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A CASE OF PENETRATING HEAD INJURY WITH FOREIGN BODY IMPACTION.

Neurosurgery

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ABSTRACT

Penetrating head injury is a potentially life-threatening condition. Penetrating head injuries with impacted object are rare. The patients with the impacted foreign bodies rarely reach for surgery. Impacted object poses difficulties in the investigation and normal operating procedure. If the impacted object is not removed carefully, it can cause further damage to the cerebral tissue or may lead to vascular injury. Here we report on one such case of a 55 year old lady, who presented to casualty with history of a wooden log falling over the head due to collapse of the ceiling with the log penetrating and impacting in the skull. The patient was investigated and taken up for surgery where careful removal of the impacted foreign body was done. The patient had uneventful recovery and was ambulant and showing signs of improvement when discharged. Patient then presented with delayed meningitis after 3 weeks and was treated conservatively and was discharged. The significance of penetrating injuries to the head depends largely on the circumstances of the injury, the velocity of impact, and attributes of the projectile. While most penetrating head injuries are caused by firearms, lower-velocity mechanisms of penetrating brain injury present unique challenges for the multidisciplinary team involved with the delivery of care. Appropriate management can lead to optimal outcomes and limit secondary brain injury.

KEYWORDS

Introduction:

Penetrating head injury is a potentially life-threatening condition. Penetrating head injuries with impacted object are rare. The patients with the impacted foreign bodies rarely reach for surgery. Impacted object poses difficulties in the investigation and normal operating procedure. If the impacted object is not removed carefully, it can cause further damage to the cerebral tissue or may lead to vascular injury.

Case report :

55year old lady living in the rural parts of Pune, Maharashtra, India was brought by relatives to casualty with altered sensorium and multiple episodes of vomiting. She had history of Head injury due to wooden log falling over head with penetration and impaction of the log in the head. On clinical examination her GCS was – E4V5M5. Pupils were equal and reactive. l/e: right frontal lacerated wound of 5x4cm with impacted wooden log along with a piece of cloth. Patient was admitted in Intensive care unit for neuro observation and resuscitation. After adequate stabilisation, CT brain scan was done on admission which showed comminuted depressed fracture of right frontal bone with right frontal hemorrhagic contusion associated with pneumocephalus and herniated subcutaneous fat, midline shift of 10.0 mm to left and Cerebral edema. [image 1].. Her condition deteriorated in the Intensive care unit after 6 hours (GCS-E2V3M4), hence a repeat CT brain was done suggestive of increase in size of sub arachnoid hemorrhage in right frontal region, with increase in surrounding edema and mid line shift. She was taken up for emergency Right frontal craniectomy with excision of fracture fragment with removal of foreign body and ICH evacuation with debridement and suturing.[image 2]. Thorough cleaning of the surrounding area around the impacted foreign body was done. Incision was extended along the line of lacerated wound medially as well as laterally; flap was raised over the right frontal region. Right frontal craniectomy was done around the foreign body. Wooden foreign body along with cloth and bony pieces were seen piercing the brain parenchyma. The impacted cloth, the wooden log and small pieces of bone and hair were dissected under microscopic vision and were removed carefully. Foreign body fragments were seen scattered in the brain parenchyma which were debrided under microscope guidance. Thorough was debridement of the wound done. Gentamycin wash was given, hemostasis achieved. Bony edges were nibbled. Brain parenchyma got laxed. Dura was hitched with the surrounding bone. Dural reconstruction was done and subgalea was hitched over the defective dural area. The bone flap was repositioned, and skin closer was done in layers over a drain. Post operatively the patient was shifted back to the intensive care unit and was given ventilatory support. She was closely monitored and was provided all supportive care and medications with broad spectrum antibiotic cover. Repeat CT scan post operatively on the next day which showed removal of internally displaced frontal bone fragments and avulsed soft tissue from right frontal lobe. Regression of pneumocephalus. Considerable regression of generalised cerebral edema with visualization of suprasellar cisterns.[image 3]. Patient was gradually weaned off ventilatory support and was shifted to wards. Patient showed gradual recovery and drain was removed after 3 days of surgery. At the time of discharge, patient was ambulant and showing improvement. (GCS – E4V5m6). Patient was followed up weekly and showed gradual improvement. After 3 weeks of surgery, patient again presented with multiple episodes of fever and a sub galeal swelling over the operative site. CT brain was done which showed extracalvarial collection seen in right frontal scalp region extending to right temporal and infra temporal regions and a extradural collection in Right Fronto - temporal region. The fluid was aspirated with all aseptic precautions and sent for examination. The fluid examination was suggestive of features of meningitis hence patient was started on broad spectrum antibiotics and continued for 14 days. Patient showed gradual recovery and CSF cultures on day 5 and day 14 showed no organism growth after incubation. Patient was then discharged. Patient was ambulating and taking full diet orally and doing daily routine activities herself.

Discussion:

Transcranial penetrating wounds are though not common but well known[1]. The most commonly encountered types of penetrating head injuries are industrial accidents, suicidal attempts, and assault. Immediate radiological examination is mandatory because small entrance wound usually does not correspond with size of the foreign body and associated intracranial injury. A trivial wound in an asymptomatic patient may lead to death within few days to weeks later because of rupture of a traumatic intracranial aneurysm or infection [2]. CT scan is mandatory to diagnose intracranial injuries, associated contusion, hematoma, major vascular injury, or brainstem injury. It is an essential means in decision making of surgical strategy [3]. Postoperative CT scan should be performed to exclude the presence of delayed hemorrhage.

In our case, craniectomy was done. The impacted weapon was gently removed along with the bone pieces. We ensured that rocking movements of the wooden fragment during withdrawal is minimized, as this could lead to further damage to the underlying brain and the fragment was withdrawn in a direct reverse path of trajectory. Although postoperative wound infection was not seen it is common for such patients to develop infection in the late post operative period as was seen in our case. Hence a regular follow up of the patient is warranted.

Image 1 – Pre operative imaging

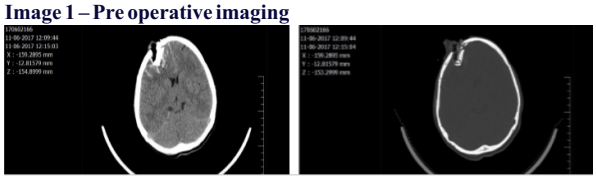


Image 2 : Intra-operative Images

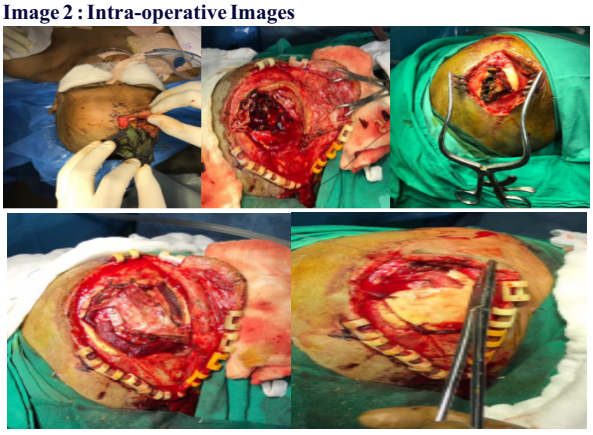
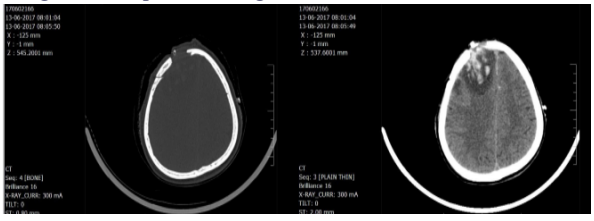


Image 3: Post Operative images



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