Background: Although it is not so difficult to get access to lesions in the midline via endoscopic endonasal approach (EEA), it is a bit troublesome to reach lesions in the lateral skull base due to some complicated anatomy.

Objective: To show surgical anatomy for EEA to the ventrolateral skull base lesions.

Method: Cadaveric heads were dissected using the endoscope. Surgical techniques were applied to clinical cases.

Results: To get access to the upper lateral skull base (cavernous sinus, orbit), simple opening of ethmoid sinus via uncinostri approach provide sufficient exposure of this area. To reach the inferior lateral skull base (petrous apex, parasympathical space, condyle), transpterygoid approach is the key procedure providing wide exposure of this area. To get to the infratemporal fossa, endoscopic Denker’s approach, followed by dissection around the lateral petryoid plate is a feasible technique for accurate opening of this area.

Conclusion: Understanding of surgical anatomy is mandatory for treating the ventrolateral skull base lesions via EEA. A less invasive and appropriate approach should be applied depending on the size, location and type of the lesion.

Materials & Methods

- Using cadaver heads, anatomical dissections were performed in the Anatomy Laboratory Toward Visuospatial Surgical Innovations in Otolaryngology and Neurosurgery (ALT-VISION) at The Ohio State University and the Anatomical Laboratory for Skull Base Surgery at Larboisiere Hospital. Fresh cadaver heads, without obvious intracranial disease and injected with blue and red latex into the venous and arterial systems, respectively, were used for anatomic dissection. An endoscope (Karl Storz GmbH, Tuttlingen, Germany) was used for dissections and photography. Images were recorded and stored using the Karl Storz Aida system (Karl Storz GmbH, Tuttlingen, Germany).

Figure 1: Stepwise views of surgical anatomy for the cavernous sinus approach.

A. Endonasal view inside the sphenoideum sinus with O° endoscope. Wide sphenodeotomies revealing several important surgical landmarks, including the medial and lateral optic–carotid recesses and carotid protuberances.
B. The lateral optic–carotid recess indicates the junction between the internal carotid artery and the optic nerve.
C. The lateral opticocarotid recess corresponds intracraniainly to the optic strut, a bone extension inferior to the anterior clinial process.
D. Opening of the dura of the cavernous sinus on the right side revealing the contents of the sinus.


References