



Successful surgery of the hypothalamic region: Yes, we can!

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Surgery of tumors involving the hypothalamic region remains one of the most challenging operative procedures even to date. Mortini et al. [1] in this issue report on 10 nasty, large tumors which they extracted from the 3rd ventricle with no mortality. They used a combined inter-hemispheric subcommisural translamina terminalis approach to which they refer as CISTA. The latter represents a variant of the frontobasal interhemispheric translamina terminalis approach that has been shown in previous publications to be a versatile, but technically difficult procedure [2, 3]. It requires extensive microsurgical skills and excellent knowledge of the pertinent anatomy. One advantage of the dissection, as difficult as it is technically, is that most of it is performed outside of the brain, within the subarachnoid space and the cerebrospinal fluid cisterns. Another advantage is that it allows a proper visualization of the lateral walls of the third ventricle, which is the prerequisite to avoid hypothalamic damage [3].

Interestingly, Mortini et al. not only achieved a gross total removal of the majority of all tumors, but also obtained a reduction in the body mass index (BMI) in a number of patients. The sequel of uncontrollable weight gain is a much feared side effect of aggressive removal of suprasellar tumor involving the hypothalamic region. Mueller et al. [4] described that weight gain occurred in a threatening number of patients after aggressive attempts of tumor removal. His group and others [5, 6] have devised grades which predict the risk of hypothalamic obesity according to the extent and localization of the tumor on the preoperative magnetic resonance imaging.

When one reviews the pertinent literature, it appears that only stable BMI or weight gain can result after such types of surgery. The concept of hypothalamic sparing surgery was

thus devised in order to avoid postoperative severe obesity [7]. It proved to be successful in this respect, but has the disadvantage that mostly surgery is not curative and that repeated operative procedures are needed.

However, hypothalamic lesions, such as craniopharyngiomas and other tumors may produce a change in BMI, even before any treatment [4]. The fact, that such obesity can be reverted by careful resection of the responsible hypothalamic tumor may lead to a break of this paradigm, just like the observation that careful resection of pituitary adenomas with preservation of the normal pituitary may cause recovery of pituitary function [8].

With advancements in microsurgical treatment the scientific opinion remain in motion, in this topic.

The fact that even large hypothalamic tumors can technically be resected by appropriate microsurgical procedure is highlighted by reports by our Chinese colleagues, who resected the vast majority of craniopharyngiomas, even those lesions with considerable size in a large series of patients [9]. In contrast to the report of Mortini et al. [1], few details about neurological, functional, and lifestyle outcome are presented in this article and in many other neurosurgery publications which solely dwell on technical aspects of the operative approaches only.

Likewise, there is lack of information on cognitive, endocrine, and neurological outcome data in many other reports dealing with surgical treatment of hypothalamic tumors.

The use of new technical developments like diffusion tensor imaging of the commissural fiber tracks and visual pathways opens new avenues for microsurgical approaches [10].

With the possibility of visualization of vital structures which cannot be differentiated from less eloquent brain by visible light, one can attempt to avoid functional cortical areas and functionally important fiber tracks. It is still not fully resolved, how to display functional data.

However, models which allow some graphical display of this data are, today available for clinical everyday use [11, 12]. Their application is highly recommended.

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One must congratulate Mortini et al. [1] for their excellent outcome in those tumors, which if left untreated also bear a high morbidity and mortality. The reversal of weight gain is a landmark observation. The paper is not just a report on an excellently documented personal surgical series of tumors, which are extremely difficult to handle, but also provides an excellent review of the pertinent literature of approaches to hypothalamic tumors and surgical results up to date.

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