

## Neuro View Box

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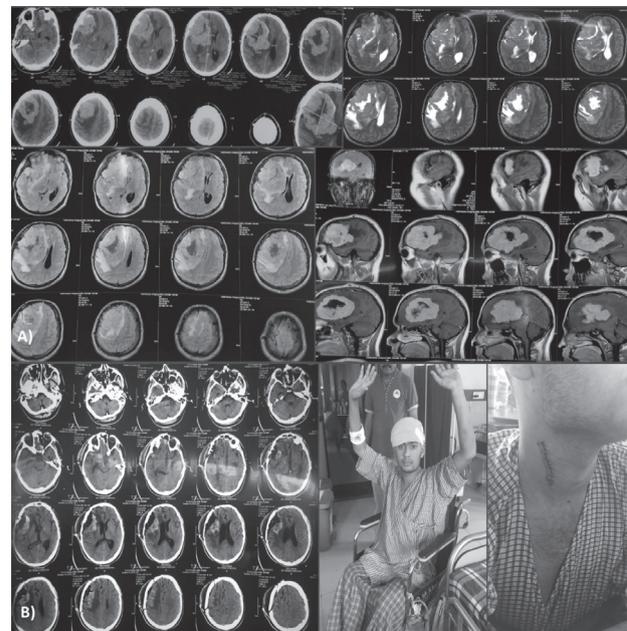
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**Received,** 9 March, 2016

**Accepted,** 18 March, 2016

## Complete Excision of Huge Meningioma with Intraoperative Intermittent External Carotid Occlusion: A Case Report



*Figure 1: A) Preoperative images showing huge enhancing mass with significant edema and mass effect in right frontal area, B Postoperative CT showing complete excision and neurologically intact patient.*

**M**eningioma is one of the most common brain tumors and it is often highly vascular. The main blood supply to the meningioma is from different branches of external carotid artery through meningeal vessels. Pre-operative embolization of meningioma to devascularize the tumor to facilitate its total excision is a common procedure. At times it may not be possible due to various reasons especially in Nepalese context.

Here we present a case of giant meningioma, totally excised by intraoperative intermittent clamping of external carotid artery without sacrificing it.

### Case Report

An 18-year-old male came to the out patient clinic with the complaints of headache on and off with rapidly progressing vision loss since few week back. He had been to an ophthalmologist for the same problem the document of which showed vision of left eye hand movement and

right eye 1/60. CT scan of brain was already done which showed huge mass in right frontal area.

On examination, his gait was unstable with mild left hemiparesis. Moreover, he couldn't walk properly due to vision problem. Fundal examination showed bilateral papilloedema.

CT scan and MRI brain with contrast showed huge extraaxial mass with central necrosis, well enhancing with contrast, in right frontal lobe with significant mass effect and surrounding cerebral edema (**Figure 1A**).

Surgery was planned as soon as possible to excise the mass and preserve vision.

Craniotomy was very difficult due to profuse bleeding from scalp and skull bone. To control bleeding, ipsilateral carotid artery and its bifurcation was exposed, external carotid artery was identified and was clamped with bull dog vascular clamp for few minutes. The whole brain became quiet and less vascular. There was less oozing of blood from scalp and bone. In the mean time dura was opened and mass was exposed. In between, external

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carotid clamp was released to see the bleeding. Whenever the clamp was released, the brain used to swell and bleed significantly. Finally whole tumor was excised with intermittent clamping of external carotid artery throughout the surgical procedure. Total surgical time was about 5 hours. Before closing dura, external carotid clamp was released and any bleeding was checked meticulously from the tumor bed, bone and scalp. There was no significant bleeding and thus dura was closed and external carotid left unclamped.

Post operatively, patient was fully conscious, his left hemiparesis and vision on both eyes improved significantly within few days. He was discharged from the hospital on 7<sup>th</sup> day of surgery. Post operative visual assessment showed left vision 2/60 and right vision 3/60. Immediate postoperative CT scan showed complete excision of tumor and reversal of mass effect (**Figure 1 B**).

## Discussions

There are various ways of controlling vascularity and thus bleeding while doing meningioma surgery. Intraoperative bleeding control and preoperative embolization of feeders are the main ways of controlling vascularity of meningioma.<sup>1,2,3</sup>

Preoperative angiography by CT scan, MRI or DSA would be helpful to assess the feeders and vascularity of tumor and to predict possible intraoperative bleeding.<sup>1</sup>Preoperative embolization is the gold standard method being practiced all over the world. However, it may not be always possible. In the developing countries like Nepal, even though it has been practiced on and off, it may not be always possible or may not be that effective due to lack of service, lack of expertise, lack of embolizing materials, financial constraints on patient part etc. As shown by the study of Ali R et al, adequate embolization of the tumor is not easy.

As major blood supply to meningioma goes from external carotid artery (EC),<sup>2,3</sup> EC clamping in the neck is another way of controlling bleeding during surgery. However, by sacrificing EC, it affects all the other organs and tissue supplied by EC not only the meningioma. That's why selective embolization of the feeder is the best way as far as possible.

Considering all these facts about vascularity of meningioma, we decided to do external carotid occlusion during surgery. Moreover, we decided not to occlude it permanently but intermittently during surgery. As surgery progressed, we released the clamp at times to see bleeding. By this technique, the surgical procedure was so facilitated that total excision of the tumor could be accomplished without much difficulty. Finally the clamp was released at the end of surgery to preserve EC.

This technique can be an ideal technique for surgery of such tumors in the setup like ours where technology is limited.

## References

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