy to perform and to repeat, have a low rate of postoperative complications and recurrence and permit a fast return to habitual daily activities.

In line with the acquired theory of pathogenetic process of PD, minimally invasive techniques provide the possibility to avoid wide *en bloc* excisions with better outcomes ²⁰.

The Gips procedure ⁵, sometime defined as “Israeli procedure”, integrates the principles suggested by both Lord and Millar ¹² and Bascom ¹³ with the use of skin trephines or disposable biopsy punches, like in our experience. The utilization of biopsy punches, also named dermal punches, is not really a variant of this technique, but we found it useful to simplify the surgical procedure. The procedure has a very limited cost, as two dermal punches of 4 and 8 mm, usually sufficient to treat a single patient cost, about 6 euros. The fast return to work or study represents another major advantage for this minimally invasive technique in terms of cost-analysis benefit.

Gips reported a total recurrence rate of 16.2% in 1165 patients interviewed by phone, with a mean follow-up length of 6.9 ± 1.8 years. About 81% of recurrences in this case series occurred within 5 years postoperatively ⁵. Despite the high recurrence rate in his case series, the advantage of this technique lies in its repeatability. Another large series of patients treated with this technique was reported by Di Castro et al ²¹ with a 5.8% recurrence rate in 2347 patients. In this case series the postoperative complication occurred in 4.3% of cases: the most frequent complication reported was postoperative bleeding (2.8%), wound infection occurred in 0.8% of patients; 1.1% of patients required prolonged postoperative analgesics consumption. Kalaiselvan et Al ²² in their systematic review investigated the role of minimally invasive surgery for PD. Interestingly, minimally invasive methods showed a significant advantage over conventional surgery in terms of disease recurrence, as well as complication rate, return to work, wound healing time and pain. Patients treated with this minimally invasive technique experience minimal postoperative pain and a

fast recovery to daily activity. This technique can be utilized either in acute suppuration or chronic disease with very low postoperative infection rates. Patients treated for recurrent disease with the Gips technique do not seem to have a statistically significant increase in the risk of recurrence¹⁸. In our series, we have observed a recurrence and complication rate comparable to the results of the literature, confirming both the effectiveness and safety of this procedure. Moreover, we observed satisfactory cosmetic results, probably due to the presence of small surgical openings leading to an optimal and aesthetic scarring.

A limitation of this study is the retrospective nature and the lack of a comparator group. Another limitation is the limited follow-up interval.

In conclusion, in our experience Gips operation was associated with both low recurrence and postoperative complication rate. The procedure is feasibly, repeatable, and does not require special and expensive equipment. The cost benefit appears favorable in relation to other minimally invasive techniques. The small surgical openings cause minimal discomfort and rapid wound healing with optimal scarring.

Definitive conclusions are not possible based on the current literature for the absence of RCTs on this specific technique. Nevertheless, our experience in line with other authors confirms that this technique can be considered as a first-line treatment for primary PD and both for recurrent and recalcitrant PD²³.

Riassunto

L'approccio chirurgico alla malattia pilonidale ha subito un sostanziale cambiamento in seguito all'introduzione di tecniche mininvasive, con lo scopo di minimizzare i costi e favorire un rapido recupero postoperatorio ed un precoce rientro all'attività lavorativa o scolastica. Presentiamo un'esperienza di un singolo centro ospedaliero con la tecnica di Gips, definita anche tecnica israeliana, ed una breve review della letteratura, focalizzandoci sulle procedure mininvasive.

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