



A case study from the Tygerberg Forensic Pathology Services Laboratory, Cape Town, South Africa

INTRODUCTION

The severity of a bullet wound depends mostly on the characteristics of the projectile, and on the tissue through which the bullet travels. As a bullet enters soft tissue, it creates a permanent cavity - the trajectory of the projectile - by crushing the tissue. In addition, a temporary cavity is produced around the permanent cavity, further stretching the tissue radially. In the brain and liver, particularly, this stretching of tissue can be fatal¹.

Homicide and death as a result of interpersonal violence account for between 36% and 46% of unnatural deaths in South Africa^{2,3}. Of these, approximately 29% are firearm-related⁵.

CASE PRESENTATION

A 76-year old male with a single, close-range gunshot to the right side of the head was found dead on the scene.

IMAGING, DIAGNOSIS AND TREATMENT

An external examination revealed a single close-range gunshot entry wound to the right temporal aspect of the head. No exit wound was found on the body. A Lodox full-body scan revealed the retained projectile in the upper left abdominal area corresponding with the position of the stomach. The autopsy revealed the gunshot track through the right temporal lobe of the brain, continuing to the base of the skull. The projectile then exited the base of the skull and entered the chest via the right side of the neck, perforating the pharynx and trachea, the pericardial sac and heart, the pericardial diaphragm and the stomach. The projectile was retrieved from the lumen of the stomach. The left pleural cavity contained 1600 ml of blood.

DISCUSSION

The external examination revealed a gunshot entry wound in the right temporal skull. Since no exit wound was visible, it was concluded that the projectile would still be within the body⁴. One would expect the most obvious site for the retained projectile would be the skull. However, the Lodox full-body scan revealed the projectile in the stomach. It is not uncommon for a projectile to alter course when it loses its flight stability when it enters a more dense medium (soft tissue compared to air), especially when it also strikes a hard surface such as bone¹, although in this case the angle of entry of the projectile may have accounted for the course the projectile took.

Knowing where the projectile was allowed it to be retrieved more easily for further ballistic analysis. Since the projectile had travelled from the head to the stomach, a more focussed examination of the tissue and organs along the track of the projectile was undertaken to determine the extent of the injuries. The mechanism of death was determined to be a combination of the trauma to the brain and heart caused by the bullet, the subsequent exsanguination from the affected organs and vessels, and possibly also the haemothorax caused by the accumulation of blood in the pleural cavity.

CONCLUSION

Knowing where the retained projectile is can alter the course of the autopsy, especially in terms of the approach to retrieving the projectile for further forensic ballistic analysis, but also in terms of determining the track of the projectile and the damage caused to the tissue.

Without a radiograph, an excessive amount of time might have been spent looking for the retained projectile in the brain, thereby extending the total time taken for the autopsy. In a very busy mortuary such as Tygerberg FPS, the pathologists' workload is already very high. Any additional wasted time impacts negatively on the overall workload in the facility. Thus, quick access to relevant information - in this case a full-body radiograph indicating the location of the bullet - is vital for managing the case load efficiently.

References

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