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Retaining Ligaments in Forehead

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The description of the retaining ligaments in the midface was instrumental to the development of corrective surgery for the deep nasolabial fold.¹ Dr. Steve Byrd, in his personal communications, suggests that similar ligaments may be present in the brow region.² Precise anatomical description of the brow and forehead ligaments would be useful in order to obtain better aesthetic results during forehead rejuvenation procedures. Browlift procedures have classically given too much central brow elevation and lateral spreading.³ Knowledge of the exact location of these ligaments in the medial brow region would permit dissection of the corrugator and procerus muscles while keeping the medial brow down.

METHOD: Four cadaver dissections were performed on fresh and fresh frozen specimens. Classic coronal incision was used and the forehead was divided in two halves for better exposure of the ligaments. Dissection was carried out at both the supra and subperiosteal planes. Ligaments were identified in both planes. The superior orbital rim and the midline were used as reference points for measurements.

The location of the retaining ligaments was confirmed during endoscopic forehead rejuvenation procedures. Histologic evaluation of these ligaments was also performed by H and E and trichrome stains.

RESULTS: Four osteoperiosteal retaining ligaments were identified. The location was fairly constant in all specimens.

Ligament A: The Superior Medial Osteoperiosteal Ligament. This Ligament is closely associated with the corrugator and procerus musculature. It is located 11.5 mm from the midline and 9.7 mm above the superior orbital rim (Fig. 1).

Ligament B: The Superior Lateral Osteoperiosteal Ligament. 21.7 mm above the midline and 9.2 mm above the superior orbital rim (Fig. 1).

Ligament C: The Inferior Medial Osteoperiosteal Ligament. This ligament is at the level of the superior orbital rim just medial to the supraorbital notch, 11 mm from the midline (Fig. 2).

Ligament D: A broad ligamentous structure extending across the lateral brow at the level of the temporal crest.

Multiple periosteogaleal ligaments were also identified. They appear to be the continuation of these previously mentioned osteoperiosteal ligaments as they proceed to the muscles and dermis (Fig. 3).

Histologic evaluation by trichrome stain confirm these ligaments to be tight bundles of collagen fibers extending from the cranium to the periosteum (Fig. 4) and continuing from the periosteum to the corrugator and procerus musculature (Fig. 5).

CONCLUSION: The retaining ligaments of the brow and forehead region are consistent in number and location in our cadaver dissections and