
High-Speed Hair Removal with the LightSheer® Duet™

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INTRODUCTION

Laser and light-based methods for removing unwanted hair (photoepilation) for men and women are relatively new. They are suitable for removing or permanently reducing the amount of hair in the axilla, arms, legs, chest, back, bikini area, or face. The efficacy and safety of laser and intense pulsed light devices in hair removal has been reviewed.^{1,2,3} According to the American Society of Aesthetic Plastic Surgery, laser hair removal remains the highest volume procedure of all laser applications.

The goal in photoepilation is to deliver light energy to melanin in the stem cells and dermal papilla in the hair follicle. In general, optimal efficacy and safety for hair removal depends on wavelength, pulse width, fluence, cooling, number of treatments, and number of pulses.⁴ More specifically, efficacy depends on the absorption of light by melanin and the subsequent thermal destruction of the hair and follicle by selective photothermolysis. Effective alternatives of laser and

light-based procedures for removing hair are limited, however, because light energy is also absorbed by melanin in the epidermis.

The long-pulsed, 800-nm LightSheer™ Diode Laser (Lumenis, Inc.) with its sapphire cooling device has been shown to be safe and effective for long-term hair reduction in a variety of skin and hair types.^{5,6} Since melanin absorbs three to four times more energy at 800 nm than it absorbs at 1064 nm, the LightSheer device removes hair at lower fluences than those required by 1064-nm lasers.⁶ The LightSheer's cooled sapphire device protects the epidermis and, because it is pressed against the skin, moves the hair bulb closer to the upper dermis where the laser energy is at its maximum.⁶ The LightSheer's longer pulse widths and continuous contact cooling sapphire tip minimize skin damage and permit the safe use of higher fluences, even in dark-skinned patients.⁵ The LightSheer laser hair removal device with its chilled sapphire tip is considered the gold standard for laser hair removal.

Treatment Area	Treatment Time (min)		Reduction (%)
	ET	HS	
Back	60	15-20	67-75
Chest	40	15	62
Shoulders	20	10	50
Underarms	10	4	60
Full legs	60-75	20-30	63
Lower legs	45	15	67
Bikini area	15	5	67

Table 1. Comparative durations for hair removal procedures using the ET and HS handpieces.

THE LIGHTSHEER DUET

The LightSheer Duet Laser System (Lumenis, Inc., Santa Clara, CA) is a non-invasive aesthetic device that delivers pulsed infrared laser light at 800 nm. The system (Figure 1) is equipped with two handpieces: (1) the LightSheer ET with a 9 mm x 9 mm spot size to treat small areas and (2) the new LightSheer HS (High-Speed) with a 22 mm x 35 mm spot size to treat large areas. The HS handpiece is shown in Figure 2.

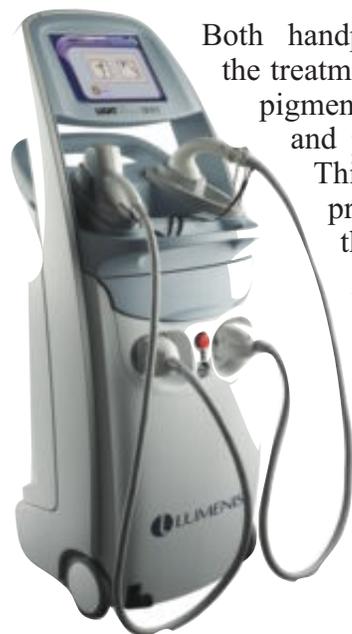


Figure 1. The LightSheer Duet Laser System (Lumenis, Inc., Santa Clara, CA).

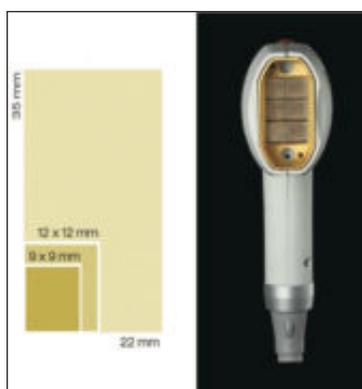


Figure 2. High Speed (HS) handpiece with a large 22mm x 35mm spot size.

The vacuum provides suction to draw and stretch the skin into a large treatment aperture bringing it close to the light source. Vacuum stretching of the skin provides four important benefits: (1) more efficient transfer of energy though the thinner, stretched skin, (2) reduction of fluence needed to achieve efficacy due to closer proximity of the light to target follicle bulbs, (3) reduced density of epidermal melanin, thus minimizing heat-

Both handpieces are indicated for the treatment of benign vascular and pigmented lesions, hair removal, and permanent hair reduction.

This paper focuses on my preliminary experience with the LightSheer HS handpiece for removing hair from the back, chest, shoulders, underarms, upper and lower legs, and bikini areas of men and women.

I have performed aesthetic procedures, including hair removal, for 7 years. In our clinic we have been regularly removing unwanted hair with a LightSheer Duet Laser System since we first began evaluating the system in 2006. Which of the two handpieces we use depends on the areas to be treated. We use the ET with the small spot size to treat the upper lip, chin, ankle, and bikini areas, and the HS with the large spot size and vacuum system to treat the back, shoulders, chest, and legs.

induced damage to the epidermis and maximizing absorption of light by melanin in the hair and follicles and (4) constriction and subsequent blanching of blood vessels within the treatment area thus further eliminating light absorption by competing chromophores. The optics of stretching skin and use during clinical laser treatments has been described in detail.⁷

The specifications of each handpiece are shown in Figure 3 and the principle of operation is shown in Figure 4.

LightSheer ET	LightSheer HS
9 x 9 mm treatment area	22 x 35 mm treatment area
Up to 100 J/cm ²	Up to 12 J/cm ²
5-400 msec pulse widths	30-400 msec pulse widths
ChillTip contact cooling	Vacuum assist technology
Full LightSheer ET functionality	Greater coverage, comfort
Field replaceable handpiece	Field replaceable handpiece

Figure 3. Specifications of the LightSheer ET and HS handpieces.

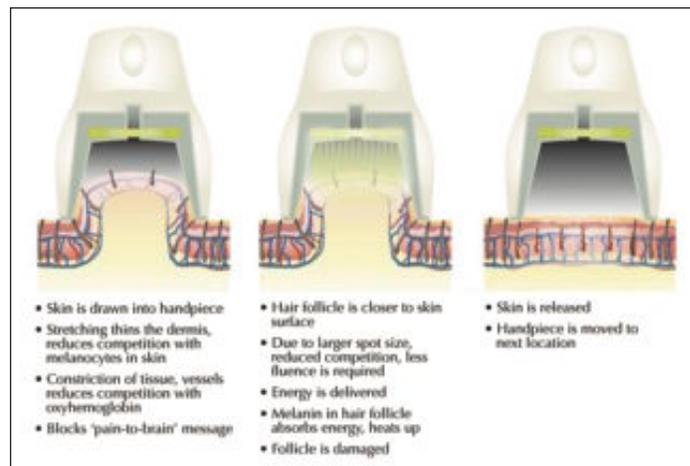


Figure 4. Operation of Vacuum Assist technology, LightSheer HS (High Speed).

RAPID TREATMENT WITH MINIMAL DISCOMFORT

The HS handpiece has three main advantages: treatment is rapid, patient discomfort is minimal so no topical anesthetics are required, and no gel is to be used during treatment. The treatment times for the ET and HS handpieces are compared in Table 1. In all cases the HS reduces treatment time by 50% to 75%. It used to take us 1 hour to treat a man's back with the ET. Now it takes 15 to 20 minutes with the HS. It took 45 minutes to treat the lower legs, now it takes



Figure 5. Treatment of the lower leg with the LightSheer HS handpiece.



Figure 6. Treatment of the chest with the LightSheer HS handpiece.

15 minutes (Figure 5). We can remove hair from a man's chest in 15 minutes as well (Figure 6). With the HS handpiece, I've seen excellent results after 3 treatments spaced 4 to 6 weeks apart compared to 5 treatments with the ET alone. With these advantages, it's not surprising that our laser hair removal volume has remained steady in the depressed economy.

As for patient discomfort, one gentleman whose back we treated with our old device waited a year for another treatment because he dreaded another long and painful experience. When he finally came in, we treated him with the HS and he was amazed at its speed, tolerability, and effectiveness. Of course, some anatomical areas are more sensitive than others, and the amount of discomfort depends on how much energy is used. But generally, the treatment is comfortable enough, that we can completely eliminate the preparation time of applying topical anesthetic and further reduce treatment time and procedure costs.

There are only a few side effects. One is that sensitive skin turns red around the hair follicle and may become edematous which is a common treatment endpoint in laser hair removal. And, although I've never treated an African American, I have treated people with tanned skin. The problem with dark skin is that more laser energy is absorbed by the greater amount of melanin in the skin. I just use lower energies and treat them more often. Fair-skinned patients respond very well to treatment.

EASY OPERATION

Another advantage of the HS is its ease of operation. The operator, rather than gliding the handpiece over the target area for 1 to 2 hours, simply "stamps" the target

area with very little pressure and then lifts the handpiece off. We don't have to use a gel to make gliding easier or a topical anesthetic to reduce discomfort. The procedure is much less tedious and takes minutes rather than hours. The entire unit is also small, mobile, and easy for the nurse to move around the office.

INCREASED REVENUE AND PROFITS

Since treatment time is shorter, we can treat more patients in a given amount of time. This increases our profit margin and patients spend less time away from their normal activities for treatments. Even though our treatment times are reduced, we have not lowered our price for hair removal because our fees are already very competitive. Our patients obtain more value for the same amount of money because the HS procedure is effective, fast, and has minimal discomfort. Since the procedure is faster and not painful, patients are more apt to keep their appointments rather than dreading and putting them off.

By using the HS handpiece, we've seen an increase in our profit margin for hair removal. We treat more patients because we have more referrals and we expect this trend to continue. Our busy patients appreciate a 20 to 30-minute treatment.

CONCLUSION

The LightSheer Duet with the HS handpiece provides clinicians a fast hair removal treatment option to remain competitive and increase procedure profits. In addition, the high patient satisfaction with the HS handpiece is due to its efficacy, speed, and absence of patient discomfort during treatment.

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