

CASE REPORT

Open depressed skull fracture with embedded human tooth in the brain: case report

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INTRODUCTION

Traumatic head and brain injuries remain the leading cause of morbidity and mortality in young people.¹ Skull fractures are common complications observed in patients with traumatic brain injuries. These fractures are diverse and may be linear or comminuted, depressed or elevated, closed or open, and at times, diastatic.² Combinations of these fractures are often seen in a patient and this,

usually, will determine the management modality.

An open skull fracture is one which involves the skull base, the paranasal sinuses or communicates with the exterior when there is breach of the scalp. Open depressed skull fractures are usually neurosurgical emergencies warranting thorough wound

ABSTRACT

Traumatic brain injuries remain a leading cause of morbidity and mortality, especially, of the young adult population. A commonly associated complication is open depressed skull fracture where various objects have been implicated.

We report the case of a young man who sustained open head injury from motorcycle accident who had a tooth embedded in the brain.

Keywords: Debridement, elevation, skull base, traumatic brain injury

debridement, removal of foreign bodies such as hair, sand, broken glass, elevation with or without the removal of contaminated/free bone fragments, and dural repair. In some cases, no neurological deficits are present, but these patients have a greater risk of suffering from secondary injuries due to infections, brain edema and haematoma collections.³

We report the case of a patient with open depressed skull fracture who was strangely found to have a tooth embedded in his brain. The authors were not aware of any previous report on any case of embedded tooth in the brain following a road traffic accident and skull fracture.

CASE REPORT

An 18-year old male student was brought to our Accident and Emergency Department with two other young men found at the site of a motorcycle crash. One of the two young men had a severe mandibular injury with loss of some teeth. Details of the accident were unavailable as there was no eye witness accounts except that the three men were riding on the same motorcycle.

He was brought in unconscious with a Glasgow Coma Score (GCS) of 9. His vital signs were normal, and his pupils were equal and briskly reactive. He had a left raccoon's eye, and open wounds on the left frontal region and vertex, measuring 8x4cm and 6x3cm, respectively. The frontal wound had brain tissue effusing from it. There was no clinical evidence of significant injury in other body regions.

Figure 1.

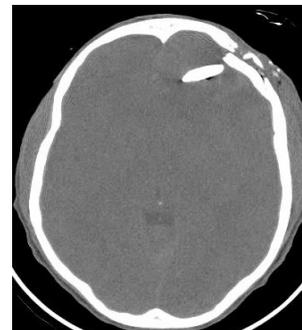
(a). Scanogram showing the frontal fracture with a triangular shaped hyperdense structure (arrow)



(b). Axial non-contrast CT image shows left frontal depressed fracture fragments



(c). Same image as (b), shown in bone window



Cranial computed tomography (CT) scan (Figure 1) showed a significantly depressed left frontal bone fracture and brain penetration by what looked like a fracture fragment, with surrounding cerebral hemorrhagic contusion. He had wound debridement, and elevation of depressed bone fragments but, one of which turned out to be a human tooth, and duroplasty.

Figure 2. The embedded tooth



He had a satisfactory and uneventful post-operative recovery and was discharged on the fourth day after surgery. He was noticed to

have a superficial wound sepsis at the first follow-up clinic attendance but, this resolved with wound dressing and antibiotics. He has no residual neurological deficit and is back to his normal daily activities.

DISCUSSION

Bone fragments are a known cause of penetrating brain injury.⁴ Various uncommon objects have been reported to penetrate the cranium, and these include tile fragments, hair accessories and stones.^{5,6,7} Metal and wooden objects have also been reported.^{8,9} In this case, which we are reporting, none of the clinical findings created a suspicion of brain penetration by the tooth, and this may be because bone and teeth have a similar chemical composition and therefore, a similar CT scan density.¹⁰ Retrospectively, however, it is possible to recognize the shape of the tooth in the scanogram (Figure 1a, white arrow). Examination of the retrieved fragments led to recognition of the tooth.

It is, therefore, reasonable to infer that the mechanism of injury in this case was a collision between the forehead of this patient and the lower jaw of the man who had a mandibular injury with loss of some teeth. This is possible due to the fact that three passengers were crowded on a single motorcycle, a common occurrence in the developing countries where this is used as a means of public transport. This strange occurrence could have been avoided if the riders were wearing crash helmets.

CONCLUSION

The careful examination of objects retrieved at surgery is essential to their proper identification and this may be the only key to knowing the details of an accident as had happened in this case. Also, a thorough examination of patients involved in the same accident may reveal mechanisms involved in the injury sustained by each of the victims.

Traffic law enforcement with regard to overloading and helmet use should be intensified in order to prevent such incidents.

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