Transsphenoidal approach for pituitary tumor

Dai et al. quantitatively synthesized the comparative efficacy and safety of the most common surgical approaches including endoscopic transsphenoidal approach, sublabial transsphenoidal microsurgery (STMS) and endonasal transsphenoidal microsurgery (ETMS) for all kinds of pituitary tumors. This systematic review and network meta-analysis were performed on randomized controlled trials (RCTs) and comparison studies from databases of Pubmed, EMBASE, and the Cochrane Library. They selected the rate of gross complete resection as the primary outcome of efficacy. And the incidence of all complications, cerebrospinal fluid (CSF) leak, diabetes insipidus, nasal septal perforation, death, and bleeding were designed as our primary outcomes of safety. Twenty-seven studies with 2618 patients were included in this network meta-analysis. On efficacy, there was no statistical difference among the three methods including ETES, STMS, and ETMS. As for safety, results indicated that the incidence of total complications of STMS (OR = 4.74; 95% CI 1.03, 40.14) is significantly superior to ETES. And the incidence of diabetes insipidus of ETMS (OR = 2.21; 95% CI 1.31, 3.81) was significantly superior to that of ETES. Besides, there was no statistical difference in the other complications including CSF leak, nasal septal perforation, death, and bleeding. They clarified the overpraise of the efficacy of endoscopy especially the endonasal transsphenoidal approach and verified that all the approaches owned similar efficacy. Moreover, they recommended the endoscopy to be the first choice for pituitary tumors, because it demonstrated the best safety 1).

The transsphenoidal approach is the gold standard for pituitary adenoma resection. However, despite advances in microsurgical and endoscopic techniques, some pituitary adenomas can be challenging to cure.

Traditionally performed with a microscope and a sublabial incision, the implementation of the endoscopic visualization and endonasal access has rendered the transsphenoidal approach less invasive and provided improved visualization into and around the sella.

see Endoscopic transsphenoidal approach

The standard endonasal approach has been expanded to provide access to other, parasellar lesions. With the addition of the endoscope, this expansion carries significant potential for the resection of skull base lesions.

see Extended endoscopic transsphenoidal approach

Although there is limited and low quality evidence available, the use of intraoperative ultrasound appears to be a safe and effective technological adjunct to transsphenoidal surgery for pituitary adenoma. Advances in ultrasound technology may allow for more widespread use of such devices 2).

Suprasellar extension is regarded a drawback for complete removal of these tumors through this approach.

Is very important to evaluate the correlation between the preoperative radiologic craniocaudal extension on MRI of pituitary adenomas and the extent of tumor removal. A retrospective study. Tertiary care hospital. 560 patients underwent transsphenoidal removal of pituitary adenomas. The degree of removal of pituitary tumor in the follow-up imaging of the patients was correlated with the
preoperative extension in mid-Coronal T1 W Gd. Tumors with suprasellar extension can be classified into: Type I tumors with extension confined to the sellar boundaries, resulted in complete removal in all cases (100%), type II tumors with suprasellar extension reaching the floor of the 3rd ventricle, resulted in complete removal in 70.2% of the cases, type III tumors with suprasellar extension above the 3rd ventricle, had only 13.5% of complete removal. Integration of radiologic findings into a scheme for the preoperative determination of possibility of total removal of the tumor through transsphenoidal approach, can give better correlation to the surgical outcome of pituitary tumors 3).

Costs

Geographic variations in healthcare costs have been reported for many surgical specialties.

In a study, Asemota et al. sought to describe national and regional costs associated with transsphenoidal pituitary surgery (TPS).

Data from the Truven-MarketScan 2010-2014 was analyzed. We examined overall total, hospital/facility, physician, and out-of-pocket payments in patients undergoing TPS including technique-specific costs. Mean payments were obtained after risk-adjustment for the patient- and system-level confounders and estimated differences across regions.

The estimated overall annual burden was $43 million/year in our cohort. The average overall total payment associated with TPS was $35,602.30, hospital/facility payment was $26,980.45, physician payment was $4,685.95, and out-of-pocket payment was $2,330.78. Overall total and hospital/facility costs were highest in the West and lowest in the South (both P<0.001), while physician reimbursements were highest in the North-east and lowest in the South (P<0.001). There were no differences in out-of-pocket expenses across regions. On a national level, there were significantly higher overall total and hospital/facility payments associated with endoscopic compared to microscopic procedures (both P<0.001); there were no significant differences in physician payments nor out-of-pocket expenses between techniques. There were also significant within-region cost differences in the overall total, hospital/facility, and physician payments in both techniques as well as in out-of-pocket expenses associated with microsurgery. There were no significant regional differences in out-of-pocket expenses associated with endoscopic surgery.

These results demonstrate significant geographical cost disparities associated with TPS. Understanding the factors behind disparate costs is important for developing cost containment strategies 4).

References


3) Hamid O, El Hakim A, El Husseiny H, El Fiky L, Kamel S. Craniocaudal extension as an indication of