Endoscopic endonasal approach case series

2021

Data were collected by a retrospective chart review done on children aged 16 years and below who underwent endoscopic tumor resection and had pre- and postoperative magnetic resonance imaging with relevant midface anatomy. 121 normal controls were matched to 20 EES patients by age and gender. Three measurements related to midface anatomy were taken from 1 sagittal T1 slice and 1 axial T2 slice of each scan. Statistical analysis was used to compare growth measures between cases and controls.

Twenty patients who underwent EES between November 2015 and April 2018 met our inclusion criteria. The mean age of the patients, 11 males and 9 females, was 10 years, and 8 patients (38%) were aged 7 years or younger. Six patients who had a high-flow Cerebrospinal fluid fistula obtained a nasoseptal flap. A student T test and multivariate regression analysis found that EES did not affect midface and skull base growth. Among the variables assessed, age appears to be the only driver of growth.

There were no identified differences in craniofacial growth in pediatric patients undergoing EES for skull base tumor resection as compared to the control group. EES does not appear to significantly interfere with midface/skull base development and is a good surgical option for pediatric patients [1].

2019

Kim et al. retrospectively reviewed clinical features, surgical outcomes, and complications in children who underwent a endoscopic endonasal approach for intracranial and skull base tumors at the Seoul National University Hospital from July 2010 to October 2018.

A total of 82 patients underwent EESs for 77 intracranial and 5 skull base bony tumors. The mean age at diagnosis was 11.4 years (range 4-18 years), and the mean follow-up period was 46.8 months. The most common tumors were craniopharyngioma in the intracranial tumor and skull base chordoma.. Gross total resection was the goal of surgery in 55 patients and achieved in 90.9%. The vision was improved in 76.1% of patients with visual impairments. Preoperatively, various endocrinological deficiencies were revealed in 73.7% of 76 patients with hypothalamus-pituitary lesions, and the hyposomatotropism was most common. Endocrinological status was improved only in 10. Aseptic meningitis or bacterial meningitis (7.3%) was the most common surgical complication, and the Cerebrospinal fluid fistula rate was 2.4%.

The endoscopic endonasal approach provides favorable neurological outcomes with acceptable risk for children with brain tumors. The high incidence of endocrinological deficits in cases with hypothalamus-pituitary lesions emphasizes the importance of judicious pre- and postoperative evaluation [2].

2015

The aim of a study was to evaluate the value of intraoperative neurophysiological monitoring (IONM) using electromyography (EMG), brainstem auditory evoked potentials (BAEPs), and somatosensory evoked potentials (SSEPs) to predict and/or prevent postoperative neurological deficits in pediatric patients undergoing endoscopic endonasal surgery (EES) for skull base tumors.

All consecutive pediatric patients with skull base tumors who underwent EES with at least 1 modality of IONM (BAEP, SSEP, and/or EMG) at our institution between 1999 and 2013 were retrospectively reviewed. Staged procedures and repeat procedures were identified and analyzed separately. To evaluate the diagnostic accuracy of significant free-run EMG activity, the prevalence of cranial nerve (CN) deficits and the sensitivity, specificity, and positive and negative predictive values were calculated.

A total of 129 patients underwent 159 procedures; 6 patients had a total of 9 CN deficits. The incidences of CN deficits based on the total number of nerves monitored in the groups with and without significant free-run EMG activity were 9% and 1.5%, respectively. The incidences of CN deficits in the groups with 1 staged and more than 1 staged EES were 1.5% and 29%, respectively. The sensitivity, specificity, and negative predictive values (with 95% confidence intervals) of significant EMG to detect CN deficits in repeat procedures were 0.55 (0.22-0.84), 0.86 (0.79-0.9), and 0.97 (0.92-0.99), respectively. Two patients had significant changes in their BAEPs that were reversible with an increase in mean arterial pressure.

IONM can be applied effectively and reliably during EES in children. EMG monitoring is specific for detecting CN deficits and can be an effective guide for dissecting these procedures. Triggered EMG should be elicited intraoperatively to check the integrity of the CNs during and after tumor resection. Given the anatomical complexity of pediatric EES and the unique challenges encountered, multimodal IONM can be a valuable adjunct to these procedures [3].

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2)
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3)
Elangovan C, Singh SP, Gardner P, Snyderman C, Tyler-Kabara EC, Habeych M, Crammond D, Balzer J, Thirumala PD. Intraoperative neurophysiological monitoring during endoscopic endonasal surgery for pediatric skull base tumors. J Neurosurg Pediatr. 2015 Oct 30:1-9. [Epub ahead of print] PubMed PMID: 26517056.