

*Short Communication*

**RADIOLOGICAL ANALYSIS OF CANINE DEATH DUE TO PROJECTILE INJURY -  
A CASE REPORT**

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**ABSTRACT:** Reason of death of a dog was analysed by radiographic findings of thoracic cavity during post mortem examination and the specific cause of death was diagnosed as due to projectile injury.

**Key words:** Projectile injury, Radiological, Radio-opaque, Post-mortem.

Projectiles are a diverse group of metallic objects such as bullets, component of explosive devices or secondary projectiles from explosions that may inflict injury or cause death (Hareke *et al.* 2008). One of the objectives of Veterinary legal autopsy is to collect evidence in order to identify the objects causing death and the criminal. Occasionally Veterinarian may face difficulty in locating and retrieving the objects present inside the body especially in case of death due to firearm injuries. This is because, the projectiles before striking the object first aimed at to strikes some intervening object and then after ricocheting and rebounding from these, hits the object (Reddy 2003). In such cases, by knowing specific location of the bullet, it may save valuable time at autopsy and also avoid needless effort in searching for bullet that are inaccessible. The purpose of this article is to illustrate the non-invasive characterization of projectile wound on post-mortem of carcass and to find out specific cause of death.

**Case history and forensic autopsy:** A male street dog was sent by Hastings Police Station, Kolkata, West Bengal, India for Post-mortem examination to find out the specific cause of death (Fig. 1). On physical examination, it was found that, bleeding occurred on left side of mouth and tunnel like wound with haemorrhage on left side of thorax. After evaluating the type of external injury it was opined that it might be a case of gunshot injury. So whole body radiography was taken for detailed investigation.

After performing radiography, two radio opaque projectiles were detected inside thoracic cavity near distal end of sixth or seventh rib of left side (Fig. 2). Then autopsy examination was performed to recover

projectiles from different positions and handed over to the police (Fig. 3).

**Observation**

During radiological analysis of lateral radiograph of thorax, some important radiological findings were illustrated. Images of projectiles showed pointed tip, followed by a constricted part (Fig. 2). Elevation of heart from sternum level with flattening of the diaphragm (Fig. 2).

The shape of the projectile, seen on radiograph was compared with known characteristic shapes and fragment patterns. The projectile showed similarity with 'diabolo' airgun pellet - a pellet with an hourglass shape (Bailey *et al.* 2007). The appearance of elevation of heart from sternum commonly occurred due to displacement of heart into the dependent hemithorax region. This is because of a lack of underlying inflated lungs to support the heart on its normal midline position. As the heart falls into the dependent hemithorax, it slides dorsally, creating the appearance of an elevated radiograph (Thrall 2013). Diaphragmatic structures that may be visualized with distinct radiographically are the right and left crura, the intercrural cleft and the cupula. The cupula is the most cranial convex portion of the diaphragm (Thrall 2013). In this case due to accumulation of progressively large amount of plural air, the convexity of cupula was decreased which leads to flattening of diaphragm (Myer 1978).

**Diagnosis**

All of the radiological findings and discussion indicated that the pellet found inside thoracic cavity,

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**Fig.1.** Dog sent by Police Station for post-mortem examination.



**Fig. 2.** Latertal radiography of the thorax of suspected casebefore performing post-mortem examination.



**Fig.3.** Recovery of retained projectile from 2<sup>nd</sup> cervical region.

travelled through the thoracic wall and might have lodged into the lungs. During travelling through the said areas of the body, the pellet also produced traumatic injury on pleura and lungs which may leads to pneumothorax. Pneumothorax is the accumulation of free air or gas within the plural space. In this case two major types of pneumothorax both open and close type were present. The open pneumothorax presents with a wound on the thoracic wall; the air coming from outside through this wound and closed type of pneumothorax is produced by the punctured wound on the lungs which allow air to enter into the plural space during different phases of respiration (Myer 1978).The cardiac output dropped due to this pneumothorax condition (Simmons *et al.* 1958). Cardiogenic shock occurs due to decreased cardiac output. Therefore, radiological analysis of a the post mortem

carcass is found useful which helped us to find out specific cause of death.

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