Comparison of Anterior Clinoidectomy Extradural and Intradural Techniques and Advantages of the Hybrid Clinoidectomy Technique

Introduction: The aim of this study is to reveal the relationship between the anterior clinoid and related structures and to highlight its contribution to surgery by defining the anatomical features of this structure and defining the area resulting from its resection.

Materials and Methods: 2 (4 sides) formalin-fixed and silicone-injected adult head cadaver specimens were dissected under the microscope at 6x40 high magnification and photographed in three dimensions at Istanbul University-Cerrahpaşa, Microendoneurosurgery and Neuroanatomy Laboratory. In this study, we describe single and combined hybrid methods for intra- and extradural clinoidectomy.

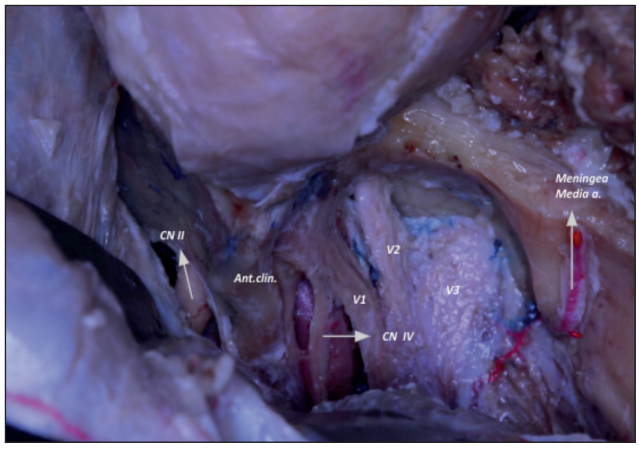
Results: The complex bone and neurovascular structure of the paraclinoid region and their interrelationships complicate the surgical treatment of vascular and tumor pathologies in this region. The anterior clinoid process (ACP) is an anatomical structure that prevents imaging and manipulation of the surrounding neurovascular structures. In the extradural approach, the ACP is drilled in 4 steps via orbitozygomatic craniotomy. Drilling the lateral roof is the first step. The second step is to cut the meningo-orbital band (MOB). The MOB is separated from the lateral edge of the ACP by sharp dissection. The lateral and superior aspects of the ACP are exposed. In the third step, the medial root part is drilled and the optic canal roof is lifted. The final step is to drill the remaining clinoid.

In the intradural approach, standard pterional craniotomy is preferred. The temporal floor opens to the same level as the middle cranial fossa floor and the dura opens to expose the sylvian fissure. After distal sylvian dissection, the optic nerve (CN II) and internal carotid artery (ICA) are visualized. The dura on the ACP can be tilted inferomedially, by drilling in the posterior-anterior direction in the mediolateral, the optic canal roof can be opened and the medial part of the clinoid can be removed. In the hybrid method, an extradural approach is performed up to the Superior Orbital Fissure (SOF) level. The medial of the SOF is left intact. After this stage, while the procedure progresses extradurally, intradural observation can be made periodically for the safety of neurovascular structures.

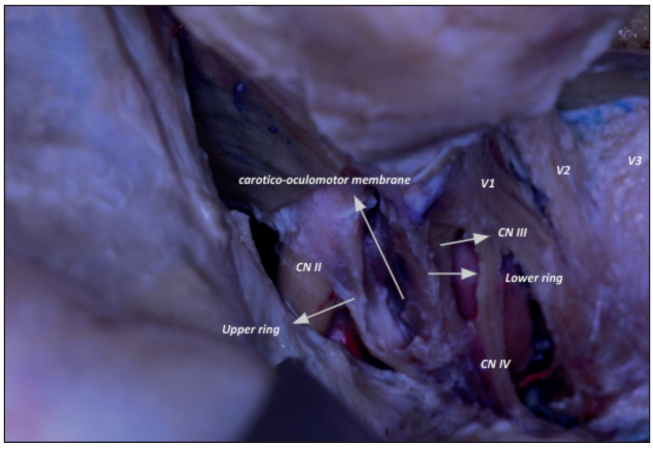
Conclusion: Extradural clinoidectomy is advantageous during removal of medial sphenoid wing meningiomas because aggressive bone removal facilitates extradual devascularization of the tumor and facilitates tumor removal, especially if the clinoid is infiltrated with tumor. Intradural technique is the primary choice especially in cases where pathology needs to be seen and dissected. The hybrid method can theoretically be used as the reverse method in both cases mentioned above. Cutting the dura along the sphenoid wing will prevent the dural layers from obscuring the clinoid, making intradural visualization and potentially deboning available to monitor the lesion.

Keywords: Anterior clinoidectomy, extradural, hybrid, intradural, microsurgery

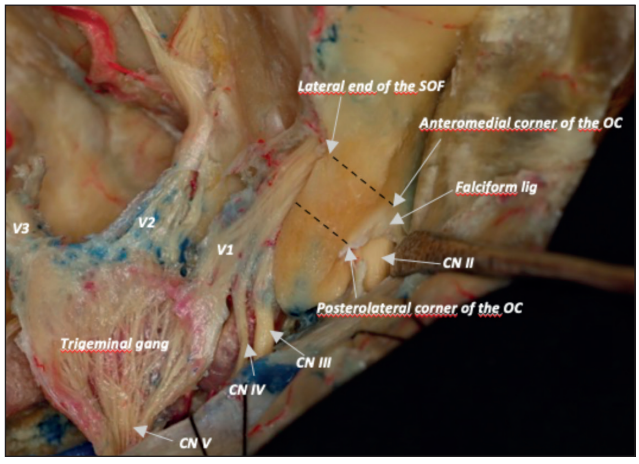
Yiğit Can Şenol, bildiri sunumunu yapmıştır



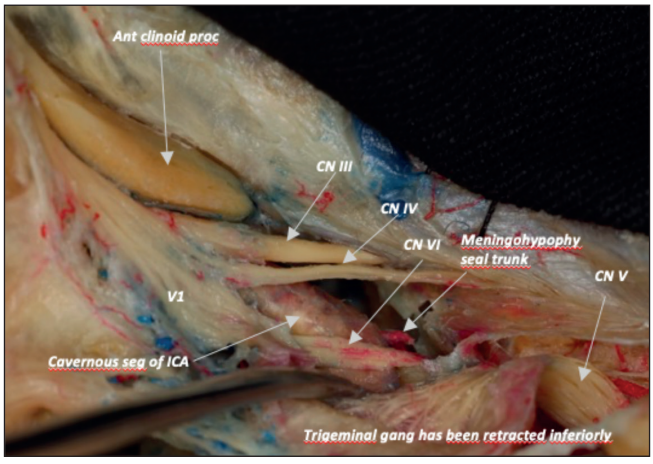
Şekil 1: Ekstradural anterior klinoidektomi öncesi



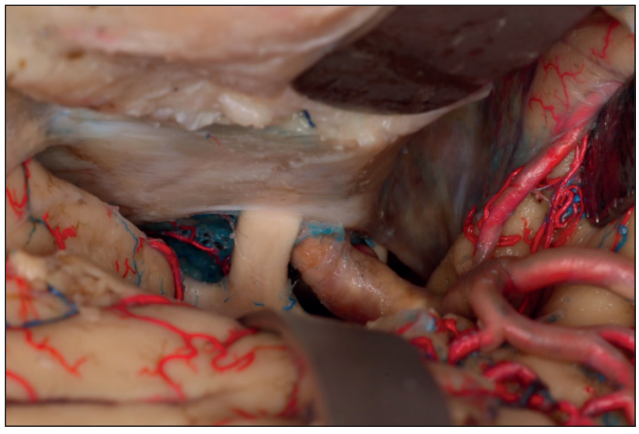
Şekil 2: Ekstradural anterior klinoidektomi sonrası



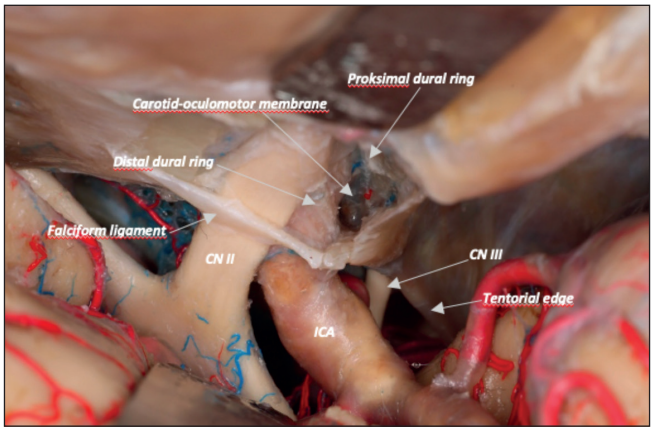
Şekil 3: Hibrit teknik ekstradural adım superior



Şekil 4: Hibrit teknik ekstradural adım lateral



Şekil 5: Hibrit teknik intradural adım rezeksiyon öncesi



Şekil 6: Hibrit teknik intradural adım rezeksiyon sonrası