Fundamentals of Surgical Practice

This is the new, expanded and updated edition of the key text currently available for the first stages of the MRCS examination. Mirroring the exam syllabus, it offers the trainee a clear understanding of the core knowledge required for examination success and incorporates new material reflecting recent developments and the new examination. The chapters have been written by acknowledged experts, many of whom are themselves involved in the training and examining of candidates. Designed to achieve maximum efficiency in learning, the content provides ample detail, key points and suggestions for further reading. In addition to a detailed index, each chapter has its own table of contents to enhance ease of use. It will be indispensable for the new trainee, and will also provide established surgeons and other healthcare professionals working in the surgical environment with a modern, authoritative overview of the key areas of surgical practice.

Prof. Andrew N Kingsnorth is a Consultant Surgeon at Derriford Hospital in Plymouth and Professor of Surgery at Peninsula Medical School, University of Plymouth. He is currently an associate editor of the International Journal of Surgical Investigation and has been an editorial board member for the British Journal of Surgery (1996–1999). Prof. Kingsnorth also spent many years as a Member of the Court of Examiners of the Royal College of Surgeons of England (1994–2000) and has published over 300 articles and invited chapters in 30 books, as well as co-editing 6 books and co-authoring 1 book.

Aljafri A Majid is a Consultant Cardiothoracic Surgeon at University Hospital, Kuala Lumpur and Professor in the Department of Surgery at the Faculty of Medicine, University of Malaya. He is also a member of the Panel of Examiners for the Royal College of Surgeons of Edinburgh.
Fundamentals of Surgical Practice

Second Edition

Edited by Andrew N Kingsnorth and Aljafri A Majid
# Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td></td>
<td>vii</td>
</tr>
<tr>
<td>Contributors</td>
<td></td>
<td>viii</td>
</tr>
<tr>
<td>1</td>
<td>Preoperative management</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Principles of anaesthesia</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>Postoperative management</td>
<td>39</td>
</tr>
<tr>
<td>4</td>
<td>Nutritional support</td>
<td>50</td>
</tr>
<tr>
<td>5</td>
<td>Surgical sepsis: prevention and therapy</td>
<td>58</td>
</tr>
<tr>
<td>6</td>
<td>Surgical techniques and technology</td>
<td>71</td>
</tr>
<tr>
<td>7</td>
<td>Trauma: general principles of management</td>
<td>89</td>
</tr>
<tr>
<td>8</td>
<td>Intensive care</td>
<td>111</td>
</tr>
<tr>
<td>9</td>
<td>Principles of cancer management</td>
<td>149</td>
</tr>
<tr>
<td>10</td>
<td>Ethics, legal aspects and assessment of effectiveness</td>
<td>184</td>
</tr>
<tr>
<td>11</td>
<td>Haemopoietic and lymphoreticular systems: anatomy, physiology and pathology</td>
<td>199</td>
</tr>
<tr>
<td>12</td>
<td>Upper gastrointestinal surgery</td>
<td>230</td>
</tr>
<tr>
<td>13</td>
<td>Lower gastrointestinal surgery</td>
<td>249</td>
</tr>
<tr>
<td>14</td>
<td>Hernia management</td>
<td>264</td>
</tr>
<tr>
<td>15</td>
<td>Vascular surgery</td>
<td>286</td>
</tr>
<tr>
<td>16</td>
<td>Endocrine surgery</td>
<td>304</td>
</tr>
<tr>
<td>17</td>
<td>The breast</td>
<td>322</td>
</tr>
<tr>
<td>18</td>
<td>Thoracic surgery</td>
<td>351</td>
</tr>
<tr>
<td>19</td>
<td>Genitourinary system</td>
<td>369</td>
</tr>
<tr>
<td>20</td>
<td>Head and neck</td>
<td>391</td>
</tr>
<tr>
<td>21</td>
<td>The central nervous system</td>
<td>415</td>
</tr>
<tr>
<td>22</td>
<td>Musculoskeletal system</td>
<td>440</td>
</tr>
<tr>
<td>23</td>
<td>Paediatric surgery</td>
<td>493</td>
</tr>
<tr>
<td>Index</td>
<td></td>
<td>525</td>
</tr>
</tbody>
</table>
One of the first challenges for aspiring surgeons to negotiate is the intercollegiate MRCS examination, which has replaced similar examinations previously run by the four Royal Surgical Colleges. The first edition of Fundamentals of Surgical Practice has become a recommended and standard text for the MRCS examination largely due to the reputation of its contributors. As editors of the second edition we are delighted that the majority of our authors have signed up to a revision and update of their chapters. There are some new contributors and some of our senior authors have revised their chapters with junior colleagues attuned to modern surgical thinking.

Technological aspects of surgery have undergone rapid change in the last two decades. A parallel change has taken place in the educational concepts underpinning transfer of basic knowledge into surgical practice. The knowledge base itself may not have changed a great deal but its method of presentation has. Therefore, we have selected authors with a gift for imparting the enthusiasm of their specialist interest in a straightforward and easily understood way but without missing out on the detail. In this edition the alimentary system has been expanded into two chapters on Upper gastrointestinal and Lower gastrointestinal surgery and a separate chapter on Hernia management has been added to emphasise the importance of surgery of the abdominal wall as an expanding area of specialist interest. The successful format of the previous edition has been retained and we are confident that this book will continue to remain a popular reference source for those beginning their postgraduate training in surgery.

Andrew N Kingsnorth
Aljafri A Majid
February 2005
Contributors

Iain D Anderson  
BSc MD FRCS FRCS(Gen)  
Consultant Surgeon  
Hope Hospital, Manchester  
Senior Lecturer in Surgery, University of Manchester  
Hillsborough Tutor in Critical Care, The Royal College of Surgeons of England, Manchester, England

JR Barwell  
Consultant Vascular and Renal Transplant Surgeon,  
Derriford Hospital, Plymouth, UK

Abraham J Botha  
MD FRCS  
Department of Upper GI and General Surgery  
St Thomas' Hospital, London, UK

Douglas M Bowley  
Department of Colorectal Surgery, John Radcliffe Hospital  
Headley Way, Headington, Oxford, UK

C Peter Clarke  
MBBS(Melb) FRACS FACS FCCP  
Senior Thoracic Surgeon  
Austrian and Repatriation Medical Centre, Heidelberg, Victoria, Australia  
Professorial Associate, Department of Surgery, University of Melbourne, Victoria, Australia

Christopher Cunningham  
Department of Colorectal Surgery, John Radcliffe Hospital  
Headley Way, Headington, Oxford, UK

Andrew Dickinson  
MD FRCS (Urol)  
Derriford Hospital, Plymouth, UK

Mark S Duxbury  
Oleg Eremin  
MD FRCS(Ed) FRACS  
Honorary Consultant Surgeon  
Aberdeen Royal Hospitals NHS Trust, Aberdeen  
Regius Professor of Surgery, University of Aberdeen, Aberdeen  
Examiner in Surgery, Royal College of Surgeons, Edinburgh, UK

Mark Fordham  
FRCS  
Consultant Urologist  
Royal Liverpool University Hospital  
Member, Court of Examiners, Royal College of Surgeons, England

A Patrick Forrest  
FRCS(Ed, Eng, Glasg) MD ChM HonDSc (Wales, Chinese University of Hong Kong) LLD (Dundee) HonFACS FRACS (Can.) FRCR  
Professor Emeritus, University of Edinburgh  
Senior Lecturer in Surgery, University of Glasgow  
Professor of Surgery, Welsh National School of Medicine  
Regius Professor of Clinical Surgery, University of Edinburgh, Member of Council, Royal College of Surgeons, Edinburgh, UK

Simon P Frostick  
MA DM FRCS  
Honorary Consultant  
Royal Liverpool University Hospital  
Professor of Orthopaedics, University of Liverpool, Liverpool, UK

Carlos MH Gomez  
LMS FRCA  
Honorary Senior Registrar and Research Fellow  
Department of Anaesthesia and Intensive Care, Charing Cross Hospital, London, UK

John WW Gothard  
MBBS Dip(Obst) RCOG FRCA  
Consultant Anaesthetist,  
Royal Brompton Hospital  
Honorary Senior Lecturer, National Heart and Lung Institute, Imperial College School of Medicine, London, UK

Roshan Lall Gupta  
MS FRCS(Eng) FRCS(Ed) FACS  
Emeritus Professor of Surgery  
Meerut, India
ix Contributors

Robert G Hardy
BSc MB ChB PhD
Department of Endocrinology, Royal Infirmary, Edinburgh, UK

DR Harper
BSc MD FRCS
Consultant Surgeon
Falkirk and District Royal Infirmary NHS Trust
Honorary Senior Lecturer, Department of Surgery, University of Edinburgh
Examiner, Royal College of Surgeons, Edinburgh and Royal College of Physicians and Surgeons, Glasgow, UK

Neil Harris
MD MRCS(Eng)
Department of Urology, Derriford Hospital, Plymouth, UK

Steven D Heys
MD PhD FRCSI(Glas) FRCS(Ed)
Honorary Consultant Surgeon
Aberdeen Royal Hospitals NHS Trust, Aberdeen
Reader in Surgery, University of Aberdeen, Aberdeen
Examiner in Surgery, Royal College of Surgeons, Glasgow, UK

Jason Payne-James
19 Speldhurst Road, London, E9 7EH, UK

RV Jeffreys
MChir FRCS(Ed)
Consultant Neurosurgeon
Walton Centre for Neurology and Neurosurgery, Liverpool
Clinical Lecturer in Neurosurgery, University of Liverpool, Liverpool, UK
Examiner, Royal College of Surgeons, Edinburgh
Member of Specialist Advisory Board in Neurosurgery, Royal College of Surgeons of Edinburgh
Previously Examiner in Conjoint FRCS (Surgical Neurology), Edinburgh, UK

ZH Khan
Locum Consultant Vascular Surgeon, Derriford Hospital, Plymouth, UK

Walter WK King
MD FRCS(Ed) FRCS FACS FCSHK
Chief, Division of Head and Neck – Plastic and Reconstructive Surgery
Prince of Wales Hospital, Shatin, Hong Kong
Professor of Head and Neck – Plastic and Reconstructive Surgery, The Chinese University of Hong Kong, Hong Kong, China

Panel of Examiners (1992–1998), Conjoint Fellowship Examination of the Royal College of Surgeons of Edinburgh and the College of Surgeons of Hong Kong

Andrew N Kingsnorth
BSc MS FRCS
Consultant Surgeon
Derriford Hospital, Plymouth
Honorary Professor of Surgery, Peninsula Medical School
External Undergraduate Examiner, Oxford, London and Kuala Lumpur, Malaysia
Member, Court of Examiners, Royal College of Surgeons of England, UK

RM Kirk
MS FRCS
Honorary Consulting Surgeon
Royal Free Hospital, London, UK

Dennis SC Lam
MBBS DO FRCS FRCOphth
Department of Ophthalmology and Visual Sciences
Princess of Wales Hospital
Associate Professor, Department of Ophthalmology and Visual Sciences, The Chinese University of Hong Kong, Hong Kong, China

David Lee
BSc MB ChB FRCS(Ed)
Consultant General and Endocrine Surgeon, Royal Infirmary, Edinburgh, UK

Sam J Leinster
BSc MD FRCS
Lead Clinician, Breast Cancer Services
Honorary Consultant Surgeon, Royal Liverpool and Broadgreen Hospitals
Professor of Surgery and Director of Medical Studies, University of Liverpool
Examiner, Royal College of Surgeons, Edinburgh
Examiner, PLAB, General Medical Council
Member, Training Committee and Examinations Committee, Royal College of Surgeons, Edinburgh, UK

Roderick Anderson Little
PhD FRCPath FFAEM
Professor of Surgical Science
University of Manchester, Manchester
Head, MRC Trauma Group, Director NWIRC, Member, Court of Examiners, Royal College of Surgeons, London, UK

C Macutkiewicz
Department of Surgery, Hope Hospital, University of Manchester, School of Medicine
<table>
<thead>
<tr>
<th>Contributors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aljafri A Majid</strong>&lt;br&gt;MBBS BmedSc(Hons) FRCS(Ed) FRCSEd(CT)&lt;br&gt;Consultant Cardiothoracic Surgeon&lt;br&gt;University Hospital, Kuala Lumpur, Malaysia&lt;br&gt;Professor and Head, Department of Surgery, Faculty of Medicine, University of Malaya, Malaysia&lt;br&gt;Member, Panel of Examiners, Royal College of Surgeons, Edinburgh, UK</td>
<td></td>
</tr>
<tr>
<td><strong>Angela Neville</strong>&lt;br&gt;Department of Surgery, University of Southern California, Los Angeles, USA</td>
<td></td>
</tr>
<tr>
<td><strong>QM Nunes</strong>&lt;br&gt;Clinical Fellow in General Surgery, Queen's Medical Centre, Nottingham, UK</td>
<td></td>
</tr>
<tr>
<td><strong>Fred Rosewarne</strong>&lt;br&gt;MBBS FANZLA&lt;br&gt;Assistant Director&lt;br&gt;Department of Anaesthesia, Royal Melbourne Hospital&lt;br&gt;Clinical Instructor, Royal Melbourne and Western Hospital Clinical School&lt;br&gt;Supervisor of Training in Anaesthesia, Royal Melbourne Hospital, Melbourne, Australia</td>
<td></td>
</tr>
<tr>
<td><strong>Brian J Rowlands</strong>&lt;br&gt;MD FRCS FACS&lt;br&gt;Consultant Surgeon&lt;br&gt;Queen's Medical Centre, University of Nottingham, Nottingham, UK&lt;br&gt;Professor of Surgery; Chairman of RCS England Working Party on Care of the Critically Ill Surgical Patient</td>
<td></td>
</tr>
<tr>
<td><strong>RC Smith</strong>&lt;br&gt;MB ChB ChM FRCS(Ed)&lt;br&gt;Consultant Surgeon&lt;br&gt;Falkirk and District Royal Infirmary NHS Trust&lt;br&gt;Honorary Clinical Teacher, University of Edinburgh&lt;br&gt;Convenor of The Examinations Committee, Royal College of Surgeons of Edinburgh, Edinburgh, UK</td>
<td></td>
</tr>
<tr>
<td><strong>Chee Voon Soong</strong>&lt;br&gt;MB BCH FRCSI&lt;br&gt;Specialist Registrar in General and Vascular Surgery&lt;br&gt;Royal Victoria Hospital, Queen's University of Belfast, Belfast Northern Ireland Postgraduate Surgical Training Programme, UK</td>
<td></td>
</tr>
<tr>
<td><strong>Dirk C Strauss</strong>&lt;br&gt;MBChB, FCS(SA), MMed(Stell)&lt;br&gt;Department of Upper GI Surgery, St Thomas' Hospital, London, UK</td>
<td></td>
</tr>
<tr>
<td><strong>Paul KH Tam</strong>&lt;br&gt;MBBS(HK) ChM(Liverpool) FRCS(Edin, Glas, Ire) FRCPCH FHKAM(Surgery) FCSHK&lt;br&gt;Chief, Division of Paediatric Surgery&lt;br&gt;Department of Surgery, Queen Mary Hospital&lt;br&gt;Chair of Paediatric Surgery, Department of Surgery, The University of Hong Kong Medical Centre&lt;br&gt;Quamond Fellow, Lincoln College, University of Oxford. (Formerly, Clinical Reader, Director and Consultant (Hon.) in Paediatric Surgery, University of Oxford and John Radcliffe Hospital, Oxford 1990–1996)&lt;br&gt;Examiner in Fellowship (General Surgery), Royal College of Surgeons, Edinburgh&lt;br&gt;Examiner, Intercollegiate Specialty Board in Paediatric Surgery (UK)&lt;br&gt;Examiner in Diploma of Child Health, Royal College of Physicians (UK)&lt;br&gt;Examiner in Fellowship (General Surgery), College of Surgeons of Hong Kong, Hong Kong, China</td>
<td></td>
</tr>
<tr>
<td><strong>Irving Taylor</strong>&lt;br&gt;MD ChM FRCS&lt;br&gt;Consultant Surgeon&lt;br&gt;University College London Hospitals NHS Trust, London&lt;br&gt;Professor of Surgery and Head of Department of Surgery&lt;br&gt;University College London, London, UK</td>
<td></td>
</tr>
<tr>
<td><strong>Robert JS Thomas</strong>&lt;br&gt;MBBS MS FRACS FRCS&lt;br&gt;Western Hospital, Victoria, Australia&lt;br&gt;Department of Surgery, University of Melbourne, Victoria, Australia</td>
<td></td>
</tr>
<tr>
<td><strong>Benjamin Thomson</strong>&lt;br&gt;Department of Surgical Oncology, Peter MacCallum Cancer Centre</td>
<td></td>
</tr>
<tr>
<td><strong>TJ Wheatley</strong>&lt;br&gt;Consultant Upper GI Surgeon, Derriford Hospital, Plymouth, UK</td>
<td></td>
</tr>
<tr>
<td><strong>John Woo</strong>&lt;br&gt;FRCSEd FHKAM (otorhinolaryngology)&lt;br&gt;Consultant&lt;br&gt;Department of Surgery, Prince of Wales Hospital, Chinese University of Hong Kong&lt;br&gt;Adjunct Associate Professor, Chinese University of Hong Kong, Hong Kong, China</td>
<td></td>
</tr>
</tbody>
</table>