

A Rare Case of Penetrating Head Injury

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How to cite this article:

Basavaraj T Badadal, Manoop K, M B Patil/A Rare Case of Penetrating Head Injury/ Int J Neurol Neurosurg. 2020; 13 (1): 33–35.

Abstract

A very rare case of penetrating iron rod injury to brain at work place. We report a rare case of perforating iron rod injury to brain, rarity due to its entry point and how it manage to enter in to the brain parenchyma and damaging motor cortex, and managed in time to save his life and give him good recovery. A 21 year old male working in building construction, and had fall from height on a 12mm iron rod and sustained iron rod injury, after 10 min he become unconscious and brought to casualty after 3 hours of injury. Due to his poor GCS(Glasgow coma scale) patient intubated and evaluated found to having penetrating head injury with right temporal and parietal intraparenchymal hematoma with significant mass effect, and emergency decompressive Craniectomy with hematoma evacuation with bone flap kept in abdominal parietal wall. After six months he underwent cranioplasty and hemi paresis improving.

Keywords: Penetrating head injury; Soft palate; Iron rod; Workplace.

Introduction

Traumatic brain injury includes various range of pathological injuries to the brain with varying clinical severity in these head trauma penetrating head injuries are rare which have poor prognosis. Very few literature have been found regarding penetrating head injury and its management, in this case report 21 year male patient admitted with history of penetrating iron rod injury with GCS 6/15 with left hemiplegic. In time surgery has shaved patient life with good out come.

Case report

A 21 year male patient working in a building construction, on January 1st 2020 in morning hours, while working he lost his balance and fell

on to a iron rod which is fixed at one end on a steps and projecting superiorly, fortunately he fell on it probably it entered through left angle of the mandible traversing in a soft tissue entering in to right side soft palate and directing superiorly in to parasellar region perforating greater wing of sphenoid bone carrying bone speckles along with it through temporal lobe to parietal lobe rupturing parietal dura and stopping at parietal bone without perforating it, producing parenchymal hematoma, he was stuck to it. Otherpersons those who are working with him came and they pulled him back and saw bleeding from the mouth and within 10 minutes he became unconscious and they rushed to our hospital. In emergency ward patient received in a state of E1V2M4 (E-eye opening, V- Best verbal response, M-Best motor response) with dilated right

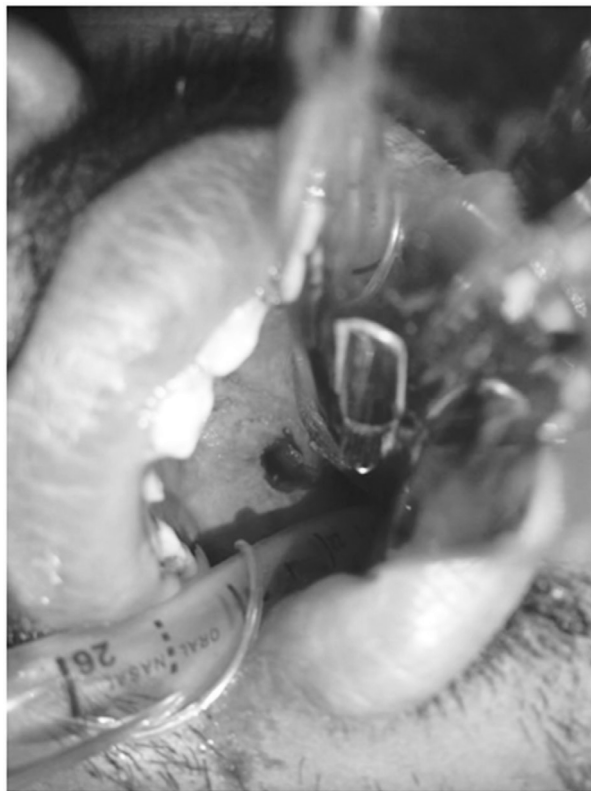
pupil, left hemiparesis, vitals are stable with mild tachycardia, due to his poor GCS patient intubated, while intubation found to have puncture wound in right side soft palate after stabilization patient shifted to CT (computed tomography), found to have right sided temporoparietal intraparenchymal hematoma with significant mass effect causing midline shift of more than 6mm, hence planned for emergency Craniectomy and hematoma evacuation.

Intra operatively after removal of bone flap, parietal dura was having about 1.5 cm perforations with hematoma filling it. Rest of the dura was very tense durotomy done, through middle frontal gyrus hematoma evacuated, brain was pulsating well and haemostasis achieved and lax duroplasty done bone flap kept in abdominal wall. Surgery went uneventful.

Patient kept on elective ventilation after 2 days his GCS was E3 Vt M5 both pupils are equal and reacting to light with persisting left hemiparesis. Patient extubated and shifted to step down ward subsequently started physiotherapy. Discharged on day 12 with GCS- E4V5M6 with improving hemiparesis called for regular follow up. After six months repeat CT brain done, shows complete resolution of hematoma, edema subsided, patient under gone cranioplasty with autologous bone flap. Now he is on regular follow up able to carry his regular work independently and walking without any support and going for work.



1. Blood stained iron rod



2. Entry wound at soft palate



3. Axial view of computed tomography showing right temporoparietal subdural hematoma and intraparenchymal bleed



4. CT Coronal bone window, showing bony spicules in parietal region



5. Parenchymal window with hematoma with mass effect



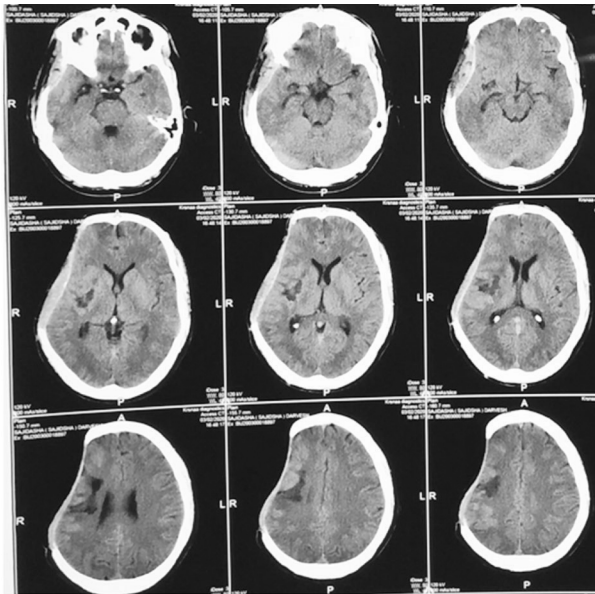
7. Dural puncture at motor cortex



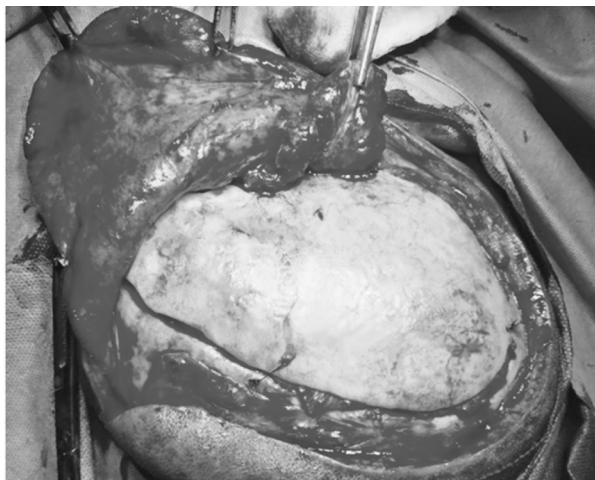
6. Sagittal view showing hematoma along the tract of entry wound



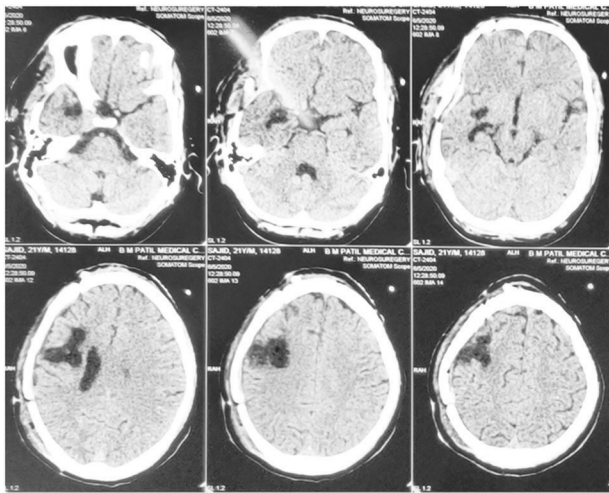
8. After durotomy subdural hematoma with damage to cortex



9. Six months follow up with resolution of hematoma and with area of gliotic changes



10. Cranioplasty bone flap replaced



11. Post cranioplasty with good alignment of bone flap with gliosis

Discussion

Penetrating head injuries caused by foreign bodies other than bullet and shrapnel are extremely unusual. The most common is due to knife injury, although bizarre Cranio-cerebral perforating injuries have been reported, for example those caused by nails, metal poles, ice picks, keys, pencils, chopsticks, and power drills¹⁻⁶.

Penetrating injury differs from gunshot injury as they will not cause cavitations, necrosis and diffuse axonal injury. Due to absence of injury to vital structure like large vessels, the prognosis is favourable and early treatment will avoid delayed brain damage and infection^{8,9}.

Penetrating head injury has complications like, infection, CSF leak, seizures and focal neurological deficit. Infection is higher in retained foreign body⁷. In all cases of penetrating brain injury, 30-50% of patients reported seizures, however, Prophylactic antiepileptic treatment is controversial^{10,11,12}. Vascular complication are frequent following penetrating head injury and ranges from 5 to 40% [13]. General patient with the penetrating head injury requires prompt medical attention and penetrating object has to be removed within 12 hours¹³.

Conclusion

We reporting first case of accidental penetrating head injury which is entering through left angle of mandible perforating right soft palate and missing great vessels, entering through Paraseller region through temporal lobe and injuring right motor cortex. Timely intubation and adequate surgery help the patient to have better post operative out come and follow up of 6 moths showed GOS (Glasgow Outcome Score) of 5.

Reference

1. Pascual JM, Navas M, Carrasco R. Penetrating ballistic- like frontal brain injury caused by a metallic rod. *Acta Neurochirurgica*. 2009;151:689-91.
2. Salar G, Costella GB, Mottaran R, Mattana M, Gazzola L, Munari M. Multiple craniocerebral injuries from penetrating nails. *J Neurosurg*. 2004;100:963.
3. Jennifer K, Reza K. Penetrating head injury in children: A case report and review of the literature. *J Emerg Med*. 2001;21:145-50.
4. Bakay L, Glausuer FE, Grand W. Unusual intracranial foreign bodies: Report of five cases. *Acta Neurochir (Wien)* 1977;39:219-31.

5. Herring CJ, Lumsden AB, Tindall C. Transcranial stab wounds: A report of three cases and suggestions for management. *Neurosurgery*. 1988;23:658-62.
6. Nakayama Y, Tanaka A, Arita T, Kumate S, Yoshinga S. Penetrating head injury caused by weed: Case report. *Brain and Nerve*. 1995;47:1192-94.
7. Hagan RE. Early complications following penetrating wounds of the brain. *J Neurosurg*. 1971;34:132-41.
8. Kazim S.F., Shamim M.S., Tahir M.Z., Enam S.A., Waheed S. Management of penetrating brain injury. *J. Emerg. Trauma Shock*. 2011;4:395-402.
9. Helling T.S., Wk McNabney, Whittaker C.K., Shultz C.C. Watkins M. The role of early surgical intervention in civilian gunshot wounds to head. *J. Trauma*. 1992;32:398-400.
10. Cemil B., Tun K., Yigenoglu O., Kaptanoglu E. Attempted suicide with screw penetration into the cranium. *Ulus. Travma Acil Cerrahi Derg*. 2009;15:624-627.
11. Chibbaro S., Tacconi L. Orbito-cranial injuries caused by penetrating non-missile foreign bodies. Experience with eighteen patients. *Acta Neurochir*. 2006;148:937-941. discussion 41-2.
12. Harlow J.M. Passage of an iron rod through the head. *Boston Med. Surg. J*. 1848;39:389-393
13. Levy M.L., Rezai A., Masri L.S., Litofsky S.N., Giannotta S.L., Apuzzo M.L. The significance of subarachnoid hemorrhage after penetrating craniocerebral injury: correlation with angiography and outcome in a civilian population. *Neurosurgery*. 1993;32:532-540.

