

# Case Lessons

## Trans-lamina terminalis route via a pterional approach for resection of a retrochiasmatic/retroclival giant craniopharyngioma

Mirel Grada, Mentor Petrela

### Introduction

Resection remains the mainstay of treatment for craniopharyngiomas with the goal of radical resection, if safely possible, to minimize the rate of recurrence. Endoscopic endonasal and microscopic transcranial surgical approaches have both become standard methods for the treatment for craniopharyngiomas. However, the approach selection paradigm for craniopharyngiomas is still a point of discussion. Choosing the optimal surgical approach can play a significant role in maximizing the extent of resection and surgical outcome while minimizing the risks of potential complications. Craniopharyngiomas can present with a variety of different sizes, locations, and tumor consistencies, and each individual tumor has distinct features that favor one specific approach over another.

Retrochiasmatic craniopharyngiomas involving the retroclival/anterior third ventricle are challenging to access. In this case lesson, we emphasize the utility of using the lamina terminalis corridor to resect the retrochiasmatic-retroclival-intraventricular portion of a craniopharyngioma.

### Case presentation

The patient is a 56 yo female with no past medical history. Her symptoms initiated in the last six-months and included headache, progressive decreased vision (amaurosis in the left eye, severe amblyopia in the right eye), and polydipsia combined with polyuria.

MRI demonstrated a giant cystic-largely solid craniopharyngioma occupying the suprasellar and anterior skull base region, and also in the retrochiasmatic- retroclival -third ventricular region.

### Surgical procedure

The conundrum EEA vs TC surgical management of retroclival extension craniopharyngiomas, we opted for EEA approach but after a second expert discussion, the lesion was reached through a left pterional craniotomy, subfrontal translaminar terminalis approach. Initially, the floor of the third ventricle is identified and further incised to expose the tumor in the retrochiasmatic space that have elevated the floor of the third ventricle superiorly. First the

tumor was decompressed internally and through dissection of the capsular-arachnoid plane, the lesion was dissected in the subchiasmatic-intraventricular area, and then tissue differentiation was carried out between the tumor and the hypothalamic tissue. At last, dissection was performed in the infundibulum and pituitary stalk, dividing the infiltrated and normal tissue. GTR was performed, preserving the pituitary stalk. (video on request to dr M.Grada).

Postoperatively, the patient reported improvement in her visual deficits. DI was managed, and the patient was discharged on day 6. Postoperative MRI demonstrated GTR.

## Discussion

After careful review of the MR images, we corresponded with J. Liu, and exposure via an EEA would be limited because of the narrow infrachiasmatic operating window between the optic chiasm and the diaphragma sellae. According to his opinion, a transbasal subfrontal trans-lamina terminalis approach would be the best corridor because of a wider and more favorable space control between the optic chiasm and the anterior communicating artery.

In latest series of Fernandez-Miranada, published in Journal of Neurosurgery in September 2024, the endoscopic endonasal pituitary sacrifice for select tumors with retrochiasmatic and/or retrosellar extension, in a series of 8 craniopharyngiomas, during a period of 6 years, only one was similar (Figure A, Case 2) with a retroclival component as our case, and he was unable to resect totally through this EEA, and it required a second stage surgery through trans-cranial approach. According to his endoscopic experience, he transected and sacrificed the pituitary gland and drilled the dorsum, and both posterior clinoid to create the working corridor, with 18% CSF leak (one meningitis and one death). All the patients are on replacement hormone therapy for the panhypopituitarism.

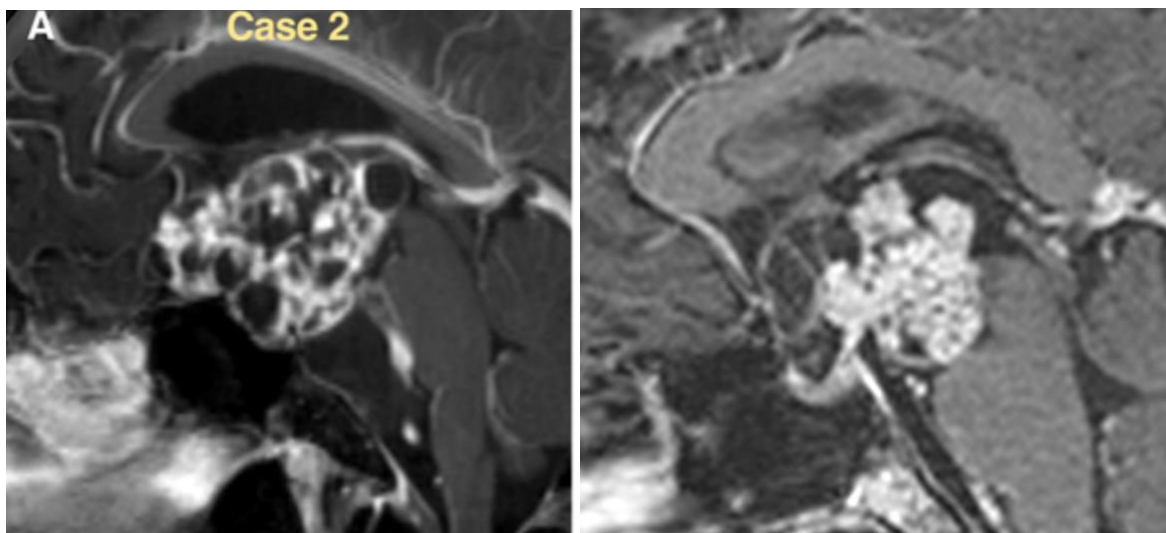
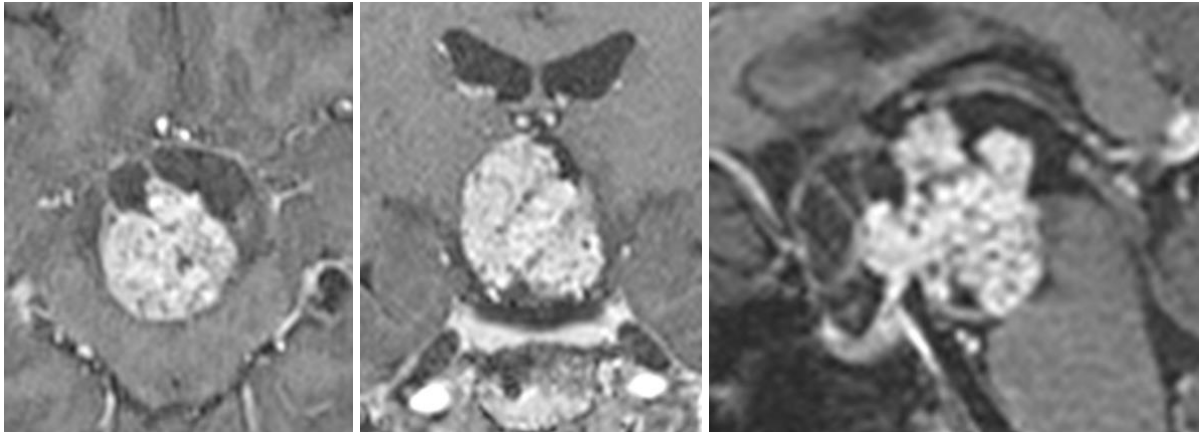


Figure A, Case 2 of the Fenandez-Miranda series, JNS, September 2024

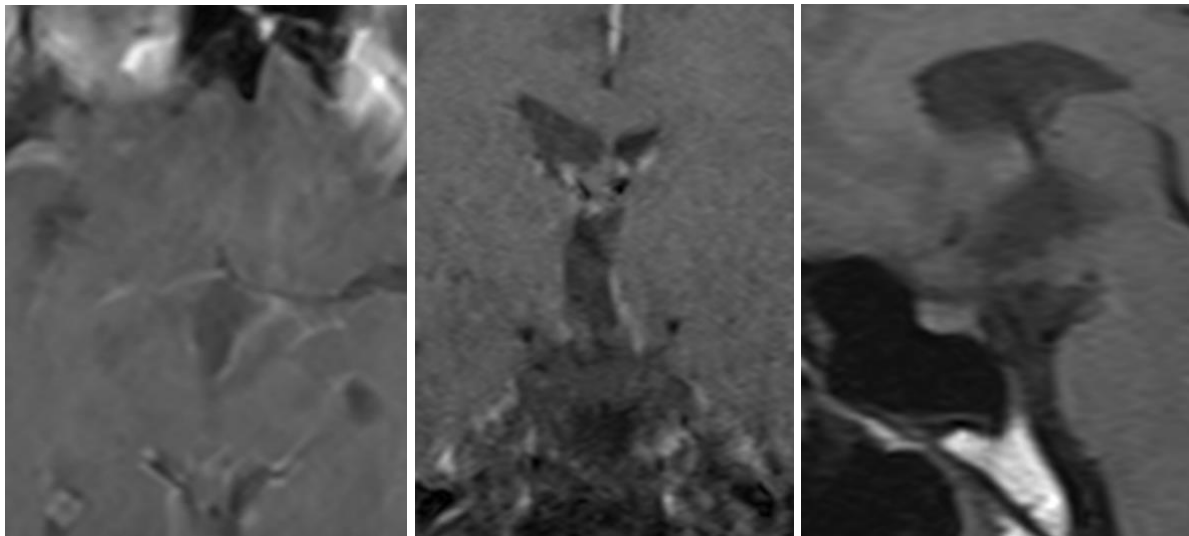
Figure B Our case operated transcranial 1<sup>st</sup> September 2024

EEA VS Transcranial

In our experience of other four retrochiasmatic/retroclival craniopharyngiomas with transcranial approach, carried less postoperative complications and pituitary replacement hormone therapy.



*Pre-operative MRI*



*Immediate post-operative post gadolinium MRI*