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ORIGINAL ARTICLE

Regular epilation alone is an acceptable treatment for symptom-free pilonidal patients

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Abstract

Introduction Patients with mild pilonidal disease often experience symptom resolution without excision. We hypothesized that treating symptom-free/asymptomatic pilonidal patients with regular epilation alone had similar recurrence rate as patients who were also treated surgically.

Method Patient data were prospectively collected 2/2019-11/2022 at our Pilonidal Clinic. All patients received regular epilation; all patients presented before 12/2020 also underwent pit excision using trephines. Starting 1/2021, only symptomatic patients underwent pit excision; symptom-free patients at presentation received only regular epilation. Recurrence rates were statistically analyzed.

Results 255 patients (male:54.4%, female:45.6%), median age 17.3years (IQR:15.8–19.1) were followed for median 612.5days (IQR:367.5–847). 44.1% identified as Hispanic, 36.5% Caucasian, 17.1% Asian, 2.4% Black. Median symptom duration at presentation was 180.5days (IQR:44.5–542.5). 160 patients were initially treated with surgical excision and regular epilation, while 95 patients with regular epilation only. The failure rate between patients who received surgical excision initially and recurred (9.4%) and patients who received epilation only and recurred (12.6%) was similar, after controlling for sex, race, age, comorbidities, skin type, hair color, hair thickness ($p > 0.05$). Patients who recurred after only undergoing regular epilation all underwent surgical excision, median 100days (IQR:59.5-123.5) after initial presentation.

Conclusion Regular epilation alone is an acceptable treatment for symptom-free pilonidal patients.

Keywords Pilonidal Disease · Epilation Therapy · Non-operative management · Pit excision

Introduction

Pilonidal disease (PD) is a suppurative condition of the sacrococcygeal region resulting in chronic drainage, pain, and infection [1]. PD is thought to be an acquired condition caused by recurrent microtrauma to the gluteal cleft due to friction, moisture and hair retention [1]. Risk factors for PD include male sex, hirsutism, and poor hygiene [2]. There are an estimated 70,000 new cases of PD annually in the US, and the average age at presentation for men is 21 years compared to 19 years among women [2]. PD often interferes with participation in work, school and sports and negatively impacts quality of life [3].

Patients presenting with acute abscess due to PD are treated with incision and drainage [1]. The treatment of chronic PD, however, is controversial. While PD patients are commonly treated with operative excision, minimally symptomatic patients can be managed with non-operative methods including good hygiene practices and hair removal [1]. One systematic review found that the recurrence of PD after laser epilation is 0–28% [4]. However, most study participants in this review had a history of prior operative intervention, so the risk of recurrence after epilation monotherapy is unknown [4]. Non-operative interventions include sinus pit ablation with phenol application and sealing off sinus pits with fibrin glue [5, 6]. Compared to operative management, non-operative techniques offer faster healing and fewer complications, but may result in higher rates of recurrence [1].

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Simple operative management for chronic PD includes the lay open technique and excision with primary closure either midline or off-midline [1]. Excision with primary closure off midline has the lowest recurrence rate among these techniques (1.4%) compared to primary midline closure (10.3%) and the lay open technique (4.5%) [7]. Other more complicated techniques using flaps include the Karydakis Flap, Rhomboid Flap, and Bascom Procedure and are considered when a patient has extensive sinus disease or significant granulation tissue unlikely to heal by primary or secondary intention [1]. These procedures have a low recurrence rate (< 5%) but 20–41% of patients suffer severe postoperative morbidity [8, 9]. Minimally invasive technique such as the Gips procedure excises each sinus pit using a trephine then extracting hair and debris from each opening: In one study with 2,347 patients who underwent the Gips procedure, only 5.8% experienced disease recurrence after 16 months [10].

Many physicians who treat patients with PD believe surgical excision is needed to prevent future recurrence, even if the symptoms have already resolved after an incision and drainage procedure or after no invasive treatment. No prior studies have assessed non-operative management only in asymptomatic PD patients. In this study, we assessed the risk of recurrence among PD patients who received epilation monotherapy and those who received both epilation and operative management. We hypothesized that patients with symptom-free PD can be treated with epilation only.

Methods

Study design This is an observational study on all patients who presented to our pilonidal care clinic from February 2019 to November 2022. This study was approved by the Stanford University Institutional Review Board (#52,040).

Data recording Patients' demographics, comorbidities, Fitzpatrick skin type classification (1 to 6), hair color (light vs. dark), and hair thickness (fine, medium, thick), number of laser epilation sessions, procedure received (incision and drainage, trephination of pilonidal pits, re-excision), follow up period, and recurrence rates were recorded. At each clinic visit, photographs of the gluteal cleft were taken. These photographs were used to determine the skin and hair characteristics using standardized charts and adjudicated by two observers to ensure accuracy and consistency.

Patient treatment All patients received counseling to maintain good hygiene and regular and/or manual epilation at the gluteal cleft. In addition, all patients presented from February 2019 to December 2020 also underwent pit excision (Gips procedure [10]) using trephines [11]. Circular incisions were made by reusable trephine (4 or 5 mm in diameter) to take out the pits. Through these incisions, the sinuses were debrided, and any hair or granulation tissue was removed. The wounds were left to heal by secondary intention. After surgical intervention, patients were seen in clinic within one to two weeks and every six to eight weeks for laser epilation. Starting January 2021, only patients who were symptomatic (pain or drainage at the gluteal cleft) at initial clinic presentation underwent pit excision. Patients who were symptomatic previously but all symptoms resolved by their first clinic presentation were considered symptom-free/asymptomatic and received only hygiene counseling and regular epilation. Recurrence was defined as the return of any of the following more than four weeks after surgical excision: pain, drainage, erythema, swelling at the gluteal cleft, presence of draining tract or abscess, or undergoing additional incision and drainage procedure. A patient that developed recurrence regardless of prior treatment underwent repeat pit excision.

Manual and/or laser epilation After the initial clinic or hospital visit, all patients were started on weekly or biweekly manual epilation at the gluteal cleft, using hand-held or electric razors. Laser epilation was started as soon as possible [LightSheer Quattro diode laser (Lumenis, Yokneam, Israel)]. The laser treatment area extended from the gluteal cleft to 5 cm bilaterally, superiorly to the border of the buttock, and anteriorly to 5 cm from the anus. Each patient underwent laser epilation every six to eight weeks with a goal of achieving > 90% hair reduction compared to the hair amount at initial presentation. The percentage of hair reduction was determined by comparing the gluteal cleft photographs taken at each clinic visit. Once patient reached > 90% hair reduction, patients were followed every 3–6 months and additional laser epilation performed as needed [12].

Data analysis We performed descriptive statistics of patient demographics, comorbidities, Fitzpatrick skin type classification, hair color, and hair thickness. We compared the recurrence rate between the operative and non-operative groups using a Chi^2 test and a multivariate logistic regression model controlling for age, race, sex, comorbidities, hair removal methods, Fitzpatrick skin type classification, hair color, and hair thickness. We used Stata/MP Version 15.1 software to perform our statistical analyses. The level of

significance was set at 0.05, and a p-value less than that was considered statistically significant.

Results

We collected data from 251 patients. The median age was 17.3 years (IQR:15.8–19.1) with 136 (54.4%) male and 115 (45.6%) female (Table 1). 92 patients (36.5%) identified as Caucasian, 111 (44.1%) identified as Hispanic, 43 (17.1%) identified as Asian, and 6 (2.4%) identified as Black. 41 patients (16.2%) reported at least one comorbidity. There was no significant difference in sex, race, or presence of one or more comorbidities between the operative and non-operative groups, but those in the operative group were significantly younger compared to the non-operative group (median 17.0 years vs. 18.8 years, p = 0.01).

In terms of Fitzpatrick Skin Type, 1 patient (0.4%) had Type I, 28 patients (11.1%) had Type II, 55 patients (21.8%) had Type III, 152 patients (60.3%) had type IV, and 16 patients (6.4%) had type V. There was no significant difference in the frequency of Fitzpatrick Skin Type between the operative and non-operative groups. There was also no difference in the frequency of hair thickness, hair density, or hair color between the operative and non-operative groups (Table 1). However, hair amount significantly varied between the two groups: Among the non-operative group 38 patients (45.3%) had a moderate or large amount of hair compared to 57 patients (35.4%) in the operative group (p = 0.02).

Initially, 169 patients (66.5%) were treated with surgical excision and regular epilation (operative group), and 85 patients (33.5%) were managed with regular epilation only (non-operative group). The recurrence rate among the operative group (9.4%) and non-operative group (12.6%) was similar (p = 0.42). When controlling for sex, race, age,

Table 1 Characteristics of patients underwent non-operative vs. operative management

	All patients (n = 252)	Non-operative Management Group (n = 85)	Operative Management Group (n = 166)	p-value
Sex				0.35
Male	136 (54.0%)	44 (51.8%)	91 (54.8%)	
Female	115 (45.6%)	40 (47.1%)	75 (45.2%)	
Race				0.63
White	92 (36.5%)	33	59	
Hispanic	111 (44.1%)	33	78	
Asian	43 (17.1%)	17	26	
Black	6 (2.4%)	2	3	
Age*	17.3 (15.8–19.1)	18.8 (16.5–20.4)	17.0 (15.4–18.4)	0.01
Comorbidity				0.75
No	211 (83.7%)	72 (84.7%)	138 (83.1%)	
Yes	41 (16.3%)	12 (14.1%)	28 (16.9%)	
Fitz-Patrick Skin Type				0.12
I	1 (0.4%)	0 (0%)	1 (0.6%)	
II	28 (11.1%)	14 (16.5%)	14 (8.4%)	
III	55 (21.8%)	23 (27.1%)	32 (19.3%)	
IV	152 (60.3%)	43 (50.6%)	108 (65.1%)	
V	16 (6.4%)	5 (5.9%)	11 (6.6%)	
Hair Amount*				0.02
Minimal	150 (61.0%)	46 (54.8%)	104 (62.7%)	
Moderate	70 (28.5%)	23 (27.4%)	47 (29.2%)	
Large	26 (10.6%)	15 (17.9%)	10 (6.2%)	
Hair Thickness				0.1
Fine	23 (12.0%)	7 (12.1%)	16 (12.0%)	
Medium	92 (48.0%)	34 (58.6)	57 (42.9%)	
Coarse	77 (40.1%)	17 (29.3%)	60 (45.1%)	
Hair Density				0.55
Thin	67 (28.9%)	25 (32.9%)	42 (27.1%)	
Medium	37 (16.0%)	13 (17.1%)	24 (15.5%)	
Thick	128 (55.2%)	38 (50.0%)	89 (57.4%)	
Hair Color				0.16
Light	27 (12.9%)	12 (17.6%)	15 (10.7%)	
Dark	182 (87.1%)	56 (82.4%)	125 (89.3%)	

comorbidities, skin type, hair color, hair amount, hair thickness, and hair density, the odds of treatment failure among the non-operative group was 1.2 times greater than the odds of treatment failure among the operative group (95% CI: -0.1-2.6, p = 0.07). Patients who recurred after initial non-operative management all underwent surgical excision. The median time from first presentation to surgical excision after failing the initial non operative management was 100 days (IQR: 59.5-123.5). No patient who underwent surgical excision after failing the initial non operative management experienced recurrence during the follow up period.

Discussion

In this observational study, we found that patients with symptom-free PD who received epilation monotherapy experienced a similar treatment failure rate compared to those who also received operative intervention after controlling for sex, race, age, comorbidities, skin type, hair amount, hair thickness, hair density, and hair color. These findings provide support for treating symptom-free/asymptomatic PD patients with first-line hair removal rather than surgical excision.

Prior research has established that epilation after surgical excision of PD greatly reduces the rate of treatment failure: Pronk et al. reviewed 14 studies showing that PD patients who underwent operative intervention followed by laser epilation experienced a recurrence rate of 9.3% compared to a 19.7% recurrence rate among those who underwent operative intervention without epilation [13]. While hair removal is accepted as a critical element in treatment of PD, our research study is the first to compare the failure rates of epilation monotherapy vs. operative intervention. Our findings suggest that laser epilation alone may be an effective treatment option for select PD patients.

This study was limited to patients with symptom-free/asymptomatic PD. In our clinic, we use the following criteria to identify symptom-free/asymptomatic PD patients: no active drainage of blood or pus from sinus pits; no ongoing pain or discomfort at the gluteal cleft; no draining sinus or granuloma present at the gluteal cleft; and no prior operative intervention. We found that epilation monotherapy may be a reasonable treatment option for patients with symptom-free/asymptomatic PD, and providers can easily identify appropriate patients with a thorough history and physical exam.

Additionally, all twelve patients who failed epilation monotherapy subsequently underwent surgical excision. Among those in the non-operative group who failed initial treatment, the median time from initial presentation to surgical excision was 100 days. After second-line operative management, no patients experienced PD recurrence during the study period. These findings suggest that treatment failure after non-operative management occurs relatively quickly, and there is no significant delay in undergoing definitive operative intervention.

This study has several strengths. It is the first study to compare first-line operative and non-operative management of PD. We also collected rich patient-level data regarding hair type, hair removal method, as well as the timing of the symptom onset, initial presentation, and failure occurrence. Our study also has weaknesses. We collected data from only one Pediatric Surgery clinical center in Northern California over a relatively short amount of time, so the generalizability of our results is limited. Treatment assignments were also based on patient preferences, and we did not have a control group who received no epilation treatment. Finally, we did not include those who underwent traditional or more complex surgical excisions, which historically offer lower recurrence rates of PD compared to the Gips procedure.

Our findings suggest that it is reasonable to offer symptom-free/asymptomatic PD patients non-operative management rather than up-front surgical excision without a significant increase in disease recurrence. Successful non-operative management of symptom-free PD also helps patients avoid the risks and morbidity associated with surgical excision. The efficacy of epilation monotherapy in the treatment of PD can be further assessed with a randomized control trial comparing operative and non-operative management.

Conclusion

Epilation monotherapy is a reasonable first-line treatment option for patients with symptom-free/asymptomatic PD. While most of these patients remain disease-free, treatment failure after initial non-operative management typically occurs within the first 3–4 months after initial presentation and does not significantly delay definitive operative management. A randomized control trial can further assess the efficacy of non-operative management of symptom-free/asymptomatic PD.

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Data Availability The datasets generated and analyzed during the current study are not publicly available due to patient privacy but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate This study was approved by the Stanford University Institutional Review Board (#52040), and all experiments were performed in accordance with relevant guidelines and regulations. Informed consent was obtained from all subjects and/or their legal guardian(s).

Consent for publication Not applicable.

Competing interests The authors declare no competing interests.

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