

GLP-1 and the Preservation of Skin Firmness After Weight Loss: A Metabolic-Aesthetic Perspective

Karolina Landaeta*

Aesthetic Medicine Specialist, Member of the Spanish Society of Aesthetic Medicine (SEME), Barcelona, Spain

*Corresponding author: Karolina Landaeta, MD, Aesthetic Medicine Specialist, Member of the Spanish Society of Aesthetic Medicine (SEME), Barcelona, Spain, Tel: +34683383673; E-mail: drakarolinalandaeta@gmail.com

Received: March 05, 2026; Accepted: March 31, 2026; Published: April 09, 2026

Abstract

Background: Glucagon-like peptide-1 (GLP-1) receptor agonists have revolutionized the treatment of obesity and metabolic disorders, demonstrating significant efficacy in weight reduction. However, rapid weight loss may lead to aesthetic concerns, including decreased skin firmness and loss of dermal support. As the use of GLP-1 therapies expands globally, the dermatological and aesthetic implications of pharmacologically induced weight loss are becoming increasingly relevant.

Objective: To analyze the relationship between GLP-1-induced weight loss and skin firmness and to explore the role of aesthetic medicine in preserving dermal integrity during metabolic weight reduction.

Methods: A narrative review of current scientific literature was conducted focusing on GLP-1 receptor agonists, weight-loss physiology, adipose tissue metabolism, and dermal remodeling. Evidence from metabolic medicine and aesthetic dermatology was analyzed to evaluate the impact of weight loss on skin quality.

Results: GLP-1 receptor agonists promote weight loss primarily through appetite suppression, delayed gastric emptying, and improved metabolic regulation. The reduction of subcutaneous adipose tissue may decrease structural support for the dermis, potentially contributing to facial volume loss and skin laxity. Preventive aesthetic strategies aimed at stimulating collagen production and improving dermal remodeling may help preserve skin firmness during weight reduction.

Conclusion: The integration of metabolic therapies with aesthetic medicine represents an emerging interdisciplinary approach. Proactive dermal preservation strategies may optimize both metabolic outcomes and aesthetic results in patients undergoing GLP-1-induced weight loss.

Keywords: *GLP-1 receptor agonists; Obesity treatment; Weight loss; Skin firmness; Aesthetic medicine; Dermal remodeling*

1. Introduction

Obesity is a global health challenge associated with significant morbidity and mortality. In recent years, pharmacological therapies targeting metabolic pathways have transformed the management of obesity.

Among these therapies, glucagon-like peptide-1 (GLP-1) receptor agonists such as semaglutide and tirzepatide have demonstrated remarkable efficacy in promoting sustained weight loss. Clinical trials have shown that these medications can achieve weight reductions exceeding 10–15% of total body weight, representing a major advancement in metabolic medicine. While the metabolic benefits of GLP-1 therapies are well established, rapid and substantial weight loss may lead to structural changes in the skin. Subcutaneous adipose tissue plays an essential role in maintaining dermal support and facial volume. Its reduction may result in decreased skin tension and the appearance of skin laxity.

These aesthetic changes may affect patient satisfaction and highlight the importance of integrating dermatological and aesthetic considerations into obesity management.

2. Methods

A narrative review of the literature was conducted to evaluate current evidence regarding the relationship between GLP-1 receptor agonists, weight loss, and skin structure.

Relevant publications between 2015 and 2025 were identified through searches in PubMed, Scopus, and Google Scholar. Keywords included GLP-1 receptor agonists, obesity pharmacotherapy, adipose tissue metabolism, dermal remodeling, and skin aging.

Studies focusing on metabolic therapies, skin physiology, and aesthetic dermatology were included to provide a multidisciplinary perspective.

3. Results

GLP-1 receptor agonists exert their therapeutic effects through several metabolic mechanisms, including appetite suppression, delayed gastric emptying, and enhanced insulin secretion.

Clinical trials have consistently demonstrated substantial weight reduction in individuals treated with GLP-1 therapies. While these results represent a significant advance in obesity management, rapid loss of adipose tissue may alter the structural relationship between subcutaneous fat and the dermis.

Adipose tissue provides mechanical support for the skin and contributes to facial volume. When fat volume decreases significantly, the dermal matrix may lose structural support, potentially leading to reduced skin firmness and visible skin laxity. These changes may be particularly evident in the face, neck, and upper arms.

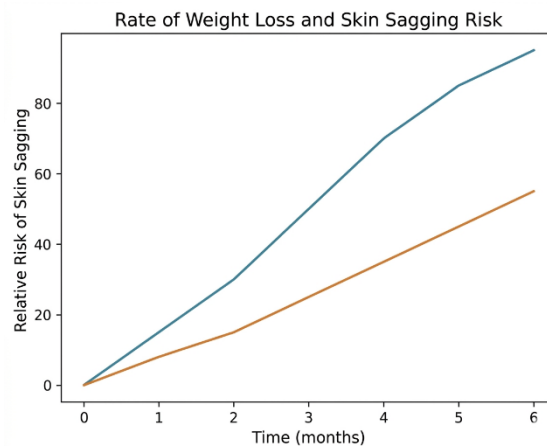


FIG. 1. Adapted model to Scientific Literature and Clinical Observational Experience.

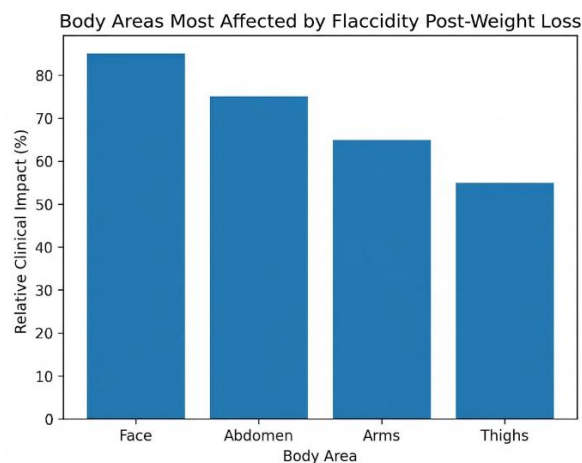


FIG. 2. Distribution based on scientific literature and clinical experience in aesthetic medicine consultation.

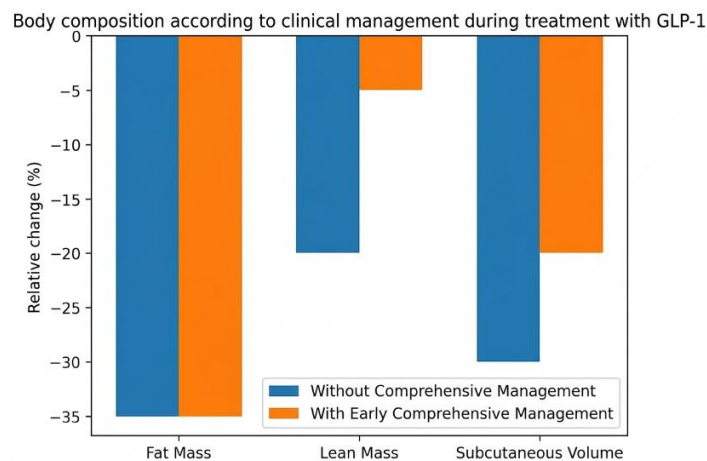


FIG. 3. Comparison of changes in body composition during GLP-1 agonist treatment according to the presence or absence of an early integrated aesthetic approach. Adapted from scientific literature and observational clinical experience.

4. Discussion

Skin aging and loss of firmness are multifactorial processes involving collagen degradation, elastin fragmentation, and alterations in extracellular matrix structure.

Rapid weight reduction may exacerbate these processes by reducing the supportive role of adipose tissue. In patients undergoing GLP-1 therapy, these structural changes may contribute to aesthetic concerns associated with weight loss.

A proactive approach combining metabolic therapy with aesthetic dermatology may therefore be beneficial. Preventive strategies aimed at preserving dermal integrity may include treatments designed to stimulate collagen production and improve skin quality.

Such strategies may involve collagen biostimulation, radiofrequency-based skin tightening, and regenerative dermatological treatments.

By integrating metabolic and aesthetic approaches, clinicians may help maintain skin firmness while achieving metabolic improvements.

5. Conclusion

GLP-1 receptor agonists represent a major advancement in obesity treatment and metabolic medicine. However, the aesthetic implications of rapid weight loss should also be considered.

The integration of metabolic therapies with aesthetic medicine may offer a comprehensive approach to patient care, addressing both metabolic health and skin quality.

Further research is needed to develop evidence-based strategies for preserving dermal integrity during pharmacologically induced weight loss.

6. Conflict of Interest

The author declares no conflict of interest.

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