

A Concise Textbook of Clinical Imaging

*Second
Edition*

*David Sutton
Jeremy W. R. Young*

A Concise Textbook of Clinical Imaging

Second Edition

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Preface to the Second Edition

The first edition of this work, published by Springer-Verlag, was very well received, with laudatory reviews in American and British radiology journals and also in *The Lancet* and the *New England Journal of Medicine*.

With this second edition, publication has been taken over by Mosby-Year Book after a friendly agreement with the original publishers, and the title has been changed to *A Concise Textbook of Clinical Imaging*. This is because the text has grown substantially in both page and illustration counts and can no longer be regarded as *Short* though it remains, we hope, *Concise*.

Our aims remain unchanged—to provide clear guidance for the first and second year resident and trainee in radiology and imaging as to which of the bewildering array of imaging methods and tests available are appropriate for specific clinical situations and what current practice and preferences are at Teaching Hospitals.

In the four years since the first edition, progress and change in clinical imaging have continued apace and are reflected in the revised text. These include increasing use of improved and more sophisticated MRI, particularly in neuroradiology, skeletal, and vascular work; more general use of color Doppler in ultrasound; and more widespread application of high resolution CT, especially in chest work.

It is a happy coincidence but no less appropriate that this new edition should be published in the centenary year of Roentgen's epoch-making discovery of x-rays.

David Sutton
Jeremy W.R. Young

Preface to the First Edition

In recent decades imaging has proved one of the most rapidly expanding areas of medicine. The present day trainees entering radiology are no longer trained by radiologists who cover and are well informed on most aspects of their specialty as was the case with previous generations. Instead they encounter a confusing array of subspecialists divided both by systems and by techniques.

The system specialists include neuroradiologists, vascular radiologists, gastrointestinal radiologists, chest radiologists, and skeletal radiologists. Technique specialists include experts in nuclear medicine, ultrasound, computed tomography and magnetic resonance, and there are subspecialists in both groups, not to mention others like pediatric radiologists who fit into neither classification.

It is our experience that this plethora of experts each with his own individual approach is bewildering and intimidating to the novice radiologist. The numerous monographs on individual subjects and techniques and the large textbooks so valuable to the more advanced radiologist are also confusing and unhelpful to the new recruit.

It was for these reasons that we decided to embark on this new *Short Textbook*. The aim was to produce a concise and integrated volume which could provide the beginner with a balanced and realistic view of the true place of different imaging techniques in current practice. Details of technique are generally excluded; most will be inevitably absorbed with increasing practical experience. The emphasis throughout is on clinical usage, and the relative and often changing importance of different methods in specific clinical contexts.

Apart from the junior radiological trainee in his first or second year at whom the book is primarily aimed, we hope this new work will also prove useful to those physicians and surgeons requiring an up-to-date outline of the scope of modern imaging either for personal education or as an aid for higher medical and surgical examinations both in America and Britain.

David Sutton
Jeremy W.R. Young

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Second Edition

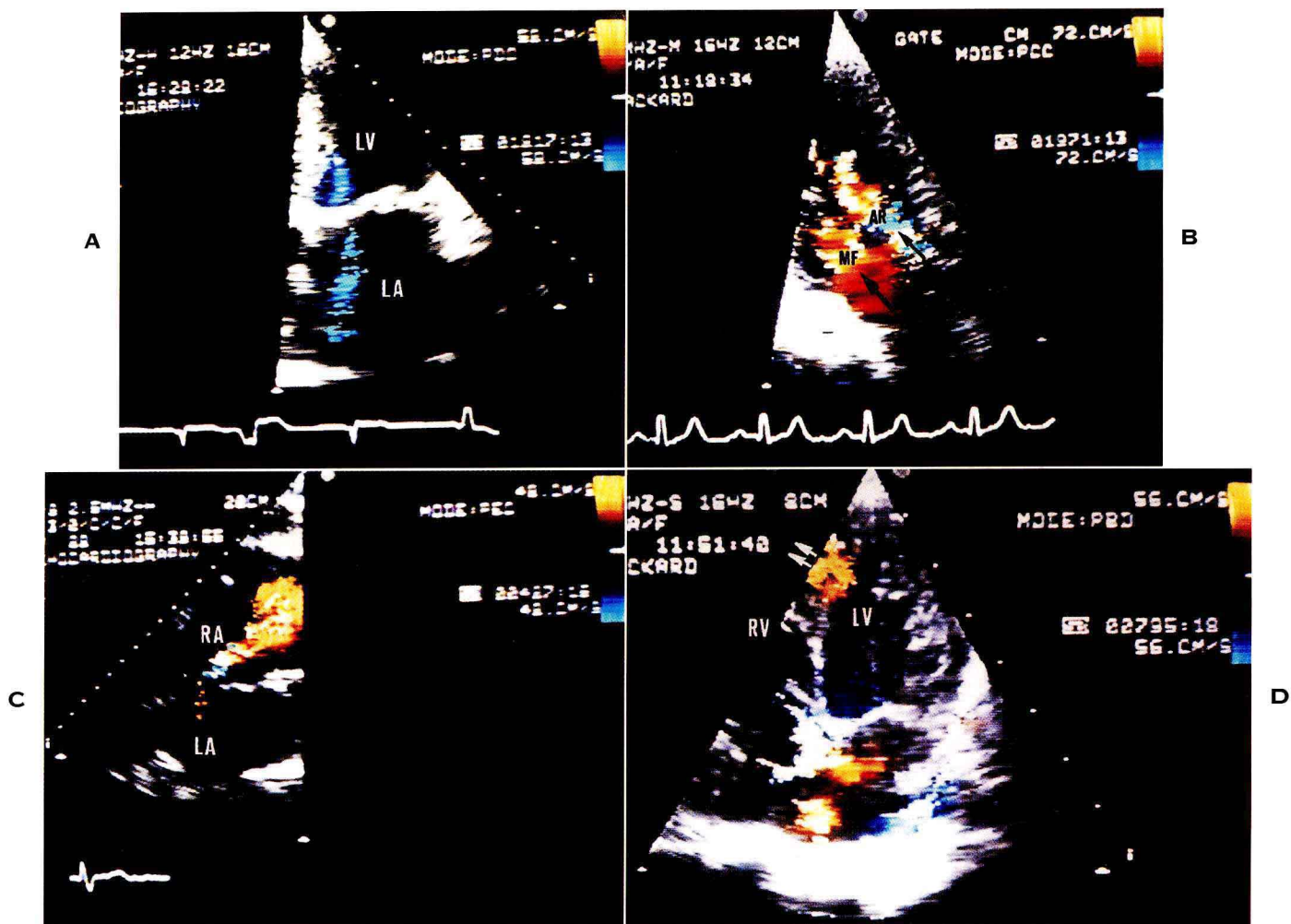


Plate 1 A, This color flow Doppler image of the left ventricle (LV), mitral valve, and left atrium (LA) shows a jet of mitral regurgitation (blue) entering the left atrium. B, This color flow Doppler image is an apical long axis view showing a jet of aortic regurgitation (AR) entering the left ventricle at the same time as the normal mitral flow (MF). The fastest flowing part of the aortic regurgitant jet in the valve region shows in blue because of the color flow aliasing artifact. C, This color flow Doppler image is a subcostal view showing flow through an atrial septal defect from the left atrium (LA) to the right atrium (RA). D, This color flow Doppler image is an apical four-chamber view showing flow across an apical muscular ventricular septal defect (arrowed) in systole from left ventricle (LV) to right ventricle (RV). See discussion in Chapter 9 text of Figure 9.16 (Plate 1 reproduced in black-and-white) for further information.

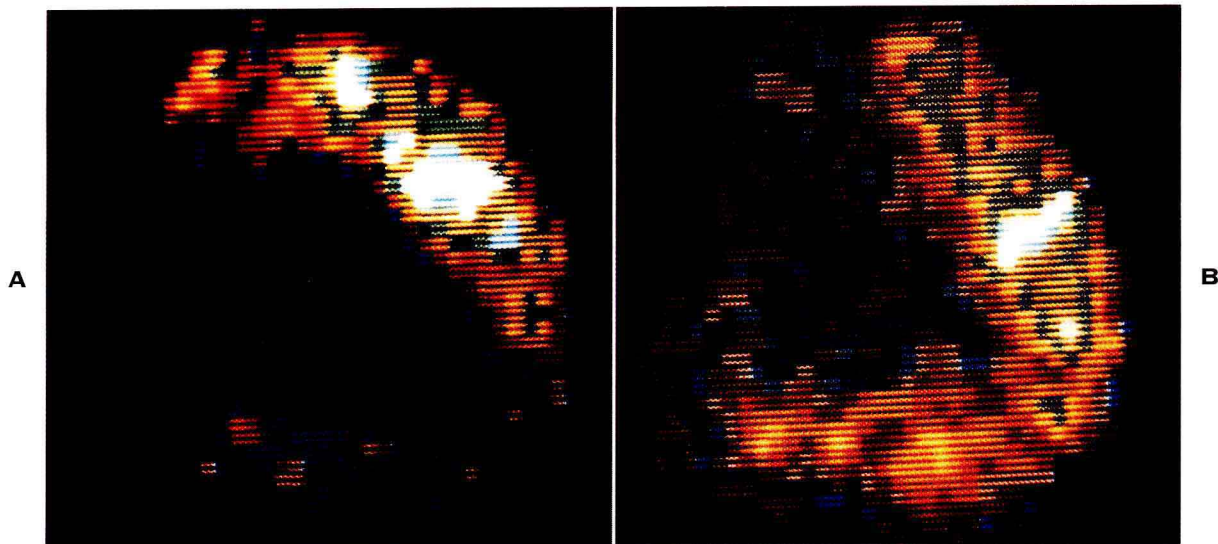


Plate 2 **A**, Immediate anterior view of a stress ^{201}Th scan showing a large inferior perfusion defect. **B**, Repeat image of the same patient shown in **A** after 4 hours of rest. There has been full reperfusion of the inferior defect indicating that this was a stress-induced perfusion defect caused by a severe localized coronary stenosis. See discussion in Chapter 9 text of Figure 9.19 (Plate 2 reproduced in black-and-white) for further information.

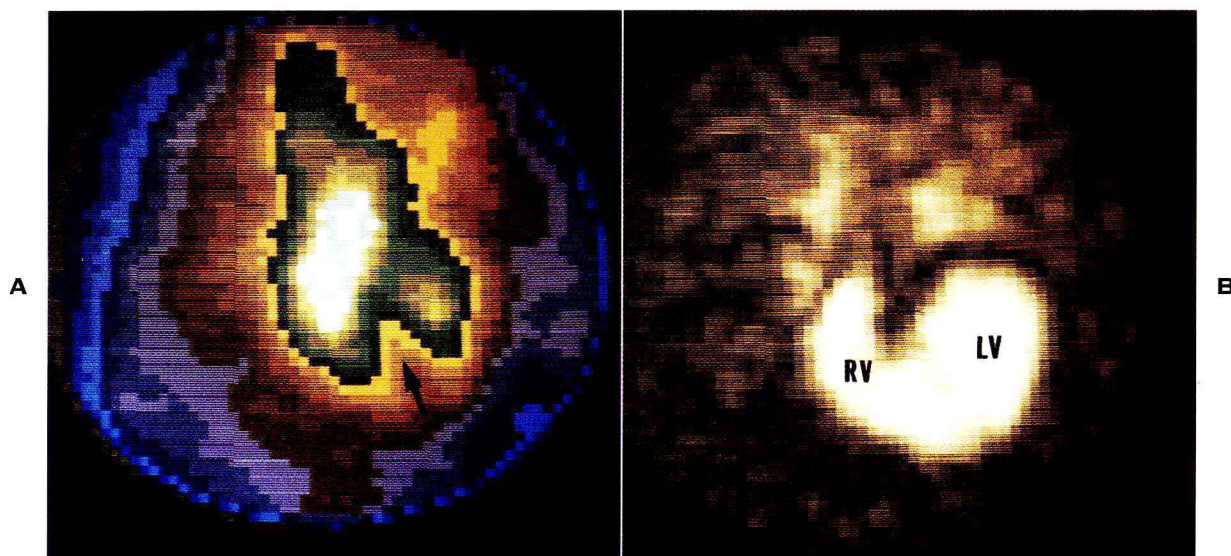


Plate 3 **A**, An image taken from a resting equilibrium blood pool scan (MUGA) in a normal patient. The projection is left anterior oblique with angulation of the gamma camera to give a "four chamber" view. The left ventricle and right ventricle are seen at the bottom of the image, separated by the interventricular septum (*arrow*). **B**, Parametric analysis has been performed on the study illustrated in **A**. This amplitude image shows the highest colors in areas of greatest change recorded during the accumulated cardiac cycle. The uniform high values over the left ventricle (LV) and right ventricle (RV) indicate normal function. See discussion in Chapter 9 text of Figure 9.20 (Plate 3 reproduced in black-and-white) for further information.

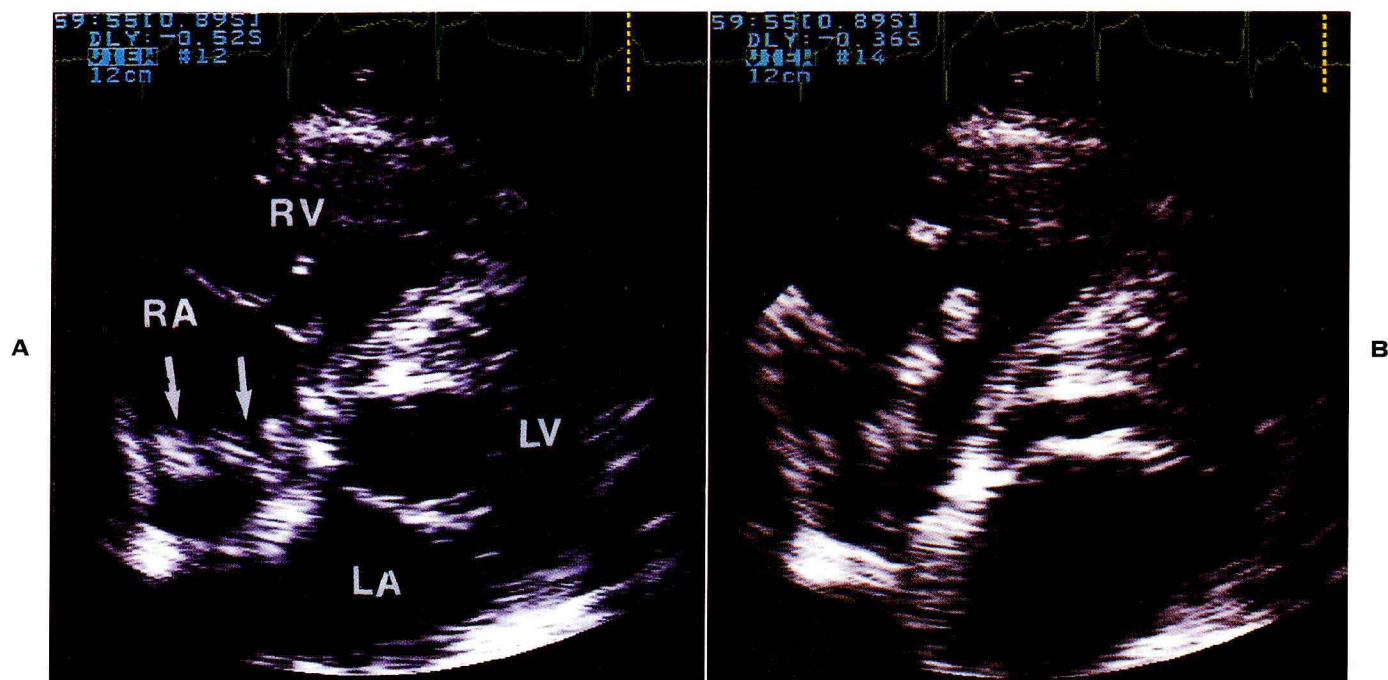


Plate 4 **A**, Modified subcostal four-chamber echocardiogram. The systolic frame shows a large mobile thrombus (*arrow*), which originated from the inferior vena cava, in the right atrium. Right atrium (RA), left atrium (LA), right ventricle (RV), and left ventricle (LV) are marked. **B**, A diastolic frame shows the thrombus prolapsing through the tricuspid valve into the right ventricle. See discussion in Chapter 12 text of Figure 12.6 (Plate 4 reproduced in black-and-white) for further information.

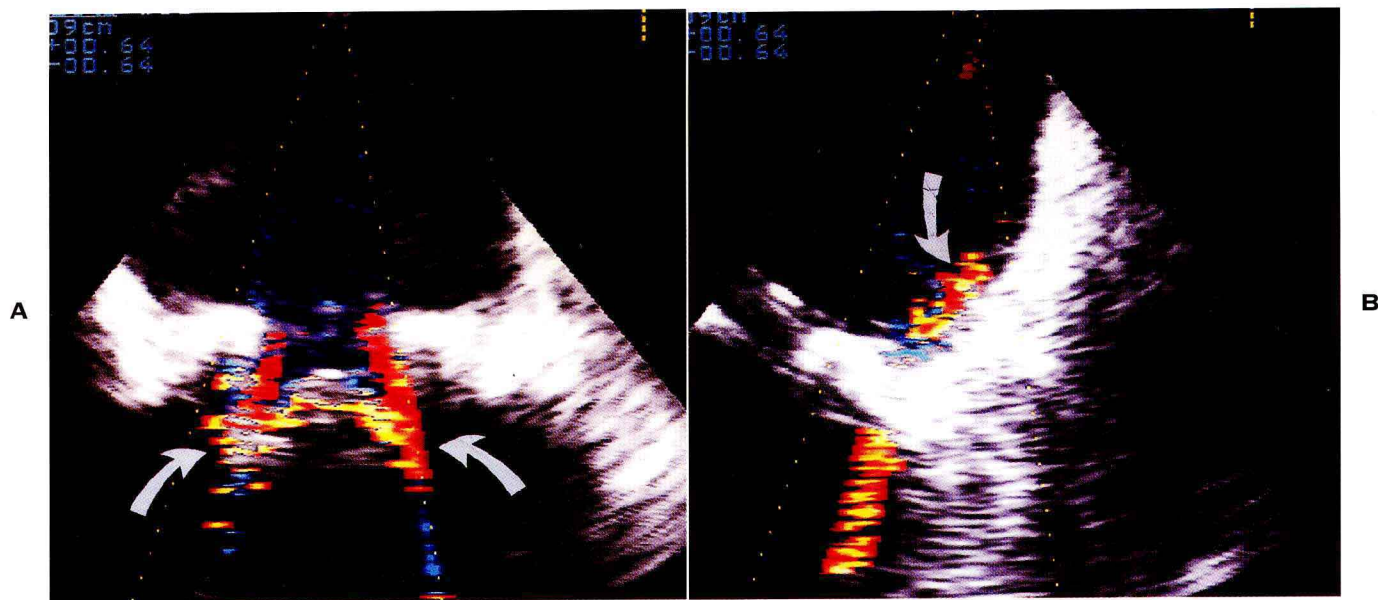


Plate 5 **A**, Transverse view from a transesophageal echocardiogram in a patient with a bileaflet prosthetic mitral valve. Color-flow Doppler mapping shows two normal diastolic streams of flow passing through the valve into the left ventricle (*arrowed*). **B**, Systolic frame from the same patient showing a small paraprosthetic jet of mitral regurgitation. See discussion in Chapter 12 text of Figure 12.10 (Plate 5 reproduced in black-and-white) for further information.

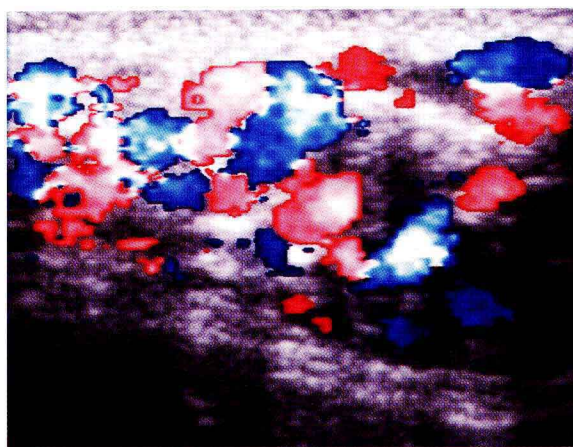


Plate 6 Color Doppler scan of the scrotum. Numerous blood-filled structures are seen due to a varicocele. See discussion in Chapter 36 text of Figure 36.49 (Plate 6 reproduced in black-and-white) for further information.

Contents

PART 1 Respiratory System

Chapter 1	<i>Methods of Investigation and Interpretation of the Chest Radiograph</i>	3
	M.B. Rubens and Simon Padley	
Chapter 2	<i>The Chest Wall, Diaphragm, and Pleura</i>	27
	M.B. Rubens and Simon Padley	
Chapter 3	<i>Diseases of the Airways: Pulmonary Collapse and Consolidation</i>	47
	M.B. Rubens and Simon Padley	
Chapter 4	<i>Pulmonary Infections</i>	65
	M.B. Rubens and Simon Padley	
Chapter 5	<i>Pulmonary Neoplasms</i>	81
	M.B. Rubens and Simon Padley	
Chapter 6	<i>Diffuse Lung Disease</i>	95
	M.B. Rubens and Simon Padley	
Chapter 7	<i>The Mediastinum</i>	112
	M.B. Rubens and Simon Padley	
Chapter 8	<i>Chest Trauma, the Postoperative Chest, and Intensive Care</i>	126
	M.B. Rubens and Simon Padley	

PART 2 Cardiovascular System

Chapter 9	<i>Cardiac Imaging</i>	141
	Peter Wilde and George G. Hartnell	
Chapter 10	<i>Acquired Heart Disease</i>	161
	George G. Hartnell and Peter Wilde	
Chapter 11	<i>Congenital Heart Disease</i>	188
	Peter Wilde and George G. Hartnell	
Chapter 12	<i>Cardiac Tumors, Implants, Pericardium, and Interventional Techniques</i>	223
	George G. Hartnell and Peter Wilde	
Chapter 13	<i>Angiography</i>	243
	David Sutton	

PART 3 Skeletal System and Soft Tissues

<i>Chapter 14</i>	<i>Congenital Abnormalities of Bone</i>	267
	<i>Jeremy W.R. Young</i>	
<i>Chapter 15</i>	<i>Trauma</i>	282
	<i>Jeremy W.R. Young</i>	
<i>Chapter 16</i>	<i>Tumors and Tumor-like Lesions of Bone</i>	307
	<i>Jeremy W.R. Young</i>	
<i>Chapter 17</i>	<i>Metabolic and Endocrine Disorders Affecting Bone</i>	338
	<i>Jeremy W.R. Young</i>	
<i>Chapter 18</i>	<i>Hemopoietic Disorders</i>	351
	<i>Jeremy W.R. Young</i>	
<i>Chapter 19</i>	<i>Bone Infections</i>	361
	<i>David W. Nelson</i>	
<i>Chapter 20</i>	<i>Osteonecroses, Osteochondroses, Paget's Disease, and Miscellaneous Disorders</i>	374
	<i>David W. Nelson</i>	
<i>Chapter 21</i>	<i>Articular Disorders</i>	391
	<i>Charles S. Resnik</i>	
<i>Chapter 22</i>	<i>The Soft Tissues</i>	413
	<i>F. Starer</i>	
<i>Chapter 23</i>	<i>Breast Imaging</i>	424
	<i>Robert McLelland, Etta D. Pisano, and M. Patricia Braeuning</i>	

PART 4 Abdomen

<i>Chapter 24</i>	<i>The Acute Abdomen</i>	451
	<i>Janet Murfitt</i>	
<i>Chapter 25</i>	<i>The Biliary Tract</i>	467
	<i>Janet Murfitt</i>	
<i>Chapter 26</i>	<i>Liver and Spleen</i>	484
	<i>Janet Murfitt</i>	
<i>Chapter 27</i>	<i>Pancreas</i>	507
	<i>Janet Murfitt</i>	
<i>Chapter 28</i>	<i>Adrenal Glands</i>	520
	<i>Janet Murfitt</i>	
<i>Chapter 29</i>	<i>Salivary Glands, Oropharynx, and Esophagus</i>	529
	<i>David J. Ott</i>	
<i>Chapter 30</i>	<i>The Stomach and Duodenum</i>	553
	<i>David W. Gelfand</i>	
<i>Chapter 31</i>	<i>The Small Intestine</i>	568
	<i>Dina F. Caroline and Dean D.T. Maglinte</i>	
<i>Chapter 32</i>	<i>The Colon</i>	594
	<i>Dina F. Caroline</i>	

PART 5 Genitourinary System

<i>Chapter 33 Renal Imaging and Congenital Lesions</i>	621
<i>Nancy S. Curry</i>	
<i>Chapter 34 Cysts and Neoplasms</i>	637
<i>Nancy S. Curry</i>	
<i>Chapter 35 Calculi, Infections, and Miscellanea</i>	652
<i>Nancy S. Curry</i>	
<i>Chapter 36 The Lower Urinary Tract and the Testes</i>	674
<i>David Rickards and Simon N. Jones</i>	
<i>Chapter 37 Gynecology</i>	689
<i>Kathryn Grumbach</i>	
<i>Chapter 38 Obstetric Ultrasound</i>	704
<i>Kathryn Grumbach</i>	

PART 6 Central Nervous System and Skull

<i>Chapter 39 The Central Nervous System: Methods, Congenital Lesions</i>	731
<i>David Sutton</i>	
<i>Chapter 40 Neoplasms</i>	742
<i>David Sutton</i>	
<i>Chapter 41 Vascular Lesions</i>	766
<i>David Sutton</i>	
<i>Chapter 42 Infection and Trauma</i>	780
<i>David Sutton</i>	
<i>Chapter 43 White Matter, Degenerative, and Metabolic Disorders</i>	794
<i>David Sutton</i>	
<i>Chapter 44 The Spine and Spinal Cord</i>	803
<i>J.M. Stevens</i>	
<i>Chapter 45 The Orbit</i>	824
<i>Michael Rothman and Gregg H. Zoarski</i>	
<i>Chapter 46 Radiology of the Teeth and Jaws</i>	843
<i>Peter Renton</i>	
<i>Chapter 47 Sinuses</i>	857
<i>Joel K. Curé and Stephen I. Schabel</i>	

PART 1

Respiratory System

