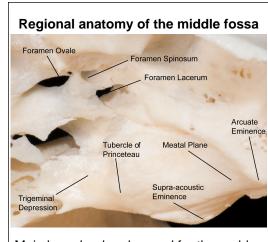




### Introduction

The epidural anterior petrosectomy (Kawase) approach has gained popularity for the exposure of petroclival lesions via anterior petrous apex drilling. The complex regional anatomy, prolonged drilling time, and the risk of injury to critical neurovascular structures in this narrow surgical corridor, make this procedure challenging. A few cases of intradural petrosectomy have been reported recently. Our study proposes a novel combined extradural-intradural technique for an en-bloc anterior petrosectomy or one-piece Kawase (OPK) using specific anatomical landmarks.



Main bony landmarks used for the en-bloc anterior petrosectomy

## **Conclusions**

The OPK allows for wide exposure of the petroclival region while using specific anatomic landmarks. The advantages of this technique include visualization of critical structures through the extradural and intradural corridors and minimizing bone drilling thus potentially reducing heat damage. Clinical translation will be required to test its further application.

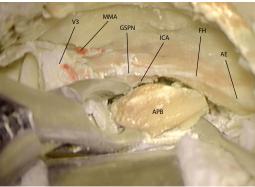
#### **Methods**

The OPK was performed on fourteen specimens. The extradural component consisted of drilling from: 1) Foramen Lacerum (FL) to the intersection of greater superficial petrosal nerve (GSPN) with the internal carotid artery (ICA), parallel to GSPN. 2) FL to the trigeminal depression (TD), parallel to the mandibular nerve (V3). 3) Partial drilling from the intersection of GSPN-ICA towards the internal auditory canal (IAC). The incision of dura and tentorium is followed by skeletonization of superior petrosal sinus (SPS) exposing the petrous ridge. The drilling was continued intradurally from: 1) Tubercle of Princeteau to the TD 2) Continuation of drilling from the IAC towards the crossing point of GSPN-ICA. Finally, the petrosectomy was completed with en-bloc removal of the bone piece. The maximum anteroposterior (AP), supero-inferior (SI) and medio-lateral (ML) lengths of the bone piece were recorded.

#### Results

OPK was successfully completed in all fourteen specimens without damage to any adjacent critical structures. The mean AP distance was 17.6±2.6mm, SI distance was 10.5±2.3mm and the mean ML distance was 9.5±2.6mm.

# Microscopical view of the final dissection to obtain an en-bloc anterior petrosectomy



AE: arcuate emience, APB: anterior petrous bone, FH: facial hiatus, GSPN: greater superficial petrosal nerve, ICA: internal carotid artery, MMA: middle meningeal artery, V3: mandibular nerve

# **Learning Objectives**

- 1) Specific landmarks for an en-bloc anterior petrosectomy
- 2) Description of an intraduralextradural anatomy of the middle fossa
- 3) Relation of the regional neurovascular structures

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