Extradural anterior clinoidectomy

Endoscopic extradural anterior clinoidectomy.

Rangwala SD, Russin J. Commentary: Mini-Pterional Craniotomy and Extradural Clinoidectomy for Clinoid Meningioma: Optimization of Exposure Using Augmented Reality Template: 2-Dimensional Operative Video. Oper Neurosurg (Hagerstown). 2020 Oct 7:opaa315. doi: 10.1093/ons/opaa315. Epub ahead of print. PMID: 33027820.

Extradural removal of the anterior clinoid process (ACP) is a crucial step in the proper surgical exposure of various pathologies in and around the central skull base. Since the pioneering description by Vinko Dolenc, the technique of extradural clinoidectomy has undergone several refinements in the light of improved understanding of microsurgical anatomy and maturation of neurosurgical techniques [1].

Noguchi et al., in 2005 compared the original Dolenc procedure and its subsequent derivatives with their own simpler and less laborious technique. Different clinical situations in which to use the procedure were described based on the authors' experience from 60 cases (40 aneurysm cases and 20 tumor cases) during a 4-year period [2].

For extradural resection of the anterior clinoid process and surrounding bone, two key steps are recommended: bony opening of the superior orbital fissure, and transection of the orbitotemporal periosteal fold.

Key Points: Pterional craniotomy • Complete extradural anterior clinoidectomy • Slit dura (3 mm) to drain cerebrospinal fluid • Peel dura from orbital roof and lateral wall • Bony opening of superior orbital fissure to use it as surgical corridor • Drilling of optic canal • Transection of orbitotemporal periosteal fold • Hollow anterior clinoid process and piece-meal resection • Transection of falciforme ligament to free optic nerve • Replace falciforme ligament by extradural free pericranial flap [3].

Extradural anterior clinoidectomy (eAC) via the minipterional craniotomy (MPT) approach (MPT+eAC) has been introduced to the neurosurgical armamentarium to improve access to anterior and middle fossa skull base structures using a minimally invasive approach. However, the effect of extradural clinoidectomy on surgical exposure with the minipterional approach has not been evaluated. Moreover, the effect of eAC on surgical maneuverability has not been established for either traditional pterional or minipterional craniotomy. Martínez-Pérez et al. sought to illustrate the microsurgical anatomy of the MPT+eAC and to evaluate the effect of eAC on surgical exposure and maneuverability.

The area of exposure, area of surgical freedom, and maneuverability score for the MPT approach and MPT+eAC were compared in 5 cadaveric heads.

Compared with the MPT approach, the MPT+eAC enlarged the area of exposure approximately twofold (93 cm2 vs. 184 cm2; P < 0.001). All targets considered in the paraclinoid region, including the posterior communicating artery origin, prechiasmatic region, and ophthalmic artery origin, showed an increase in surgical freedom and maneuverability after performing eAC. Targets remote from the clinoid such as the internal carotid bifurcation were not affected.

MPT+eAC offers a larger area of exposure and greater surgical freedom and maneuverability at the paraclinoid region using this minimally invasive approach [4].

References

1)
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