



LipoLife^{3G}



AUTOLOGOUS FAT TRANSFER SOLUTIONS

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Introduction

Autologous fat transfer, a popular, minimally invasive grafting technique, primarily applied for aesthetic contouring and reconstructive purposes, overcomes central safety issues posed by conventional allogenic fillers. In addition, donor tissue is easily accessible and abundant and the procedure is cost-effective and incurs minimal donor site morbidity (Banyard et al., 2015). However, despite great advancements in both technology and knowledge of the underlying process, the degree of fat resorption, and consequential volume loss following grafting limits long-term clinical effectiveness and has become a key parameter when comparing between fat grafting platforms (Billings et al., 1989; Sommer and Sattler 2000). Evidence has suggested that viable adipocyte content is a key determinant of fat transfer longevity, while traces of blood, liquefied fat and fibrotic tissue accelerate adipocyte degradation (Peer 1955; Peer 1956; Sommer and Sattler 2000; Har-Shai et al., 1996; Carpaneda 1996). Indeed isolation methods maximizing cell count and viability and designed to provide for a contaminant-free sample, have yielded more long-lasting clinical results (Coleman 1997; Pu et al., 2008).

The 1470 nm LipoLife laser-assisted liposuction device has been designed to enable gentle fat tissue collection and to provide for increased relative ratios of viable adipocytes in the harvested tissue. In a recent study evaluating the effectiveness of the device, laser-collected samples presented a significantly larger and more homogenous adipose phase and fewer contaminants as compared to samples collected using a standard mechanical liposuction device (Levenberg et al., 2015). Moreover, laser-assisted liposuction more effectively preserved preadipocyte viability.





Methods

Fat harvesting

Oral midazolam was administered 20 min before the local application of 18% EMLA to the recipient site and infusion of a mixture of lidocaine 20% (30 cc per liter saline) and adrenaline (0.5 ml per liter saline) to both the donor and recipient sites. Standard puncture holes were made at the donor sites with a #11 surgical blade, to allow fat laser aspiration. Tumescant solution was injected at a 2:1 ratio to aspirated volume. Fat aspiration was performed using Mercedes X-Y mm cannulas specially designed with a swivel handle (LipoLife, Alma Lasers), through which the 1470nm, 600 micron, radial emitting laser fiber (Alma Lasers, Ltd.) was advanced. The lipoaspirate was transferred from the collection canister to a 5-10 cc syringe, which was left to stand at room temperature for 20 min until distinct separation of the

blood and fat layers was observed. The fat content was then ready for injection into the recipient site.

Adipose tissue injection

Fat was injected into the subcutaneous fatty tissue, using a 5-10 cc syringe, equipped with a 14 g cannula and a cross-hatching/fanning fat pearl injection technique. To avoid asymmetry, care was taken to fill both treated sides equally. Overfilling was avoided to prevent formation of clumps.

Postoperative care

Treatment site remained bandaged for a period of few of weeks to make sure that the fat transplant stayed in the injection site

Cases

Case 1:

Buttocks augmentation – A 25-year-old female complaining of excess hip and abdominal fat and lack of fullness in the buttocks, underwent buttocks augmentation under full anesthesia. Fat was harvested from the abdomen, back and hips and 350 cc were injected to each side of the buttocks. No touch-up were requested.

Figure 1
Buttocks augmentation- before (left fig.) and after 3 mount (right fig.)



Case 2:

Buttocks augmentation – A 27-year-old female requesting a bilateral buttocks augmentation. Fat (300 cc) harvested from the waist, side of the abdomen and back was injected into each side of the buttocks under general anesthesia. No touch-ups were requested.

Figure 2
Buttocks augmentation- before (left fig.) and after 3 mount (right fig.)





Cases

Case 3

Pectoral and rectus abdominis muscle enhancement – Fat was harvested from the waist and abdomen of a 45-year-old male. Thereafter, 190 cc were injected into the chest area and 25 cc into each side of the abdominal muscle area. The patient returned after one year to a second fat grafting to enhance the results. The amount of fat extracted was minimal.



Figure 3

Abdominis and chest muscle enhancement.

Before (left fig.), 3 month after the first procedure (middle fig.) and 6 months after the second procedure (right fig.)

Conclusion

The LipoLife laser-based fat harvesting procedure provides for critical maintenance of cell viability, and subsequently high sustainability of the lipotransfer outcomes. The procedure is minimally invasive, short and low-risk, and can be applied in reconstruction/augmentation of a wide

range of organs. Buttocks and penile augmentation were performed in an outpatient clinic, whereas the pectoral enhancement procedure was performed in an operating room, although it was not required.

References

1. Banyard, D.A., Salibian, A.A., Widgerow, A.D., Evans, G.R. Implications for human adipose-derived stem cells in plastic surgery. *J Cell Mol Med* 2015;19:21-30.
2. Billings, E. and May, J. Historical review and present status of free fat graft autotransplantation in plastic and reconstructive surgery. *Plast. Reconstr. Surg.* 1989;83:368.
3. Carpaneda, C. A. Study of aspirated adipose tissue. *Aesthetic Plast Surg* 1996;20:399-402.
4. Coleman S. Facial recontouring with lipostructure. *Clin Plast Surg* 1997;24:347-67.
5. Har-Shai, Y., Lindenbaum, E., Ben-Itzhak, O., et al. Large liponecrotic pseudocyst formation following cheek augmentation by fat injection. *Aesthetic Plast Surg* 1996;20:417-419.
6. Evenberg A., Scheinowitz M. and Sharabani-Yosef O. Higher cell viability and enhanced sample quality following laser assisted liposuction versus mechanical liposuction. *J Cosmet Dermatol Sci App* 2015;5(3):238-45.
7. Peer LA. Cell survival theory versus replacement theory. *Plast Reconstr Surg.* 1955;16:161.
8. Peer LA. The neglected free fat graft, its behavior and clinical use. *Am J Surg.* 1956;92:40-7.
9. Pu LLQ, Coleman S., Cui X et al. Autologous fat grafts harvested and refined by the Coleman technique: a comparative study. *Plast Reconstr Surg* 2008;122:932-7.
10. Sommer, B., and Sattler, G. Current concepts of fat graft survival: Histology of aspirated adipose tissue and review of the literature. *Dermatol. Surg* 2000;26:1159.