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Case Report

Fatal non-ballistic Penetrating Injury by a Metal Piece from a Rolling Machine: A Case Report

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ABSTRACT

Missile injuries are predominantly caused by firearms, shrapnels during bomb explosions, and so on. Non-ballistic penetrating missile injuries are very rare. In this case, an adult male, while working on a cold stainless steel rolling machine, had sustained a penetrating injury to the outer aspect of upper 1/3rd of left thigh, by a metal piece, ejected from the metal sheet moving on the rolling machine. The metal piece entered the pelvic cavity fatally injuring his visceral organs. He was brought dead on arrival. The case is unique since it is the first reported case of a non-ballistic missile injury that was accidental and fatal. There was also no direct human involvement. In most reported cases of such kind, head injuries are the commonest, and prove to be fatal.

Keywords: Missile; Penetrating; Rolling machine; Pelvic cavity; Non ballistic

CASE REPORT

A 30-year-old adult male accidentally injured himself while working as an operator in a privately owned metal factory. He was standing near a stainless steel rolling machine (cold roller type), (Figure 1) when suddenly a small metal piece, of size (2.0x1.7x0.25) cm (Figure 2), detached from the metal sheet moving on the rolling machine, and at high speed accidentally penetrated the outer aspect of upper 1/3rd of his left thigh. Thereafter it entered the pelvic cavity injuring his colon, mesentery, and left kidney before finally lodging into the muscles in the paravertebral region. He was immediately taken to a local hospital where he was declared dead on arrival.

Figure 1: Steel Rolling Machine

Figure 2: Metal Piece

AUTOPSY FINDINGS

The dead body was of an adult male of average stature and medium built. Faint post mortem hypostasis was present on the back and dependant parts of the body except at pressure areas. An oval shaped horizontal penetrating wound of length 1.7 cm and breadth 0.5 cm, with inverted margin was present over outer aspect of

upper 1/3 of left thigh (Figure 3). It was present 5 cm below anterior superior iliac spine and 12 cm lateral to midline. On dissection, the direction of wound track was backward, upwardly and to the right. The metal piece, after lacerating the subcutaneous tissue and muscles of the thigh, entered the pelvic cavity passing below the left inguinal canal. After lacerating the sigmoid colon, mesentery and lower pole of the left kidney, it was finally found embedded in the muscles of the paravertebral region at the label of T 12. The length of the track was about 25 cm. About 2 litres of clotted blood was found inside the pelvic and peritoneal cavity (Figure 4). All internal organs were pale. No drug or alcohol was detected in the toxicological analysis. The man died due to hemorrhagic shock, which further was a result of multiple visceral injuries.

Figure 3: Penetrating wound

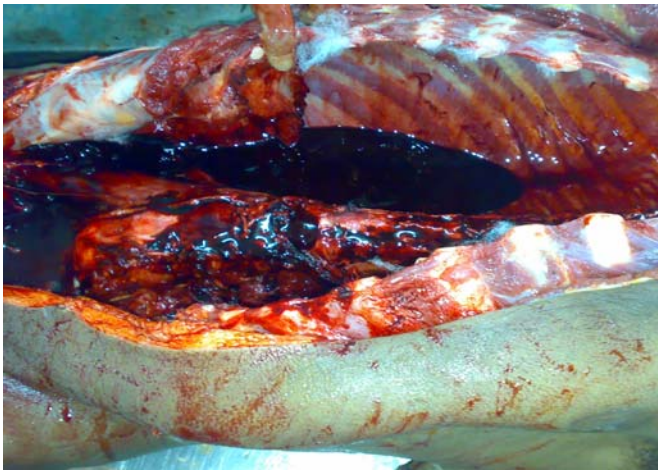

Figure 4: Clotted blood in pelvic and peritoneal cavity

DISCUSSION

Rolling is a metal forming process in which the metal stock is passed through a pair of rolls. This process is classified according to the temperature of the metal rolled. If the temperature of the metal is above its re-crystallization temperature, then the process is termed as 'hot rolling'. If the temperature of the metal is below its re-crystallization temperature, it is termed as 'cold rolling'.[1]

Non-ballistic penetrating missile injuries caused by metallic foreign bodies are rare among civilian population**.** Only few cases have been reported in literature.

Pascual *et al*.[2] had reported a case of penetrating ballistic like injury to the brain caused by a metallic rod, which had resulted from fracture of spray valve lever handle of a kitchen sink pre-rinse spray tap. A similar case was reported by Secer *et al*.[3], where a metallic fragment entered into the brain through the orbit. Chattopadhyay[4] had reported a case in which a stone propelled by the pressure from the rear wheel of a speeding truck on the highway, struck the head of a 7-year-old girl resulting in fatality. In another case reported by Bhootra and Bhana[5], a fatal penetrating missile wound of the head was caused by a stone propelled by a slingshot. Since the skull and brain were involved in all these cases, the wounds proved to be fatal, sometimes resulting in death. The case presented here is unique due to the manner of injury and part of the body involved. During the process of rolling a small metal piece accidentally got separated from a metal sheet moving on a cold stainless steel rolling machine and struck the operator standing a little higher to the machine, penetrating outer aspect of upper 1/3rd of left thigh and traversing the muscle plane of thigh and inguinal region, entered into the pelvic cavity, lacerating sigmoid colon, mesentery and lower pole of left kidney, finally lodging into the muscles of paravertebral region at T12.

REFERENCES

1. http://en.wikipedia.org/wiki/Rolling_ (metalworking).
2. Pascual JM, Navas M, Carrasco R. Penetrating ballistic-like frontal brain injury caused by a metallic rod. Acta Neurochir 2009; 151(6): 689-91.
3. Secer M, Ergungor MF, Dalgic A, Okay HO, Daglioglu E, Nacar OA. Transorbital brain injury by a metallic fragment: A case report. Turk Neurosurg 2007; 17(2):163-5.
4. Chattopadhyay S. Accidental low velocity atypical missile injury to the head. Am J Forensic Med Pathol 2008; 29(4): 334-6.
5. Bhootra BL, Bhana BD. An unusual missile-type head injury caused by a stone: case report and Medicolegal perspectives. Am J Forensic Med Pathol 2004; 25(4): 355-7.