

The Use of Geometric Morphometrics as a New Method to Analyse Glenoid Bone Loss after Shoulder Dislocation

Mr. Thomas Key, Professor Lennard Funk

July 2012

Volume 2

Issue 1

Doctors Academy Publications

The World Journal of Medical Education and Research (WJMER) is the online publication of the Doctors Academy Group of Educational Establishments. Published on a quarterly basis, it's aim is to promote academia and research amongst all members of the multi-disciplinary healthcare team including doctors, dentists, scientists, and students of these specialties from all parts of the world. The principal objective of this journal is to encourage the aforementioned from developing countries in particular to publish their work. The journal intends to promote the healthy transfer of knowledge, opinions and expertise between those who have the benefit of cutting edge technology and those who need to innovate within their resource constraints. It is our hope that this will help to develop medical knowledge and to provide optimal clinical care in different settings all over the world. We envisage an incessant stream of information will flow along the channels that WJMER will create and that a surfeit of ideas will be gleaned from this process. We look forward to sharing these experiences with our readers in our subsequent editions. We are honoured to welcome you to WJMER.



DOCTORS
ACADEMY
Disseminating Medical Knowledge and Skills Globally



WJMER

World Journal of Medical Education and Research

An Official Publication of the Education and Research Division of Doctors Academy



The Role of Cell-Based Imaging in Drug Discovery

Antigen Microarrays for Rapid Screening of Rheumatoid Arthritis and Other Autoimmune Diseases

Abstracts from the International Academic & Research Conference 2012

Osteoradionecrosis (ORN) of the jaw

In this edition, these topics and more....

Management of Major Trauma:
A Malaysian Perspective

Assessment and Management of Head and
Spinal Cord Injuries

Role of Cloud Computing in Global Healthcare
Provision

The Use of Geometric Morphometrics as a New Method to Analyse Glenoid Bone Loss after Shoulder Dislocation

Mr. Thomas Key, BSc

Final Year Medical Student
The University of Manchester Medical School

Address for Correspondence:

Mr. Thomas Key : thomaskey88@gmail.com

Professor Lennard Funk, BSc, MB ChB, MSc, FRCS(Tr&Orth), FFSEM(UK)

Professor of Orthopaedic and Sports Medicine
University of Salford
Consultant Shoulder & Upper Limb Surgeon
Wrightington Hospital

This is the abstract of the presentation that won 'Doctors Academy Award for Academia and Research' (best oral presentation) at the Preston National Surgical Undergraduate Surgical Conference 2012.

Abstract

Introduction

Glenoid bone loss occurs at the anteroinferior and posteroinferior aspects of the glenoid rim in anterior and posterior instability respectively. This morphological change in the shape of the glenoid fossa predisposes to increasing instability. The aim of this study was to use geometric morphometrics to analyse changes to glenoid morphology in traumatic shoulder instability.

Materials and methods

3D models of the surface of the glenoid fossa were created using CT scans from 8 patients with 5 dislocations and 3 controls. Ten landmarks, corresponding to the same anatomical sites between samples were digitized onto the surface of the glenoid fossa. Shape information was extracted from the

landmark co-ordinates and analysed for variation in the geometric properties of the glenoid fossa using geometric morphometrics.

Results

The areas of most pronounced variation between the dislocation and control groups were as expected, at the anteroinferior, and posteroinferior glenoid regions. This indicated that geometric morphometrics allows variation in the geometric properties of the glenoid fossa after dislocation to be accurately analysed at a good level of detail in three dimensions. Compared to conventional techniques using single glenoid measurements from 2 dimensional images, morphometrics represents an exciting new avenue for analysing the morphological changes to the glenohumeral joint involved in shoulder pathology.

doctorexams.co.uk

Doctor Exams is an online repository consisting of 100s of questions with correct answers and detailed explanations for questions in multiple choice, extended matching, single best answer and short answer formats. In addition, there are questions and answers related to clinical images, radiology, osteology & data interpretation.

Other useful resources include applied surgical anatomy, focused clinical history and examinations, and a quick exam revision guide. Candidates can also view numerous clinical presentations and watch videos of many clinical examinations and skills.

Question types



Theory Based Question/Answer Format



Mock Exams



Image Based Question/Answer Format



Read



View



Watch



The World Journal of Medical Education & Research (WJMER) is the online publication of the Doctors Academy Group of Educational Establishments. It aims to promote academia and research amongst all members of the multi-disciplinary healthcare team including doctors, dentists, scientists, and students of these specialties from all parts of the world. The journal intends to encourage the healthy transfer of knowledge, opinions and expertise between those who have the benefit of cutting-edge technology and those who need to innovate within their resource constraints. It is our hope that this interaction will help develop medical knowledge & enhance the possibility of providing optimal clinical care in different settings all over the world.



**DOCTORS
ACADEMY**
Disseminating Medical Knowledge and Skills Globally



WJMER
World Journal of Medical Education and Research
An Official Publication of the Education and Research Division of Doctors Academy