300.0

-2000.0

### Computed Tomography of

## BLUNT BDMMA GRAUMA



Azian Abd Aziz Ahmad Razali Md Ralib Radhiana Hassan Siti Kamariah Che Mohamed Ellyda Muhammed Nordin



LIBRARY
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

**Computed Tomography of** 

# BLUNTABDOMNAL ABDOMNAL ATRAUMA

Azian Abd Aziz
Ahmad Razali Md Ralib
Radhiana Hassan
Siti Kamariah Che Mohamed
Ellyda Muhammed Nordin



**IIUM** Press

Gombak • 2018

Copy No: Initial Date: WINK: 13/21H Location: M

> First Print, 2018 © IIUM Press, IIUM

IIUM Press is a member of the Mailis Penerbitan Ilmiah Malaysia - MAPIM (Malaysian Scholarly Publishing Council)

All rights reserved. No part of this publication may be reproduced. stored in a retrieval system, or transmitted, in any form or by any means. electronic, mechanical, photocopying, recording, or otherwise. without any prior written permission of the publisher.

Perpustakaan Negara Malaysia

Cataloguing-in-Publication Data

Azian Abd. Aziz

Computed Tomography of BLUNT ABDOMINAL TRAUMA / Azian Abd Aziz, Ahmad Razali Md Ralib, Radhiana Hassan, Siti Kamariah Che Mohamed, Ellyda Muhammed Nordin. Includes Index

ISBN: 978-967-418-461-2

1. Emergency medicine--Handbooks, manuals, etc. 2. Emergency Medical Technicians. 3. Tomography. 4. Abdomen--Blunt trauma. 5. Abdomen--Wounds and injuries. I. Ahmad Razali Md. Ralib. II. Radhiana Hassan. III. Siti Kamariah Che Mohamed. IV. Ellyda Muhammed Nordin. V. Title. 616.025

> Published in Malaysia by **IIUM Press** International Islamic University Malaysia P.O. Box 10, 50728 Kuala Lumpur, Malaysia

> > Printed in Malaysia by Attin Press Sdn. Bhd. No. 46, Jalan 2/108, Taman Salak Jaya, Salak Selatan 57100 Kuala Lumpur.

21.8.18.mab

Contents

Figures	ix
Tables	XV
Preface	xvii
Acknowledgement	xix
Abbreviation	xxi
CHAPTER 1: Introduction	
Radhiana Hassan	
Overview	1
Diagnostic tools in blunt abdominal trauma	2
Indications and technique	4
Grading of organ injuries on computed tomography	10
Management of blunt abdominal trauma	10
CHAPTER 2: Liver Injuries	
Radhiana Hassan	
Introduction	11
CT features of blunt liver injury	11
CT-based injury grading system	16
Follow-up CT findings in blunt liver injury	23
Object Through the second	
CHAPTER 3: Spleen Injuries	
Ellyda Muhammed Nordin and Radhiana Hassan	
Introduction	26
CT features of blunt splenic injury	26
CT-based injury grading system	30
Follow-up CT findings in splenic injury	36
de la companya del companya de la companya del companya de la comp	
CHAPTER 4: Renal Injuries	
Ahmad Razali Md Ralib and Radhiana Hassan	
Introduction	39
CT features of blunt renal injury	39

Renal injury grading system	45
Follow-up CT findings in renal injury	50
CHAPTER 5: Lower Urinary Tract Injuries	
Siti Kamariah Che Mohamed and Radhiana Hassan	
Ureteral Injuries	
Introduction	53
CT features of blunt ureteral injury	54
Ureteral injury grading system	55
Urinary Bladder Injuries	
Introduction	56
CT cystography technique	57
Urinary bladder injury grading system	58
CT features of urinary injury	60
Urethral Injuries	
Introduction	64
Urethral injury grading system	66
CT features of blunt urethral injury	67
Testicular Trauma	74
CHAPTER 6: Bowel And Mesenteric Injuries	
Azian Abd Aziz and Radhiana Hassan	
Introduction	75
CT features of bowel and/or mesenteric injury	76
Bowel and/or mesenteric injury grading system	90
Follow-up CT findings in bowels and/or mesenteric injury	91
CHAPTER 7: Adrenal Injuries	
Siti Kamariah Che Mohamed and Radhiana Hassan	
Introduction	92
CT features of blunt adrenal injury	92
Adrenal injury grading system	96
Follow-up CT findings in adrenal injury	97

CHAPTER 8: Pancreatic Injuries	
Radhiana Hassan	
Introduction	98
CT features of blunt pancreatic injury	98
Pancreatic injury grading system	104
Follow-up CT findings in pancreatic injury	105
CHAPTER 9: Retroperitoneal Injuries	
Azian Abd Aziz and Radhiana Hassan	
Introduction	106
CT features of retroperitoneal injury	107
CHAPTER 10: Haemoperitoneum And Active Haemorrhage	
Ahmad Razali Md Ralib and Radhiana Hassan	
Introduction	116
CT features of haemoperitoneum	119
CT quantification of haemoperitoneum	120
CHAPTER 11: Lower Thoracic Injury	
Radhiana Hassan	
Introduction	123
CT features of blunt chest injury	124
Bibliography	131
Index	145

## BLUNT ABDOMINAL TRAUMA

This book contains a wide range of CT images pertaining to blunt abdominal trauma, designed to provide a quick and useful reference for all doctors managing this type of cases. It is also helpful for medical students, nursing students and allied health students to consolidate their knowledge on this important topic to prepare them for clinical practice in later years.

AZIAN ABD AZIZ obtained her Master of Medicine in Radiology from Universiti Sains Malaysia in 1999. She had her further training in Royal Children's Hospital, Melbourne Australia and The Hospital for Sick Children in Toronto. AHMAD RAZALI MD. RALIB obtained his Master of Medicine in Radiology from Universiti Sains Malaysia in 2003. He did his fellowship in Universiti Kebangsaan Malaysia. RADHIANA HASSAN obtained her Master of Medicine in Radiology from Universiti Sains Malaysia in 2008. She had further training in Universiti Kebangsaan Malaysia. SITI KAMARIAH CHE MOHAMED obtained her Master of Medicine in Radiology from Universiti Sains Malaysia in 2008. ELLYDA MUHAMMED NORDIN obtained her Master of Medicine in Radiology from Universiti Sains Malaysia in 2009. She is a consultant radiologist in Hospital Pakar PRKMUIP. All the authors are lecturer at Kulliyyah of Medicine, International Islamic University Malaysia.





### **HUM Press**

Tel: +603 6196 5014 / 6196 5004 Fax: +603 6196 4862 / 6196 6298 Email: iiumbookshop@iium.edu.my Website: http://iiumpress.iium.edu.my/bookshop

