

Superior Orbital Rim Bone Contouring through a Minimally Invasive Eyelid Crease Approach for Facial Feminization

Audrey C. Ko, MD¹; Tathyana Fernandes Fensterer, MD²; Erin M. Shriver, MD¹; Kelly H. Yom, BA³

¹ Department of Ophthalmology and Visual Sciences, Division of Oculofacial and Reconstructive Surgery, University of Iowa, 200 Hawkins Drive, Iowa City, IA, 52242, USA

² Department of Surgery, Division of Plastic and Reconstructive Surgery, University of Iowa, 200 Hawkins Drive, Iowa City, IA, 52242, USA

³ Carver College of Medicine, University of Iowa, 200 Hawkins Drive, Iowa City, IA, 52242, USA

BACKGROUND

- Forehead and brow contouring is a surgical procedure that is often performed in transgender females and cisgender females with masculine features to feminize the appearance of the upper face.
- Previously described surgical approaches for forehead and brow contouring have all required a mid-forehead, pretrichial, or bicoronal approach for adequate exposure.
- In patients that do not have a prominent central forehead or glabella, only contouring of the superior central and lateral orbital rims may be required, which can be achieved via a less invasive approach.
- **We describe a novel minimally invasive surgical approach to feminize the periocular brow area through the eyelid crease.**

MATERIALS AND METHODS

A retrospective review of patients who underwent bilateral upper eyelid blepharoplasty in conjunction with bone contouring of the mid-forehead, anterior frontal sinus wall, and superior orbital rims was conducted.

In these patients, the upper eyelid blepharoplasty was performed first, followed by contouring of the superior orbital rims with a surgical approach through the blepharoplasty eyelid crease incision. A bicoronal approach was then used for the remainder of the forehead contouring, during which the previous areas of bone sculpting through the eyelid crease incision were examined.

RESULTS

Two patients were included in this study. For both patients, the superior central and lateral orbital rims were safely and successfully contoured through the upper eyelid incision.

- The supraorbital nerve was easily identified and protected during the dissection.
- Examination of previously burred areas via bicoronal flap did not show any additional areas needing contouring that could not be accessed through the upper eyelid incision.
- Postoperatively, both patients achieved excellent cosmetic results for feminization of the periorbital area and were satisfied with the results.

Patient 1

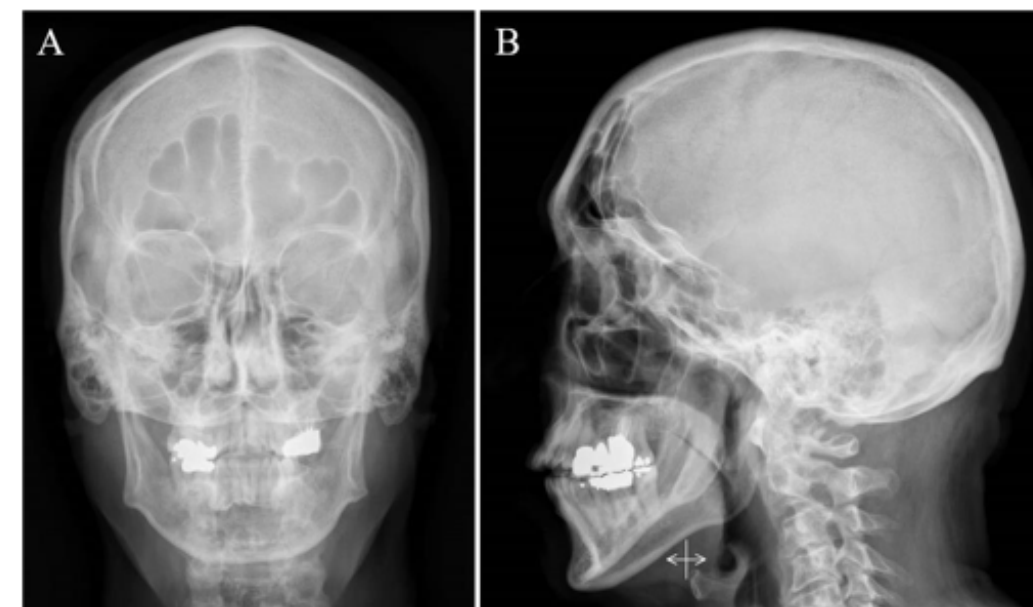


Figure 1A-B. Skull x-ray demonstrating frontal (A) and sagittal (B) views of the bony structure of the forehead and frontal sinus. Note that this patient did not have a frontal sinus prominent enough to require a frontal sinus osteotomy.

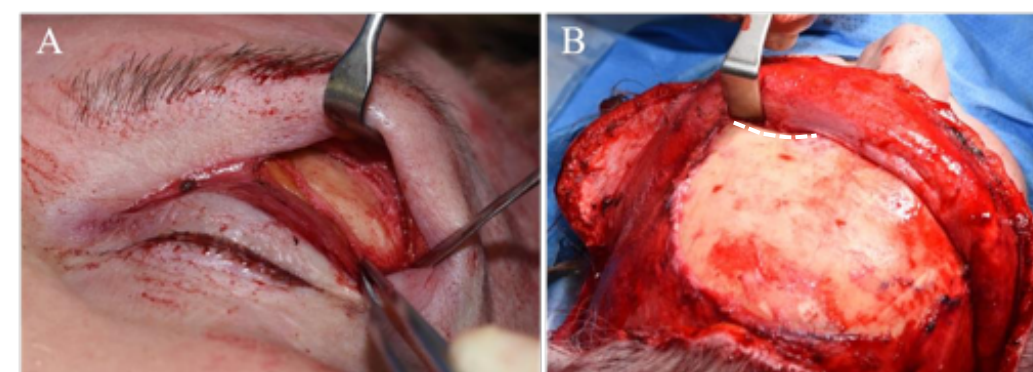


Figure 2A-B. Intraoperative photographs demonstrating exposure of the superotemporal and central superior orbital rim through the upper eyelid crease approach (A). The exposure from the bicoronal approach (B) allowed for identification and delineation of burr marks in areas previously accessed through the eyelid crease incision, indicating the area of central and lateral orbital rim bone that is able to be directly visualized and safely burred through the upper eyelid incision (dotted line).



Figure 3A-F. Frontal, three-quarter, and profile view photographs of the patient preoperatively (A-C) and at postoperative month 2 (D-F) demonstrating reduction in central forehead bossing and prominence of superior orbital rim (arrow).

Patient 2

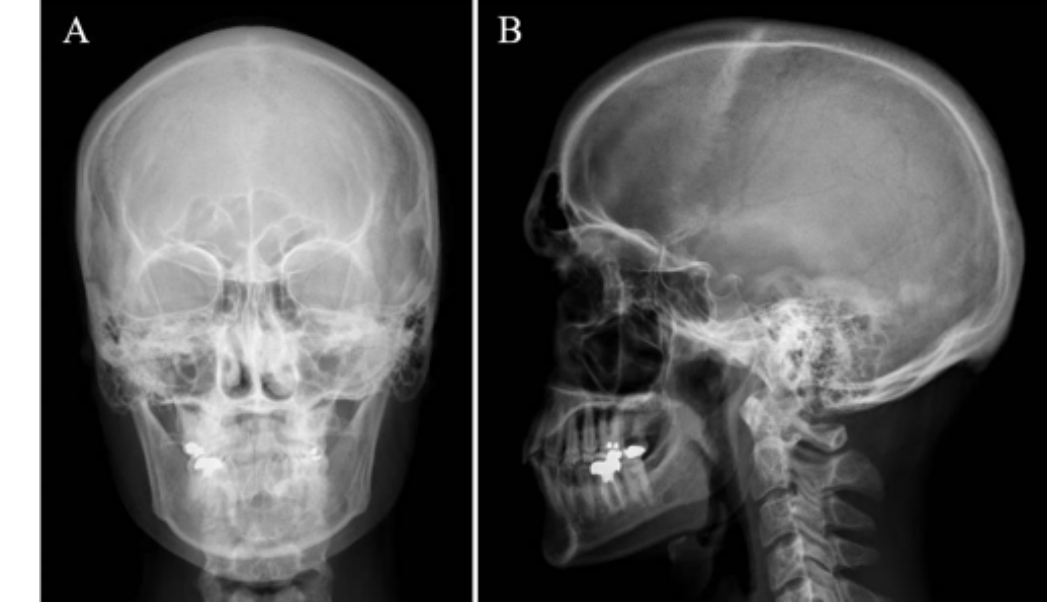


Figure 4. Skull x-ray demonstrating frontal (A) and sagittal (B) views of the bony structure of the forehead and frontal sinus. Note that this patient did not have a frontal sinus prominent enough to require a frontal sinus osteotomy.



Figure 5A-C. Intraoperative photographs demonstrating sculpting of the superotemporal and central superior orbital rim through the upper eyelid crease incision (A-B). Note the superomedial extent of the superior orbital rim that may be achieved through this exposure. The lateral ridge of the superciliary arch (*) is accessible. A bicoronal approach (C) allowed for identification and delineation of the bony area previously accessed and burred through the eyelid crease incision (dotted line), as well as the boundaries of the frontal sinus (purple ink).

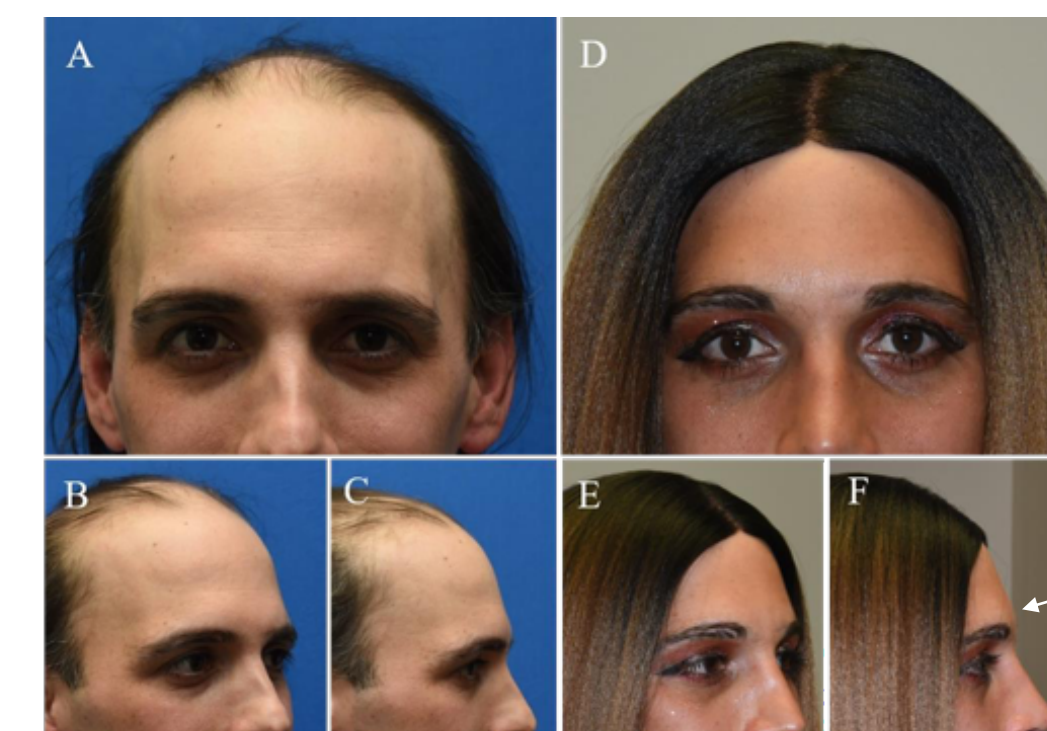


Figure 6A-F. Frontal, three-quarter, and profile view photographs of the patient preoperatively (A-C) and at postoperative month 2 (D-F) demonstrating reduction in central forehead bossing and prominence of superior orbital rim (arrow).

CONCLUSIONS

- In patients who desire contouring of the superior central and temporal orbital rims only, an approach through the upper eyelid crease is a minimally invasive and safe method for visualization and bony sculpting of those areas.
- While the anterior frontal sinus region can be accessed through this incision, the margins of the frontal sinus and the thickness of remaining bone was unable to be assessed visually. Therefore, the authors do not feel it would be safe to contour without visualization in this region, as this puts the patient at risk for development of a full thickness bony defect overlying the frontal sinus or, more dangerously, the intracranial space. Full thickness bone entry into the frontal sinus will cause a soft bony defect that is palpable through the soft tissues of the forehead. Full thickness bone entry into the area surrounding the frontal sinus will result in dangerous entry into the intracranial vault.
- The mid forehead area is not easily accessible through this approach, as there was difficulty accessing this area due to the tension of the overlying skin and curvature of the skull.
- This incision is also conducive to concurrent upper eyelid blepharoplasty, upper eyelid ptosis repair, and internal lateral canthopexy.