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Endoscopic transsphenoidal approach as a promising surgical option in the treatment of craniopharyngioma

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Endoscopic transsphenoidal approach as a promising surgical option in the treatment of craniopharyngioma

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BACKGROUND. The introduction of endoscopic technique in the surgical approach to the sellar/suprasellar tumours would have profound implications for treatment. Some lines of evidence have emerged since 2004 suggesting that this approach may improve the results of surgery in large pituitary adenomas, but data are scant for craniopharyngiomas (Table). Aim of the study is to analyze results, advantages and limits of endoscopic transsphenoidal endonasal approach in the treatment of craniopharyngioma both in childhood and in adulthood.

PATIENTS AND METHODS. Over the last 15 years, 95 consecutive patients affected with craniopharyngioma (CR) were operated on in our centre by the same surgical team. Transcranial approach was chosen for 33 patients (35%) on the basis of shape, size and location. The remaining 62 (52% sellar and suprasellar, 54% purely suprasellar, 3% purely intrasellar; male to female ratio: 0.73; median age: 46 yrs, range, 3-83 yrs; 26% aged 18 years or younger) were operated by endoscopic endonasal approach (EEA) for a total of 71 surgical procedures (Fig. 1-3), including 9 recurrences during the follow-up period (mean: 59 months, range, 3-98). EEA as chosen because of its minimally invasiveness, the detailed view given by angled optics, and the change to tailor the approach on the basis of the tumour extension. Whenever possible, the surgical target was the selective removal of the tumour.

RESULTS. At presentation, visual impairment was shown in 77%, hypopituitarism in 54%, panhypopituitarism coupled with diabetes insipidus (DI) in 24%, isolated DI in 3%. Endocrine function worsened once more postoperatively, as expected (new cases of permanent DI and hypopituitarism occurred in 12.6% and 15.4%, respectively). Conversely, after EEA visual function returned to normal in 35%, improved in 47% and remained unchanged in the remaining 18% (Fig. 4). Gross tumour removal was obtained in 80%. Morbidity encompassed postoperative CSF leak (18%) and chronic subdural haematoma (1.5%); one acute post-operative hydrocephalus (1.5%) was fatal. Weight gain occurred in 8%. Recurrence rate was 14.5%. A moderate worsening of the quality of life (social integration at a lower level) occurred in 13% and a heavy worsening (semi- or totally dependent) in 4% (Fig. 5).

DISCUSSION. Our study about EEA in CR has some strengths, including a large sample (perhaps one of the largest worldwide: Table) and a multidisciplinary team of dedicated and experienced surgeons together with endocrinologists, neuroradiologists and oncologists. EEA was a reliable approach in the majority of patients (65%). The technique, safe and well tolerated, provides a direct approach along the way of the tumour growth and allows the surgeons to remove the lesion, avoiding brain retraction and vascular-nervous structures manipulation. There are no significant differences between the two groups (adulthood vs. childhood) with respect to gross tumour removal, improvement of visual function, postoperative morbidity. The choice of surgical approach to CR remains a challenge. Up to the time of the appearance of EEA, transcranial approach was performed in the vast majority of patients worldwide, consigning the transsphenoidal surgery to a minor role for pure intrasellar CR. Over the last 15 yrs the trend is changing - and our experience with EEA comes at just the right time (Fig. 6).

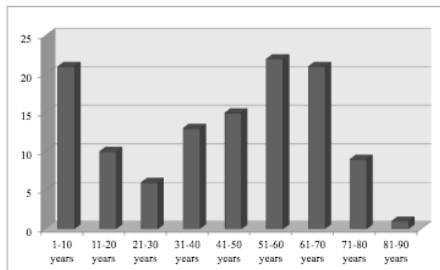


Fig. 1 Bimodal distribution of age

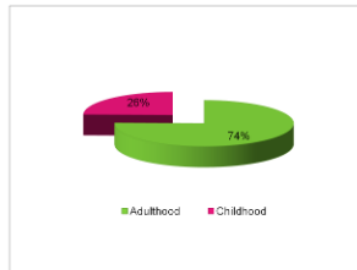


Fig. 2 EEA series from 1998 to 2012 (62 patients)

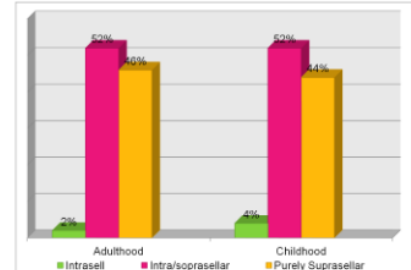


Fig. 3 Tumour location

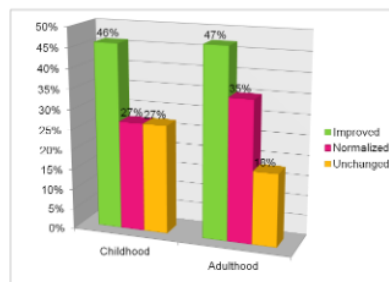


Fig. 4 Visual function

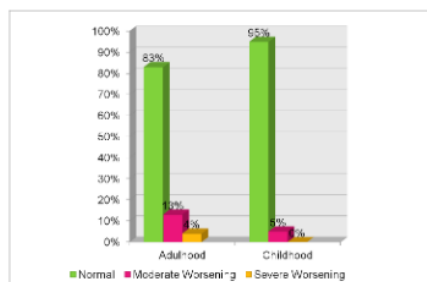


Fig. 5 Quality of life

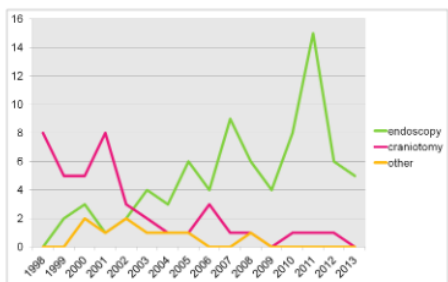
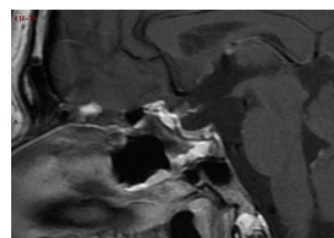
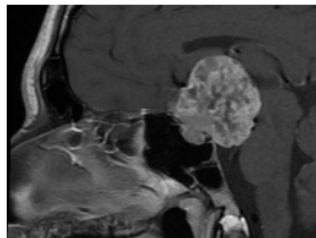


Fig. 6 EEA vs. transcranial approach over the last 15 yrs

	Journal	n. Patients
Frank G et al.	Neurosurgery 2006	10
Laufer J et al.	J Neurosurg 2007	10
de Divittis et al.	Neurosurgery 2007	10
Gardner PA et al.	J Neurosurg 2008	16
Cavallo LM et al.	J Neurosurg 2009	22
Campbell PG et al.	Neurosurgery Focus 2010	14
Leng LZ et al.	Neurosurgery 2012	24



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Introduction: The management of craniopharyngioma (CR) remains a challenge. The introduction of endoscopic technique in the surgical approach to the sellar/suprasellar region would have profound implications for treatment. The aim of the study was to analyze results, advantages and limits of endoscopic endonasal approach (EEA).

Design/methods: From 1998 to 2012, 95 patients underwent surgery for CR. Transcranial approach was chosen for 33 patients (35%) on the basis of shape, size, and location. The remaining 62 (52% sellar and suprasellar, 45% purely suprasellar, 3% purely intrasellar; male to female ratio: 0.73; median age: 46 years, range, 3–83 years; 26% aged 18 years or younger) were operated by EEA, for a total of 71 surgical procedures, including nine recurrences during the follow-up period (mean: 59 months, range, 3–98).

Results: At presentation, visual impairment was detected in 77%, hypopituitarism in 54%, isolated diabetes insipidus (DI) in 3%, panhypopituitarism coupled with DI in 24%. Endocrine function became further worse postoperatively, as expected (novel cases of DI and hypopituitarism occurred in 12.6 and 15.4%, respectively); conversely, after EEA visual function returned to normal in 35%, improved in 47%, and remained unchanged in 18%. Gross tumor removal was obtained in 80%. Morbidity consisted in post-operative CSF leak (18%) and chronic subdural haematoma (1.5%); one acute post-operative hydrocephalus (1.5%) was fatal. Weight gain occurred in 6%. Recurrence rate was 14.5%. Quality of life was preserved in 85% of cases, a moderate worsening (social reintegration at a lower level) occurred in 10% and a heavy worsening (semi- or totally dependent) in 5%.

Conclusions: EEA was a reliable approach in the majority of patients (65%) referred to us. The technique, safe and well tolerated, provides a direct approach along the way of the tumour growth and allows the surgeon to remove the lesion, avoiding brain retraction and vascular-nervous structures manipulation.

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