



Pathology Biology Section – 2007

G3 Firearms Injuries: Beyond Entry and Exit Wounds

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After attending this presentation, attendees will learn (1) the diagnostic features of pattern injuries made by firearms; and (2) their relevant role in criminal investigations.

This presentation will impact the forensic community and/or humanity by showing several case studies in which patterned abrasions and wounds were useful in the identification of the firearms used and in the reconstruction of the assaults.

Patterned injuries usually occur when the force is applied at or near a right angle to the skin surface, rather than with the skidding impact of a graze. If a weapon with a patterned surface strikes the skin, abrasions or bruises and even lacerations follow the ridges of the object if it has a profile of varying height. Formerly it was often claimed that abrasions retained the pattern of the impacting object more accurately than other injuries such as bruises and lacerations. However, even if abrasions do preserve such patterns well, bruises and lacerations may also follow the profile of the inflicting object reproducing exactly the imprint of firearm weapons and/or its parts.

The plastic grip of a firearm weapon can easily imprint its design on the skin producing bruises and/or lacerations at the edges of the impact site such as heavy objects with firm impacts use to do. The skin between the thumb and index finger of the hand holding a pistol may slightly overlap the lumen of the barrel so that a graze wound can occur. Shape and size of pattern injuries are often useful for the identification of the weapon used in the assault. In the literature, there have been many reported cases in which additional pattern injuries have been found in the area surrounding the entry wounds produced by shotguns, revolvers, and semiautomatic pistols due to the peculiar firearm muzzle design. These findings have been used in shooting reconstruction and also to establish the range of fire. It is well known that if the discharge is contact, the muzzle of a firearm can imprint an abrasion on the skin surface. Hard and loose-contact wounds have been described depending on whether the muzzle of the weapon is jammed "hard" against the skin (so that the skin envelops the muzzle) or held lightly against the skin. Even when there is a gap between the muzzle and the skin, for example when the barrel of the weapon is held at an acute angle to the skin, the muzzle can imprint part of its circumference thus producing angled or incomplete-contact wounds. Difficulties in interpreting such pattern injuries may occur when the injury involves a surface not completely flat such as the head. In these cases the position of the edge that digs in most deeply may give an indication of the angle of the blow.

Pattern Injuries, Firearm Wounds, Ballistic