Endoscopic endonasal transcavernous approach for invasive corticotroph pituitary adenoma

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This is a 37-year-old woman who presented with weight gain, a moon-shaped face, and muscle weakness for 4 months. Cushing’s disease was confirmed after a series of diagnostic tests. MRI demonstrated a pituitary macroadenoma with right cavernous sinus invasion and encasement of the right ICA. An endoscopic endonasal approach was performed, and gross-total resection could be achieved without injury of the cranial nerves. The Cushing’s syndrome improved gradually after the surgery. Histopathology revealed a corticotroph adenoma. In this surgical video, we demonstrate the strategies of tumor resection according to a surgical anatomy-based classification of the cavernous sinus from an endonasal perspective.

The video can be found here: https://youtu.be/aNXFRdGfjpl.

KEYWORDS endonasal endoscopic approach; transcavernous approach; pituitary adenoma; Cushing’s disease; surgical video
Now we proceed to the lateral compartment of cavernous sinus (2:28). It is always challenging to mobilize the ICA medially. The abducens nerve should be identified early on to prevent injury during tumor resection (2:45). The other cranial nerves in the lateral compartment include oculomotor nerve, trochlear nerve, and V1. The branches of inferior lateral trunk need to be carefully identified and controlled. Here the inferior compartment is exposed, which represents the space anterior to the vertical segment of cavernous ICA. Sympathetic plexus can be identified here, which usually conjoint with abducens nerve laterally (3:08). Next, we will proceed to superior (or medial) compartment of cavernous sinus. Here we dissect out the medial wall of cavernous sinus from the ICA (3:19). Careful resecting the medial wall and the ligaments attached on it can further mobilize ICA laterally and completely expose the oculomotor triangle. Here we can see the interclinoid ligament and the oculomotor nerve can be identified laterally (3:45). Here we can see the dura defect, and this is the site where tumors extending into the posterior fossa (3:50). Next the case proceeds to the posterior compartment of cavernous sinus. Posterior compartment is the space just behind the vertical segment of cavernous ICA. After penetrating out two layers of dura, the abducens nerve can be identified at the bottom of posterior compartment (4:09). Since right ICA and cavernous sinus are exposed, a rescued nasal septal flap is harvested and covered on the dura defect. The free middle turbinate flap is covered on the debrided septum. Here we can see the postop result with complete treatment. The patient’s postop cranial nerves functions are well preserved without any deficit and she is under remission status now.

References

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Disclosures
The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this publication.