

Case Reports

Rupture of Basilar Tip Aneurysm, Treated with Endovascular Coiling- a Rare Case Report

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Abstract:

Objective: To evaluate the outcome of the patient after endovascular coiling.

Method: A 31 years old disoriented male patient had been admitted in the hospital with severe headache, left hemiparesis, drooping of right upper eyelid. CT scan of brain, MRA, Digital subtraction angiography of brain revealed, subarchnoid haemorrhage, midbrain haemorrhage with ventricular extension with basilar tip aneurysm. Patient was treated with endovascular coiling at Cathlab.

Result: Post operative period was uneventful. Extensive physiotherapy was done. After 14 days patient could walk with support. After 2 months patient used to walk without support. But gait was spastic.

Conclusion: Though management of basilar tip aneurysm is very challenging but it can be managed by endovascular coiling successfully.

Key words: basilar tip aneurysm, subarachnoid haemorrhage, digital subtraction angiography, endovascular coiling.

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Introduction

The basilar artery forms at the confluence of the two vertebral arteries at the base of the medulla oblongata. The basilar artery then runs up the front of the brainstem giving off several branches along the way. At the top of the brainstem (ie: midbrain), it divides into the two posterior cerebral arteries, specifically the "P1" segments. Basilar tip aneurysms form at this division point.¹

Basilar tip aneurysms are not common. They compromise about 5% of all aneurysms within the confines of the skull. However, they are the most common aneurysm of the vertebrobasilar system.²

Patients at risk for developing cerebral aneurysms include those with atherosclerosis, those with a family history of intracranial aneurysms, those with a history of hypertension or collagen vascular disease, and those with polycystic kidney disease. Smokers are also at a higher risk of developing aneurysms.³

Basilar tip aneurysms form when the lining of the vessel wall is thinned. Typically the muscular layer of the wall - the tunica media - is weakened as a result of the aforementioned reasons.⁴

This thinning allows turbulent blood flow to form outpouchings in the vessel wall. Typically these outpouchings occur at branch points within arterial trees (ie: the branch point of the basilar artery into the posterior cerebral arteries).⁵

The most common symptoms of a basilar tip aneurysm occur after it ruptures. The resulting subarachnoid hemorrhage can cause a variety of signs and symptoms. The most common being a severe headache, although cranial nerve dysfunction, stroke, coma, and death can also occur.⁶

Like other intracranial aneurysms, basilar tip aneurysms may be clipped or coiled. Clipping of an aneurysm involves an open surgical procedure where the surgeon dissects down to the aneurysm and places a clip across its neck. This effectively excludes it from the circulation and prevents it from rupturing.⁶

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Aneurysms may also be treated from inside the blood vessel. In this procedure a catheter is threaded from the femoral artery in the groin up into the basilar artery. At this point the aneurysm is located and small metallic coils are placed within the dome of the aneurysm. Regardless of how the aneurysm is treated - either with clipping or coiling - the end result is that the aneurysm is excluded from the normal circulation. The merits of clipping versus coiling are still under debate. Ultimately, the treatment depends on the size and location of the aneurysm, as well as other medical problems that the patient may have.⁶

Case presentation:

Mr. Sujit Deb Nath a 31 years old male patient presented with sudden severe headache, loss of

consciousness, occasional vomiting for several time, weakness of one side of the body, had been admitted in the hospital two days back. He also complaints of dropping of right upper eye lead in the same duration of time.

His attendance also complaints of warning headache one month back.

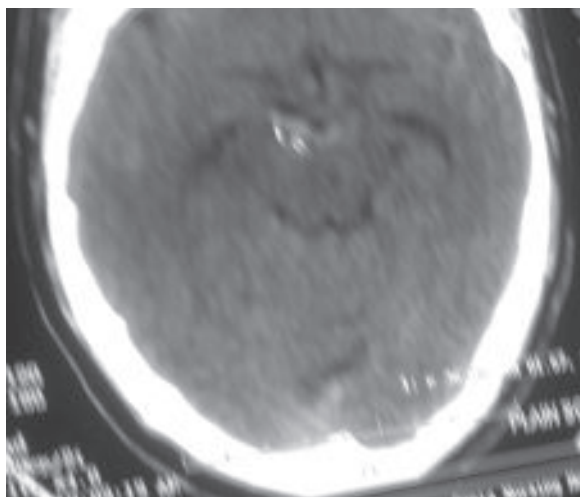


Fig.-1: Shows basilar aneurysm with haemorrhage

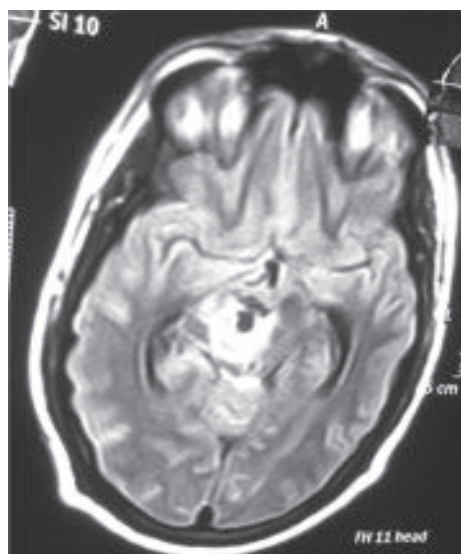


Fig.-2: Shows MRI of brain with flow void appearance

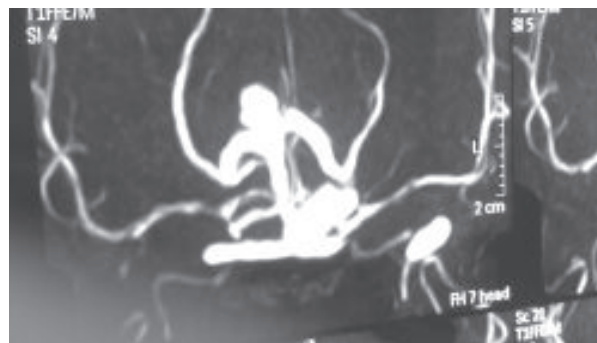


Fig.-3: MR Angiogram (basilar tip aneurysm)

He gave the history of thunderclap headache, which persist 24 hours and was slightly relieved by medicine. His attendance also gave the history of loss of consciousness for 3 hours and patients was shifted to the ICU for the management. Patients attendance also complaints of hemiparesis left side of the body for same duration. Muscle power was grade II of left upper and lower limb. On examination of cranial nerve there was 3rd and 4th nerve palsy with upper motor type of facial palsy at the left side. During examination Glasgow comma scale was 14. Neck rigidity and Kerning's sign were positive. CT scan of brain showed, subarachnoid haemorrhage (fig. 1) with ventricular extension. MRI of brain (fig. 2) with MR angiogram showed basilar tip aneurysm (fig. 3) and mid brain infarction. Digital subtraction angiography of brain revealed huge enlarge basilar tip aneurysm with bilateral internal carotid arteries hypoplasia. Serum electrolyte showed hyponatraemia with high volume of urine upto 5L/day. Total count of WBC increases 19000/cmm. High rise of temperature for 5 days. Urinary routine examination showed huge pus cell. Infection was treated by proper antibiotic after culture of urine. Following controlling of UTI endovascular coiling was done under general anaesthesia in the cathlab. Endovascular microcatheter was introduced through the right femoral artery. Aneurysm was packed by detachable coil (fig. 5,6). Careful management of intake, output and serum electrolyte were done.

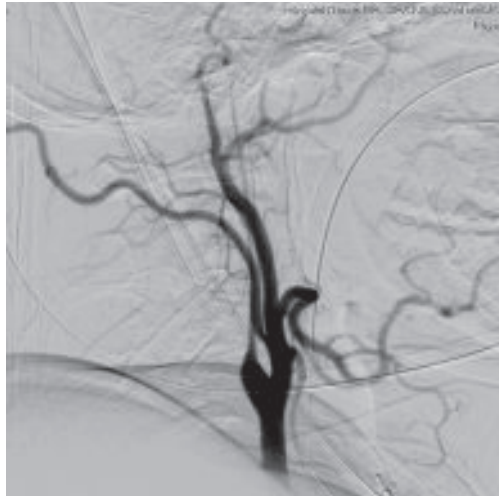


Fig. 4a

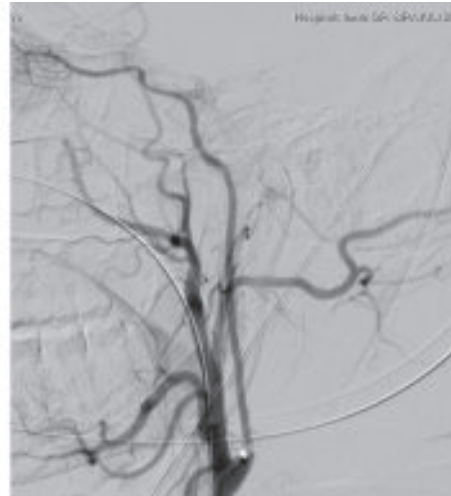
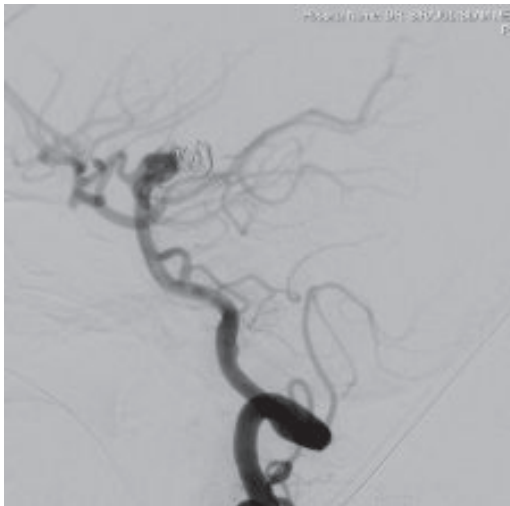
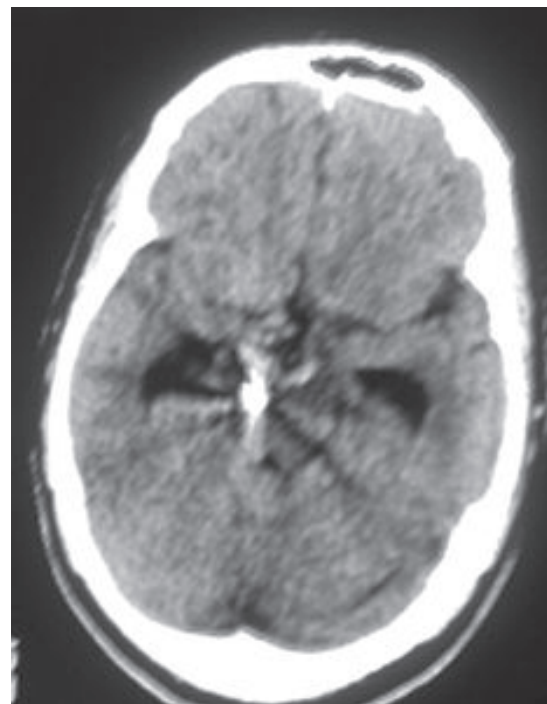


Fig. 4b

Fig.-4: DSA shows hypoplasia of both internal carotid arteries**Fig.-5:** Post-coiling DSA of patient**Fig.-6:** Post-coiling DSA of same patient

Extensive physiotherapy was given. After 14 days patient can walk with support. After 3 weeks patient was shifted to the CRP, Mirpur, Dhaka for extensive rehabilitation program. After 2 months patient can walk without support but gait is spastic. Drooping of left eye lead improved slightly. Medial rectus weakness and 4th nerve weakness persist. Facial weakness improve partially.

**Fig.-7:** Postoperative CT scan of brain with coiling

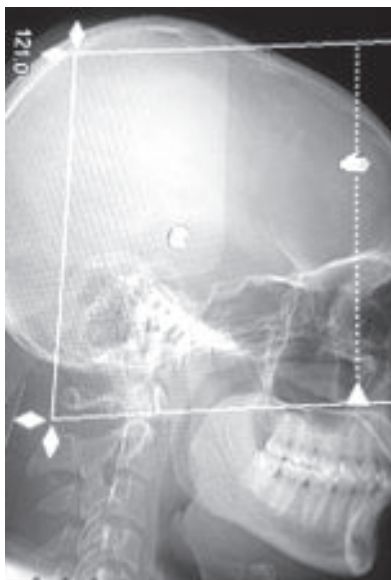


Fig.-8: X-ray skull lateral view (radiopaque shadow of coiling)

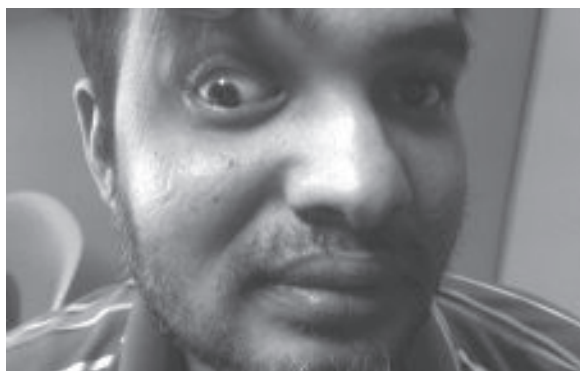


Fig.-9: Postoperative patient after 14 days

Discussion:

Very large and giant basilar tip aneurysms form a special subset of intracranial aneurysms that account for 5% of all coiled intracranial aneurysms in their practice. If left untreated, prognosis is grim. Surgery has long been the only treatment option but is challenging and associated with substantial morbidity.^{7,8,9} The introduction of detachable coils has greatly facilitated the management of basilar tip aneurysms, and coiling has rapidly replaced surgical treatment because coiling of basilar tip aneurysms is technically not different from coiling of aneurysms at other locations without additional associated morbidity.^{5,8,10} Nowadays, surgical techniques for large and giant basilar tip aneurysms such as direct clipping under hypothermia with circulatory arrest and

bypass surgery^{18,19,20} are not serious treatment alternatives for coiling in most centers. Nevertheless, because most large and giant basilar tip aneurysms have a wide neck, coiling of these aneurysms may be technically difficult, and supporting devices that prevent coil herniation in the parent artery are frequently needed. Supporting balloons have been available for this purpose since the early 1990s, and later, the TriSpan supporting device and the intracranial stent became available.²¹⁻²³ The use of these supporting devices makes the coiling procedure more complex, resulting in increased morbidity.¹¹ Despite the frequent use of supporting devices, in previous study, coiling of very large and giant basilar tip aneurysms was associated with low morbidity and mortality, in the same range as for other studies that include basilar tip aneurysms of all sizes. Most patients had good outcomes during up to 11.5- years follow-up. Although many aneurysms could not be occluded completely and many aneurysms reopened during follow-up necessitating additional coil treatment, rebleeding from the coiled aneurysm was rare and additional treatments were without complications. The 2 rebleedings in previous study probably could have been prevented. In 1 patient, failure of electrolytic detachment of the coils in the presence of multiple other coils precluded adequate aneurysm occlusion in 1995. This problem of early GDC design has been overcome since then.

In our study our patients had rare presentation basilar tip aneurysm with hypoplasia of both internal carotid arteries was successfully treated by endovascular coiling.

Conclusion:

Coiling of very large and giant basilar tip aneurysms is associated with reasonably low morbidity. Although practice of close monitoring after coiling when necessary can keep rebleeding rates at low levels, considering the morbidity of other treatment alternatives.

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