Physician's Guide

LipoLife™ System for Laser-Assisted Liposuction, Skin Tightening and Fat Grafting

Introduction

This physician guide aims to provide general treatment considerations and recommended treatment parameters of the LipoLife™ system (Figure 1) intended for laser assisted liposuction, skin tightening and fat grafting.

Autologous fat grafting is widely used for soft-tissue augmentation and replacement in reconstructive and aesthetic surgery. Autologous fat grafting became an important and easily accessible filler with the advent of liposuction in the 1980s (Tabit C.J. et al. Aesthet. Plast. Surg.2012) with growing use ever since, mostly because adipose tissue is readily available, natural, easy to harvest and inexpensive. In addition, autologous adipose tissue does not trigger an immunological response that could lead to rejection.
Different harvesting procedures result in different outcomes of fat graft take, as observed by multiple in vitro, in vivo and human studies (Strong A.L. et al. Plast. Reconstr. Surg.2015). Optimizing fat harvesting is of maximal importance, and since patient-related factors are unchangeable, production of high-quality fat relies heavily on effective harvesting technique.

The LipoLife™ system was developed to meet the need for laser assisted liposuction technology, which produces a high quality fat cell yield intended for autologous fat grafting for aesthetic body and face contouring.
The LipoLife™ system is composed of Almas' 1470nm laser Diode, intended for laser assisted liposuction and skin tightening, and the Alma LipoFlow™ system intended for tumescent infiltration, tissue harvesting and filtering.
The LipoLife™ system provides a low risk, minimally invasive as well as short operating time surgical procedure for liposuction, skin tightening and autologous fat grafting which can be applied in a wide range of reconstruction or augmentation procedures.

Technology and Mechanism of Action

The LipoLife™ 1470nm wavelength was chosen due to its absorption specificity in water, rendering it ideal for gentle fat tissue harvesting. The system performs simultaneous laser emission and liposuction. The laser energy emission is carried out by a single-use, 400 or 600µm, optical fiber (Figure 2) with a radial tip embedded in a 2/3/4mm cannula (Figure 3). The rounded cannula tip minimizes tissue trauma during operation. The radial emitting fiber enables energy dispersion in a 360° pattern (Figure 4), which reduces energy intensity, thus reducing potential laser related adverse events such as burns and internal scarring.

In Addition, the 360° radial laser feature produces a gentle thermal effect on the extracellular matrix of the sub cutaneous tissue. This heating effect dissociates the adipocytes enabling facilitated liposuction and by so generating a high-quality adipocyte yield. The harvested fraction with the LipoLife™ system is homogenous, demonstrating a high viable adipocyte count, low in fibrous and blood contaminants. These characteristics can reduce the need for repeated grafting procedures as well as preventing early resorption and inflammatory reactions.

Another added advantage of the LipoLife™ system's thermal effect is promoting neocollagenesis via dermal heating, resulting in skin contraction (tightening) and overall improved appearance.

Figure 1. *LipoLife™ System*

Figure. 2 *Optical Fiber*

Figure 3. *Liposuction Cannula Kit*

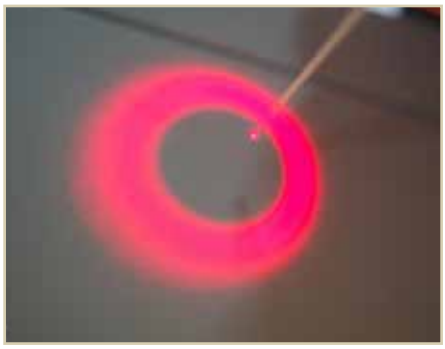

Figure 4. *Radial Tip Fiber, 360° Dispersion Pattern*

Treatment Considerations

Pre-Operative Considerations

- Previous medication consumption: aspirin, NSAIDs (non-steroidal anti-inflammatory drug), vitamin E, ginkgo, etc., is prohibited two weeks prior and two weeks following liposuction procedure. Acetaminophen is allowed.
- Antibiotics may be prescribed according to physician's discretion.
- Smoking is not recommended for one week prior and two weeks following liposuction procedure.
- Alcoholic beverages should not be consumed one week prior and one week following liposuction procedure.

During Treatment

- Anesthesia is carried out by the wet infiltration technique, using the infiltration kit (Figure 5).
- Connect the fiber to the cannula.
  - Step # 1: Insert the distal end of the fiber through the proximal end of the cannula.
  - Step # 2: Align the pilot beam through the center of the emission window (Figure 6).
- Lase only when the cannula is in the target area.
- Make sure that lasing (treatment area) is not close to the entry incision.
- Laser treatment is carried out in a full and wide movement in order to evenly distribute the energy over the entire treatment area.
- Always make sure that the cannula (laser) does not rest in one spot while laser energy is being emitted in order to avoid over heating.

Figure. 5 *Infiltration Kit*

Figure 6. *Pilot Beam Aligned Through the Center of the Emission Window*

Recommended Treatment Parameters

Laser-Assisted Liposuction

Treatment Area	Cannula [Ømm]	Fiber [Øµm]	Mode	Power [W]
Abdomen, Flanks, Hip & Buttocks, Thigh	3/4	400/600	CW	7-15
Upper Arms, Calves & Ankles, Chin & Neck	3	400	CW	5-12

Skin Tightening

Treatment Area	Cannula [Ømm]	Fiber [Øµm]	Mode	Power [W]	Accumulated Energy [kJ/100cm^2]
Abdomen, Flanks	3/4	400/600	CW	13-15	3
Hip & Buttocks, Thigh	3/4	400/600	CW	13-15	2-3
Upper Arms, Calves & Ankles	2/3	400	CW	7-12	1-2
Chin & Neck	2	400	CW	7-10	1-2

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