

Surgical Anatomy of the Ligamentous Attachments in the Temple and Periorbital Regions

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Discussion by Barry M. Zide, D.M.D., M.D.

It's great to discuss an article that I wish I had written.

This anatomic treatise is a logical derivative of the explosive surgical interest in the periorbital region. The drawings and dissections are very clear and they follow the prose nicely. But to understand the article fully, you have to read it slowly because the terms "ligament" and "adhesion" are often confusing. Here are the basics: The retaining structures of the periorbital area consist of the following:

1. *Ligaments* pass from the subSMAS through it to dermis, e.g., the zygomatic/masseteric ligaments that you cut in the deep-plane method.
2. *Septa* are broad attachments from the deeper tissues (e.g., periosteum) to the SMAS that do not go through to the skin, e.g., lateral to orbit and over the deep temporal fascia. The "zone of fixation" along the superior temporal line is another example.
3. *Adhesions* are tacking areas between the SMAS tissues and the deeper pericranium and fascia, especially at the superolateral orbit. This "keystone" region, which starts about 10 mm above the superolateral rim, is a triangular attachment with extensions or radiations to other septa or adhesions as shown (Fig. 2).

This adhesion zone in the supraorbital area—dense tissue—determines the restraint on mobility of the brow. In short, this adhesion restricts motion in all directions at the deep

level but the skin above can still be free to move.

This discussion will point out four things: (1) what I learned or saw that I did not already know; (2) what I already knew but the authors described better; (3) what you need to take from this article; and (4) how your surgery might be altered from this knowledge.

Face it, if not for the temporal branches of the VIIth nerves, most of this periorbital surgery would be simple, because surgeons for years gave little thought to the sensory nerves around the orbit. It was easy to avoid the supraorbital nerve. To put in cheek implants or to expose the buttress, you transected the zygomaticofacials; for craniofacial exposure, you often cut the zygomaticotemporals, and were it not for David Knize showing us all the lateral branch of the supraorbital, you would still be bagging that one.

The real message in this article involves the demonstration of the dense adhesion area above the superolateral orbital rim and the separation of risk/no risk zones over the deep temporal fascia. As you, the surgeon, dissected downward from above, you were familiar with the extra attachments (septa) along the superior temporal line. And I, like you, always dissected directly atop the deep temporal fascia as I continued toward the orbit. I never realized that an inferior septum existed, although that area was more difficult for the elevator to stay on the deep fascia. The inferior temporal septum radiates obliquely downward from the lateral part of the temporal ligamentous adhe-

sion, and all the important structures are caudal to it (Fig. 5). Inferior to this septum, Moss et al. demonstrated the penetrating zygomaticotemporal nerves, and they showed the sentinel vein position very clearly, as well as I had ever seen them.

If this glorious article depicts one great concept, it is how the orbit is surrounded by concentration areas of firm attachments. It explains anatomically just what areas you, as surgeons, must release as you try to mobilize the brow during the subperiosteal brow lift. According to this article, the "orbital ligament" that Knize directed us into cutting is somewhat lower than what he described. And for real release, you must release along the lateral two-thirds of the supraorbital rim and also some other "thickish" attachments along the lateral orbital rim for complete brow elevation. In doing a Knize-type forehead lift, scissor spreading was used to release the periorbital "bands" at the superolateral orbit, and the special thickening needed to be cut around the suture area. I could always put my fingers into the incision to feel that the release was complete, but I was never really sure of cutting that ligament near the zygomaticofrontal suture. This article explains why, i.e., because the ligament may be

closer to the canthal area, and there were other areas as well. For me, this means that I just have to be sure to transect the periosteum and septa at the upper third of the lateral orbital rim. And whether you do this endoscopically or by palpation is your call. By endoscope, the sentinel vein will serve as a guide for your dissection as noted.

The authors' Discussion section focuses on the varying definitions of terms: ligaments, septa, and adhesions, and it might be a waste of time to read. But the section on surgical applications reviews the obvious imperatives this new knowledge imparts to the surgeon. As you read this section, the anatomic approach to brow lift becomes more obvious, and the release for subperiosteal cheek lift becomes clear. Figure 13 separates the release areas for you.

In short, the anatomy of the periorbital attachments has been elegantly presented here. And although the article is occasionally a sloggy read, the material is crucial for all of us who work in this area.

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