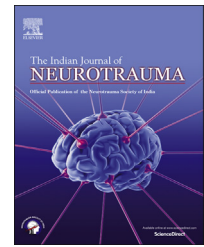


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Case Report

Post traumatic large vertex epidural hematoma without sagittal sinus injury: A case report and review of literature



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ABSTRACT

A 23-years-old young male patient was admitted to our hospital following head injury due to road traffic accident. He was unconscious and his Glasgow Coma Scale (GCS) was 7 out of 15. Computed tomography scan of head revealed a large epidural hematoma over bilateral frontal lobes convexity crossing the midline, extending posteriorly over fronto-parietal lobe convexity in the vertex beyond coronal suture and associated with fronto-parietal bone fracture. Emergency operation was done and the hematoma was evacuated. Intra operatively there was no sagittal sinus injury. Post operatively patient became conscious without any neurological deficit. We report our case of head injury with extensive epidural hematoma in bilateral frontal and vertex area without sagittal sinus injury and reviewing the literature.

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1. Introduction

Extradural hemorrhage occurs in 1% of cases of head injury and commonly found in temporal, frontal and temporo-parietal region.¹ Vertex epidural hematoma comprises about 1.2–8.2% of cases of epidural hematoma (EDH) following head injury.² The bleeding source is usually from dural vein, venous sinus such as sagittal sinus, the fracture itself or due to dural stripping from skull bone.³ We report our case of large bilateral frontal and vertex epidural hematoma without sagittal sinus injury in a young male patient following accidental head injury and its management.

2. Case report

A 23-year-old-young male patient was admitted to neurosurgery department with the alleged history of head injury following road traffic accident. No history of bleeding from nose or ear was present. On clinical examination, the patient was unconscious and localizing to painful stimulus. His Glasgow coma scale was E1 M5 V1 = 7/15. Vital signs were maintained. Bilateral pupils were dilated, left more than the right but reacting to light. There was a boggy scalp swelling over left frontoparietal area. There was no other neurological deficit. No swelling or deformity was seen over

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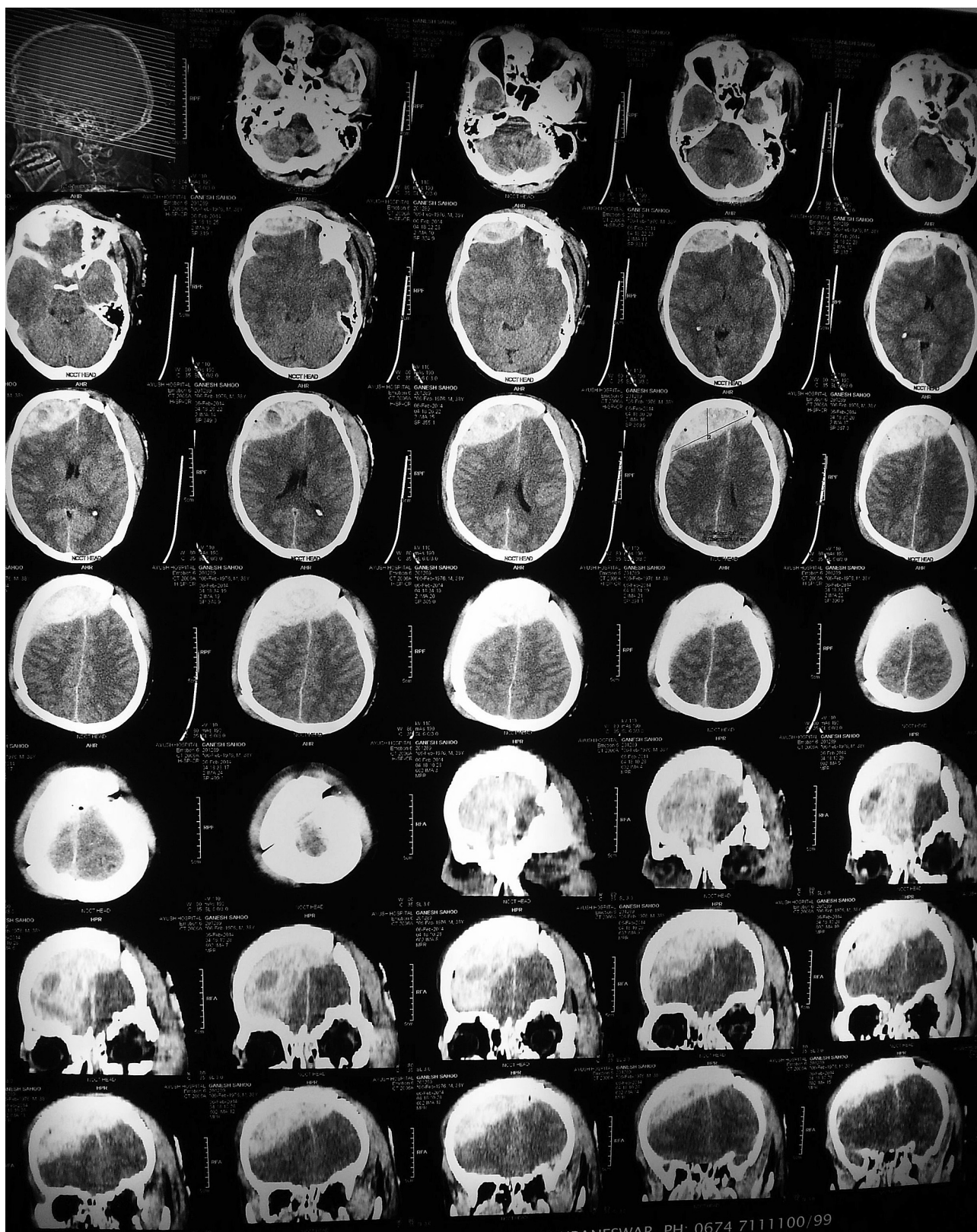


Fig 1 – Non-contrast computed tomography of head shows a large extradural vertex hematoma extending from bilateral subfrontal region to bilateral frontoparietal convexity crossing the midline causing compression of cerebral hemispheres.

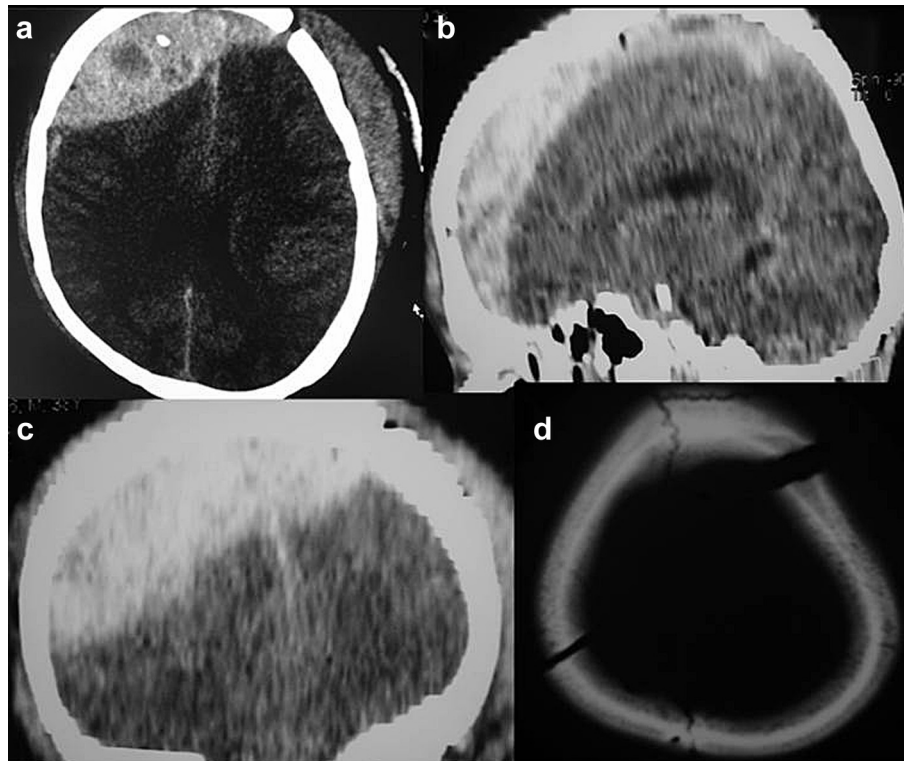


Fig. 2 – Non-contrast computed tomography of head shows the EDH in axial, sagittal, coronal cuts and the fracture of left frontal and right parietal bone in bone window (a, b, c and d).

extremity and body parts. Computed tomography (CT) of head revealed a large extradural hematoma extending from bilateral subfrontal region to bilateral frontoparietal convexity beyond coronal suture crossing the midline along with fracture of left frontal and right parietal bone (Figs. 1 and 2). The frontal and parietal lobe were compressed by the hematoma. Focused Assessment with Sonography for Trauma (FAST) revealed no free fluid in peritoneal, pleural or pericardial space. No pneumothorax was seen in chest radiography and ultrasound examination. An emergency evacuation of EDH was planned with adequate blood in hand. Bicoronal scalp flap was raised. Fracture line was noted over left frontal and right parietal bones crossing the sagittal suture. Bilateral frontoparietal craniotomy was done following the fracture line. Patient's head end was kept low during elevation of bone flap to prevent air embolism in case of possible traumatic sinus tear. A large hematoma measuring about 350 ml was evacuated. No tear of sagittal sinus was seen. No dural tear was also noted. There was no active bleeding from the branches of meningeal artery on either side. Dural tag suture applied all around. The dead space was filled with gel foam. The single frontoparietal bone flap was replaced and fixed with Vicryl 1-0 suture (Fig. 3). Post operatively patient had significant neurological improvement. He became conscious without any deficit. Computed tomography of head on 3rd post operative day showed no residual extradural hematoma or mass effect (Fig. 4).

3. Discussion

Extradural hemorrhage is relatively common intracranial hematoma in extradural space following head injury and usually have good prognosis after successful evacuation of hematoma.⁴ Vertex epidural hematoma is rare, can extend in any direction before attending a life threatening size and has a reported mortality rate of 18–50%.⁵ EDHs are usually produced due to bleeding from meningeal vessels and occur infrequently from diploic space and venous sinus bleeding. Vertex EDH usually occurs due to sinus injury following trauma as there is dense dural adhesion of superior sagittal sinus at the sagittal suture.^{4,6} Bilateral EDH occurs due to separation of dura from calvarium at two places due to single impact or due to its extension under the fracture line across the midline.⁷ In our case the vertex hematoma was crossing the midline due to fracture line crossing the sagittal suture though there was no sinus injury which is rare. Datta SGS had reported a case of bilateral vertex epidural hematoma with no superior sagittal sinus injury.³

Patient with large vertex EDH may manifest with unusual clinical signs which can cause delay in diagnosis and dilemma about the indication for and timing of surgery.⁸ In our case the patient was unconscious after the trauma and revealed a large vertex EDH in CT scan of brain and required emergency evacuation of hematoma.

Computed tomography scan of head is the rapid and inexpensive diagnostic study in emergency situation for

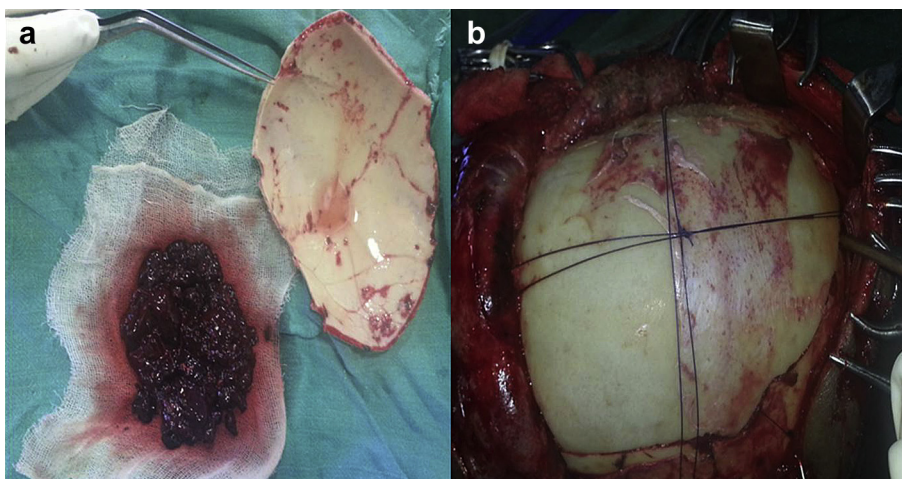


Fig. 3 – Intraoperative frontoparietal craniotomy and evacuation of hematoma (a and b).

diagnosis of intracranial hematoma, fracture involving the orbit and optic nerve canal and for planning of early surgical intervention to prevent loss of life and vision.^{9,10} In our case there was no associated exophthalmus or involvement of orbit. Conventional axial computed tomography may

sometimes underestimate the size of vertex EDH. Coronal CT or magnetic resonance of brain in multiplanar reformat is preferred modality for vertex hematoma.¹¹

The vertex epidural hematoma doesn't require surgery always. Vertex hematomas may be chronic and resolve

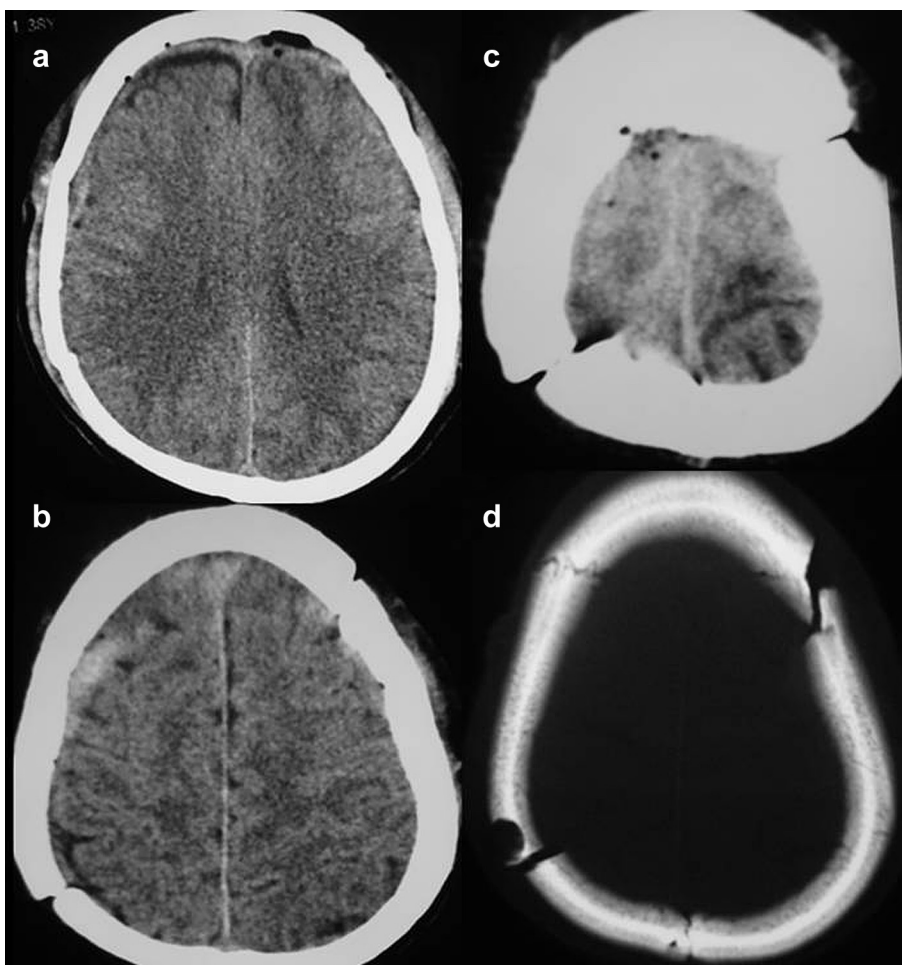


Fig. 4 – Post operative CT scan of head in axial cuts at three different level (a, b, c) with no residual extradural hematoma and mass effect and bone window (d) showing the burr hole site close to left side posterior parietal fracture and the fracture on opposite side.

spontaneously in some cases. The choice of conservative or surgical management depends on the amount of hemorrhage, mass effect, neurological deficit or displacement or tear of superior sagittal sinus.¹¹

In case of bilateral EDH with different volumes, the large EDH has to be evacuated first followed by the opposite side where as in case of equal volume of EDH, the hematoma on the dominant site is to be evacuated first.¹² Timothy L. Jones et al describes bilateral frontoparietal bone craniotomy in case of vertex EDH excluding a bar of bone in midline giving rising to attachment for superior sagittal sinus.¹³ In our case, the patient was unconscious. Hence the vertex hematoma was evacuated by single bicoronal scalp flap and bilateral single frontoparietal bone craniotomy following the fracture line. No bleeder from meningeal artery or superior sagittal sinus is seen. The cause of hematoma was thought to be due to post traumatic venous bleed from intra diploic or dural vein and the fracture of vault.

4. Conclusion

Vertex epidural hematoma is rare and should be considered as a special entity due to its usual association with sinus injury leading to possible torrential hemorrhage during surgery. Coronal CT scan of head is the modality of choice for diagnosis and proper planning of treatment in emergency. For large vertex hematoma, early surgical intervention in emergency with adequate blood transfusion packs in hand is required to save the life.

Conflicts of interest

All authors have none to declare.

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