

Introduction

A detailed knowledge of the microsurgical anatomy of the middle fossa floor and petrous bone is mandatory to define the surgical limitations and to avoid complications during performing anterior transpetrosal approach. This includes cutting of GSPN during dissection of middle fossa dura and poor localization of IAC before drilling of the petrous apex leading to injury of acousto-facial bundle or the cochlea.

Methods

We performed 10 anterior petrosal approaches in 5 formalin preserved cadavers to define the microsurgical anatomy of the approach and to delineate the efficacy of a modified technique (Elevation of the middle fossa dura starting from the meningo-orbital band anteriorly and continuing in anterior to posterior direction rather than posterior to anterior direction) to spare greater superficial petrosal nerve (GSPN) while dissection and elevation of middle cranial fossa dura and to precisely localize the internal auditory canal (IAC) before drilling of the rhomboid area of petrous apex by measuring the angle between GSPN sulcus and IAC using multislice computerized tomography-1mm thickness cuts on petrous bone- on 5 dry skulls. Morphometric analysis of the anatomical bony landmarks in the region of the anterior petrosal approach were also performed on both sides of 5 dry skulls.

Results

This modified technique of dural dissection and elevation allowed sparing of GSPN in 9 /10 sides(90%).

The mean angle between the long axis of the GSPN and the IAC, ($61^{\circ}.20 \pm 1.48$), was used for appropriate localization of the IAC on the middle fossa floor in all skull specimens. The mutual relations between the landmarks of this approach were easier with measurements obtained in this study.

Conclusions

We recommend the following points while performing anterior transpetrosal approach to an upper petroclival lesions:

- Elevation of the middle fossa dura starting from the meningo-orbital band anteriorly and continuing in anterior to posterior direction.
- Removal of the petrosal apex bone at the rhomboid complex using the angle between the long axis of the GSPN and the IAC, approximately 61° , for appropriate localization of IAC.
- Tentorial incision between Meckel's cave and the medial free end before the entrance of the trochlear nerve into its canal in the tentorium to avoid its injury.
- The differences in exposure by rotating the microscope through various angles was noted providing greater surgical freedom to prepontine area, trigeminal nerve, abducent nerve entering Dorellos' canal, acousto-facial bundle and basilar artery.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) know the relations between the landmarks of this approach,

2) describe the approach in step-by-step fashion.

3) identify the pitfalls while performing that approach.

