



Technical Note

Lateral supracerebellar transtentorial approach to a middle fossa epidermoid tumor

Atul Goel *, Abhidha Shah

Department of Neurosurgery, King Edward VII Memorial Hospital and Seth Gordhandas Sunderdas Medical College, Acharya Donde Marg, Parel, Mumbai 400 012, India

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ABSTRACT

A 40-year-old patient was admitted with a 9-month history of headaches and multiple episodes of generalized seizures. Investigations revealed a medial temporal epidermoid tumor that extended into the suprasellar region. The tumor was surgically resected using a lateral supracerebellar–transtentorial approach. The rationale for the surgical approach and its validity in this clinical situation is discussed.

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1. Introduction

We report a patient with a medial temporal epidermoid tumor that extended into the suprasellar region. The tumor was resected by a lateral supracerebellar–transtentorial approach. The rationale for the surgical approach in this particular surgical situation is discussed. We did not find a similar approach described in the literature.

2. Illustrative patient

A 40-year old male presented with a 9 month history of headache and multiple episodes of generalized seizures. There were no focal neurological deficits. Investigations revealed a medial temporal epidermoid tumor that extended into the suprasellar region. The tumor was deeply insinuated into the temporal lobe (Fig. 1).

2.1. Surgery

A lateral supracerebellar, transtentorial approach was used to surgically resect the tumor. The patient was placed in a semi-sitting surgical position and the head was turned appropriately. The sigmoid and the transverse sinuses were exposed. The cerebellum was retracted inferiorly and a tentorial incision was made from its free edge, approximately 2 cm behind the site of its attachment at the petrous apex. The petrosal vein was coagulated and sectioned to permit easier retraction of the cerebellum. The 4th cranial nerve was protected during the tentorial sectioning. The medial temporal tumor could then be exposed directly. As the

tumor was soft and friable, it could be resected relatively easily. The anatomy of the medial suprasellar structures was seen vividly after the tumor resection. Postoperative scans confirmed total tumor resection (Fig. 2).

At a follow-up of 18 months, the patient was asymptomatic.

3. Discussion

Epidermoid tumors present a particular neurosurgical challenge.¹ These tumors are slow-growing and generally long-standing. They are located in deep brain areas, are relatively large when diagnosed and insinuate deeply into critical neural structures and encase vital brain arteries and nerves. There is no tumor-surrounding edema and the brain is lax at the time of surgery, making retraction of the brain for tumor exposure relatively safe. The friable and avascular nature of the tumor provides additional surgical advantage. The presenting clinical symptoms are usually mild and the patients are generally well adjusted to the symptoms and neurological deficits.^{1,2}

The special relationship of epidermoid tumors to the tentorium has been previously reported by us,² where we identified 96 such cases. Accordingly, we labeled this group of tumors as “tentorium-based” epidermoid tumors. We identified that about 55% of intracranial epidermoid tumors can be grouped under this sub-heading. Some of these tumors are located both above and below the tentorium in relationship to the brainstem and nearby critical neural and vascular structures. We have described a three-stage operation for these tentorium-based epidermoid tumors appropriate for their anatomic position. The surgical approach was retro-sigmoid lateral supracerebellar. Stage 1: the tumor in the vicinity of the brainstem and adjoining the 5th cranial nerve was resected first. Stage 2: the supratentorial part of the tumor was approached by sectioning the tentorium. The tentorial dural flap taken from its

* Corresponding author. Tel.: +91 22 24129884; fax: +91 22 24143435.
E-mail address: atulgoel62@hotmail.com (A. Goel).

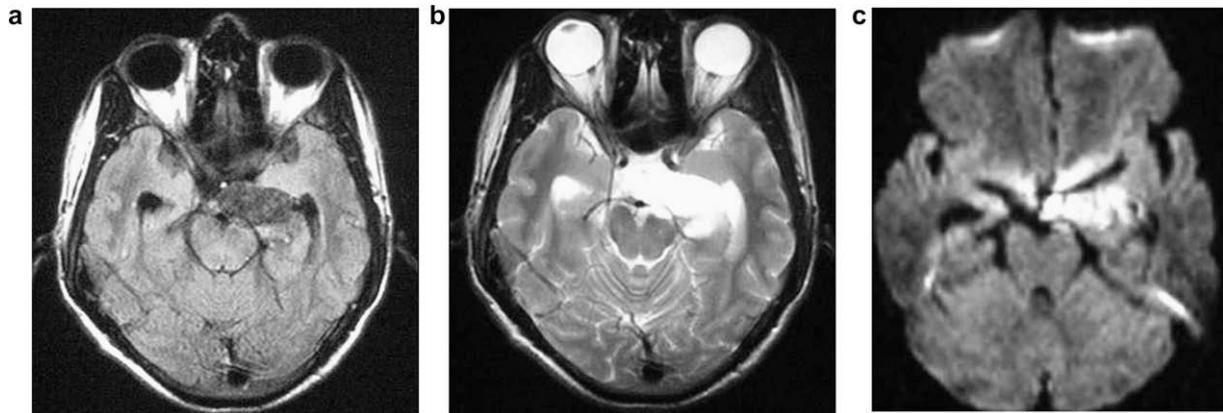


Fig. 1. (a) Axial fluid-attenuated inversion recovery MRI, (b) axial T2-weighted MRI, and (c) axial diffusion-weighted MRI of the patient showing the medial temporal epidermoid tumor that extended towards the suprasellar region.

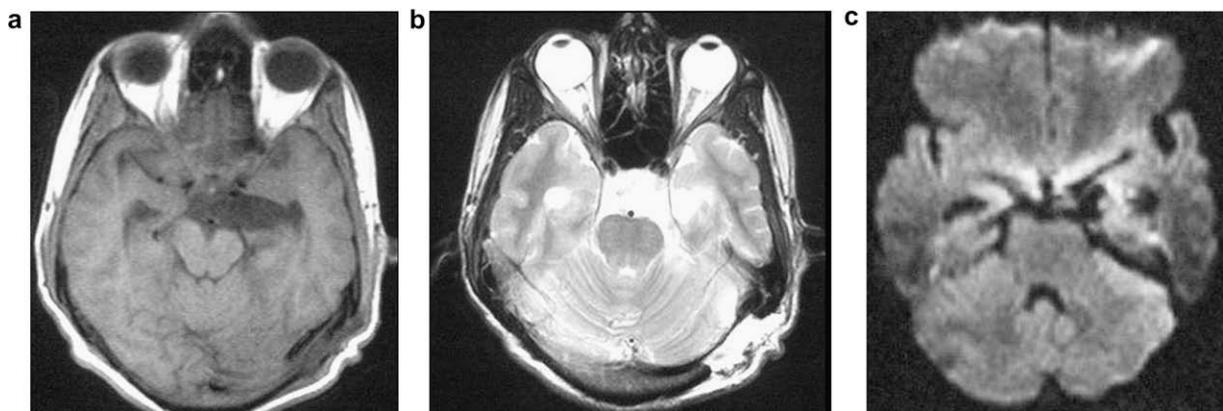


Fig. 2. Postoperative (a) axial fluid-attenuated inversion recovery MRI scan, (b) axial T2-weighted MRI, and (c) diffusion-weighted MRI showing the excision of the tumor. Note the evidence of a retrosigmoid craniectomy.

undersurface was similar to the tentorial dural flap previously described by us for a middle fossa transtentorial surgery.³ Stage 3: The tumor related to the 7th and 8th cranial nerves and the lower cranial nerves was resected.³

In the presented patient the tumor was located entirely in the middle cranial fossa and extended towards the suprasellar region. It had no extension into the posterior cranial fossa. From our earlier experience in dealing with purely supratentorial medial temporal tumors by pterional and basal subtemporal approaches, we observed that due to extensive and deep insinuation of the tumor into the brain, extensive brain retraction was necessary to expose the epidermoid tumor, even after a basal exposure.^{2,4} A posterior fossa, lateral supracerebellar, transtentorial approach provided an “extreme basal” exposure and direct access to the medial temporal tumor. The line of vision to the temporal extension of the tumor was direct and no temporal lobe retraction or even manipulation was necessary. A safe radical tumor resection was possible. The superiority of the presented approach to a basal pterional approach cannot be convincingly shown on the basis of a single patient. Although the depth to the exposure of the tumor was relatively long from the surface, the basal exposure and the physical nature of the tumor assisted in its resection and a larger basal pterional craniotomy could be avoided.

Although midline supracerebellar transtentorial approaches to pineal, medial temporal, posteromedial temporal and medial occipital tumors have been described,^{5–7} our literature search did not reveal a lateral supracerebellar approach to medial temporal tumors that extended into the suprasellar region, as described here. The trajectory provided a clear view of the medial temporal and suprasellar region, thus aiding excision.

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