

Role of Laser Depilation in Treatment of Pilonidal Sinus Disease

Ayman F El-Ramah^{1,*}, Hanan M Darwish²

¹Department of General Surgery, Faculty of Medicine (Damietta branch), Al-Azhar University, Egypt

²Department of Dermatology, Faculty of Medicine for Girls, Al-Azhar University, Egypt

Abstract Background: Pilonidal sinus is a chronic disease affecting mainly men from puberty to their early thirties. Surgical treatment has significant failure rate, and recurrence is common. Excessive hair growth in the natal cleft is thought to be a factor in initiating this disease. **Objective:** To evaluate the role of Laser hair removal following surgery in treatment of pilonidal sinus. **Methods:** 18 patients with pilonidal sinus were treated initially by open surgery followed by division into two groups; Group A using Laser hair depilation in the natal cleft following pilonidal sinus surgery, Group B using the conventional methods for hair removal. **Results:** Group A patients received the full course of treatment of Laser (4 sessions, 6-weekly) after surgical treatment. None of the patients developed recurrent disease at 1-year follow up and, none have required further surgery. Group B patients showed recurrence in 4 patients. **Conclusion:** Our results strongly suggest that Laser hair removal after surgical interventions in pilonidal sinus disease decreases the rate of recurrence and should be advised to all patients. However, larger studies are needed to ensure this advocacy.

Keywords Pilonidal Sinus, Laser Depilation, Excessive Hair Growth

1. Introduction

Pilonidal sinus disease (PSD) is a painful disorder usually found in the natal cleft; it is diagnosed by the presence of a characteristic epithelial track between the buttocks. The sinuses may be caused by hair growing into the skin where there is excessive body hair or if tight clothing is worn, and is often seen in occupations that involve sitting for long periods[1].

PSD is a problem suffered mostly by young men, with an incidence of 26 per 100,000 population, affecting men twice as often as women[2] with symptoms of recurrent infection of the area of the natal cleft[3]. The clinical presentation of the disease varies from asymptomatic pits to painful draining abscesses and chronic fistulae. The most common manifestation of pilonidal disease is a painful fluctuant mass in the sacrococcygeal region[2].

Many treatment options for pilonidal sinus have been reported including, antibiotics, drainage, and excision surgical treatment. Different modalities of surgery have been used, but they often result in recurrence, and additional surgery is needed[4]. Laser hair epilation in the affected area have shown beneficial effect by decreasing the risk of recurrent pilonidal sinus disease[5].

Laser depilation is used in a number of medical conditions, such as ingrown hairs, hirsutism (male pattern of hair distribution in females), and folliculitis (inflammation around the hair follicle), as well as PSD. Lasers emit specific wavelengths of light that are absorbed by a different colour in the tissue, known as chromophore, and are converted into heat. The chromophore for laser hair removal is melanin; since this is lacking in light hairs, laser hair removal treatments are better suited to people with darker hairs[6].

Laser has been available as a permanent method for hair removal[7]. Multiple sessions are often needed and seem to increase progressively the hair free period between sessions and decrease hair regrowth[8].

2. Patients and Methods

This study was done on 18 patients, 16 males and 2 females with pilonidal sinus attended to out patient's clinic in Al Azhar university hospitals and other hospitals. Age of patients ranged from 17– 30 years. 11 Patients had primary disease and 7 had recurrent disease. All of patients underwent surgical intervention by open technique in which the whole sinus was excised and the wounds left open for healing by secondary intention. After complete wound healing, patients were divided into 2 groups: **Group A:** 9 patients were treated with alexandrite Laser for hair removal after application of local anesthesia cream eutectic mixture of prilocaine 2.5% and lidocaine 2.5% (EMLA CREAM). The Laser system protocol was:

* Corresponding author:

ramahsurgeon@yahoo.com (Ayman F El-Ramah)

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1-Laser system: Cynosure Apogee 5500

2-Wavelength (nm): 755

3-pulse duration (ms): 3

4-Fluence (J/cm²):18-20 according to skin type of each patient.

5-spot size (mm):12 -15

6-sessions (n):3- 5

7-Time interval (weeks):4-6

Group B: 9 patients were using traditional methods for hair removal (shaving, and hair removal creams).

All patients were followed up for about one and half years, every 2 months for 6 month, and every 3 months for 1 year.

Written informed consent from all study patients was taken.

3. Statistical Analysis

All statistical calculations were done using computer programs. Microsoft excel version 10 and spss (statistica package for the social science version 20.00) statistical program. at 0.05, 0.01 and 0.001 level of probability [9]. Comparison of percentage was done using the t test and chi square were presented using percentage, mean \pm standard deviation. The Pearson linear correlation coefficient was estimated to show the relationship of the physiological parameter to each other[10].

4. Results

Demographic data, type of lesion, method of hair removal and recurrence after treatment were shown in table 1.

Our study was done on 18 patients, 16 were males (89%) and 2 were females (11%) with age ranged from 17 to 30 years, with a mean age of 22.3 ± 0.7 years. 11 patients (61.1%) had primary lesion, while 7 patients (38.9%) had recurrent lesion. Group A patients had a mean age 21.33 ± 3.94 years, 8 (88.9%) were males, 5 (55.6%) were primary cases and 4(44.4%) were recurrent. Patients in Group A underwent Laser hair removal at the natal cleft after complete wound healing and according to the explained protocol. Group B patients had a mean age 23.33 ± 3.60 years, 8 (88.9%) were males, 6(66.7%) were primary cases and 3(33.3%) were recurrent. Group B patients use the traditional methods for hair removal (table 2, 3), (Figure 1,2). Patients in Group A mentioned that the Laser hair removal was comfortable with no complications while those in group B reported difficulty in maintaining hair removal at regular periods.

Recurrence occurred in 4(44.4%) in Group B while there were no recurrence in Group A and this difference was statistically significant. (Table 3), (Figure 3)

Table 1. Demographic data, clinical data, method of hair removal and recurrence after treatment

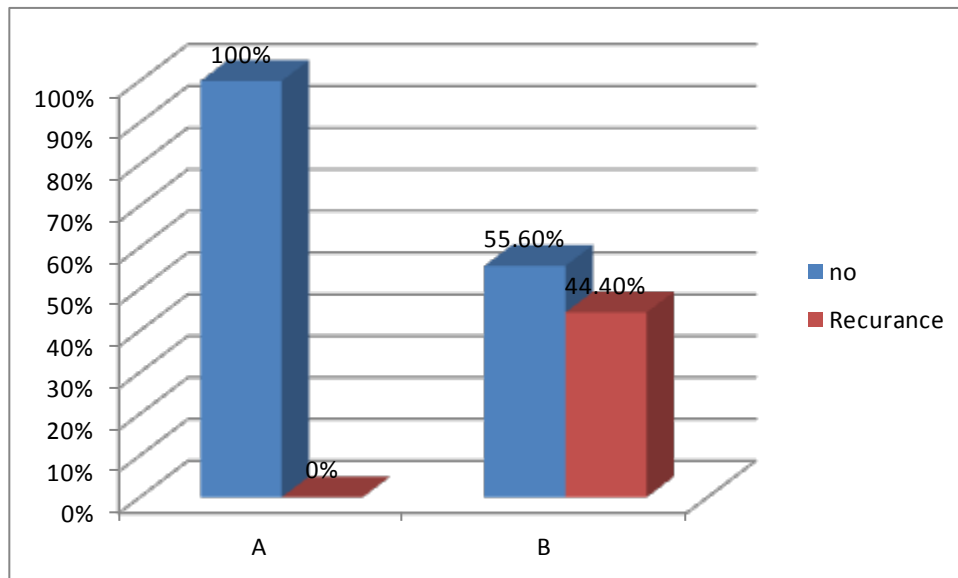
Patient	Sex	Age	Lesion	method of hair removal	Recurance after ttt
1	Male	17	primary	laser : 4 sessions	No
2	Male	22	recurrent	Laser : 5 sessions	No
3	Male	24	recurrent	Laser :3 sessions	No
4	Male	18	primary	Laser :4 sessions	No
5	Male	29	recurrent	Laser :4 sessions	No
6	Male	17	primary	Laser : 5 sessions	No
7	Male	20	primary	Laser :3 sessions	No
8	Male	21	primary	Laser :4 sessions	No
9	Female	24	recurrent	laser :3 sessions	No
10	Male	22	primary	Shaving	No
11	Male	23	primary	Shaving	Recurrence
12	Male	25	primary	Shaving	No
13	Male	30	recurrent	Shaving	Recurrence
14	Male	18	primary	Shaving	No
15	Male	23	primary	Cream	Recurrence
16	Male	24	recurrent	Cream	No
17	Male	26	recurrent	Cream	Recurrence
18	Female	19	primary	Cream	No
Group (A): Patients from 1 to 9. Group (B): Patients from 10 to 18.					

Table 2. Comparison between studied groups as regards age

	Mean±SD	T test	P value
Group A	21.33±3.94	1.124	0.278
Group B	23.33±3.60		NS

Table 3. Comparison between studies groups as regards sex, type of lesions and recurrence after treatment

		Group A	Group B	Chi square	P value
Sex	Male N=16	8 (88.9%)	8 (88.9%)	0.000	1.000
	Female N=2	1(11.1%)	1(11.1%)		NS
Type of lesions	Primary N=11	5 (55.6%)	6(66.7%)	0.234	0.629
	Recurrent N=7	4(44.4%)	3(33.3%)		NS
Recurrence	No recurrence	9 (100%)	5 (55.6%)	5.143	0.023
	Recurrence	0(0%)	4(44.4%)		S

**Figure 1.** Comparison between studies groups as regards Recurrence

5. Discussion

Pilonidal disease is a chronic disease of the natal cleft that causes both discomfort and embarrassment to sufferers. Recurrent follicular infection is the causative factor. It is often resistant to treatment so its treatment remains in question. Surgical treatment has a significant failure rate, and recurrence is common. The aim of the treatment of pilonidal sinus includes excising and healing with decrease recurrence rate[11]. The origin of pilonidal sinus has been a subject of interest for many years. It was thought to be of congenital origin, involving the remnant of the medullary canal and the infolding of the surface epithelium or a faulty fusion of the cutaneous covering in the early embryonic stage[2] but now it was believed that the majority of pilonidal disease cases are acquired and the result of a foreign body response to entrapped hair[12]. After the onset of puberty, sex hormones affect the pilosebaceous glands, and the hair follicles become distended with keratin. As a result, a folliculitis is created,

which produces edema and follicular occlusion. The infected follicle extends and ruptures into the subcutaneous tissue, forming a pilonidal abscess. This results in a sinus tract that leads to a deep subcutaneous cavity. The laterally communicating sinus overlying the sacrum is created as the pilonidal abscess spontaneously drains into the skin surface³. Loose hair is sucked into the pilonidal sinus by friction and movement of the buttocks whenever the patient stands and sits. This trapped hair stimulates a foreign body reaction and infection[13]. Excess hair in and around the gluteal cleft increase the risk of the occurrence of the disease, and the frequency and severity of recurrences are directly related to the density of the hair present on the buttocks. Long-lasting or permanent hair removal in the gluteal area in pilonidal sinus disease would eliminate the hair decreasing the risk of recurrent disease[14]. **Benedetto and Lewis[12]** reported that the 800 nm diode laser may be an effective tool in the treatment of pilonidal sinus disease. Presence of large amounts of hair in the lower back is one of the risk factors

that increase the chance of pilonidal sinus development. By eliminating the source of hair and hair fragments that course along the surface of the lower back and buttocks, interruption of the etiologic source for pilonidal sinus disease can be accomplished[14].

There are recent reports that Laser hair removal in the area may be effective treatment for pilonidal cysts[15].

Lavelle et al.,[16] said that laser treatment for pilonidal sinus, either as primary treatment or as an adjunct to surgery in refractive cases. It could also be useful in preventing the growth of hairs into wounds that have been left open and allowed to granulate.

Oram et al.,[17] suggest that laser hair removal after surgical interventions in pilonidal sinus disease decreases the risk of recurrence over the long term.

Our study meets with these studies in the effect of the Laser hair removal after pilonidal sinus excision decrease the rate of recurrence.

6. Conclusions

Laser hair removal after surgical interventions in pilonidal sinus disease decreases the risk of recurrence. We recommend laser epilation to every patient with pilonidal sinus disease as an adjunct treatment after the surgical treatment.

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