

## Accidental Intracranial Entry of a Gun Barrel: Case Report

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Intracranial penetration of foreign bodies as nails, pencil, screwdriver have been reported.<sup>1,2,3</sup> Penetrating injury of head with bullets is a most common event mostly due to homicidal or suicidal purpose. It is however, unusual for a gun barrel to enter the forehead causing accidentally self inflicting injury. We report a case of intracranial injury caused by rear of the barrel while cleaning the gun. The patient survived with minimal deficits.

### Case Report

Thirty-six-years-old man presented to the Emergency Department with rear end of the gun barrel stuck in his head. He was injured while he was cleaning the nozzle of the gun. He accidentally hit the trigger which caused the loose rear of the gun barrel to dislodge and hit his forehead. On admission, the rear end of barrel was firmly embedded in the left side of forehead with evidence of facial burns (**Figure 1A**). An hour later following accident, he had altered sensorium. His general and systemic examinations were unremarkable. Neurologically, his Glasgow Coma Score was 8/15. He opened eyes to pain, aphasic and had right sided hemiparesis of grade III/V. Pupils were bilateral equal and

Intracranial injury produced by gun barrel has not been reported yet. We report a case of a 36 years old man who presented to the emergency department with gun barrel stuck in his forehead entering antero-posteriorly. The injury was self inflicted accidentally. Following plain roentgenogram of head, the gun barrel was removed successfully. The sequence of event has been described.

**Key words:** accidental, intracranial, gun barrel

reacting to light. Brain matter was leaking out in addition to oozing blood from the wound.

Plain roentgenogram of head revealed rear end of barrel piece entering in the left frontal bone with depressed fracture of frontal bone (**Figure 1B**).

After preparation, an emergency craniotomy was performed with bicoronal skin incision and large scalp flap to gain wide exposure. A 'T' shaped extension was made towards the barrel to facilitate the reflection of scalp flap and to avoid any movement of the barrel as it may further injure the brain. Carefully, five burr-hole bifrontal craniotomy was performed and barrel piece was delivered safely (**Figure 1C**). Necrotic brain, dura and bone pieces were removed and wound was thoroughly irrigated with hydrogen peroxide and normal saline. Brain was lax and pulsatile. After achieving hemostasis, dural defect was closed with pericranial graft. Bone flap was replaced and defect in the bone was covered with bone dust collected during making burr holes. Wound margins were freshened and 'T' shaped extension was closed in the usual fashion. Recovered barrel piece showed crack in the cylinder and dislodgement in the posterior cap.

Postoperatively and at follow up, there was mild residual motor deficit.

### Discussion

The significance of intracranial injury is its related morbidity and mortality due to injury to the brain and vessels. Penetrating head trauma is defined as a wound in which the projectile punctures the cranium but does not exit. Accidental penetrating head injury with gun barrel is a relatively uncommon scenario. The skull often offers resistance to hitting object especially if the object is weaker than the bone such as pencil, wooden sticks, plastic



Figure 1. A: The patient on presentation to the emergency department with rear end of the gun barrel stuck in his head., B: Plain roentgenogram of head revealing the rear end of barrel piece entering in the left frontal bone with depressed fracture of frontal bone , C: The wound when the barrel was safely removed from the head.

materials and even thin knife blades. In this case report, the rear of gun barrel penetrated the left frontal bone while the patient was cleansing the gun. Craniotomy was performed based on skull radiography. The nature and extent of brain injury and involvement of vital structures were unknown in our patient as preoperative computed tomography (CT) of head was not done because of technical problem. X-ray skull and CT head are the two main modalities to investigate penetrating injury.<sup>4</sup> CT scan is the best method to evaluate the extent of injury and postoperative complications.<sup>5</sup>

The hitting object if impacted in the head should not be attempted to remove until patient is taken to the operating theater. Sudden removal of the impacted object may cause loss of tamponade effect leading to disastrous haemorrhage. The goal of surgical intervention is to remove the foreign body, devitalized structures and hematoma if present and use broad spectrum antibiotics to prevent infection.

The outcome of penetrating head injury can be improved with prompt evaluation, early diagnosis and judicious

management. Our patient improved to the point where his Glasgow coma score was 15 with minimal right sided hemiparesis.

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