

Book Review: 'Broken Bones: Anthropological Analysis of Blunt Force Trauma'
2nd edition, 2014
Reviewed by R. Gaur*

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* Rajan Gaur, Professor Dept , Professor, Department of Anthropology, Panjab University, Chandigarh-160014 (India). Email: rajan_gaur7@yahoo.com



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Traditionally, Forensic Anthropologists are involved in the preparation of a biological profile of unknown human remains, particularly of completely or partially skeletonized remains, which generally include the determination of sex, age, ethnicity and stature to identify the deceased. A few decades back, the analysis of all types of trauma on victims subjected to forensic examination were usually carried out almost entirely by forensic pathologists in the mortuary. However, in the last few decades, the analysis of bone trauma and post-mortem interval and ante-mortem pathology has become an integral part of the repertoire of a professional forensic anthropologist. Unfortunately, there are only a few texts available that specifically treat bone trauma from a forensic viewpoint. In this context, the expanded and updated 2nd edition of the edited volume, '*Broken Bones*', is a very welcome and needed collection of highly specialized chapters on various aspects of forensic skeletal trauma analysis presented in a systematic manner.

The volume is a collection of ten specialized papers and nine case studies on various aspects of blunt force skeletal trauma analysis. The volume is divided into three sections. The first section gives an insight into the fundamentals of trauma analysis and the second section provides a

detailed description of the various types of traumas of each skeletal element in the context of its morphology. The third section presents case studies.

The first chapter of section one explains the purpose, requirements, qualifications, training and responsibilities of a forensic anthropologist with special reference to skeletal trauma. The second chapter is devoted to the various procedure and processes involved in human skeletal trauma analysis, such as the field recovery and receipt, methods of cleaning and preparation, examination and case report writing, and requirements of court testimony as expert witness. The third chapter provides an insight into the biomechanics of bone fractures and explains the basic engineering terminologies related to trauma, besides describing the various biomechanical properties, composition, stress thresholds and mechanical loading of bone as a material. The fourth chapter analyses and explains in sufficient depth the fine points of antemortem, perimortem and postmortem trauma apart from differentiating between blunt force and high velocity bone trauma. The fifth chapter provides a detailed classification of various types of bone fractures and their possible causes and mechanisms of generation. Theoretical considerations of designing experimental trauma studies using mammalian models and implementing their results to explain human bone trauma are discussed in the sixth chapter. The seventh chapter offers detailed description of the common situations of blunt force trauma such as homicidal injuries, child and elderly abuse, hanging, manual and ligature strangulation, trauma due to motor vehicle, railroad and aircraft related trauma and trauma caused by falls.

The second section starts with the eighth chapter in which different types of fractures of various parts of the skull, teeth and the bones of the throat are explained in sufficient detail. In the ninth chapter, the different types of trauma of various vertebrae, sacrum, coccyx, ribs and sternum are described along with their probable causes and circumstances. The tenth chapter explains the types of fractures and its causes in the bones of upper extremity, including clavicle, scapula, humerus, radius, ulna, carpals, metacarpals and phalanges. The last and the lengthiest chapter of the second section of this edited volume gives elaborate descriptions, classifications and probable causes of different types of fractures of the various skeletal elements of the lower extremity, including the innominate bone, femur, tibia, fibula, tarsals, metatarsals and phalanges of the foot.

In the third section of this volume, a collection of nine case studies are included, which illustrate a number of the concepts of trauma analysis discussed in the first two sections of the book. The

section incorporates case reports dealing with the examination, analysis and interpretation of bone trauma to assess the cause and manner of death in a variety of situations, such as fall from height, child abuse, intimate partner homicide, blunt force trauma to the chest and healed trauma in homicides.

The overall production quality of the book is excellent. The text is extensively supported by illustrations that substantially enhance the reading experience and the value of this volume. However, some of the sketches could have been better and a small section on other types of traumas (sharp force and ballistic) could have further enhanced its value. This volume provides at one place the fundamental concepts of blunt force skeletal trauma. A major strength of the volume is the bone by bone and fracture by fracture classification, analysis and interpretation of the bone trauma and the fracture specific epidemiological information. This volume is a must for the physical anthropologists training to become professional forensic anthropologists. In addition, the volume is a valuable and very useful reference material not only for professional forensic anthropologists, but also for osteologists, palaeopathologists and forensic pathologists.