

Surgical Strategies For The Treatment Of Pituitary Adenomas Invading The Cavernous Sinus

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Pituitary adenomas are usually histologically benign and grow slowly and expansively. But some adenomas can show macroscopic or radiographic invasion into the cavernous sinus (CS). Although it is still controversial whether cavernous sinus invasion (CSI) means aggressive characteristic of tumor, CSI is the most unfavorable preoperative factor influencing surgical results. Therefore, improvement of surgical results of the tumors invading the cavernous sinus would lead to the improvement of overall surgical cure rate in functioning pituitary adenomas. From surgical standpoint, CSI should be divided into two types: partial type and total invasion type. Sharp excision of infiltrating medial wall of CS with protruded tumor is the tactics for the surgical treatment of partial invasion type and exposing the both sides of the internal carotid artery (ICA) widely and removing tumor around ICA is for the complete invasion type. Midline transsphenoidal approach is sufficient for partial invasion type, but the ethmoid-pterygo-sphenoidal approach is needed for complete invasion type. Intraoperative monitorings (surgical navigation, microdoppler, and monitoring device of eye movement) are indispensable tools to accomplish these procedures more safely.

We believe that aggressive surgical approach to the tumor with CSI will improve the surgical outcomes in functioning pituitary adenomas, but CS surgery should be done by well-trained pituitary surgeons and in centers where endovascular support is available and where it is possible to switch to open surgery, if necessary.