

IN BRIEF

- Of value to both oral surgeons and proponents of intra-oral laser use.
- Demonstrates the efficacy of laser hair removal on an intra-oral graft site.
- Documents the innovative use of laser energy within a dental setting, to the prime benefit of the patient.

Intraoral hair removal on skin graft using Nd:YAG laser

C. Lumley¹

This case report is a demonstration of the efficacy of laser hair removal on a graft site intraorally. A Polaris Long Pulse Nd:YAG laser was used for the procedures.

LASER HAIR REMOVAL

The demand for a non-invasive method for hair removal has led to the development of various light source technologies for the process. These include ruby, alexandrite, diode, and Nd:YAG lasers and intense pulsed light sources.

The pulsed Nd:YAG laser produces a light energy at a wavelength of 1,064 nm and targets the chromophore of melanin in the hair follicle.

The light energy produced by each type of system varies, as do the results of treatment. However, a number of papers conclude that the evidence from controlled clinical trials favours the use of lasers for the removal of unwanted hair.¹⁻³

Trials and clinical experience have demonstrated that:

- epilation with lasers induces a partial short-term hair reduction (six¹ and 12² months)
- efficacy is improved when repeated treatments are given¹ as a single treatment can reduce hair by 10

to 40% with repeated treatments providing reductions of up to 90%²

- laser treatments are more effective than conventional treatments (shaving, wax epilation, electrolysis)^{1,2}
- while very few side effects are reported, the patient should be advised of possible temporary problems caused by laser treatments which include: hyperpigmentation, hypopigmentation, erythema, peri-follicular oedema, folliculitis, blistering or scabbing.^{1,2}

CASE REPORT

In November 2005 a male patient in his forties was referred for laser hair removal by his maxillofacial surgeon. The patient had been diagnosed with a squamous cell carcinoma intraorally distal to his lower first molar and extending to the retromolar pad area. Surgery had been undertaken and included local resection, level IV neck dissection and reconstruction with radial forearm free flap.⁶

The graft took well and healing was uneventful, however after several weeks the patient returned to see his surgeon as the graft had begun to grow hair very extensively.⁷ The patient was a Fitzpatrick's skin type 4 and of swarthy Mediterranean complexion with thick dark hair.

A Polaris Long Pulse Nd:YAG laser³⁻⁵

was used for the hair removal procedures. This laser has the following specifications: Wavelength 1,064 nm: Pulse Duration 10 ms: Output Energy 40J per pulse @ 1Hz: Spot sizes 10.0 mm and 4.0 mm. Beam Delivery by Fibre Optic and focussing hand-piece including sacrificial window. Aiming Beam Laser diode operating at 635 nm.

Following a test patch at manufacturer recommended settings for the patient's skin type (10 mm spot size at 21.5 J: fluence 27.3 J/cm) to reduce the chances of any adverse skin reaction and to establish the fluence and energy levels to start the treatment, the patient attended clinic on four further occasions with approximately five-week intervals between each treatment allowing for the hair growth cycle.

Great caution was exercised particularly at the graft junction with the epithelial tissues. Pain relief was provided using Lignocaine spray and cooling with ice cubes wrapped in gauze. The hair was trimmed, where possible, using a scalpel and tweezers prior to treatments.

Access to the treatment site was difficult due to the limited opening the patient could achieve. Two treatments were carried out using the hair removal handpiece with a spot size of 10 mm (25.5 J/28.5 J) (max fluence 36.4 J/cm).

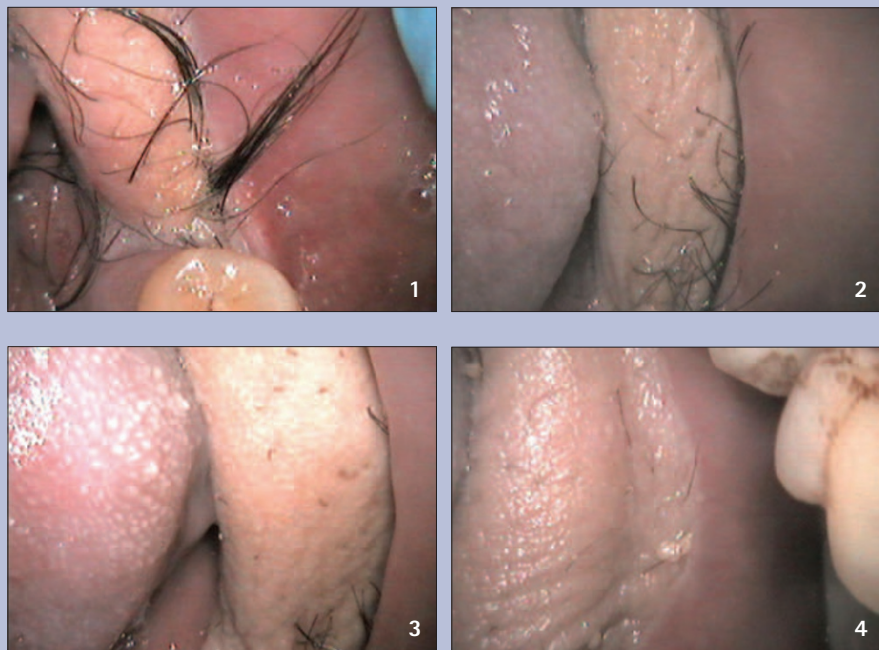
¹The Lumley Dental Practice, 6 Argyle Road, Sevenoaks, Kent TN13 1HJ
Correspondence to: Dr Cheralyn Lumley
Email: sevenoaksdental@btclick.com

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Figs 1-4 The progressive improvement in hair reduction during the course of four treatments. Figure 4 shows the distinct difference in appearance between the keratinised graft area and the non-keratinised buccal mucosa.

Subsequently, two further treatments were carried out with a 4 mm handpiece normally used for vascular work, but at a reduced energy level (9.5 J).

Photographs taken with a Vistacam wireless intraoral camera are provided here (Figs 1-4) and show the progressive improvement in hair reduction during the course of four treatments, which lasted approximately six months. The final photograph (Fig. 4) shows well the distinct difference in appearance between the keratinised graft area and the non-keratinised buccal mucosa.

At a review appointment in September 2006 there was very little growth. The remaining hair was positioned at the graft junction that was difficult to access. This Nd:YAG laser treatment has been clinically successful and has met patient expectations.

COMMENTS

The difficult nature of treating skin that has been grafted into the mouth should not be underemphasised. Treatment energy levels are critical to ensure that the graft is not destabilised, but enough

to effectively remove the hair. Several treatments are required at four to six week periods due to the hair growth cycle.

Selection of the donor site is usually based on the features wanted at the recipient site; this is more important in full-thickness grafts where more of the characteristics of the donor site skin will be retained by the grafted material in its new location. Where hair growth is undesirable but the graft area contains hair follicles, it would be preferable (time and other factors permitting) to reduce or eradicate hair from the donor site using an Nd:YAG or other appropriate laser, prior to grafting to the recipient site.

HAZARDS

Laser safety and treatment policies and procedures are designed to ensure patient and operator safety at all times. Particular attention must be given by the operator to beam hazard to skin and eyes and also to fire risk.

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