

## Transcranial Stab Injury with Knife: A Rare Case with Excellent Outcome

### Abstract

Traumatic stab injury/wounds to the brain are rare type of injuries having fatal outcomes. In the present case report, we report a case of a 17-year-old male who presented to the accident and emergency department of our hospital with an alleged history of assault due to a vegetable cutting knife with the knife lying in the right temporal region. In these types of injuries, no attempt should be made to remove the weapon without adequate investigations and facilities as it can be fatal. While removing the weapon, care should be taken that there is no rocking or zigzag movement and the weapon should be retrieved back from the same trajectory. The underlying principles in these types of cases include thorough debridement of the wound with removal of dead tissue with no rocking movement while retrieving the weapon. The wound should be thoroughly closed to prevent postoperative cerebrospinal fluid leak.

**Keywords:** *Dura mater, skull, stab*

### Introduction

Stab injuries to the brain are rare injuries in civilians.<sup>[1]</sup> They are usually seen in young males, following assaults or road traffic accidents.<sup>[2]</sup> In the present case report, we report a case of a 17-year-old male who presented to the accident and emergency department of our hospital with an alleged history of assault due to a vegetable cutting knife with the knife lying in the right temporal region.

### Case Report

A 17-year-old male was presented to the accident and emergency department with an alleged history of assault with a vegetable knife. The knife was seen embedded in the skull in the right temporal region [Figure 1]. The patient attendants had tried to withdraw the knife at the scene of injury but were not able to do it. On arrival, the patient was fully conscious, vitals were normal, there was no neurological deficit, and pupils were bilateral equally reacting to light. Routine investigations such as X-ray of the skull [Figure 2] and noncontrast computed tomography (NCCT) of the head were done [Figure 3]. NCCT of the head was suggestive of intracranial extension of the knife, with the knife lying in the right temporal region [Figure 4]. The patient was taken to the operation theater for

craniotomy and removal of the knife. Right frontotemporoparietal craniotomy was done. On opening the dura, there was underlying acute subdural hematoma and contused brain, and the knife was seen going deep into the temporal base [Figure 5]. The knife was gently taken out without any zigzag movement preventing not to damage the surrounding brain parenchyma or any vessel as the knife was traversing through the sylvian fissure. The hematoma and the contused brain were removed, and after achieving hemostasis, the dura mater was closed and the bone was replaced back. Postoperatively, the patient had an excellent recovery with no neurological deficit and discharged subsequently [Figure 6].

### Discussion

Penetrating injuries can cause a lot of damage to the brain by causing vascular compromise, infection, and damage to vital structures and hence can cause a lot of morbidity and mortality. Vascular compromise can be either due to direct trauma or due to hematoma formation. Temporal stab wounds are in particular notorious as short distance required to reach the brain stem and major vessels. The temporal bone is a very thick and hard structure located in the base of the skull. The base of the skull has multiple foramina,

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Figure 1: Preoperative photograph in emergency



Figure 2: X-ray of the skull with knife

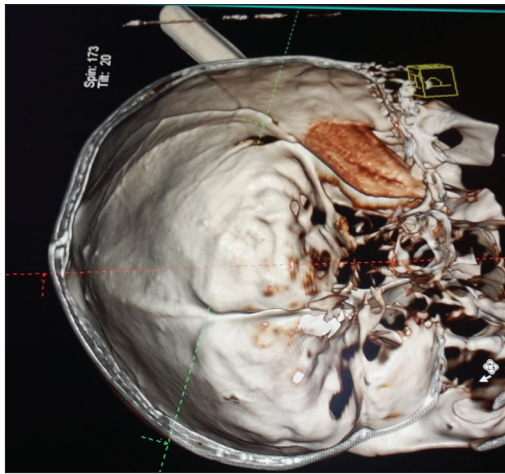


Figure 3: Computed tomography of the skull, three-dimensional reconstruction depicting the trajectory

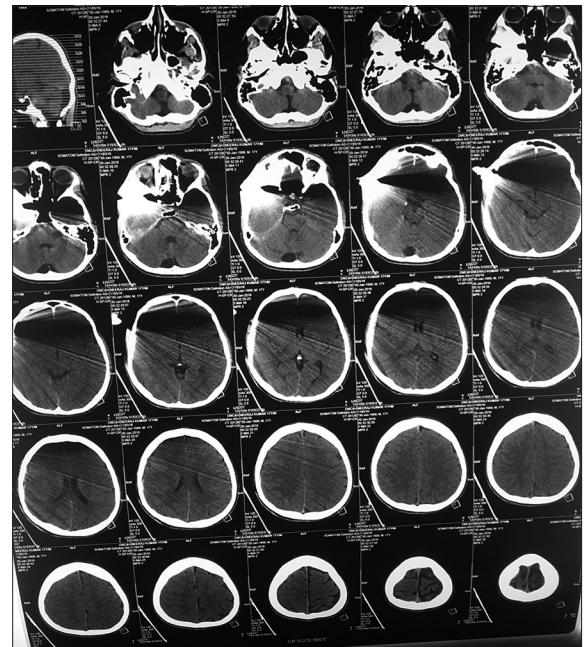


Figure 4: Noncontrast computed tomography of the head

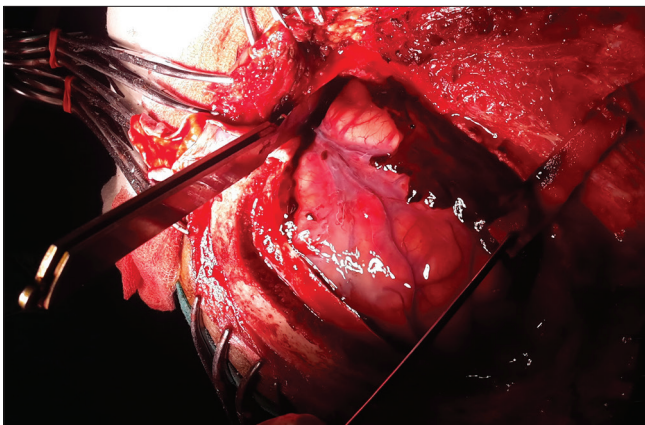


Figure 5: Intraoperative picture showing the weapon

as seen in the images below, creating areas of decreased resistance susceptible to traumatic injury. Therefore, fractures that involve the temporal bone continue along the skull base with a pattern that follows the weakest points of the anatomy.



Figure 6: Postoperative picture

In the present case report, the patient had an excellent recovery as vessels were spared. In these types of injuries, no attempt should be made to remove the weapon without adequate investigations and facilities as it can be fatal. While removing the weapon, care should be taken that there is no rocking or zigzag movement and the weapon is brought back from the same trajectory.<sup>[3]</sup> The underlying principles in these types of cases include thorough debridement of the wound with removal of dead tissue with no rocking movement while retrieving the weapon with thorough wound closure to prevent postoperative cerebrospinal fluid leak.<sup>[4]</sup> Low-velocity objects usually cause penetrating injuries in the regions of the skull's temporal bones or orbital surfaces where the bones are thinner and thus more likely to break.<sup>[5]</sup> Damage from lower-velocity penetrating injuries is restricted to the tract of the stab wound because the lower-velocity object does not create as much cavitation.<sup>[5]</sup>

#### **Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and

other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

#### **Conflicts of interest**

There are no conflicts of interest.

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