

# A New Onset Obstructive Hydrocephalus Seen After Medical Termination of Pregnancy Treated with Endoscopic Third Ventriculostomy: Case Report

Shighakolli Ramesh\* and Jaleel MA

Consultant Neurosurgeon, Department of Neurosurgery, Kamineni hospitals, Hyderabad, Telangana, India

\*Corresponding author: Ramesh S, Consultant brain and spine surgeon, Department of Neurosurgery, Kamineni hospitals, Hyderabad, Telangana, India, Tel: 9618461044; E-mail: [srameshns1@gmail.com](mailto:srameshns1@gmail.com)

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## Abstract

A new onset obstructive hydrocephalus after medical termination of pregnancy (MTP) is a rare event. A 23-year-old female patient who underwent medical termination of pregnancy for an unwanted pregnancy presented with a chief complaints of headache and vomiting since 6 days, altered sensorium since 1 day. Postpartum headache has a wide differential diagnosis of tension headache, migraine, hypertension/pre-eclampsia, cortical vein thrombosis; subarachnoid haemorrhage, cerebral infarction/ischemia, space occupying lesions, posterior reversible leucoencephalopathy syndrome, sinusitis and meningitis. In index case, we tried to rule out above said differentials even after medical termination of pregnancy but to our surprise patient had obstructive hydrocephalus with significant peri ventricular ooze. Literature search showed hydrocephalus during pregnancy or after postpartum, our search didn't reveal similar case of obstructive hydrocephalus after medical termination of pregnancy. We report this case as hydrocephalus should also be considered as a differential for headache after delivery or medical termination of pregnancy.

*Keywords: Hydrocephalus; Postpartum; Medical termination of pregnancy; Endoscopic 3<sup>rd</sup> ventriculostomy*

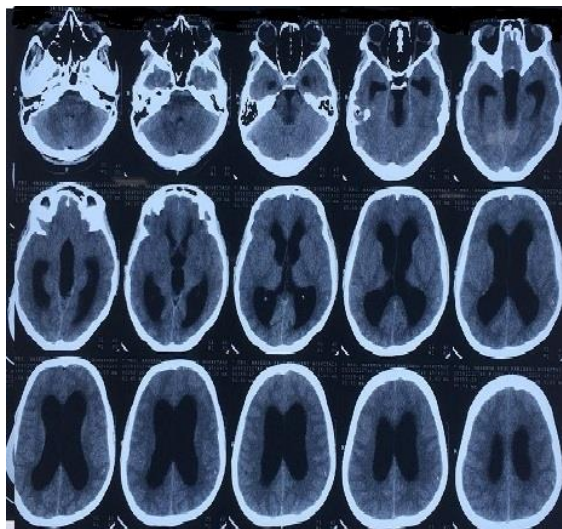
## 1. Introduction

Hydrocephalus after medical termination of pregnancy is not a known entity. Rarely physiological changes which occur during pregnancy may cause new onset of hydrocephalus if so usually at term, but we present a case of hydrocephalus after medical termination of pregnancy.

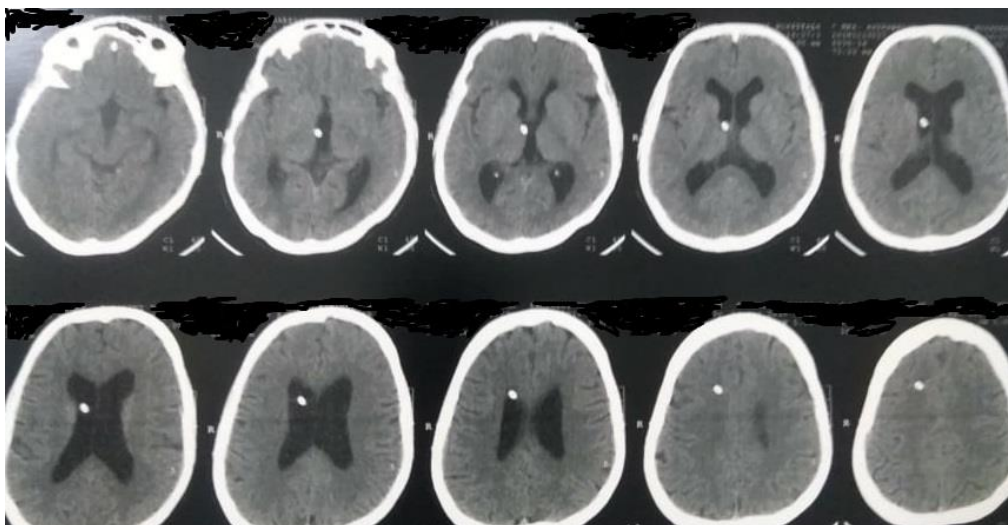
## 2. Case Report

23-year-old married female had a missed period for which she consulted a gynaecologist. Urinary pregnancy test and USG abdomen confirmed her pregnancy. She underwent medical termination of pregnancy (MTP) for unwanted pregnancy. Two days after MTP she developed sudden onset of headache, severe in intensity, continuous and holocranial. Headache was

associated with vomitings especially in early mornings and was non bilious. She was managed conservatively for persistent headache and vomitings for 6 days by local physician. She had altered sensorium for a day and was referred to our tertiary centre for further management. On arrival she was drowsy arousable, following simple commands, GCS: E3V4M6, restless, irritable, moving all limbs with bradycardia. Her CT scan brain done showed dilatation of supra tentorial ventricular system i.e., lateral, third ventricle with normal 4<sup>th</sup> ventricle, diffuse cerebral oedema (obliteration of bilateral sulcal spaces, basal cisterns) (FIG. 1). She underwent emergency right frontal burr hole, endoscopic third ventriculostomy and reservoir placement under general anaesthesia. CSF was clear and under severe pressure. CSF analysis were normal. She improved neurologically i.e. conscious, coherent, identifying attenders, ambulant, independent for daily activities. Her Trans vaginal ultra sound done during hospital stay showed retained products for which gynaecologist advised misoprostol per vaginally stat, followed by oral for 3 days. No further episodes of headaches and vomitings. Three months post operatively she is comfortable without any issues (FIG. 2).



**FIG. 1. Dilated lateral, third ventricle with normal 4<sup>th</sup> ventricle suggestive of aqueductal stenosis with significant peri ventricular ooze and diffuse cerebral edema.**



**FIG. 2. Post op scan showing well decompressed ventricles with reservoir *insitu*.**

### 3. Discussion

Hydrocephalus is a significant burden on both paediatric and adult population, on a rough estimate around 4, 00,000 new cases per year will be detected around the world [1]. Traditionally hydrocephalus is classified into two sub types obstructive or communicating based upon site of obstruction. If obstruction at arachnoid granulations it is communicating and obstruction proximal to arachnoid granulations called as obstructive. New onset of hydrocephalus during pregnancy is rare, only few cases are reported in literature [2-4].

Aqueductal stenosis is most common cause of obstructive hydrocephalus accounting to 6%-66% in paediatrics and 5%-49% in adults [5,6]. In pregnancy, brain and cerebral circulation adaptation are unique to maintain homeostasis, when compared to other organs and vascular system. Brain is enclosed in a rigid skull, has comparatively less tolerance to changes in blood and CSF flow. Other organs during pregnancy has increased perfusion and ultra-filtration whereas cerebral circulation has to strictly control blood flow in order to counter balance increased plasma volume and cardiac output by 50%. Increased blood flow and plasma volume may lead to shift in balance leading to diffuse cerebral oedema, raised intracranial pressure, herniation and rarely death [7].

Cardiac output, left ventricular volume, heart rate shows increasing trend whereas decreasing trends are seen in peripheral vascular resistance and oncotic pressure (due to hemodilution). Increased cerebral blood flow, increased resistance to cerebral vasoconstrictors, selective remodelling (thinning of wall with larger vessel lumen) all leads to increased cerebral blood volume. Excess CSF is produced due to venous dilatation [7]. Oatridge et al. [8] has shown changes in brain, ventricular size during and after pregnancy in both groups i.e., normal and pre-eclampsia deliveries. They conclude in both groups, ventricle size increased with proportionate compensatory decrease in brain size and these changes are seen maximum at term. These changes normalise by 40 weeks post-delivery [8]. In view of ongoing above said physiological changes in pregnancy i.e. increased cerebral blood volume, excess CSF may lead to clogging of already narrow aqueduct leading to obstructive hydrocephalus [9].

Murat et al has done extensive literature search in management of obstructive hydrocephalus in pregnant patients. In his search around 14 pregnant patients have been reported with new onset of obstructive hydrocephalus out of which 9 patients had mass lesions. Median ages of patients presenting was 25 years (range: 20-39 years). Most common presenting symptom was headache, nausea/ vomitings, depressed sensorium, seizure, memory disturbance and vision problem. Out of 14 cases, 9 were treated with shunt systems, 3 with endoscopic third ventriculostomy and 1 with temporary ventriculostomy [4].

Our index patient was a 23 years old presented similarly with headache, vomitings, depressed sensorium. Even though during pregnancy CT scan of brain is usually avoided due to ionizing radiation, in our index case she already underwent medical termination of pregnancy so scan was done. It showed dilated lateral, third ventricle, and normal 4th ventricle with significant peri ventricular ooze and diffuse cerebral oedema. She underwent emergency right frontal burr hole, endoscopic third ventriculostomy with reservoir placement. Post operatively she improved clinically, conscious and coherent. Post-operative period was uneventful. Her follow up CT scan brain done showed well decompressed ventricles.

Differential diagnosis of postpartum headache is broad ranging from migraine, tension headache to cerebral infarction/ischemia and mass lesion. Aim to report this case was to broaden the differential diagnosis of postpartum headache for a clinician and also to consider hydrocephalus as a cause of headache not only postpartum but also after medical termination of pregnancy.

#### **4. Conflict of Interest**

Nil.

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