LASER HAIR REMOVAL

Unwanted facial and body hair can be a significant problem; it can affect the way we feel, affect our social interactions, and influence what we wear and what we do. While mild hirsutism and hypertrichosis are most often physiologic, it should not be forgotten that severe hirsutism and hypertrichosis can be a clue to an underlying systemic illness. Hirsutism, especially when associated with irregular menses, acne, or female pattern hair loss, can be caused by androgen excess. Late onset hypertrichosis could also be due to other underlying problems.

There are various methods to camouflage unwanted bodily hair, e.g. plucking, shaving, bleaching, hair removal creams, or epilation. Electrolysis can result in permanent hair follicle destruction. Each follicle needs to individually treated, often repeatedly to achieve this.

Laser hair removal therapy can produce either a permanent reduction in hair density or permanent removal of unwanted hair. Permanent reduction in hair density means that some hair continue to regrow after a single course of laser therapy, and ongoing maintenance laser therapy may be needed. Permanent hair removal means that the hair never regrows even after a single course of laser therapy.

Whether a person achieves permanent hair removal rather than a permanent reduction in hair density is influenced not only by the color and thickness of the hair being treated and the color of the patient's skin, but also by the type and quality of the laser being used and the competence and training of the person operating the laser.

Which laser and how does it work?

Lasers emit a specific monochromatic wavelength of light. When targeted on the skin, the energy from the light is transferred to a target chromophore. For hair removal, the target chromophore is melanin pigment. Energy absorbed by melanin is converted to heat that produces thermal damage to the surrounding tissue.

To achieve hair removal, the target tissues are the hair follicle stem cells in the hair bulge, which may be found at the level of insertion of the arrector pili muscle. Specific parameters are modified to enable the laser beam to selectively destroy bulge cells without damage to the bystanding tissue.

Lasers suitable for hair removal include:

- long- pulse ruby lasers
- long- pulse alexandrite lasers
- long- pulse diode lasers
- long -pulse Nd:YAG lasers

Intense pulsed light (IPL) devices are not laser devices but flash lamps that emit multiple wavebands of light simultaneously and work in a similar fashion.

To bypass epidermal melanocytes and thereby minimize the risk of consequential skin dyspigmentation, long wavelength light is required. In fair skinned people with dark hair, an IPL device, an Alexandrite laser, or a diode laser can be used. In dark skinned people with dark hair a Nd:YAG or diode laser can be employed. For blond or red hair, a diode laser can be used. For gray hairs with no melanin pigmentation, currently available lasers are ineffective. The use of pigment dyes to color gray hair prior to treatment is being studied.

To bypass hair pigment on the skin surface, hairs are carefully shaved prior to treatment. Plucking cannot be used to prepare for laser treatment, as hair shafts below the skin surface are the target chromophore. Retreatment intervals must be sufficiently long to allow new hair growth to reach the level of the bulge.

To control spread of heat and consequential thermal damage to surrounding tissue, short pulse duration is required. Repetition of laser pulses at intervals longer than the 'thermal relaxation time' of the surrounding tissue enables efficient target tissue destruction without heat spread.

To control the amount of heat generated in the target chromophore and surrounding tissue, the energy can be adjusted. The unit of energy is Joules/cm^2. High energy produces greater bulge cell damage, but also increases the treatment discomfort experienced by the patient and the risk of laser burn.

Laser burn occurs when energy is too high, surface hair has not been removed carefully enough, or recent sun tanning (epidermal pigmentation) is not accounted for in setting the laser parameters, or when an inappropriate wavelength is employed- for example use of an Alexandrite laser in a person with a Fitzpatrick type IV or V skin.

How many treatments will I need?

1. Fitzpatrick skin types I and II:

People with dark hair can usually achieve permanent hair removal with 4-6 treatments at 4 to 6 weekly intervals. People with fair hair will generally only achieve permanent hair reduction. After an initial course of treatment, 6-12 monthly treatments may be needed.

2. Fitzpatrick skin types III:

People with dark hair can usually achieve permanent hair removal with 6-10 treatments at 4 to 6 weekly intervals. People with fair hair will generally only achieve permanent hair reduction and after an initial course of treatment may require 3-6 monthly repeat treatments.

3. Fitzpatrick skin types IV and V:

People with dark hair can usually achieve permanent hair reduction with 6-10 treatments at 4 to 6 weekly intervals. Maintenance will usually be required with 3-6 monthly repeat treatments. People with fair hair are unlikely to respond.

What side effects may occur?

You will be advised to wear goggles during the laser treatment session to prevent eye injury. There will be some pain experienced during the treatment, especially during the first few sessions. This is mainly due to incomplete hair removal prior to the procedure. Residuals hairs missed during shaving absorb laser energy and heat the skin surface producing pain. With repeat treatments at regular intervals, this occurs less often.

After the laser treatment, the skin will feel hot for 15-30 minutes. There may be redness and swelling for up to 24 hours. More serious side effects include blisters, hyper- and hypo-pigmentation, or infrequently even permanent scarring. This generally occurs when there has been recent sun-tanning, the laser settings have not been adjusted, or when patients are taking medications that affect the skin's response to sunlight.

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