Commentary on: Cortical Thickness Parameters for Endoscopic Browlift Fixation

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The study by Mowlavi et al, “Cortical Thickness Parameters for Endoscopic Browlift Fixation,” aims to characterize bicortical thickness along various coronal lines of the skull using computed tomography (CT) imaging. The authors have confirmed the findings of our previous study, “Current Methods for Brow Fixation: Are They Safe?” in that (1) the bicortical thickness of the skull varies in different areas of the cranium and (2) the potential exists for inner-table penetration as one proceeds further lateral from the midline (temporally) for brow fixation.

In the study by Mowlavi et al, coronal lines were selected along planes that travel through the anterior border of the mandibular condyles as well as the junction of the posterior mandibular condyles and external auditory meatuses, which were identified on CT scans of the cadaveric skull. The authors state that these coronal planes were selected because of their ease of identification on coronal images. Bicortical cranial thickness was measured along these 2 lines, beginning at the midline and coursing laterally at 1-cm intervals over the temporal region.

Although their study entailed sequential measurements at various points from the midline along the selected lines, based on the position of the mandibular condyles and external auditory meatuses, in practice the aesthetic surgeon would rarely (if ever) have the luxury of preoperatively reviewing a patient’s CT scan to identify sites for proposed brow fixation. Perhaps a CT scan would be available for a reconstructive procedure that necessitated a split calvarial bone graft, but a scan would almost never be available in cases of elective cosmetic surgery.

Our study1 was intended to be practical in the sense that cortical thickness measurements were taken at standard sites used in published and well-accepted browlift fixation methods2–4 relative to the anterior hairline, just as would be done in an operating room with the cosmetic-surgery patient, without the luxury of expensive preoperative imaging. Our points of measurement were far from “arbitrary”; they were obtained 1 cm posterior to the anterior hairline and perpendicular to the brow arch as well as 3 cm posterior to the hairline and 3 and 7.5 cm from the midline (aligned with the lateral orbital rim). These sites were chosen based on previously described techniques for Endotine (MicroAire, Charlottesville, VA) placement, MiTek screw (Chesterfield, MO) placement, and the senior author’s technique of 45° beveled cortical tunnel placement.1 Our study also evaluated various appliances and techniques themselves, not just the thickness of the skull at the chosen sites. In our opinion, incisions and brow fixation points should be based on the anterior hairline position relative to the brow anatomy; we would not perform a browlift on a patient with a high anterior hairline because, even with endoscopic methods, the hairline becomes rotated posteriorly to some degree.

Moreover, with our method of cortical tunnel placement, the location of drill holes is never based solely on centimeter measurements from the midline; their location also depends on eyebrow laxity/movement. The brow is pulled cephalad with the patient in the seated position, prior to entering the operating room, to determine the area of greatest movement to achieve the best elevation. This could be at 2.5 cm and 6 cm from the midline, 3.5 cm and 7 cm from the midline, or some variation thereof, based on the shape of the individual’s brow (but never extending beyond 7 cm from the midline, given the thinner bone laterally). If maximal laxity is at the tail of the brow and the drill hole is placed at 7 cm from the midline, the lift of the brow may actually be more cephalad and medial to prevent drilling too far laterally on a patient whose cranium is relatively small or narrow. Indeed, the drill sites are not at fixed sites in centimeter measurements from the midline but rather are placed according to the natural shape of the brow and its maximal laxity to achieve the best shape for the desired aesthetic appearance.

Although Dr Mowlavi and colleagues studied 26 hemi-craniums, all were female cadaver skulls, which may have skewed the results somewhat. They note, “Because male skulls tend to be thicker, additional studies will be needed to provide a more complete picture of skull thickness for both genders, along with appropriate surgical

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recommendations.” However, as previously published and confirmed by our study, cranial bone thickness increases posteriorly and medially, and the calvaria of women is actually thicker than that of men. Adeloye et al found that parietal and occipital bones were thicker in women than men. Given these findings, it would have been even more insightful if Dr Mowlavi and colleagues had included male skulls in their study. It is certainly clear that there is variation according to gender and ethnicity, so these are important details to elucidate as well. Men are no longer strangers to cosmetic surgery; they have been seeking forehead lifts and other facial cosmetic procedures with increasing frequency (accounting for 7.5% of browlift procedures in 2010). As such, they are a demographic that should be included in anatomical studies of facial cosmetic procedures.

In conclusion, this is a useful and confirmatory anatomical study of female cadaver skull thickness relative to various points used in browlift fixation. In our published report, the thickest sites were posterior to the coronal suture and more medially oriented; this has been confirmed by the present CT-based study, which showed the thinnest bone to be that which spans more lateral from the midline, particularly over the temporal and lateral frontal regions.

**Disclosures**


**REFERENCES**