



ONE IN, TWO OUT, NOWHERE TO GO: A CASE REPORT

Forensic Medicine

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ABSTRACT

As the epidemic of gunshot injuries and firearm fatalities continues to grow in India, understanding gunshot wound (GSW) injury and management is becoming increasingly crucial for healthcare providers. Unfortunately, current guidelines are largely outdated, having been written at a time when high-velocity weapons and expanding bullets were primarily used in military contexts. With advances in firearm technology and increased civilian access to military-grade firearms, the nature of domestic GSW injuries has become more severe, complicating clinical decision-making due to the increased tissue damage and prevalence of retained bullets associated with these weapons. There is presently a dearth of literature that addresses recent advancements in the field of projectile-related trauma, particularly injuries involving retained bullets. This review aims to consolidate the findings in a case of gunshot wound with retained bullet with findings suggestive of reentry.

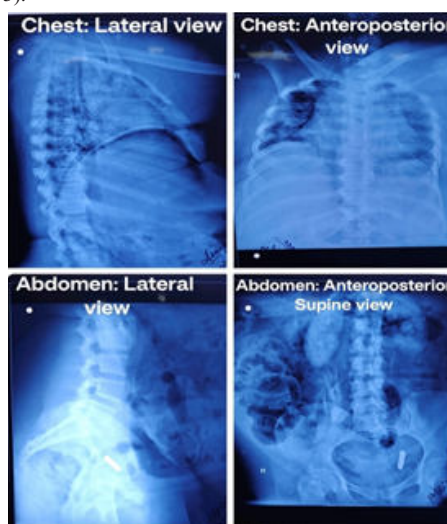
KEYWORDS

weapons, trauma, military, projectiles, retained bullet, reentry wound.

INTRODUCTION

Gunshot injuries to the chest wall pose significant risks due to the presence of vital organs such as the heart, lungs, aorta, and major veins, as well as the vertebrae and spinal cord, all of which are susceptible to trauma. Sequelae of such injuries includes cardiac tamponade, pneumothorax, hemothorax, spinal cord damage leading to sensory and motor deficits, vertebral fractures, cosmetic concerns requiring interdisciplinary surgical management and death. India ranks at #4 in deaths due to gunshot wounds in the world.

(Figure 3).



Countries with the highest Total Gun Deaths (all causes) in 2019

Country	All Causes 2019(#)
Brazil	49,437
United States	37,040
Mexico	22,119
India	14,711
Colombia	13,171
Venezuela	10,599
Philippines	9,268
Guatemala	5,981
Nigeria	5,103
Iraq	4,424

Figure 1

The extent of injury depends on factors like bullet velocity, energy transfer, distance traveled, bullet type, and tissues encountered upon penetration. The trajectory, tissue characteristics, and potential for internal lacerations or cavitation further influences the severity of injury. Gunshot wounds may either lack an exit wound or may have multiple exit wounds despite a single-entry wound, complicating the prediction of bullet trajectory and final resting place.

Case Report

A case of a 50 years old female with an alleged history of homicidal firearm injury, who was shot at her residence after which she was taken to Hospital where she died during the course of treatment.

She was 156 cm in length with 116 kg of weight, falling in morbidly obese category. Prior to beginning with the autopsy, X-Ray chest and abdomen of the dead body were taken (Figure 2a-2d).

Autopsy Finding: A Firearm entry wound measuring 1 cm x 0.8 cm x cavity deep situated on the outer upper quadrant of left breast 10 cm above left nipple, 12 cm away from midline and 130 cm above heel. Blackening and tattooing was present around the wound in an area of 8 cm x 7 cm accompanied with abrasion collar of 0.2 cm around it

Figure 2a-2d



Figure 3

The direction of wound was vertically downwards and backwards. The tract of the wound goes through and through the breast tissue making a firearm exit wound of size 1.5 cm x 0.9 cm present over lower aspect of left breast, situated 8 cm below nipple, 13 cm away from midline and 126 cm above heel (Figure 4). The following wound makes a firearm

re-entry wound measuring 1 cm x 0.8 cm x abdominal cavity deep present over left hypochondrium, 13 cm away from midline, 124 cm above heel and 2 cm below the above mentioned exit wound (Figure 4).



Figure 4[A: Exit wound, B: Re-entry wound]

The direction of the wound goes downwards, medially backwards. The tract of the wound goes piercing the muscles of the abdomen, omentum, lacerating the greater curvature of stomach (Figure 5),



Figure 5

piercing the loop of the intestines and lacerating the mesenteric vessels (Figure 6) going downwards towards the pelvic cavity where a bullet was recovered which was copper jacketed of length 3 cm and diameter 0.8 cm (Figure 7).



Figure 6



Figure 7

There was extravasation of blood and blood clots throughout the tract. All organs were pale with about 1.5 litre of blood clot found in the peritoneal cavity.

DISCUSSION

Discussing death due to firearm injury involves navigating a complex web of perspectives:

1. Public Health: Firearms globally contribute significantly to injury

and mortality rates. Prevention strategies focus on gun control, safety education, and mental health.

2. Legal and Regulatory: Varying gun control laws aim to balance rights with safety. Legal repercussions for firearm-related deaths depend on circumstances like accidental discharge or self-defense.

3. Social and Ethical: Firearm deaths impact communities profoundly, sparking debates on ethical firearm use, self-defense rights, and responsibilities of gun owners.

4. Media and Perception: High-profile incidents shape public perception and influence advocacy efforts for stricter gun laws or Second Amendment rights.

5. International Context: Global differences in firearm-related deaths highlight cultural, political, and historical influences, informing effective policy approaches.

6. Healthcare and Response: Treating firearm injuries presents medical challenges and may result in long-term physical, psychological, and socioeconomic impacts.

7. Research and Policy: Evidence-based research informs strategies to reduce firearm deaths, emphasizing data availability for effective policy development.

Navigating these factors requires a balanced approach that considers public health, legal frameworks, ethical responsibilities, societal impacts, and international perspectives to address firearm-related deaths effectively.

CONCLUSIONS

Cause of death in this case was hemorrhagic shock as a result of antemortem injury to internal abdominal organs and mesenteric blood vessels produced by projectile of a firearm. The rarity of this injury is pertaining to the relative position of the shooter and the victim where shooter was standing and aiming at her (close range) in order to frighten her as she was sitting on the sofa.

Thus, initial positions of shooter, victim and obesity caused this rare injury.

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