INVITED COMMENTARY

Value of transcavernous surgery in the treatment of pituitary adenomas

Dieter K Lüdecke

Clinic of Neurosurgery, University of Hamburg, Hamburg, Germany

The commonest cause of incomplete resection of pituitary adenomas appears to be invasion of the cavernous sinus, and there are increasing numbers of publications describing different surgical approaches to this problem. Parkinson (1) pioneered the transcranial operative approach, and Hakuba (2) has reported four modifications, including his experience with 13 different neoplasms. The main disadvantage, even in the hands of experienced neurosurgeons, is the high complication rate (2–6).

In this issue of the European Journal of Endocrinology, Matsumo et al. (6) report a slightly modified transcavernous approach that they have used in four patients with different types of pituitary adenomas, and they have compared the results obtained in four patients with adenomas that were operated by the transsphenoidal technique. This is the first investigation to compare the endocrine outcome in large invasive adenomas using these different techniques but, because of the small number of cases, and their heterogeneity, it must still be regarded as only a preliminary study. In the small group of hypersecreting adenomas, the postoperative reduction of hormone excess, reported as the percentage decrease, indicated better results in the transcranially operated patients. Impairment of cranial nerve function occurred in all the transcavernous operations but fortunately was transient. More severe and other neurological complications can be expected without more extensive experience. However, allowing for the fact that there are so few operations on which to base a judgement, this report encourages wider discussion of the use of more aggressive surgical techniques in the treatment of benign neoplasms. One has to remember though, that in these cases an increasingly sophisticated and multidisciplinary approach is now being adopted. This includes various medical therapies (7, 8) and improved extradural surgical transsphenoidal techniques (9–11) and refined radiotherapies, e.g. Gammaknife (12). Transsphenoidal microsurgery has proved to be the most effective primary treatment option (8, 13, 14).

Hypersecreting pituitary adenomas serve as an ideal control of the effectiveness of tumour therapies (8, 9). The extent of improvement and the definition of complete remission can be evaluated from numerical data and can even be monitored intraoperatively (9). With non-secreting adenomas a tumour-free postoperative magnetic resonance image is a desirable postoperative result, although small non-secreting adenoma rests are seldom harmful to the patient in the short or even the long term. Thus, different surgical and other treatment techniques are most easily evaluated by the results obtained with tumours that produce clear hormonal markers, like growth hormone or prolactin.

For a meaningful comparison of treatment results to be obtained it is most important to have a clear classification of the tumour in a sufficient number of patients. Various classifications of pituitary adenomas have been proposed but have not been used widely because of their complexity (13, 14). The terms micro- and macroadenomas, defining microadenomas as those measuring less than 10 mm in diameter, are well accepted. However, even microadenomas might be non-resectable by a standard (13) or a wider transsphenoidal approach (11) when they encase the internal carotid artery within the cavernous sinus. With the help of magnetic resonance imaging, an improved classification would appear to be possible (15, 16). I therefore propose a simplified classification by combining previous efforts (13–16) and modifying the proposal of Sheline and Tyrrell (17) on the basis of tumour size (8). This system allows the use, combined or separately, of just size or biological behaviour, as well as surgical judgement. The maximum tumour diameter is used as a basis, defining: T0, without any signs of tumour in the magnetic resonance image; T1, up to 9 mm; T2, 10–20 mm; T3, 21–30 mm; T4, 31 mm or more. Enclosed or invasive, and transsphenoidally resectable or non-resectable may be added as well.

In most patients with enclosed tumours from grade T0 to T3, normalization of hormone excess can be achieved rapidly by transnasal microsurgery (8, 9, 13, 14). Nevertheless, there remains a considerable number of patients with large and invasive tumours, in whom most of the para- and supraseller parts of the tumour can be removed by refined transsphenoidal techniques (9–11), but complete extirpation is not possible. There is evidence that the effects of radiotherapy are slow and depend upon the size of the tumour rest (12, 18). If
drugs such as dopamine agonists or somatostatin analogues are sufficiently effective, there is no need for risky and aggressive surgical procedures. The disadvantage of radiation therapy is the progressive loss of pituitary function, although this can be minimized by stereotactic techniques (12).

In conclusion, we see a very limited indication for trans cavernous surgery with large trans sphenoidally non-resectable adenomas when medical therapy is not effective enough or the non-resectable part is too large for radiosurgery. On the other hand, if there are clearly associated symptoms like trigeminal pain or ophthalmoplegia (4), this approach has to be considered if the standard pterional access is not sufficient to remove the parasellar tumour mass.

References


Dieter K Lüdecke, Clinic of Neurosurgery, University of Hamburg, 20246 Hamburg, Germany

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