UNIVERSITY OF AMSTERDAM





FORENSIC RESEARCH PROJECT

RESEARCH PROJECT

Title	: **Analysis of ballistic trauma in human long bones**
Keywords	: Forensic anthropology, ballistic trauma, biomechanics
Expertise Area	: Forensic Anthropology
Department	: Pathology Service
Institute/Company	: Institute of Legal Medicine and Forensic Science of Catalonia (IMLCFC) and Universitat Autònoma de Barcelona (UAB)
City	: Barcelona
Country	: Spain
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SHORT DESCRIPTION

The forensic examination of deceased victims of gunshot trauma is a frequent challenge in which the cause and circumstances of death must be reconstructed. In such cases most of the information is given by the analysis of soft tissues. However, in some forensic cases such as decomposed bodies this information often cannot be retrieved. In these cases, compartments of the body more resistant to decomposition, such as the bones, may provide clues about the circumstances of trauma and death. Whereas cranial gunshot injuries have been well studied, information on the long bones is scarce and their assessment remain difficult and controversial. In a recent study on gunshot trauma in long bones, a specific pattern based on several macroscopic distinguishing traits was reported. The proposed research will take that study a step further by changing the variables used in the previous research (methodology,) such us shoot distance, type of ammunition, impact side. The aim of this research will therefore be to analyse the potential changes in the resulting gunshot fracture pattern. Specifically, we propose to reproduce, characterise, and discuss the cortical traits related to ballistic long bone trauma and to acquire more knowledge on the underlying fracture mechanism. The study is based on an experimental analysis. Thus, gunshot trauma will be inflicted to donated human long bones under controlled conditions, reconstructed, analysed and visualized with a high-speed camera. The present research proposal constitutes a unique opportunity to assess experimentally the effects of gunshot trauma on human bones.

Methodology:

1. Experimental gunshot trauma in human long bones. Ballistic laboratory Mossos d'Esquadra de la Generalitat de Catalunya (police of Catalonia).
2. Macroscopic examination of the fracture patterns. Forensic Pathology Service, Institute for Legal Medicine and Forensic Science of Catalonia (IMLCFC) in collaboration with Universitat Autònoma de Barcelona (UAB).
3. Analysis of trauma cases (MUSEUM-IMLCFC). Forensic Pathology Service, Institute of Legal Medicine and Forensic Science of Catalonia (IMLCFC).
4. Autopsy gunshot trauma cases (if available). Forensic Pathology Service, Institute of Legal Medicine and Forensic Science of Catalonia (IMLCFC).

REQUIRED/RECOMMENDED EXPERTISE

Human anatomy / biology / biomedicine

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