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# C0425 - MINIMALLY INVASIVE EXTRADURAL ANTERIOR CLINOIDECTOMY: WITH MINIPTERIONAL APPROACH MINI-HAKUBA, (TRUE KEYHOLE MICRO-HAKUBA). LEARNING AND TAILORING THE TECHNIQUE. INITIAL EXPERIENCE AFTER FIRST 16 CASES

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## Resumen

**Objectives:** Minimally invasive extradural anterior clinoidectomy (with or without drilling using adequate rongeurs) should become part of the armamentarium of the neurosurgeon. Description of the steps taken to learn and safely reproduce this technique avoiding learning curve morbidity.

**Methods:** Anatomical study was performed in 3 cadaver heads specifically analyzing clinoidal attachments, meningoorbital band, superior orbital fissure, middle fosa peeling steps, optic strut, distal and proximal dural rings. Extradural anterior clinoidectomy using a minipterional approach (Mini-Hakuba) was then performed in meningiomas, paraclinoid aneurysms and optic nerve compressions. Surgical landmarks, pearls and pitfalls were described in detail. Finally true keyhole (Micro-Hakuba) anterior clinoidectomy was performed in selected cases.

**Results:** Minimally invasive extradural anterior clinoidectomy was performed in all cases recognizing all the necessary anatomy to carry it out safely. Sufficient exposure was achieved for the clipping of paraclinoid aneurysms, optimal optic nerve decompression was obtained, maximum tumoral devascularization was obtained in the meningioma cases and no morbidity was added to the patients.

**Conclusions:** Minimally invasive extradural anterior clinoidectomy (Mini-Hakuba and Micro-Hakuba) can be safely included in the armamentarium of the neurosurgeon without morbidity for the patients during the learning curve after the study of the involved anatomy and adequate initial patient selection. Although it is a complex technique it can be easily adopted and reproduced with excellent results from the beginning.