White Paper

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Utilization of a Human Adipose Tissue Allograft (hATA) for the Restoration of Dermal Adipose in Aesthetic Plastic and Reconstructive Surgery

The Role of Adipose Tissue in Skin Health

Skin quality reflects overall well-being and is closely linked to physical appearance and the perception of attractiveness. Poor skin quality can negatively impact self-perception, confidence, and overall quality of life. As a result, the desire for a youthful and healthy appearance is one of the strongest motivators for patients seeking aesthetic treatments, particularly minimally invasive procedures that require little to no downtime.

Skin quality is influenced by numerous intrinsic and extrinsic factors; however, the visible manifestations of skin aging tend to be similar regardless of the underlying cause. Loss of soft tissue support, fragile skin texture, wrinkles, laxity, and sagging are common hallmarks of declining skin quality.

Dermal white adipose tissue (dWAT), a specialized adipose layer located between the dermis and the deeper subcutaneous fat, has increasingly been recognized as a critical component of skin structure and function. dWAT plays an important role in maintaining skin integrity, supporting dermal architecture, and contributing to overall skin health.

Changes in the quantity or function of this adipose layer are now considered key contributors to skin aging, fibrosis, and structural deterioration of the skin. As dermal adipose tissue diminishes, the skin loses structural support and resilience, contributing to the visible changes commonly associated with aging and significant weight loss.

Adipose Tissue Loss in GLP-1–Associated Weight Reduction and Aging

In recent years, GLP-1 receptor agonists have become widely used for medical weight management. While these therapies are highly effective for weight reduction, changes in skin quality have emerged as a notable unintended consequence.

The alterations in skin appearance observed in patients using GLP-1 therapies are multifactorial; however, the loss of dermal and subcutaneous adipose tissue is believed to play a significant role. Reduction of these supportive fat layers can contribute to diminished skin support, increased laxity, and a more accelerated appearance of aging.

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Limitations of Current Aesthetic Treatments for Restoring Dermal Adipose Tissue

Because skin is a complex and multi-layered organ, restoration of skin quality often requires a multimodal therapeutic approach. Current minimally invasive treatments range from topical agents to procedural interventions such as lasers, photodynamic therapy, microneedling, injectable dermal fillers, and biostimulatory agents.

While these modalities can protect skin from further damage, stimulate collagen production, and improve surface texture or soft tissue contour, they do not directly restore dermal white adipose tissue.

Autologous fat transfer remains the only widely recognized approach capable of restoring adipose tissue layers. For this reason, fat restoration strategies may represent an important component of a comprehensive approach to improving skin health and achieving a more youthful appearance.

Lipoderma®: Human Adipose Tissue Allograft

Lipoderma is a human adipose tissue allograft developed by Britecyte, Inc. from donated adipose tissue. Designed as an alternative to autologous fat transfer, Lipoderma is an off-the-shelf structural adipose allograft that can be delivered through minimally invasive implantation techniques without the need for a secondary harvesting procedure.

The adipose tissue sourced for Lipoderma undergoes an aseptic processing method designed to remove immunogenic components, including blood and lymphatic elements, while preserving the structural characteristics of native adipose tissue. The resulting structural allograft retains the architecture of adipose tissue, consisting of approximately 90% adipocytes and 10% extracellular matrix (ECM).

This proprietary processing and preservation method allows for extended storage of Lipoderma in the clinical setting, with studies demonstrating stability for up to 12 months when stored in refrigeration conditions (0°C–10°C) and up to five years when stored at −40°C or below.

Lipoderma is currently available in 1.5 cc and 10 cc vials. The product can be implanted using a 20- or 21-gauge needle or larger cannula when delivered through 1 cc or 3 cc syringes. For improved control of tissue flow when larger volumes are administered using 5 cc or 10 cc syringes, implantation using an 18-gauge or larger needle or cannula is recommended. The plunger push pressure during implantable is comparable to microfat or a moderate G' injectable filler.

Clinical Experience with Lipoderma

The author conducted a six-month proof-of-concept study evaluating the use of a structural adipose allograft across multiple facial and body areas where skin integrity was compromised due to the loss

of the adipose layer in aesthetic plastic and reconstructive surgery. A concurrent safety evaluation was also performed.

Following IRB approval (IRB ICSS-2021-011), patients were implanted with Lipoderma in the following anatomical areas:

- Malar/Submalar region
- Nasolabial and melolabial folds
- Nasal dorsum
- Lower third of the face
- Pre-jowl sulcus
- Tear trough
- Upper eyelid
- Hands
- Breasts
- Buttocks
- Legs

Lipoderma was also incorporated into multi-modal wound and scar management protocols, where it was used as a scaffold to support tissue repair in wound care and as part of multimodality scar therapy.

Implantation volumes ranged from 1 cc to 10 cc per session. Traditional two-dimensional photography and Quantificare 3-D imaging were utilized for comparative analysis before and after implantation. Patient satisfaction was assessed using a simple visual analog scale, where patients marked their level of satisfaction on a 10 cm line ranging from unhappy to very satisfied.

Patients were followed daily for one week, weekly for one month, and monthly thereafter through the six-month post-procedure period. Follow-up visits included photographic documentation and monitoring for potential adverse events, including allergic reactions, hypersensitivity, pain, swelling, or discoloration.

Results

Twelve patients were included in the study (8 female, 4 male). Ages ranged from 32 to 76 years, with a mean age of 42 years. All patients had been on GLP-1 therapy for a minimum of 1 year. No allergic reactions, hypersensitivity responses, or other adverse events attributable to the Lipoderma implantation were observed at any study timepoint.

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Quantificare 3-D imaging demonstrated measurable improvement in skin tone, texture, and overall skin quality when Lipoderma was implanted in the immediate subdermal plane.

When volumization was the primary goal, Quantificare analysis demonstrated successful early outcomes with sustained volume retention through the six-month study endpoint. A representative case with 3-D imaging is shown in **Figure 1.**

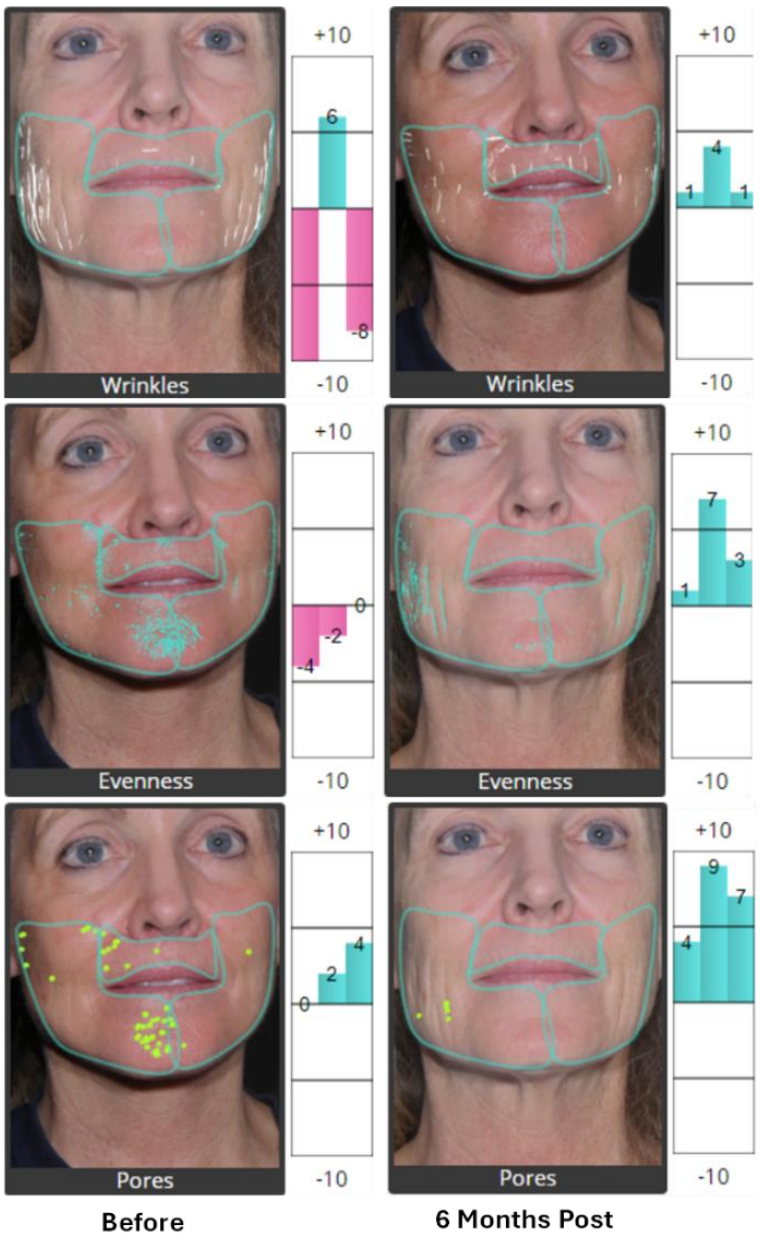

Figure 1. A 63-year-old female before and 6 months post–Lipoderma implantation in the perioral region.

In select cases, hybrid strategies were employed. These included tissue priming techniques and scaffold-based procedures to support larger-area (body) volumization. These approaches appeared to enhance the clinical effectiveness of Lipoderma. Representative cases are shown in **Figures 2-4.**

Figure 2. A 58-year-old female before and 6 months post–Lipoderma and Hyperdilute Calcium Hydroxyapatite (CaHA) implantation in the medial thigh region.

Figure 3. A 54-year-old female before and 6 months post–Lipoderma and Hyperdilute Calcium Hydroxyapatite (CaHA) implantation in the gluteal region.

Figure 4. A 74-year-old female before and 1 year post–Lipoderma and Hyperdilute Calcium Hydroxyapatite (CaHA) implantation in the posterior gluteal region following two sessions.

When incorporated into multimodal wound or scar treatment protocols, Lipoderma helped to supplement the missing or compromised hypodermal adipose layer that plays an important role in supporting wound healing and scar remodeling. Restoration of this structural layer may contribute to improved tissue integrity and clinical outcomes.

Clinical benefit was particularly observed in atrophic scars, striae, and cellulite, where restoration of structural adipose support contributed to improvements in tissue quality. Additional procedure protocols and expanded clinical experience will be described in forthcoming peer-reviewed publications.

The observed improvements in skin quality and tissue integrity align with the growing understanding of dWAT as a critical structural and biologic component of healthy skin. Restoration of this adipose layer may help to re-establish the supportive environment necessary for optimal dermal function, tissue regeneration, and structural stability. Additional representative cases are shown in **Figures 5-7.**

Figure 5. A 53-year-old female before and 6 months post–Lipoderma implantation in the perioral and pre-jowl sulcus region.

Figure 6. A 78-year-old female before and 6 months post–Lipoderma implantation in the nasolabial fold region.

Figure 7. A 78-year-old female before and 3 months post–Lipoderma implantation in the hand.

Conclusions

Lipoderma represents a valuable addition to the aesthetic plastic and reconstructive surgery armamentarium. By restoring the structural adipose layer beneath the dermis, it offers a like-for-like solution for areas where native adipose tissue has been diminished or lost.

As understanding of dWAT continues to evolve, restoration of this layer is increasingly recognized as an important component of maintaining skin integrity and structural support. Re-establishing the adipose layer helps recreate the physiologic environment necessary for normal dermal function, which may secondarily contribute to improvements in tissue quality.

Structural adipose allografts such as Lipoderma therefore represent an emerging approach to addressing soft tissue deficits by restoring the underlying adipose architecture that supports healthy skin and soft tissue structure. This restoration-based strategy may represent an important shift in aesthetic and reconstructive medicine—from simply replacing lost volume to rebuilding the structural tissue layers that support skin health.

References

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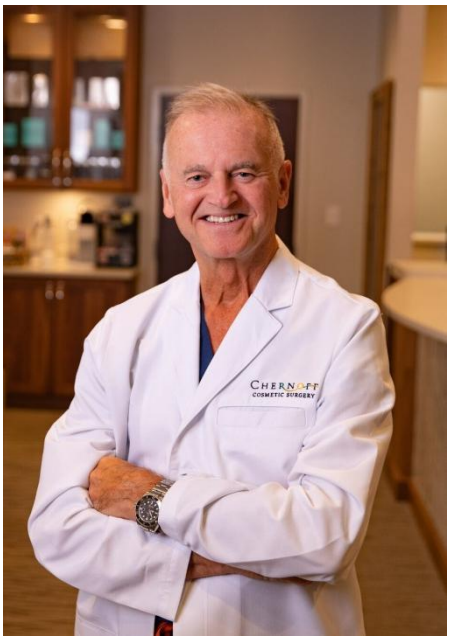
About the Author



Dr. Gregory Chernoff is a triple board-certified facial plastic and reconstructive surgeon with over 30 years of experience in aesthetic and reconstructive surgery. He is certified by the American Board of Facial Plastic and Reconstructive Surgery, the American Board of Otolaryngology–Head and Neck Surgery, and the Royal College of Physicians and Surgeons of Canada.

Dr. Chernoff completed a five-year residency followed by advanced fellowship training in microvascular surgery, breast and body contouring, laser therapy, and facial plastic and reconstructive surgery at the University of California, San Francisco (UCSF).

He has contributed to numerous clinical studies, particularly in the field of laser therapy, and is recognized for integrating surgical and non-surgical techniques to achieve natural, patient-centered outcomes.