



Original article

## Laser depilation of the natal cleft – an aid to healing the pilonidal sinus

Joy Odili, David Gault

RAFT Institute of Plastic Surgery, Mount Vernon Hospital, Northwood HA6 2RN, UK

**Background:** Pilonidal disease is common. Excessive hair growth in the natal cleft is thought to be a factor in initiating these sinuses. It is chronic and intermittent in nature and treatment can be difficult. Hair removal by shaving or use of creams is often advised as a compliment to surgical treatments. However, access to the natal cleft can be difficult. Laser removal of hair in the natal cleft is considered as an aid to healing the pilonidal sinus.

**Patients and Methods:** Over a 5-year period, 14 patients with recurrent pilonidal disease were treated in our unit with laser depilation. They were all contacted by postal questionnaire, and those with on-going disease were asked to return to the clinic for evaluation and possible further treatment.

**Results:** All patients returned the postal questionnaire. Of the 14 patients, 4 had on-going disease and received further depilation with the Alexandrite laser. All are now healed with no reported complications. All patients found the procedure painful and received local anaesthetic.

**Conclusions:** Laser depilation in the natal cleft is by no means a cure for pilonidal disease. Removal of hair by this method represents an alternative and effective method of hair removal and, although long lasting, is only temporary. However, it allows the sinuses to heal rapidly. It is relatively safe, and simple to teach, with few complications. It should thus be considered as an aid to healing the problem pilonidal sinus.

**Key words:** Pilonidal sinus – Laser – Natal cleft – Hair removal

Pilonidal disease is a common disorder of the natal cleft.<sup>1</sup> Excessive hair growth in the natal cleft is thought to be a key factor in initiating these abscesses, and their recurrence. Hairs are often found trapped in the base of pilonidal wounds. Surgical treatment remains controversial. Recurrence is common and many cases are difficult to heal. Weekly shaving is often advised as a compliment to surgical treatments. However, the natal cleft is difficult to access with a conventional razor. Patients often find that recurrence is delayed if the hair-free interval is prolonged.

A total of 105 patients with pilonidal disease have been seen and treated in our region by general surgeons over the past 5 years; 14 of these patients, not healed by repeated conventional surgical procedures, were referred to our unit. These patients were treated with laser therapy to assess its role as an alternative treatment modality. Most patients were satisfied with the procedure as well as the outcome, and expressed a preference to laser if further treatments were required. They were dissatisfied with repeated surgical procedures that had become complicated by further breakdown. Laser therapy should be

---

Correspondence to: Joy Odili, Surgical Research Fellow, RAFT Institute of Plastic Surgery, Mount Vernon Hospital, Northwood HA6 2RN, UK. Tel: +44 1923 844555; E-mail: odilij@raft.ac.uk

considered in treating pilonidal disease. The advantages and problems are presented.

### Patients and Methods

As laser techniques are now being used to control hair growth, it seemed logical to see if this technique would be helpful in treating pilonidal disease. The light beam can probe difficult areas inaccessible with a conventional razor. A group of 14 patients, 12 males and 2 females, have received laser depilation for pilonidal disease in the past 5 years in our unit. Both the Alexandrite and ruby lasers have been used as both are known to suppress hair growth. These machines deliver pulses of monochromatic light to areas of skin 5–10 mm in diameter. This treated area or 'spot size' varies with the power selected and the machine used. The Alexandrite laser has a wavelength of 755 nm and was used at a fluence of 12–40 J/cm<sup>2</sup>. The ruby laser has a wavelength of 694 nm and was used at a fluence of 14.5–25 J/cm<sup>2</sup>.

Each spot of light treats hairs within the target area. The light is delivered at between 1–5 pulses/s, allowing large areas to be treated rapidly. The 'flick' of the light impinging on the skin in most zones of the body causes little discomfort. However, the peri-anal area was more sensitive and anaesthetic cream or injections of local anaesthetic were helpful. Post-treatment care consisted of cool aloe vera gel applied to intact skin, or Terracortril<sup>TM</sup> cream if there were any areas of residual disease.

A questionnaire was sent to all 14 patients. Those with on-going disease were asked to return to the clinic for re-evaluation and possible treatment. All patients had received some form of surgical treatment for their disease in the past, and found the results unsatisfactory. All were patients who had suffered multiple breakdowns, and had each on average undergone 3 (range, 1–7) surgical procedures.

### Results

All patients returned the postal questionnaire. The patients ranged from 16–50 years of age. Many had tried alternative methods of hair removal, such as creams or shaving. However, they found this difficult or impractical because of the location. All patients found the laser treatment painful and required local anaesthetic. This contrasts with other body sites where the discomfort of the laser beam is well tolerated. With the exception of one patient, all said they would have laser therapy if further treatment were required. The single patient who differed, stated pain as the reason she would not consider further therapy, unless it was performed under general anaesthetic. All patients stated that this was a satisfactory and less embarrassing method of hair removal.

Patients underwent on average 2 (range, 1–10) laser treatments. The average pretreatment hair density was 11 hairs/cm<sup>2</sup> (range, 9–30) hairs/cm<sup>2</sup>, and the average post-treatment was 4 hairs/cm<sup>2</sup> (range, 3–10) hairs/cm<sup>2</sup> at 12 months. When compared, this showed a statistically significant reduction ( $P < 0.002$ , Wilcoxon test). The patients were followed up every 3–4 months for a year, and then seen only if there was recurrence. Long-term follow-up thus ranged from 12 months to 5 years. Eight patients were healed by the end of the first year and a further 2 by the end of the second year. The hair-free interval ranged from 6 weeks to 4 months. All reported no time off work (or school) following the treatment.

At 5 years, we offered all patients a further follow-up appointment as part of a postal questionnaire. Eight declined stating that they were healed. Six patients asked to be re-evaluated, of whom four were found to have on-going disease. These patients were subsequently treated with the Alexandrite laser. They received 4 sessions of treatment over a 3-month period. This resulted in a significant reduction in the size of the sinuses, as well as reduction in the number of peri-anal hairs. In one case, the pilonidal sinus was reduced from 5 × 1.5 × 2 cm to 3.5 × 1 × 1 cm in 2 weeks. Without hairs present, normal secondary healing proceeded rapidly (Figs 1 & 2). These 4 patients were followed-up every 4 months for a year and have remained healed. We operate an open referral system for these patients. Should further problems arise further follow-up can be arranged at the patients' request.

### Discussion

Pilonidal disease is a persistent focus of sepsis initiated by a down-growth into the skin of unwanted hair. The hair serves as a breach in the dermis through which bacteria enter. They commonly occur in the natal cleft, but can also occur in the umbilicus, the axilla, and the interdigital webspaces.<sup>1</sup> They tend to occur after puberty, and usually resolve by the age of 40 years. It occurs more frequently in Caucasians and less in Africans or Asians. It is often associated with obesity, hirsutism, and decreased personal hygiene.<sup>1</sup>

Treatment of pilonidal disease centres on different surgical procedures. This usually involves primary excision and direct closure, marsupialisation, or healing by secondary intention.<sup>2</sup> Some advocate the use of z-plasties and other flaps for primary closure, rather than deep suturing.<sup>3</sup> These procedures result in healing in 58% of cases within 10 weeks,<sup>1</sup> but recurrence is common, varying from 11–14% and depends on which treatment has been used.<sup>2</sup> Regular shaving of the area involved is recommended in an attempt to prevent recurrence. Most patients describe this as inconvenient and often difficult due to access.

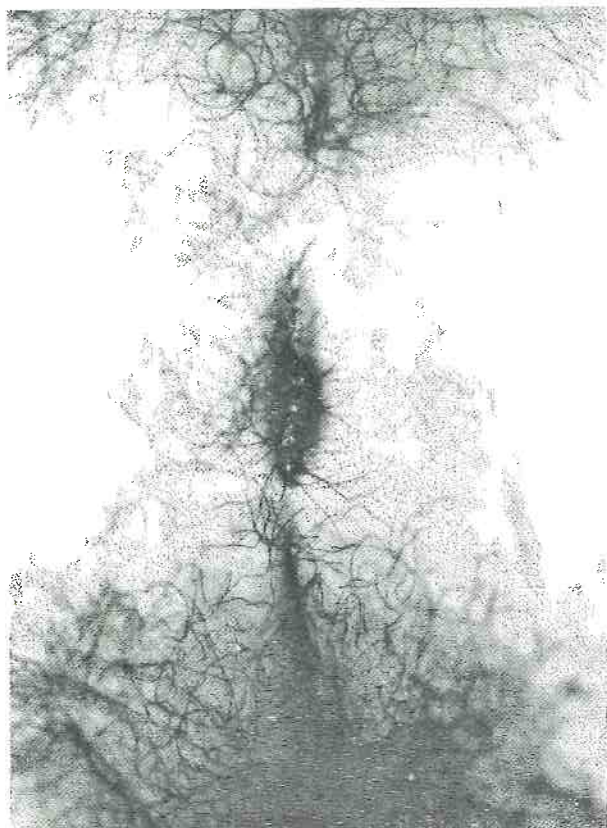


Figure 1 Sinus before treatment.



Figure 2 Sinus healed and number of hairs reduced after laser treatment.

Lasers have been available for hair removal since 1996.<sup>4</sup> This is by no means a permanent method of hair removal despite media hype.<sup>5</sup> Numerous studies have been carried out, and patients often report a 60–80% reduction in hair growth at 6 months.<sup>6</sup> Multiple treatments are often needed and some believe only anagen hair responds. Multiple treatments seem to increase progressively the hair-free period between treatments, and also decrease the percentage of hair re-growth.<sup>7</sup> There are no scars,<sup>8</sup> but temporary changes in pigmentation can occur in patients with dark skin types. Complications are few, but a significant number of patients experienced discomfort with the procedures. Most required topical anaesthesia and one found only the use of his personal stereo a significant distraction from the pain.

Hair destruction by laser is achieved by selective absorption of light energy by the melanin in dark hairs.<sup>9</sup> Short pulses of light treat a variable number of hairs within a target footprint. This is a safe and straightforward procedure with the appropriate training. Protective eye-wear is required for the operator, assistant, and the patient. Rarely, blistering, hyper- or hypopigmentation occurs as a complication. A study has shown that in comparison to UV radiation, the ruby laser does not induce free radical

production in the treated tissues and there is no known cancer risk.<sup>9</sup> It has always been assumed that lasers were unlikely to induce skin cancer and this is the first evidence supporting this view.

Laser hair removal can be carried out as a day-case procedure under local anaesthesia. After treatment, care of the treated area is simple. The cost of each procedure varies with each treatment. Laser machines cost in the region of £50,000 at the present time.

Laser therapy is by no means a cure for pilonidal disease. Removal of hair by this method can be an uncomfortable procedure and, although long lasting, is temporary. However, it represents an alternative and effective method of hair removal, with a low complication rate. Hair removal is achieved in the most awkward crevices of the natal cleft using an easily directed light beam. The sinus is given an opportunity to heal by prolonging the hair-free interval. It is simple to teach and is worth considering especially for recurrent disease where patients are disenchanted with conventional surgery.

#### References

1. Allen-Merish JG. Pilonidal sinus: finding the right track for treatment. *Br J Surg* 1990; 77: 123–32.

2. Spivak H, Brooks VL, Nussbaum M, Friedman I. Treatment of chronic pilonidal disease. *Dis Colon Rectum* 1996; 39: 1136-9.
3. Abu Galala KH, Salam IM, Abu Samaan KR, El Ashaal YI, Chandran VP, Sabastian M *et al.* Treatment of pilonidal sinus by primary closure with a transposed rhomboid flap compared with deep suturing: a prospective randomised clinical trial. *Eur J Surg* 1999; 165: 468-72.
4. Gault DT, Grobbelaar AO, Grover R, Liew SH, Philp B, Clement RM *et al.* The removal of unwanted hair using a ruby laser. *Br J Plast Surg* 1999; 52: 173-7.
5. Liew SH, Grobbelaar AO, Gault DT, Sanders R, Green CJ, Linge C. The effect of ruby laser light on *ex vivo* hair follicles: clinical implications. *Ann Plast Surg* 1999; 42: 249-54.
6. Boss Jr WK, Usal H, Thompson RC, Fiorillo MA. A comparison of the long-pulse and short-pulse Alexandrite laser hair removal systems. *Ann Plast Surg* 1999; 42: 381-4.
7. Williams R, Havoonjian H, Isagholian K, Menaker G, Moy R. A clinical study of hair removal using the long-pulsed ruby laser. *Dermatol Surg* 1998; 24: 837-42.
8. Solomon MP. Hair removal using the long-pulsed ruby laser. *Ann Plast Surg* 1998; 41: 1-6.
9. Haywood RM, Wardman P, Gault DT, Linge C. Ruby laser irradiation (694 nm) of human skin biopsies: assessment by electron spin resonance spectroscopy of free radical production and oxidative stress during laser depilation. *Photochem Photobiol* 1999; 70: 348-52.