



# Traumatic Delayed Posterior Cranial Fossa Epidural Hematoma: A Rare Entity

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## Abstract

### Keywords

- ▶ cranial epidural hematoma
- ▶ craniocerebral trauma
- ▶ craniotomy
- ▶ posterior cranial fossa
- ▶ traumatic brain injury

Posterior fossa epidural hematomas (EDHs) are much rarer entities than supratentorial EDHs which are reported only 4 to 7% in the literature. Due to the tight space and critical structures in posterior fossa, only a few cases can go with the conservative management but even then patients can deteriorate anytime with enlargement of hematoma and compression effects on brain stem and require urgent evacuation. This letter aims to provide a case of a young kid who presented initially with less-volume EDH and later required urgent evacuation because of hematoma expansion.

## Introduction

In epidural hematoma (EDH), blood is accumulated in the space between the inner table of the skull and the outer layer of dura mater. It is not only the most commonly seen pathology in the emergency department of traumatic brain injury but also the most frequent one pathology involving the supratentorial region of the brain in trauma cases.<sup>1</sup> Posterior fossa EDH is less frequently observed, accounting for only 1.2 to 12.9% of all EDH cases.<sup>2</sup> The extradural hematomas of the posterior fossa may be categorized as acute or delayed defined with respect to the brain stem compression appearing within or after 24 hours of injury.<sup>3</sup> Surgical evacuation is needed in most of the cases but only few patients can be managed conservatively and some might need surgery later on.

## Case Presentation

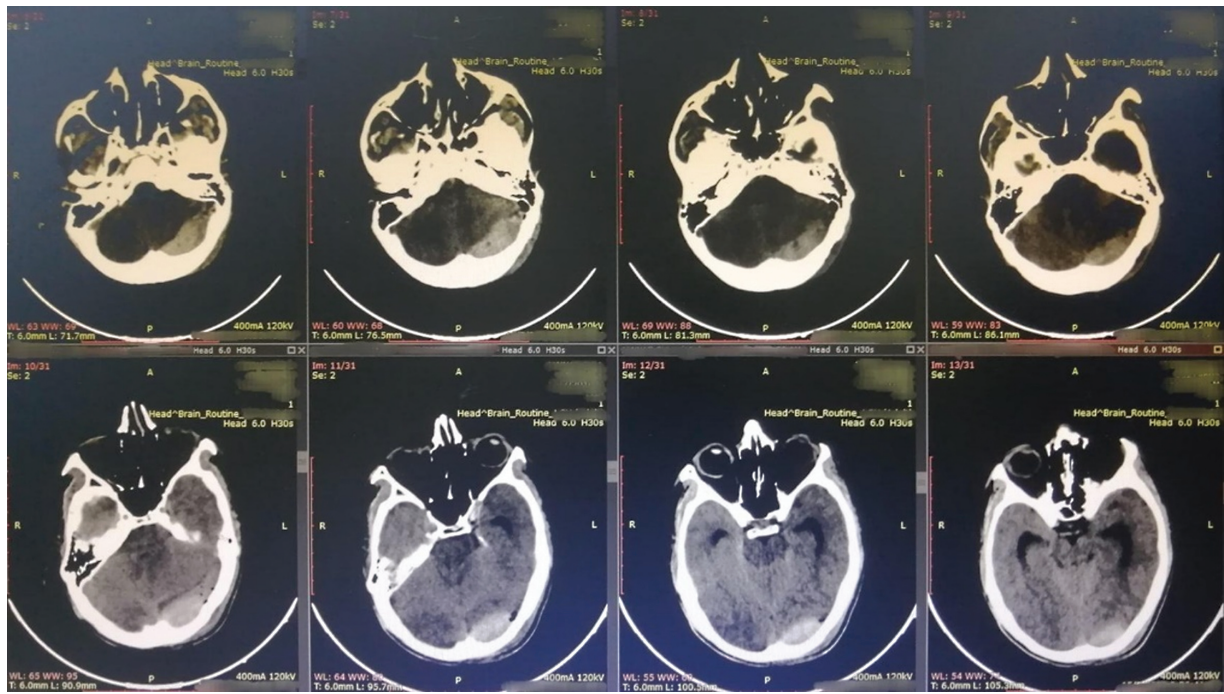
A 13-year-old boy, resident of a rural area, presented to our emergency department with history of a road traffic accident about 15 hours ago. On examination, his Glasgow coma scale

(GCS) was E3V4M5 = 12. His pupils were bilaterally equal and reactive to light. Chest and abdomen were clear on primary survey and chest X-ray and focused assessment with sonography for trauma scan were normal. The patient was managed initially in the emergency room and a computed tomography (CT) scan of the brain was done that showed left-sided posterior fossa EDH with volume of 6 mL. An initial plan to manage conservatively was made and close neuromonitoring of the patient was performed. Patient remained vitally stable and neurologically the same over the next few hours. After 16 hours of admission, his GCS deteriorated to E3V3M4 = 10. An urgent CT brain was done that showed expansion of hematoma as shown in ▶ **Fig. 1**. An urgent evacuation of the hematoma was planned. Craniotomy and evacuation of EDH were done in the emergency theater with the aim to decompress the posterior fossa. About 25 mL of clotted blood was found in the epidural space and a linear fracture of occipital bone was also found intraoperatively. ▶ **Fig. 2** shows the postoperative CT brain plain. Postoperatively the patient's GCS improved and he was discharged after 2 days on GCS 15 with no neurological deficits.

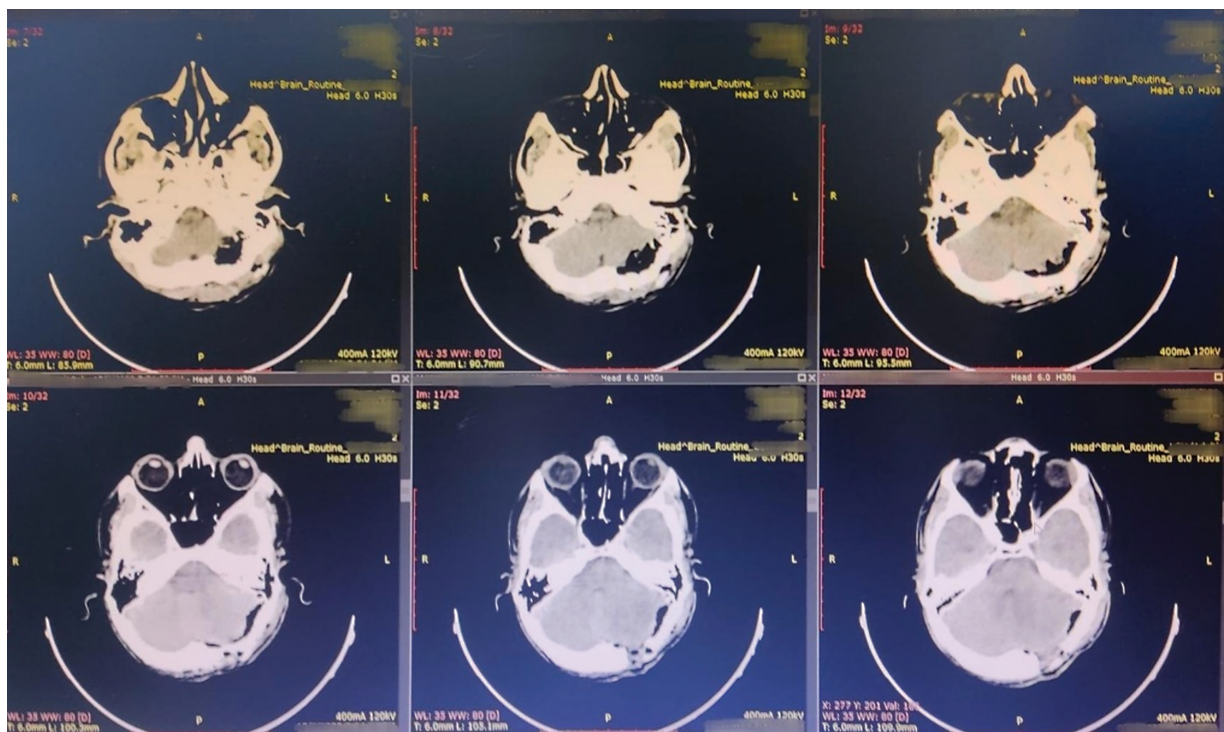
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**Fig. 1** Preoperative axial computed tomography brain plain showing left-sided occipital and posterior fossa epidural hematoma.



**Fig. 2** Postoperative axial computed tomography brain plain following evacuation of epidural hematoma.

## Discussion

Traumatic posterior fossa EDH, though rare, needs to be monitored more aggressively as compared to other traumatic hematomas of the brain because of, not only, small and tight space of posterior fossa, but also, having very vital structures of the brain in it. The neurological

deterioration in posterior fossa EDH progresses very rapidly; thus, early diagnosis and surgical evacuation in needed cases become very crucial in saving the life of the patient.<sup>4</sup> Delayed traumatic posterior fossa EDH is even more rare and only a handful of cases are reported worldwide; cases are being reported even after posterior fossa surgeries as well.<sup>5</sup>

The mechanism in development of posterior fossa EDH is road traffic accidents in the majority of cases in adults, while in children it is the fall from height.<sup>2,6</sup> Sources of bleed in most cases of posterior fossa EDH are occipital fracture; transverse sinus bleed or no intraoperative source can be identified at times.<sup>6</sup> Thus, presence of a linear fracture on radiology during assessment of patients is a risk factor of posterior fossa EDH.<sup>7</sup> Most patients present with complaints of nausea, vomiting, headache, and/or impaired consciousness or there could be no symptoms initially but later on there is deterioration of the patient. GCS at admission is a very strong predictor of prognosis of posterior fossa EDH.<sup>8</sup> In one study, three out of eight patients deteriorated within 12 hours after admission and required urgent surgical evacuation.<sup>6</sup> Our patient's initial scan showed minor extradural bleed in initial scan; 16 hours after admission he deteriorated neurologically and we performed an urgent surgical evacuation of posterior fossa EDH.

## Conclusion

Posterior fossa EDH requires attending surgeons to be extra vigilant in managing the patient with active neurological monitoring, GCS and pupils being the most important, with often serial radiological imaging to look for the progression of hematoma. Initial presentation, mechanism of injury, and radiological clues at presentation all play an important role in such cases. Early diagnosis and surgical evacuation produce excellent post operative results.

## Patient Consent

Consent was obtained from the father of the child for publication of this case and the accompanying images.

## Conflict of Interest

None declared.

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