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# of abstract words : N/A

# of text words : 500

# of references : 10

# of tables/figures : 0 figures

# of videos : 0

Running title: Combined management for skull-base benign lesions

Key words: skull-base, management, meningioma, schwannoma

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Financial Disclosures: None

Dear Editor,

We read with great interest the article by Kim et al.[2], discussing multimodal management of petroclival meningiomas. Current authors' preference is for multimodal management, with planned subtotal resection followed by adjuvant SRS.

During the past ten years, our unit has developed an optimally invasive skull-base surgery approach for large benign tumors. The philosophy of this approach is planned subtotal resection followed by SRS using Gamma Knife (GK), with the aim to reduce morbidity and mortality. Gamma Knife is usually performed between 3 to 6 months after microsurgical resection, without a "wait-and-scan" follow-up period of the remnant tumor. In relationship with this recently published paper by Kim and co-authors, we also apply this approach to other skull-base meningiomas, such as the clinoid and cavernous sinus ones.

In the particular case of petroclival meningiomas radical removal remains challenging, primarily due to brainstem adherence or invasion, and encasement of basilar artery/perforators, cranial nerves V, VII, VIII, IX, X, XI[5]. In these cases, we prefer to use the supracerebellar infratentorial (extended retrosigmoid) approach. The extent of tumor removal frequently depends on extent of clival component, invasion of cavernous sinus, adherence to brainstem pia and basilar artery or its branches. What is deemed risky to remove is left behind for subsequent GK-SRS. In our series of combined approaches for benign skull-base lesions, we have not had any mortality or major neurological morbidity. Single fraction GKS can be safely applied on residual tumors[1], even in cases with brainstem contact, due to low prescription marginal doses of 12 Gy, which allow for high rates of tumor control[6]. In cases where limiting factor is optic apparatus, due to GK steep gradient, it is possible to keep the dose below 8 Gy [3,4].

In the particular case of clinoid and cavernous sinus meningiomas, surgical challenge is to preserve carotid artery and branches, recover visual function and limit occulomotor cranial nerve palsies. We don't routinely remove intracavernous sinus part for these tumors. We also perform chiasmopexy, by interposing small fat graft between optic nerve, chiasm, and residual intracavernous sinus tumor component, allowing safe GK on remnant. The same strategy is applied to pituitary stalk whenever needed, to minimize risk of pituitary insufficiency.

In conclusion, we are completely in agreement and we congratulate Kim and co-authors for a very nice paper, which will contribute, in the future, to major paradigm shift in the treatment of these difficult skull-base tumors.

Funding: Constantin Tuleasca gratefully acknowledges receipt of a 'Young Researcher in Clinical Research Grant' (Jeune Chercheur en Recherche Clinique) from the University of Lausanne (UNIL), Faculty of Biology and Medicine (FBM) and the Lausanne University Hospital (CHUV)

Acknowledgments: Lausanne University Hospital and University of Lausanne.

Conflict of interest: No conflict of interest.

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