

Reconstructive Approaches Following Sphenoorbital Meningioma Resection

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BACKGROUND

Meningiomas involving the sphenoorbital region are a challenge to access and reconstruct. During the operation, it is often necessary for large areas of hyperostosis to be removed, resulting in large defects. Although there is much discussion in the neurosurgical literature about these tumors, there is little discussion on best methods for reconstruction. Craniofacial surgeons are in a unique position to assist neurosurgeons with surgical access and reconstruction.

METHODS

A retrospective study was conducted to evaluate all patients who underwent resection and reconstruction of a sphenoorbital meningioma by the senior authors (CS and DAS) between 2010 and 2020. Patients were included if the primary pathology was a sphenoorbital meningioma, the initial operation at NYU was the first ablative operation, and surgical access included an orbitozygomatic osteotomy. Demographic data, type of approach, type of reconstruction, and postoperative complications were identified and recorded.

RESULTS

There were 23 patients included in the study. There were 20 female patients and 3 male patients. Average age at the time of resection was 50 years (range: 37-72). The majority of patients had progressive proptosis prior to the ablative operation. One patient underwent radiation therapy prior to resection. Orbital reconstruction was with a combined titanium-Medpor implant in 18 patients, split calvarial bone graft in 3 patients, and a Medpor implant in 2 patients. Calvarial reconstruction was performed with titanium mesh in 21 patients, split calvarial bone graft and titanium mesh in 1 patient, and craniotomy bone and titanium plate in 1 patient. Reoperation was required in 7 patients and one of these patients required 2 separate procedures. Reoperations were performed for hypoglobus or enophthalmos (2), orbital implant malposition (1), abscess formation (1), pain (1), intracranial fat graft modification (1), and soft tissue deformities (2).

CONCLUSION

Sphenoorbital meningiomas can require broad areas of resection of the skull base and calvarium requiring comprehensive reconstruction of the anterior cranial fossa, orbital walls, and cranium. This is where craniofacial surgeons and neurosurgeons should work together for optimal result. Access is performed with an orbitozygomatic osteotomy, and reconstruction is varied. The senior surgeon (DAS) most commonly reconstructs these defects with combined titanium-Medpor implant for the superolateral orbit and titanium mesh for the frontotemporal defect. There have been few complications requiring revision, with the most common revolving around postoperative globe position.