

Hair Removal guidelines with LightSheer® technology over skin of color

Indian Study Case Report



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Introduction

The use of lasers in cosmetic dermatology on patients with skin of color has always been challenging because of the higher competing epidermal melanocyte activity as compared to Caucasian skin types (Anderson et al., 1983). Laser hair removal, still the most common laser procedure in dermatology, appears to be even more intricate as the targeted hair chromophore is also melanin. As a result, to avoid unwanted side effects from laser therapy while maintaining high efficacy levels, the use of the right laser device, appropriate settings and customized pre-and post-treatment care are crucial.

LightSheer® laser systems were the first to provide permanent hair reduction on all skin types using state-of-the-art, high-power diode laser technology. To date, LightSheer lasers along with long-pulsed Nd:YAGs are considered as the safest hair removal lasers for darker skin types (E. Battle et al., 2002 & 2004) with higher and quicker hair reduction reported when using the LightSheer systems.

The LightSheer® DUET™ was the first introduction of HIT™ (High-Speed Integrated Technology), Lumenis' addition to the already established gold standard LightSheer technology, offering added benefits for much quicker, safer, more hygienic, and even more relaxed treatments both for the patients and the operators. Limiting factors of pain associated with tedious and long-lasting sessions have been eliminated, making hair removal accessible to everyone. LightSheer combines two powerful diode technologies: The high-fluence, sapphire-cooled ChillTip™ and the low-fluence, vacuum-assisted, big spot size HIT™ (HS). The vacuum assistance of the HS handpiece and its pick-and-place technique, which does not require the use of any coupling gel, allow a good visual indicator for the operator to ensure

precise positioning of the handpiece to cover large body areas consistently and uniformly. As opposed to some competing low-fluence techniques which require multiple, operator-dependent passes, the HS also has pulse stacking capabilities - if needed - which make the clinical outcome more reproducible and homogeneous as it will not depend on the manual positioning skills of the operator.

Most of the Indian skin types are IV and V with some skin type III in the Northern part of the country. In addition to the classic hair removal requests and increasing requests for large treatment areas with deep and coarse body hair, a growing number of hair disorders and cases of polycystic ovarian syndrome (PCOS) has been reported. Hirsutism, an androgen dependent disorder which presents with excess terminal (coarse) hair in a male growth pattern, accounts for up to 40% of the facial hair removal requests of women of reproductive age.

The above-described hair conditions of Indian skin types IV and V are challenging for all hair removal lasers. The purpose of these guidelines is to assist Physicians in fine-tuning their laser hair removal approach when ever it comes to treating dark skin types.

Pre-treatment

- Pre-assessment review:
 - ▶ A thorough consultation with detailed information is the best guarantee for a clear understanding of the treatment process and expected outcome
 - ▶ Absolute and relative contra-indications do not differ from Caucasian skin type treatment
 - ▶ Patients with initial fine hair which has poor/no color contrast with skin color, would not respond optimally to laser hair removal treatments

- ▶ Paradoxical regrowth in young Indian female patients with long vellus hair on the sideburns is a rare post- hair removal laser side-effect (Alaijan et al., 2005). The reason for this stimulation remains unclear and further investigation should be made
- ▶ As skin of color has a higher potential for scarring and keloidal reaction, it should be underlined that patients with a history of keloids should be excluded
- No special extra skin preparation, such as application of tyrosinase inhibitors is needed
- Sun protection starting 4 weeks prior treatment is mandatory
- Non-idiopathic hirsutism, hyperandrogenism should be confirmed or ruled out through laboratory and/or radiologic testing and medically treated if found.
- Given its masculine association, most women accept facial pre-shaving with difficulty. However, a proper close blade shaving technique (dry shaving to be excluded) on the same treatment day, remains the best chosen method to prepare for optimal treatment comfort and outcome. Chemical depilatories, usually thioglycolic acid preparations, could cause irritant dermatitis and inflammatory hyperpigmentation most especially on patients with skin of color and is not recommended
- After shaving, the area to be treated should be thoroughly cleansed to make sure no shaved hair remain stuck to the skin surface. residual hair could cause localized thermal injury to the epidermis
- 5-10 minute pre-cooling, using either cold packs (not frozen) or large cooling rollers, is administered on specifically dense areas of coarse hair to improve epidermal protection and provide cool “anaesthesia” to the patient
- Due to delayed response times of skin of color, test patches should be ideally performed 48-72 hours pre-treatment. This would allow secure assessment of higher treatment dosages. Test spots are not always practical, therefore milder treatment dosage with 15-30 minute delay is recommended, in order to observe skin and hair responses.
- Any change of one or both of the settings necessitate a new dosage tolerance test

ChillTip™

- The high-fluence ChillTip technology provides epidermal protection through permanent contact cooling
- Use of cold coupling gel may be combined but is not mandatory
- Apply compression of the handpiece to particularly dense treatment sites and hold for a few seconds before lasing
- **Pulse Duration Width**
 - ▶ As per hair texture and density, skin types IV-V could either tolerate 30ms or require 100ms (see Figure 1)
 - ▶ If the setting changes imply a change in PW, fluence levels should be reinitiated and started from initial settings value (see Figure 1, Examples 1, 2 and 3)
- **Fluence**
 - ▶ From session to session, with a decrease in the hair count without change in the hair texture and while maintaining PW, change of ChillTip handpiece fluence levels is gradually increased by increments of 1-2J/cm² (see ET handpiece example diagram and Examples 1, 2 and 3)

Treatment

- Selection of treatment dosages for both technologies- the low-fluence HS and the high-fluence ChillTip is the safe and effective combination of Fluence in Joules per square centimetre, F (J/cm²) and matching Pulse Width (PW) in milliseconds (ms)

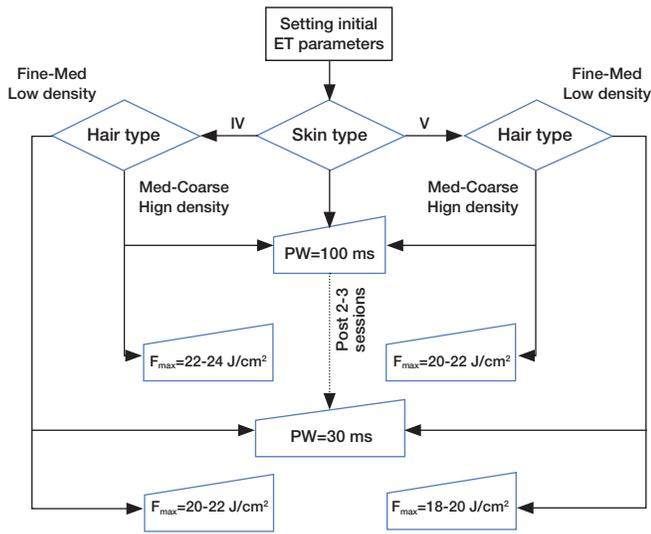


Figure 1: Initial settings for ET ChillTip handpiece



Baseline



72 Days Post 4 Treatments

Example 2 - LightSheer® 805nm with courtesy of Dr. Rahul Pillai

Skin type V

1st session 22J/cm², 100ms

2nd session 26J/cm², 100ms, 36 days post session #1

3rd session 20J/cm², 30ms, 69 days post session #2

4th session 22J/cm², 30ms, 63 days post session #3



Baseline



6 Months Post 5 Treatments



Baseline



Post 8 Treatments

Example 1 - LightSheer® 805nm with courtesy

of Dr. Soni Nanda

Skin type IV

1st session 20J/cm², 100ms

2nd session 22J/cm², 100ms, 4 weeks post session #1

3rd session 24J/cm², 100ms, 6 weeks post session #2

4th session 20J/cm², 30ms, 8 weeks post session #3

5th session 24J/cm², 30ms, 3 months post session #4

6th session 26J/cm², 30ms, 6 months post session #5

Example 3 - LightSheer® 805nm with courtesy of Dr. Rahul Pillai

Skin type IV, patient with PCOS

1st session 22J/cm², 100ms

2nd session 24J/cm², 100ms, 31 days post session #1

3rd session 26J/cm², 100ms, 34 days post session #2

4th session 18J/cm², 30ms, 49 days post session #3

5th session 20J/cm², 30ms, 64 days post session #4

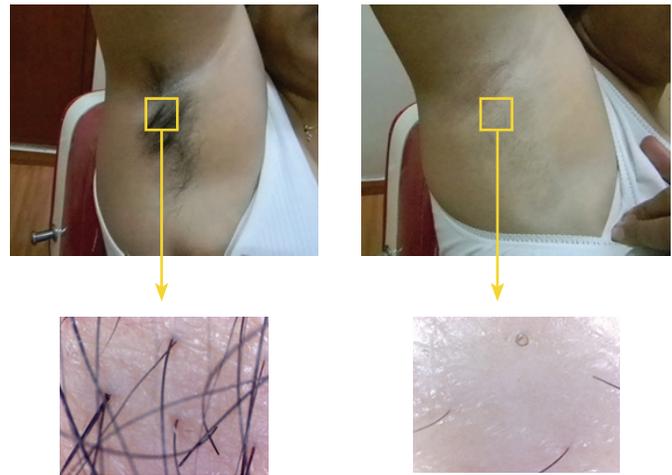
6th session 22J/cm², 30ms, 62 days post session #5

7th session 24J/cm², 30ms, 80 days post session #6

8th session 24J/cm², 30ms, 120 days post session #7

HIT™

- The low-fluence HS handpiece provides epidermal protection through integrated vacuum-assistance. Vacuum-assistance reduces the volumetric melanosome density of the epidermis that competes with the light absorbance by the hair
- Vacuum level is set to “Medium” by default and may be lowered down to “Low” for extremely lax skin
- Unlike the ChillTip handpieces, compression of the HS handpiece when positioning it on the skin is not recommended
- **Pulse Duration Width**
 - ▶ As per hair texture and density, skin types IV-V could either tolerate 30ms or require 100ms (see Figure 2)
 - ▶ If the settings change imply a change in PW, fluence levels should be reinitiated and started from initial settings value (see Figure 2, Example 4)
- **Fluence**
 - ▶ From session to session, with a decrease in the hair count without change in the hair texture and while maintaining PW, change of HS fluence levels is gradually increased by increments of 0.4-0.6J/cm²
 - ▶ If maximum fluence of 6J/cm² in 30ms is to be exceeded, return to a PW of 100ms with minimal fluence of 4.5J/cm² and test double pulse stacking
 - ▶ For touch-ups on patchy areas of very fine stubborn hair after 5-6 sessions, the use of a ChillTip handpiece may also be considered



Baseline
Example 4 - LightSheer 805nm with courtesy of Dr. Soni Nanda
 Skin type IV
 1st session 5.5J/cm², 100ms
 2nd session 6J/cm², 100ms, 4 weeks post session #1
 3rd session 5.5J/cm², 30ms, 8 weeks post session #2

Post-treatment

- Immediate cooling of skin to aid in reducing erythema and oedema is of prime importance in all cases using either cold packs (but not frozen) or external air flow cooling systems. The oedema should subside before the patient is allowed to leave the clinic
- In rare cases, should the oedema level be abnormally high, local application of a steroid-antibiotic cream may be considered
- Avoidance of sun exposure and regular application of sunscreen is stressed upon for the entire treatment regimen
- A cream/ointment combining an antibiotic and moderately potent topical steroid together with a non-pore blocking moisturizer to maintain the skin hydrated in the week following one session is suggested
- Proper drug-therapy (oral antiandrogens) needs to be combined in every case with significant hirsutism
- Hamzavi et al. (2007) describe the combined use of topical eflornithine cream in cases of hirsutism. The cream treats facial hirsutism by slowing the rate of hair growth; it does this by irreversibly inhibiting ornithine decarboxylase, an enzyme

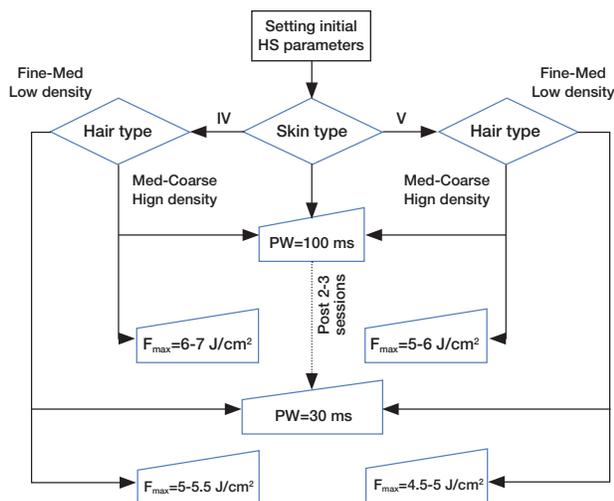


Figure 2: Initial settings for HS handpiece

essential for hair growth. Adverse effects may include a mild burning sensation, outbreak of acne, pseudofolliculitis barbae, irritation, and allergic contact dermatitis. It has NOT been considered as an adjunct treatment for the LightSheer®

- On young female patients with hypertrichosis for which the initial hormonal test did not indicate abnormal LH/FSH ratio, should no hair reduction be visible after 3-4 sessions, blood tests for hormonal and lipid profiles should be repeated as the ratio might have changed since initial visit

Conclusions

The dual technology feature of LightSheer® systems allows safe and effective permanent hair reduction for skin types IV and V.

The high-fluence ChillTip handpieces are the optimal choice for facial treatments presenting more superficial hair. Although they deliver high fluences, because the areas treated were small, no need of anaesthesia has been required.

The low-fluence HS handpiece is the optimal choice for larger body parts with deeper hair structures with the bonus of a rapid coverage rate, unrivalled patient AND operator comfort in

one single pass technique. It is the treatment of choice for the patients who do not tolerate the slightest discomfort and who may be candidates for full body treatments.

Patient satisfaction is usually higher with the ChillTip handpieces after the 1st session but reported and observed satisfaction with ChillTip and HS matches after the 3rd session (Halachmi & Lapidoth, 2012).

In all cases, additional pre and post-cooling helped in largely reducing the post-op oedema and provided additional comfort to those patients having a high density of coarse hair.

Numerous papers (E. Battle et al., 2002, 2004, A. Kazmi et al., 2002) validate the use of the high-fluence ET ChillTip LightSheer handpiece on dark skin individuals. The use of the low-fluence HS handpiece on these specific skin types has not been addressed as extensively in literature yet. However, the HS handpiece has all the features to offer both safety and effectiveness that are demanded on dark skin types with the bonus of speed, optimized patient and operator comfort.

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