

CASE REPORT

A curious case of spontaneously resolving closed “jigsaw” depressed skull fracture in an adolescent

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ABSTRACT

Spontaneously resolving depressed skull fractures have been previously reported in the pediatric age group, however they are very rare in adolescents. We report a case of spontaneously elevating depressed fracture in a 13 year old boy. Depressed skull fractures in this age group might resolve on its own but may also complicate during its course of non-operative self elevation. In the reported case, the child developed gliosis and suffered seizures two years after the trauma. Repeat scans showed almost normal skull topography with underlying gliotic changes. Although all depressed skull fractures won't complicate as such, patients without neurological deficits should also be operated to prevent any delayed complications.

Key words: Depressed fracture, pediatric head injury, skull fracture

Introduction

Spontaneously resolving and nonoperative elevation of depressed skull fractures are not unknown in medical literature; however, such reports only cite younger children.^[1-3] We present an unusual case of self-reducing frontal depressed skull fracture in a 13-year-old, whose family denied intervention, and the boy later presented with seizures after 2 asymptomatic years. Repeat images showed that the previously depressed segment had spontaneously reduced, and the only evidence of injury was hypodense area signifying gliosis.

Case Report

In 2012, a 13-year-old boy was brought into the emergency department (ED) of our institute about 6 h after being injured by a winnowing fan blade. He complained of headache and one episode of vomiting. After the injury, he was unconscious for about 10 min following which he regained consciousness. He did not have seizure or auro-nasal bleed.

In the ED, he was conscious and had a tender closed wound with an obvious palpable defect in the skull topography; a depression of 1.5 cm bone fragment pushed to a depth of approximately 1 cm from the skull silhouette. Noncontrast computed tomography (NCCT) scan of the brain and skull showed a depressed fracture in the left frontal region with underlying hypodense area showing edema [Figure 1a and b]. No underlying hemorrhagic contusion, extra- or sub-dural bleed was, however, visible.

Surgery was offered to the patient and his family; however, the family was reluctant and denied any surgical intervention. Despite multiple counseling sessions by many health-care consultants and neurosurgeons, the family left the hospital against medical advice 2 days after admission. We tried to follow-up with the family 1-month after the admission, but they said that the patient was asymptomatic and did not need any medical attention. Subsequent follow-up attempts failed because of unresponsive family members.

In 2014, the patient was readmitted at our institute with complaints of two episodes of seizures in the previous 12 h. There was no history of injury or any neurological symptoms in the intervening 2 years. A repeat NCCT scan of the brain and skull showed no defect in the bony topography of the skull [Figure 1c]. There were, however, bifrontal hypodense areas, more on the left side, suggestive of gliosis [Figure 1d]. No neurosurgical intervention was required. The patient was discharged 2 days later, with advice of two antiepileptic drugs. He returned to the ED with another episode of seizure, 42 days after the previous admission. The patient has been symptom-free for more than 6 months since the adjusted dose of antiepileptic drugs.

Access this article online

Quick Response Code:



Website:

www.asianjns.org

DOI:

10.4103/1793-5482.165786

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Discussion

Pond fractures and ping-pong ball type depressed fractures of skull in younger children have been previously reported to elevate spontaneously over months, with few segments reducing over hours to 3 days.^[2] A 13-year-old skull is, however, more stiff and unyielding. It seems that the constant pressure of the brain over the depressed fragment was responsible for its elevation, and the broken fragment gradually rising, fit in the skull profile such as segments of a jigsaw puzzle. Nonsurgical management of depressed bone in infants by breast pump or manually has been previously reported.^[4,5] We are yet to come across reports of spontaneous resolution of depressed fracture in adolescents. Most cases of spontaneously resolving depressed fracture report good result on follow-up, with no neurological deficit or seizures. Our patient, being older than those previously reported, had firmer skull bone, and the depressed bone must have taken more time to elevate when continually pressed by the underlying brain. This must

also have kept the brain under continued counter-pressure from the bone, hence leading to a large gliotic area, which served as epileptogenic focus. There was no evidence of raised intracranial pressure. Moreover, the depressed broken fragment was displaced such that it fit back in the skull topography such as the pieces of a jigsaw puzzle, hence the term, “jigsaw” depressed fracture.

Conclusion

Although this case is a good example, even if only rare and odd, of how “jigsaw” depressed fracture may spontaneously elevate in older children as well, leaving no sign of previous depression, the patient suffering from seizures is a warning that depressed fractures if not surgically reduced well in time, may lead to generation of epileptogenic focus in the form of gliosis. Also, there is no evidence in literature that may suggest that surgical reduction of the depressed segment prevents late presentation of seizures.

Acknowledgments

We want to thank Ms. Shayantani Banerjee Prabal for helping us in editing the article.

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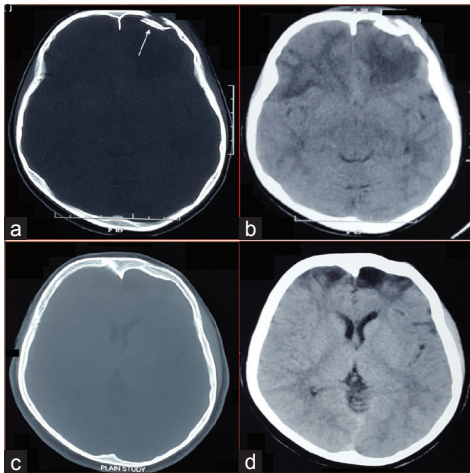


Figure 1: (a) Bone window of skull showing a depressed fracture in the left frontal region (b) computed tomography scan of the brain showing hypodense area underlying the depressed fracture (c) repeat bone window of skull showing no bony defect (d) repeat computed tomography scan of the brain showing gliotic area in the left frontal region

How to cite this article: Harsh V, Besra SK, Kumar J, Kumar A. A curious case of spontaneously resolving closed “jigsaw” depressed skull fracture in an adolescent. *Asian J Neurosurg* 2016;11:109-10.

Source of Support: Nil, **Conflict of Interest:** None declared.