

# Using Cranial Sutures in a Single-Step Frame-Guided Resection and Reconstruction for Intraosseous Meningiomas: Technical Note

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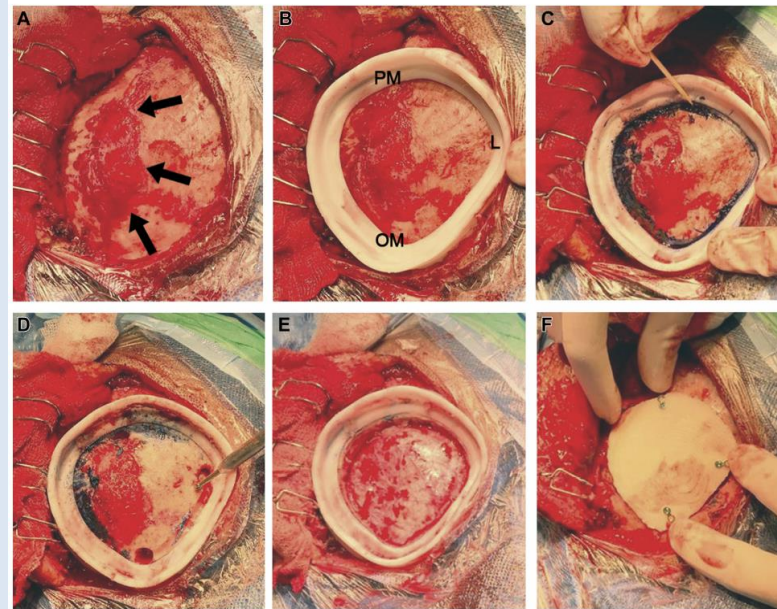
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**BACKGROUND:** Single-stage surgical treatment of cranial intraosseous meningiomas includes complete tumor resection followed by aesthetic reconstruction. Tailored tumor resection with a computer-aided design/computer-aided manufacturing custom-made implant for the defect has been advocated in recent years to achieve a satisfactory cosmetic result with reduced operative time and fewer complications. However, several technical nuances related to the area of osseous removal may compromise cranioplasty.

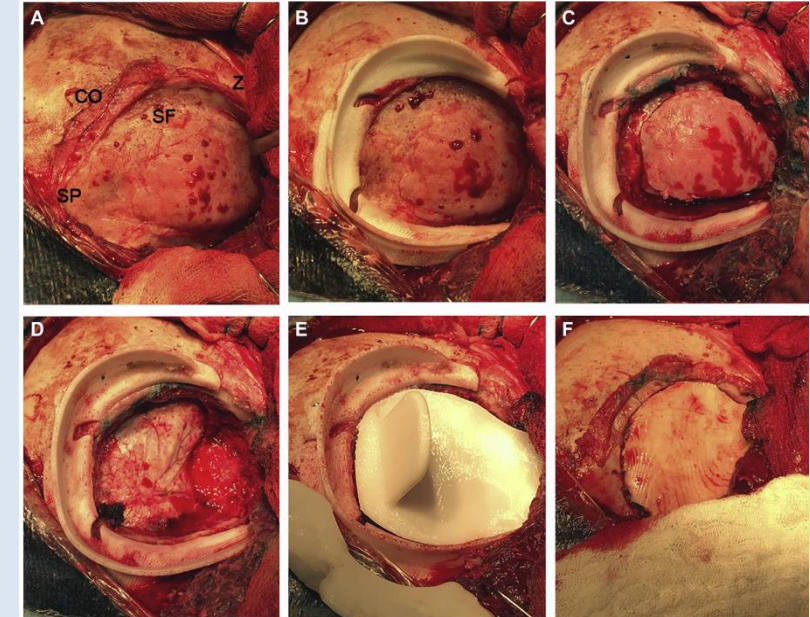
**METHODS:** We present 2 cases of intraosseous meningiomas (sphenoid wing and retromastoid) to illustrate a step-by-step approach, from preoperative planning to single-step surgery.

**RESULTS:** For each case, a customized frame template delimiting bone removal was designed using cranial sutures as anatomical landmarks for precise placement of the cranioplasty template over the area of interest.

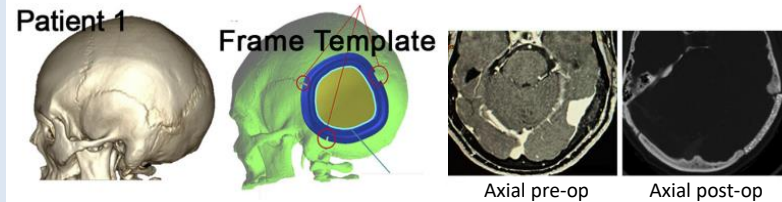
**CONCLUSIONS:** Custom templates based in cranial sutures may benefit single-step frame-guided resection and reconstruction of intraosseous tumors with compelling results



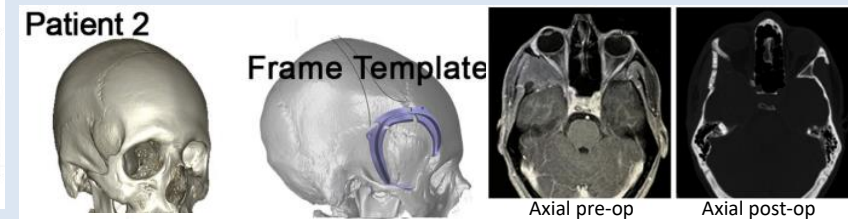
(A) Intraosseous tumor (arrows) on the outer table near the asterion. (B) Frame template positioned over the lambdoid, parietomastoid, and occipitomastoid sutures, delimiting the area of bone removal. (C) Limits of demarcation with methylene blue. (D) Bone drilling in the shape of frame template. (E) Bone flap removed, exposing dura mater. (F) Cranioplasty fixed. L, lambdoid; PM, parietomastoid; OM, occipitomastoid.



(A) Area of interest near pterion: coronal, sphenofrontal, and sphenoparietal sutures and the frontal process of zygomatic bone. (B) Frame template positioned and temporally fixed over coronal, sphenoparietal, and zygomatic bone, delimiting the area of bone removal. (C) Bone drilling in the shape of frame template. (D) Dural exposition and lateral sphenoid wing removal. (E) Test cranioplasty template over the area of bone removal. (F) Cranioplasty fixed. CO, coronal; SF, sphenofrontal; SP, sphenoparietal; Z, zygomatic bone.



Comparison in both patients between preoperative and postoperative images



Comparison in both patients between preoperative and postoperative images