

Special Topic

# Retaining Ligaments of the Face: Review of Anatomy and Clinical Applications

Aesthetic Surgery Journal  
33(6) 769–782  
© 2013 The American Society for  
Aesthetic Plastic Surgery, Inc.  
Reprints and permission:  
[http://www.sagepub.com/  
journalsPermissions.nav](http://www.sagepub.com/journalsPermissions.nav)  
DOI: 10.1177/1090820X13495405  
[www.aestheticsurgeryjournal.com](http://www.aestheticsurgeryjournal.com)  


Mohammed Alghoul, MD; and Mark A. Codner, MD

## Abstract

The retaining ligaments of the face are important in understanding concepts of facial aging and rejuvenation. They are located in constant anatomic locations where they separate facial spaces and compartments. Their superficial extensions form subcutaneous septa that separate facial fat compartments. Their main significance relates to their surgical release in order to achieve the desired aesthetic outcome. Furthermore, they have a sentinel role in their anatomic relationship to facial nerve branches. When performing facial aesthetic surgery, plastic surgeons should select a plane of dissection, release the appropriate ligaments depending on the desired aesthetic goals, and avoid nerve injury by using the ligaments as anatomic landmarks. Descriptions of the retaining ligaments are variable in the literature; due to different interpretations of anatomy, several classifications, locations, and nomenclature systems have been proposed. This article will review and clarify the anatomy of the retaining ligaments of the face, including the cheek, mandible, temporal, and periorbital areas.

## Keywords

retaining ligaments, SMAS, facial compartments, facial nerve, facial surgery, anatomy

Accepted for publication February 12, 2013.

A thorough knowledge of the layers, planes, and structures of facial anatomy is critical when performing aesthetic surgery. The retaining ligaments of the face represent an additional dimension of this anatomy and are important in understanding concepts of facial aging and rejuvenation. Since Mitz and Peyronie's description of the superficial musculoaponeurotic system (SMAS) in 1976,<sup>1</sup> numerous studies have focused on further clarifying the anatomy of the SMAS and its use as a vehicle in facial rejuvenation.<sup>2-11</sup> Plastic surgeons—including Bosse, Papillon, and Furnas—logically realized the importance of the ligamentous attachments of the SMAS to the facial skeleton and deep fascia.<sup>3,12</sup> These ligaments are consistent anatomic structures and are therefore present in predictable locations. The main significance relates to the surgical release of these ligaments to achieve the desired aesthetic outcome.<sup>11-16</sup> Furthermore, they are useful landmarks because of their intimate relationship with branches of the facial nerve.<sup>11,12,14,15,17-23</sup> Significant research describing the retaining ligaments of the face has advanced our knowledge in this field. However, these consistent retaining ligaments have been inconsistently named by different

investigators due to subjective interpretation. As a result, ligaments were discovered and named, then rediscovered and renamed, which has led to some confusion (Table 1).<sup>11,12,14-16,18,24,25</sup> Perhaps the tedious dissection required to identify the ligaments has contributed to these variations, as well. The purpose of this article is to review and clarify the anatomy of the retaining ligaments of the face, including their different descriptions, nomenclature, and clinical significance in facial aesthetic surgery.

---

Dr Alghoul is Assistant Professor in the Division of Plastic Surgery at Northwestern University Feinberg School of Medicine, Chicago, Illinois. Dr Codner is Clinical Assistant Professor of Plastic Surgery at Emory University, Atlanta, Georgia.

## Corresponding Author:

Dr Mark A. Codner, 1800 Howell Mill Road, Suite 140, Atlanta, GA 30318, USA.  
E-mail: [macodner@gmail.com](mailto:macodner@gmail.com)