

## EXTENDED ENDOSCOPIC ENDONASAL APPROACH TO THE CENTRAL SKULL BASE TUMORS

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### Abstract:

**Aim:** Over the years, many different approaches were described for central skull base tumors surgery. Nowadays, the endonasal way, traditionally used mainly for intrasellar tumors, is being expanded and includes tumors situated as well in suprasellar, parasellar, clinoid and clival region with pure endoscopic usage.

**Methods:** During the period from January 2007 until December 2016, at the Department of Neurosurgery, University Hospital Center Zagreb, using this method we operated several patients with supra and parasellar giant pituitary adenomas, adenoma associated with tuberculum sellar meningeoma, cysts (Rathke's and arachnoidal), meningeomas, parasellar and clival metastasis, craniopharyngeomas, clival chondromas, clival cyst, active neuroendocrine tumor and sphenoid sinus granuloma. Surgical approach for these tumors was determined by their location, extension and type, depending on MRI, MSCT and MSCT-angiography. Endoscopic approach was chosen in cases where the anatomy of nasal septum and sphenoid sinus permitted so. In those cases we preferred team work involving two surgeons (neurosurgeon and ENT surgeon) working through both nostrils and using two or three instruments along with the endoscope.

**Results:** In most operations all tumor margins could be visualized except parasellar ones because of their attachment to vascular parts and optic apparatus. In most cases postoperative hormone status was in normal range or improved. Vision field amelioration improved. Recurrent tumors, mostly malignant ones, were treated radiosurgically (*GammaKnife*) or with conventional radiotherapy. Postoperative complications included rhinorrhoea and infections appeared in rare cases.

**Conclusion:** The use of extended endoscopic endonasal approach for central skull base tumors allows the surgeon to avoid brain retraction, permits early exposure of the lesion and provides good visualization from sphenoidal planum to clival region. Conclusive results about complete tumor removal, adequate follow up, recurrence rate and endocrinological results for each specific tumor are not yet available, thereby delaying a true judgement, but we strongly recommend this approach.