

Laser and Light Treatments for Pilonidal Cysts

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Pilonidal (nest of hair) cysts are foreign body reactions accompanied by chronic inflammation. Current accepted treatments include the traditional conservative treatments or aggressive surgery. However, these modalities exhibit a high rate of disease recurrence, especially in patients with hirsutism; therefore, affected patients often are subjected to repeated surgical interventions. This report describes 5 patients treated with either a diode laser or intense pulsed light (IPL), which produced results leaving the patients recurrence free. Four of 5 patients remained recurrence free for 7 months to more than 36 months; one patient experienced a recurrence after 36 months, which was longer than his previous remission. These results suggest laser and IPL technologies are alternatives to traditional surgical intervention, providing potentially longer disease-free intervals and fewer recurrences.

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Pilonidal (nest of hair) cysts are believed to arise from frictional impact on hair shafts in the intergluteal folds or sacrococcygeal cleft. The hair, after penetrating the dermis, induces a foreign body reaction accompanied by chronic inflammation.¹⁻³ The cysts generally occur in individuals during their early teens to mid 30s and present as painfully inflamed cystic swellings believed to be secondary to ingrown hairs. The cysts commonly appear in individuals whose occupation requires

extensive periods of sitting. A genetic component also exists.²

The most common treatment for pilonidal cysts is surgical removal accompanied by antibiotics, especially in cases with drainage following surgery. The cysts most frequently occur in areas of high hair density; therefore, patients often develop complications. Common complications include cellulitis, abscesses, and recurrent sinus formation that generally requires surgical drainage followed by healing via secondary intention (Figure 1).⁴ Less common complications include osteomyelitis and meningitis and, in rare cases, malignant degeneration such as squamous cell carcinoma (occurrence rate, 0.1%) due to chronic inflammation similar to scars.⁵

Over the past 5 decades, the treatment of pilonidal cysts has included the traditional conservative



Figure 1. Complication of postsurgical removal of a pilonidal cyst.

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treatments or aggressive surgery, but the high incidence of recurrence has warranted repeated surgical intervention. We present 5 patients with a history of recurrent pilonidal cysts. Each patient experienced repeated cycles of surgical removal of a cyst followed by recurrence. In each patient, the area surrounding the cyst was treated with either a diode laser (wavelength, 810 nm) or intense pulsed light (IPL) (wavelength, 500–1200 nm) for laser hair removal subsequent to traditional surgical removal. Each of the 5 patients experienced no side effects from the treatment, and all patients exhibited reduced recurrence frequency.

Case Reports

Five men were treated with a diode laser or IPL for recurrent pilonidal cysts. The pilonidal cysts initially presented at 15 to 18 years of age in all 5 patients, and 4 of 5 patients had experienced multiple surgical excisions prior to presenting to our office. Most of the patients described themselves as hairy (hirsutism) and had an occupation that required them to sit 90% to 100% of the workday. One of 5 patients reported having a sibling who experienced a similar condition. All 5 patients received 4 to 5 consecutive diode laser or IPL hair removal treatments.

Patient 1—A 43-year-old man (aged 42 years at his initial visit) presented with a history of pilonidal cysts on his gluteal cleft. His first cyst was treated when he was 18 years old. Since then, the patient has undergone 7 separate operations, each with minor complications. Previous treatments included

antibiotics. The patient described himself as hairy and spent at least 8 hours of his workday seated.

Patient 2—A 20-year-old man (aged 17 years at his initial visit) presented with a history of pilonidal cysts in his rectal region that started when he was 15 years old. The patient had undergone 4 surgeries prior to IPL treatment. He spent at least 8 to 12 hours a day seated.

Patient 3—A 36-year-old man (aged 35 years at his initial visit) presented with a history of pilonidal cysts in his sacrococcygeal region since he was 18 years old. The patient had undergone more than 12 surgical procedures and multiple cauterizations prior to presenting to us. The patient described himself as hairy and spent at least 10 to 12 hours a day seated because of his occupation.

Patient 4—A 22-year-old man (aged 20 years at his initial visit) presented with a history of pilonidal cysts on his left gluteal cleft since he was 18 years old. He previously had one surgical procedure that was left for secondary closure; however, because of recurring complications of drainage and infections, the site did not heal. He described himself as very hairy and spent at least 8 to 10 hours a day seated because of his occupation. He reported that his brother had the same condition but less severe.

Patient 5—A 23-year-old man (aged 20 years at his initial visit) presented with a history of pilonidal cysts on his right buttock since he was 18 years old. He previously had 4 surgical procedures that were left for secondary closure. He described himself as very hairy and spent at least 8 hours a day seated because of his occupation.

Table 1.

Cyst Presentation Summary*

Patient	Age at Initial Cyst Presentation, y	Cyst Recurrence Rate Before Treatment With Diode Laser or IPL	Cyst-Free Period After Treatment With Diode Laser or IPL
1	18	Constant (persistent inflammation)	>12 mo
2	15	8–12 mo	36 mo [†]
3	18	2–3 mo	7 mo
4	18	12 mo	21 mo
5	18	6 mo	36 mo

*IPL indicates intense pulsed light.

[†]Patient required surgical intervention after 3 years recurrence free.

Table 2.

Treatment Settings*

Patient	Diode Laser		Intense Pulsed Light			
	Fluency	Pulse Duration	Fluency	Filter Wavelength	Pulse Duration	Pulse Delay
1	NA	NA	34–36 J/cm ²	645 nm	2.4–4.2 ms	57–60 ms
2	30 J/cm ²	30 ms	NA	NA	NA	NA
3	28 J/cm ²	30 ms	NA	NA	NA	NA
4	NA	NA	34 J/cm ²	645 nm	2.4–4.2 ms	57–60 ms
5	NA	NA	34 J/cm ²	645 nm	2.4–4.2 ms	57–60 ms

*NA indicates not applicable.

Results

Four of 5 patients reported no recurrence of pilonidal cysts after treatment with the diode laser or IPL (Tables 1 and 2). These 4 patients also reported no complications, including drainage or abscess formation; however, the patients continued to closely monitor the regions of their disease (Figure 2).



Figure 2. Patient after treatment with intense pulsed light (wavelength, 645 nm; energy output, 20 J; radiofrequency, 20).

Patient 1 remained cyst and complication free for more than 12 months after treatment with IPL; patient 3 remained cyst and complication free for 7 months after treatment with the diode laser; patient 4 remained cyst and complication free for 21 months after treatment with IPL; and patient 5 remained cyst and complication free for 36 months after treatment with IPL. Patient 2 reported a minor complication of drainage and infection at about 6 months after his final diode laser treatment. He remained cyst free for 36 months but ultimately required surgical intervention for a recurrent cyst.

Comment

The current gold standard for treating pilonidal cysts is surgical intervention with excision that is left to close with secondary intention. Although surgical intervention is acutely effective, surgical patients often experience secondary complications and recurrence of pilonidal cysts.^{6,7}

Case studies have explored the use of Nd:YAG and CO₂ lasers for photodermal ablation. Ruby laser epilation has been used in conjunction with surgical intervention, but these laser treatments have been shown to be ineffective.⁸ The Nd:YAG laser has been successfully used as an alternative surgical tool, decreasing postoperative recovery time, pain, and cost relative to surgical excisions. However, neither Nd:YAG nor CO₂ lasers have demonstrated relief for pilonidal cyst recurrence.

Research on the effects of the diode laser and IPL as treatments for cosmetic removal of unwanted hair has been abundant.⁶ Diode laser (wavelength, 810 nm) and IPL or broadband light (wavelength,

500–1200 nm) energy is absorbed by the pigmented hair shaft. The absorbed light heats the hair and destroys the follicle, thus eliminating hair. The indicated melanin absorption peak lies within the UV range (290–400 nm) and with decreased absorption capacity at the longest wavelengths.⁶

Minimal data exist describing the use of the diode laser or IPL as a potential alternative treatment for pilonidal cysts or for the continual monitoring of the cysts. Diode and IPL treatments differ from lasers and light sources unsuccessfully used in the past. Unlike other lasers, such as the ruby laser, which mostly covers shorter wavelengths and works best on light hair, the diode laser works on a longer wavelength (810 nm) and the IPL covers a broad wavelength spectrum. Both the diode laser and IPL have their best effect on dark hair. We successfully treated 4 of 5 patients with the diode laser or IPL. In all 5 patients, the recurrence-free period following diode laser or IPL treatment exceeded the recurrence-free period following surgical resection. In addition, the time between recurrences doubled or nearly doubled.

Patients 1, 2, and 5 were free of pilonidal cysts for 3 times longer (12 months, 36 months, and 36 months, respectively) than with other treatments (1 month, 10 months, and 6 months, respectively). Patients 3 and 4 were cyst free for 7 and 21 months, respectively, which was slightly less than twice their recurrence rate, mostly because of the short time that elapsed since their last treatment.

Although patient 2 reported a cyst recurrence rate of 8 to 12 months prior to his diode laser treatment, he had never been free of complications; he had just been cyst free following surgical or laser treatments (ie, wound closure). Therefore, his recurrence rate is better characterized as persistent, though this prevents a useful comparison of recurrence frequencies. The potential utility for treating problem patients has been demonstrated by this patient who has been cyst free for 36 months since receiving treatments with a diode laser. In addition to extending the cyst-free period following surgery to correct pilonidal cysts in this patient, diode laser

and IPL treatments diminished the side effects of surgical treatment, improving his quality of life.

These results suggest that decreasing hair in the area of and surrounding the pilonidal cysts reduces the rate of recurrence. Using a diode laser or IPL for removal of surrounding hair with or after surgical excision of a pilonidal cyst represents a favorable alternative to surgical intervention alone. Because the etiology of pilonidal cysts appears to involve ingrown hairs and a nidus of bacterial overgrowth, effective treatment using laser and light sources may help prevent the initial pathology of the cysts. The likely mechanism of action is secondary to decreased inflammation in the setting of diminished hair density. Ultimately, removal of hair by diode laser and IPL in areas prone to cyst formation may obviate the need for surgical treatment and may make it possible to secondarily prevent pilonidal cysts from appearing.

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