Child's Nervous System (2019) 35:2079–2080
https://doi.org/10.1007/s00381-019-04314-w

FOCUS SESSION

Pediatric endoscopic endonasal skull base surgery—where do we stand and where are we going?

Waleed A. Azab[1]

Received: 9 July 2019 / Accepted: 14 July 2019 / Published online: 31 July 2019

Nothing is More Powerful Than an Idea Whose Time Has Come.
Victor Hugo (1802–1885)

In its very essence, endoscopic neurosurgery is a perfect representation of the philosophy of minimally invasive surgery, where maximally effective procedures are performed with the least disruption of the innocent passerby normal structures. Indeed, endoscopy is currently playing a crucial role in the management of a large spectrum of neurosurgical diseases out of which many are being exclusively treated endoscopically nowadays. Compared with conventional microsurgery, one of the greatest advantages of endoscopic neurosurgery is the superior visualization of the pathoanatomical details and thus a higher probability of preservation of normal structures. Furthermore, the use of endoscope allowed precise visualization and utilization of unprecedented surgical corridors, a feature that has eminently been demonstrated in endoscopic skull base surgery. These new approaches allowed better access to many skull base pathologies and more thorough understanding of their relation to the juxtaposed neurovascular structures.

Although endoscopic skull base surgery in adult patient subpopulation has now become a very well-established field, the pediatric counterpart has not fully been there yet. It was not until the late 1990s when sporadic case reports and limited series of endoscopic endonasal surgery for pediatric anterior cranial base pathologies started to appear in the literature [1, 2] and were followed by other publications.

Despite the fact that many of the cranial base pathologies in children are ideal targets for endoscopic endonasal approaches, a look at the number of publications on endoscopic skull base surgery during the last two decades discloses a great discrepancy between the adult and pediatric fields. It is of note that although the surgical techniques developed for adults are also utilized in pediatric patients, the existence of specific anatomical differences between the two age groups was one of the main obstacles that have hindered the progress of pediatric endoscopic skull base surgery. Concerns in that regard included small pyriform apertures, incompletely developed nasal passages, and lacking pneumatization of the sphenoid sinus [3]. Notwithstanding, the feasibility and advantages of endoscopic transnasal access to a wide variety of midline cranial base lesions in children from the crista galli to the foramen magnum have been demonstrated [4], even in the very young pediatric age [5]. From another perspective, concerns about the craniofacial development after endoscopic endonasal skull base procedures in children turned to be unfounded as recent works disclosed no evidence of impact of endoscopic endonasal surgery on craniofacial development in the young patients [6].

In this focus session of Child's Nervous System, we endeavored to present a constellation of papers geared

✉ Waleed A. Azab
waleedazab@hotmail.com

[1] Department of Neurosurgery, Ibn Sina Hospital, P. O Box: 25427, 13115 Kuwait, Safat, Kuwait

towards shedding more light on endoscopic endonasal surgical treatment for various pathological entities encountered in the pediatric age. Although relatively uncommon in this patient subpopulation, surgical treatment and required skull base reconstruction in these lesions are becoming an important arena of the subspecialty that is expected to be gradually more explored in the future. The main topics covered include pituitary adenomas and craniopharyngiomas as well as reconstruction techniques. In the first two papers, we are provided with a wide spectrum of pediatric lesions treated via an endoscopic endonasal route in the works by Kim et al. and by Deopujari and colleagues. For pituitary adenomas, Waltz and colleagues from the Ohio Group present a review on this pathological entity in the pediatric age group, while Veiceschi et al. analyze their pediatric pituitary adenoma cases in a multicenter study, and Gazioglu et al. present their experience in treating pediatric Cushing's disease. In their review article, Drapeau and colleagues discuss many aspects of pediatric craniopharyngiomas, while D'Avella et al. from the Naples Group touch an area of great interest to pediatric neurosurgical community in their insightful focus on the key lessons learned from endoscopic endonasal surgery for these lesions. As it pertains to the reconstruction techniques, Laibangyang et al. demonstrate their experience in using pedicled nasoseptal flaps for pediatric craniopharyngiomas, and Shah et al. describe, in a broader overview, the use of nasoseptal flaps for reconstruction of skull base defects in infants.

As I see it, endoscopic endonasal skull base surgery is here to stay and is expected to grow into more practice, newer surgical corridors, and broader horizons in the near future.

Compliance with ethical standards

Conflict of interest The author has no conflict of interest to declare.

References

1. Weiss DD, Robson CD, Mulliken JB (1998) Transnasal endoscopic excision of midline nasal dermoid from the anterior cranial base. Plast Reconstr Surg 102(6):2119–2123
2. Jorissen M, Eloy P, Rombaux P, Bachert C, Daele J (2000) Endoscopic sinus surgery for juvenile nasopharyngeal angiofibroma. Acta Otorhinolaryngol Belg 54(2):201–219
3. Kuan EC, Kaufman AC, Lerner D, Kohanski MA, Tong CCL, Tajudeen BA, Parasher AK, Lee JYK, Storm PB, Palmer JN, Adappa ND (2019 Apr) Lack of sphenoid pneumatization does not affect endoscopic endonasal pediatric skull base surgery outcomes. Laryngoscope. 129(4):832–836. https://doi.org/10.1002/lary.27600
4. Kassam A, Thomas AJ, Snyderman C, Carrau R, Gardner P, Mintz A, Kanaan H, Horowitz M, Pollack IF (2007) Fully endoscopic expanded endonasal approach treating skull base lesions in pediatric patients. J Neurosurg 106(2 Suppl):75–86
5. Nation J, Schupper AJ, Deconde A, Levy M (2018) Pediatric endoscopic endonasal approaches for skull base lesions in the very young: is it safe and effective? J Neurol Surg B Skull Base 79(6):574–579. https://doi.org/10.1055/s-0038-1645854
6. Chen W, Gardner PA, Branstetter BF, Liu SD, Chang YF, Snyderman CH, Goldstein JA, Tyler-Kabara EC, Schuster LA (2019) Long-term impact of pediatric endoscopic endonasal skull base surgery on midface growth. J Neurosurg Pediatr 11:1–8. https://doi.org/10.3171/2018.8.PEDS18183]