

## Case Report

# Transverse Venous Stenting in Medically Refractory Idiopathic Intracranial Hypertension — A Case Report

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Idiopathic Intracranial Hypertension (IIH) is a disease characterized by persistent intracranial hypertension but in the absence of any distinguishable pathology. This disease has been associated with obesity and thus weight reduction constitutes major lifestyle related modification for its management but in patients not responding to it are then planned for pharmacological and surgical treatment options. Medically refractory cases who have trans stenosis venous pressure gradient of 8-10 cm H<sub>2</sub>O and more are the candidates planned for venous sinus stenting but it is very dilemma to optimize these patients preoperatively as they are on high dose dual antiplatelet drugs. Here we report management and follow up of such case in 39 year old female on dual antiplatelet agents posted for transverse venous sinus stenting.

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**Key words :** Idiopathic Intracranial Hypertension, Antiplatelet Drugs, Obesity, Transverse Venous Sinus Stenting, Case Report.

Idiopathic Intracranial Hypertension (IIH), also known as pseudotumor cerebri or benign intracranial hypertension, is characterized by persistent intracranial hypertension without a distinguishable pathology. A 2011 United Kingdom study reported an incidence of 11.9 per 100,000 obese women<sup>1</sup>. Hereby we report management of a case of medically refractory IIH due to transverse venous sinus stenosis.

### CASE REPORT

A 39-year-old female weighing 80 kg presented to neurosurgical outpatient department with complaint of headache since past 6 years. It was insidious in onset, progressive in nature and associated with transient blurring of vision (lasting 5-10 seconds), vomiting and tinnitus. There was no history of trauma/weakness of limbs/ seizures. She was taking tablet acetazolamide 250mg 6 hourly since 2016 for IIH. Her vitals and higher mental functions were normal. All cranial nerves were normal on examination except second nerve which revealed bilaterally normal sized and normally reacting pupils with 6/6 visual acuity in both eyes but bilateral papilledema on fundoscopy. Magnetic Resonance Imaging (MRI) brain revealed intact gray-white differentiation with no areas of abnormal signal. Bilateral optic nerves were torturous with prominent subarachnoid spaces, partial empty sella was also seen. MR arteriography was normal but on MR Venography

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### Editor's Comment :

- Venous Sinus Stenting is the treatment of choice in medically refractory cases of Idiopathic Intracranial Hypertension.
- Antiplatelets and anticoagulants peri-procedurally in these patients must be vigilantly monitored to maintain risk-benefit ratio.

arachnoid granulations were seen along bilateral transverse sinus causing significant stenosis.

The opening CSF pressure was 24cm of H<sub>2</sub>O. She was planned for diagnostic cerebral angiogram (DSA) with manometry under conscious sedation where right transverse sinus stenosis was confirmed (Fig 1) with pressure gradient of 12cm H<sub>2</sub>O across the stenosed segment.

She was started on tablet aspirin 150mg once daily and tablet clopidogrel 75 mg once daily for 7 days and scheduled for right transverse sinus stenting under general anesthesia. All the anticoagulants were continued till the day of intervention and injection enoxaparin 0.4 mg subcutaneous was advised to be added on the morning of day of intervention. Her coagulation profile on the morning of intervention was checked and was within normal limits. Left radial artery cannulation was done for beat to beat invasive blood pressure monitoring and intermittent arterial blood gas analysis. The interventional radiologist took access via right femoral vein and left femoral artery. The sheath system was then advanced till the stenosed right transverse sinus and beyond 10mm. Injection heparin was given in the dose of 5000 IU intraarterially at the start of procedure and then 1000 IU intermittently every hour, with total dose of 9000 IU. In view of partial opening of stenosed segment via stent, balloon dilatation was done to ensure complete opening of the stenosed segment (Fig 2).

Injection nitroglycerin 50 microgram was given intraarterially to prevent vasospasm. Throughout the

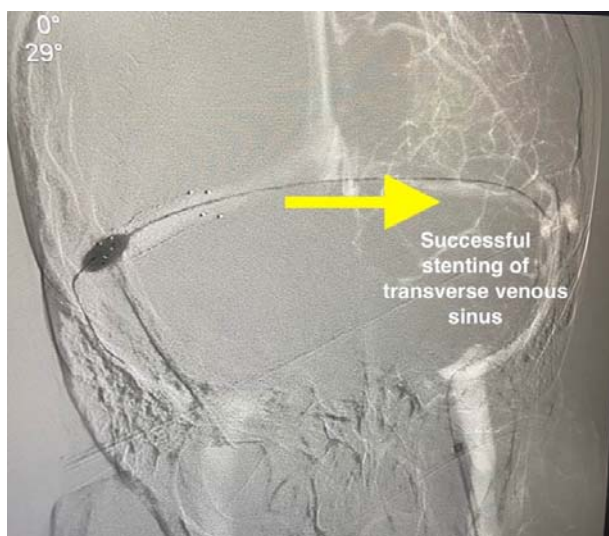


Fig 1 — Showing diagnostic subtraction angiogram image showing transverse venous stenosis

procedure end tidal Carbon-di-oxide was kept around 32-35 mmHg to prevent any rise in Intra-cranial Pressure (ICP). After successful dilatation, check angiogram was done which was found satisfactory. The patient was then smoothly extubated to prevent any rise blood pressure.

Postoperatively, she complained of severe headache, for which she was started on injection fentanyl via peripheral cannula at the rate of 0.05 microgram/kg/minute with maintained spontaneous ventilation. Enoxaparin was continued for 5 days and her antiplatelets were continued further in the postoperative period to prevent stent thrombosis. On follow-up her headache got relieved and papilledema was also improving.

### DISCUSSION

Idiopathic Intracranial Hypertension (IIH) has classic triad which includes chronic headaches, papilledema and visual loss without any neurological signs or ventriculomegaly or intracranial lesions on imaging, except abducent nerve palsy that could be seen in severe cases<sup>2</sup>.

The modified Dandy criteria are the most widely accepted criteria for diagnosing IIH<sup>3</sup>. There has been various studies suggesting association of obesity and IIH<sup>4</sup>. Our patient was also overweight with Body Mass Index (BMI) of 30.1kg/cm<sup>2</sup>.

The treatment of choice in medically refractory IIH is nowadays getting more inclination towards transverse Venous Sinus Stenting (VSS). The goal of VSS is to normalize the trans-stenosis pressure gradient. A pressure gradient of 8-10 cm H<sub>2</sub>O has been the threshold for intervention in most studies<sup>5-8</sup>. In our case the trans stenosis pressure gradient was 12 cm H<sub>2</sub>O, thus becoming the ideal candidate for venous stenting. With any vascular stenting, the most feared complication is acute thrombus and stenosis of the stent. To prevent thrombosis of stents, patients are put on high dose of dual antiplatelet drugs 1-2 weeks prior to procedure including aspirin 325 mg once daily and clopidogrel 75 mg once daily. And anticoagulation escalated on the day



Fig 2 — Showing successful stenting with balloon dilatation of stenosed segment

of surgery by addition of heparin.

During the procedure heparin bolus are given intermittently with goal-activated clotting time of 250-300 seconds through the procedure. The dual antiplatelet drugs at the escalated doses are continued post procedure upto 3 months after which repeat check angiograms are performed for follow-up<sup>5</sup>.

The postoperative headache which patient had is a noted postoperative complication that occurs due to dural stretch and it resolved gradually.

### CONCLUSION

VSS is now a days being increasingly opted for treatment of medically refractory IIH. The high coagulation in these patients form important consideration.

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