

CORONARY CT ANGIOGRAPHY ANATOMY

CORONARY CT ANGIOGRAPHY ANATOMY IS A CRITICAL AREA OF STUDY IN THE FIELD OF CARDIOVASCULAR IMAGING, PROVIDING DETAILED INSIGHTS INTO THE STRUCTURE AND FUNCTION OF THE CORONARY ARTERIES. THIS NON-INVASIVE IMAGING TECHNIQUE UTILIZES COMPUTED TOMOGRAPHY (CT) TO VISUALIZE THE CORONARY ARTERIES, HELPING IN THE DIAGNOSIS AND MANAGEMENT OF VARIOUS CARDIAC CONDITIONS. UNDERSTANDING CORONARY CT ANGIOGRAPHY ANATOMY IS ESSENTIAL FOR HEALTHCARE PROFESSIONALS TO INTERPRET THE IMAGES ACCURATELY AND TO MAKE INFORMED CLINICAL DECISIONS. THIS ARTICLE WILL DELVE INTO THE INTRICACIES OF CORONARY CT ANGIOGRAPHY, COVERING ITS PRINCIPLES, THE ANATOMY OF THE CORONARY ARTERIES, INDICATIONS FOR THE PROCEDURE, THE CONTRAST AGENTS USED, AND THE INTERPRETATION OF RESULTS.

TO FACILITATE A COMPREHENSIVE UNDERSTANDING, THE FOLLOWING TOPICS WILL BE COVERED:

- INTRODUCTION TO CORONARY CT ANGIOGRAPHY
- ANATOMY OF THE CORONARY ARTERIES
- INDICATIONS FOR CORONARY CT ANGIOGRAPHY
- CONTRAST AGENTS IN CORONARY CT ANGIOGRAPHY
- INTERPRETING CORONARY CT ANGIOGRAPHY RESULTS
- BENEFITS AND LIMITATIONS OF CORONARY CT ANGIOGRAPHY
- FUTURE DIRECTIONS IN CORONARY IMAGING

INTRODUCTION TO CORONARY CT ANGIOGRAPHY

CORONARY CT ANGIOGRAPHY (CCTA) IS A SOPHISTICATED IMAGING MODALITY THAT ALLOWS FOR THE VISUALIZATION OF THE CORONARY ARTERIES IN A NON-INVASIVE MANNER. THE TECHNIQUE LEVERAGES ADVANCED CT TECHNOLOGY TO PRODUCE HIGH-RESOLUTION IMAGES, AIDING IN THE IDENTIFICATION OF CORONARY ARTERY DISEASE (CAD). CCTA IS PARTICULARLY VALUABLE IN PATIENTS WITH CHEST PAIN OR SUSPECTED CAD, AS IT CAN REVEAL THE PRESENCE OF SIGNIFICANT STENOSIS OR BLOCKAGES.

THE PROCEDURE INVOLVES THE USE OF A CT SCANNER TO CAPTURE IMAGES OF THE HEART AND SURROUNDING STRUCTURES IN A SERIES OF CROSS-SECTIONAL VIEWS. THESE IMAGES ARE THEN RECONSTRUCTED TO CREATE DETAILED 3D REPRESENTATIONS OF THE CORONARY ARTERIES. CCTA HAS GAINED POPULARITY DUE TO ITS ACCURACY, SPEED, AND ABILITY TO PROVIDE CRITICAL INFORMATION WITHOUT THE NEED FOR INVASIVE CATHETERIZATION.

ANATOMY OF THE CORONARY ARTERIES

UNDERSTANDING THE ANATOMY OF THE CORONARY ARTERIES IS FUNDAMENTAL FOR PROPER INTERPRETATION OF CORONARY CT ANGIOGRAPHY. THE HEART IS SUPPLIED WITH BLOOD BY TWO MAIN CORONARY ARTERIES: THE LEFT CORONARY ARTERY (LCA) AND THE RIGHT CORONARY ARTERY (RCA).

LEFT CORONARY ARTERY (LCA)

THE LEFT CORONARY ARTERY BRANCHES INTO TWO PRIMARY ARTERIES:

- **LEFT ANTERIOR DESCENDING (LAD) ARTERY:** SUPPLIES BLOOD TO THE ANTERIOR WALL OF THE LEFT VENTRICLE AND THE INTERVENTRICULAR SEPTUM.
- **LEFT CIRCUMFLEX (LCX) ARTERY:** SUPPLIES BLOOD TO THE LATERAL AND POSTERIOR ASPECTS OF THE LEFT VENTRICLE.

THE LCA IS CRUCIAL FOR DELIVERING OXYGENATED BLOOD TO A SIGNIFICANT PORTION OF THE HEART MUSCLE, AND BLOCKAGES IN THIS ARTERY CAN LEAD TO SEVERE ISCHEMIC EVENTS.

RIGHT CORONARY ARTERY (RCA)

THE RIGHT CORONARY ARTERY PRIMARILY SUPPLIES THE RIGHT VENTRICLE AND THE INFERIOR WALL OF THE LEFT VENTRICLE. IT ALSO GIVES RISE TO THE MARGINAL ARTERY, WHICH PROVIDES ADDITIONAL BLOOD SUPPLY TO THE HEART'S WALLS. THE RCA IS ESSENTIAL FOR MAINTAINING THE PERFUSION OF THE RIGHT SIDE OF THE HEART, AND ITS ASSESSMENT IS CRITICAL DURING CCTA.

INDICATIONS FOR CORONARY CT ANGIOGRAPHY

CCTA IS INDICATED IN VARIOUS CLINICAL SCENARIOS, PARTICULARLY WHEN NON-INVASIVE ASSESSMENT OF CORONARY ARTERY DISEASE IS NECESSARY. SOME OF THE PRIMARY INDICATIONS INCLUDE:

- EVALUATION OF PATIENTS WITH ATYPICAL CHEST PAIN.
- ASSESSMENT OF CORONARY ARTERY DISEASE IN PATIENTS WITH A LOW TO MODERATE RISK OF CAD.
- PREOPERATIVE EVALUATION FOR CARDIAC SURGERY.
- INVESTIGATING CORONARY ARTERY ANOMALIES.
- ASSESSMENT OF CORONARY ARTERY BYPASS GRAFTS (CABG).

THE TECHNIQUE IS ALSO UTILIZED IN THE EVALUATION OF PATIENTS WITH KNOWN CORONARY ARTERY DISEASE TO MONITOR DISEASE PROGRESSION AND TREATMENT RESPONSE.

CONTRAST AGENTS IN CORONARY CT ANGIOGRAPHY

CONTRAST AGENTS ARE VITAL FOR ENHANCING THE VISIBILITY OF THE CORONARY ARTERIES DURING CCTA. THE MOST COMMONLY USED CONTRAST MEDIA ARE IODINE-BASED, WHICH IMPROVE THE CONTRAST BETWEEN THE BLOOD VESSELS AND SURROUNDING TISSUES.

TYPES OF CONTRAST AGENTS

THE PRIMARY TYPES OF CONTRAST AGENTS INCLUDE:

- **IODINATED CONTRAST MEDIA:** THESE ARE THE STANDARD CONTRAST AGENTS USED IN CCTA, PROVIDING EXCELLENT VASCULAR ENHANCEMENT.
- **NON-IONIC CONTRAST MEDIA:** THESE AGENTS HAVE A LOWER RISK OF ADVERSE REACTIONS AND ARE OFTEN PREFERRED FOR PATIENTS WITH A HISTORY OF CONTRAST ALLERGIES.

THE CHOICE OF CONTRAST AGENT MAY DEPEND ON THE PATIENT'S MEDICAL HISTORY, RENAL FUNCTION, AND ANY KNOWN ALLERGIES.

INTERPRETING CORONARY CT ANGIOGRAPHY RESULTS

THE INTERPRETATION OF CCTA RESULTS REQUIRES A THOROUGH UNDERSTANDING OF THE CORONARY ANATOMY AND POTENTIAL PATHOLOGIES. RADIOLOGISTS AND CARDIOLOGISTS ANALYZE THE IMAGES FOR SIGNS OF:

- CORONARY ARTERY STENOSIS OR OCCLUSION.
- CORONARY ARTERY ANOMALIES.
- PRESENCE OF ATHEROSCLEROTIC PLAQUES.
- ASSESSMENT OF MYOCARDIAL PERFUSION.

THE EVALUATION OFTEN INVOLVES THE USE OF SPECIFIC SCORING SYSTEMS AND VISUALIZATION TECHNIQUES TO CLASSIFY THE SEVERITY OF ANY DETECTED ABNORMALITIES ACCURATELY.

BENEFITS AND LIMITATIONS OF CORONARY CT ANGIOGRAPHY

CCTA OFFERS NUMEROUS ADVANTAGES, MAKING IT A PREFERRED CHOICE IN MANY CLINICAL SITUATIONS. HOWEVER, THERE ARE ALSO LIMITATIONS THAT MUST BE CONSIDERED.

BENEFITS

THE KEY BENEFITS OF CCTA INCLUDE:

- NON-INVASIVE NATURE, REDUCING THE RISKS ASSOCIATED WITH TRADITIONAL CATHETERIZATION.
- HIGH DIAGNOSTIC ACCURACY, ESPECIALLY IN LOW-RISK POPULATIONS.
- RAPID ACQUISITION OF IMAGES, ALLOWING FOR TIMELY DIAGNOSIS AND TREATMENT.

LIMITATIONS

DESPITE ITS ADVANTAGES, CCTA HAS LIMITATIONS:

- EXPOSURE TO IONIZING RADIATION, THOUGH NEWER TECHNOLOGIES HAVE REDUCED DOSES.
- LIMITED ABILITY TO VISUALIZE SMALL CORONARY ARTERIES.
- POTENTIAL FOR FALSE-POSITIVE RESULTS, LEADING TO UNNECESSARY ADDITIONAL TESTING.

FUTURE DIRECTIONS IN CORONARY IMAGING

THE FIELD OF CORONARY IMAGING IS EVOLVING RAPIDLY, WITH ADVANCEMENTS IN TECHNOLOGY AND TECHNIQUES. FUTURE DIRECTIONS MAY INCLUDE:

- IMPROVED IMAGING RESOLUTION AND SPEED THROUGH ADVANCEMENTS IN CT TECHNOLOGY.
- INTEGRATION OF ARTIFICIAL INTELLIGENCE IN IMAGE ANALYSIS FOR ENHANCED DIAGNOSTIC ACCURACY.
- DEVELOPMENT OF NEW CONTRAST AGENTS WITH FEWER SIDE EFFECTS AND IMPROVED IMAGING PROPERTIES.

THESE ADVANCEMENTS PROMISE TO ENHANCE THE UTILITY OF CORONARY CT ANGIOGRAPHY IN CLINICAL PRACTICE AND RESEARCH.

FAQ SECTION

Q: WHAT IS CORONARY CT ANGIOGRAPHY USED FOR?

A: CORONARY CT ANGIOGRAPHY IS PRIMARILY USED TO VISUALIZE THE CORONARY ARTERIES, ALLOWING FOR THE ASSESSMENT OF CORONARY ARTERY DISEASE, EVALUATION OF CHEST PAIN, AND PREOPERATIVE PLANNING FOR CARDIAC SURGERIES.

Q: HOW IS CORONARY CT ANGIOGRAPHY PERFORMED?

A: THE PROCEDURE INVOLVES ADMINISTERING A CONTRAST AGENT INTRAVENOUSLY, FOLLOWED BY THE PATIENT LYING ON A CT SCANNER TABLE. THE SCANNER CAPTURES IMAGES OF THE HEART DURING BREATH-HOLD, RESULTING IN DETAILED PICTURES OF THE CORONARY ARTERIES.

Q: IS CORONARY CT ANGIOGRAPHY SAFE?

A: WHILE CCTA IS GENERALLY SAFE, IT INVOLVES EXPOSURE TO IONIZING RADIATION AND THE USE OF CONTRAST AGENTS, WHICH MAY POSE RISKS FOR SOME PATIENTS. PROPER SCREENING AND PREPARATION CAN MINIMIZE THESE RISKS.

Q: WHAT ARE THE RISKS ASSOCIATED WITH CONTRAST AGENTS USED IN CCTA?

A: RISKS ASSOCIATED WITH CONTRAST AGENTS INCLUDE ALLERGIC REACTIONS, KIDNEY DAMAGE, AND INJECTION SITE COMPLICATIONS. NON-IONIC CONTRAST AGENTS ARE OFTEN USED TO REDUCE THE RISK OF ADVERSE EFFECTS.

Q: CAN CORONARY CT ANGIOGRAPHY REPLACE TRADITIONAL ANGIOGRAPHY?

A: WHILE CCTA IS A VALUABLE NON-INVASIVE TOOL, TRADITIONAL ANGIOGRAPHY (INVASIVE CORONARY ANGIOGRAPHY) IS STILL THE GOLD STANDARD FOR CERTAIN SITUATIONS, PARTICULARLY WHEN THERAPEUTIC INTERVENTIONS ARE REQUIRED.

Q: WHAT SHOULD PATIENTS EXPECT AFTER A CORONARY CT ANGIOGRAPHY?

A: AFTER THE PROCEDURE, PATIENTS MAY EXPERIENCE MILD DISCOMFORT AT THE INJECTION SITE AND MAY BE MONITORED FOR ANY IMMEDIATE REACTIONS TO THE CONTRAST AGENT. MOST PATIENTS CAN RESUME NORMAL ACTIVITIES SHORTLY AFTER.

Q: HOW LONG DOES IT TAKE TO RECEIVE RESULTS FROM A CORONARY CT ANGIOGRAPHY?

A: RESULTS FROM A CORONARY CT ANGIOGRAPHY ARE TYPICALLY AVAILABLE WITHIN A FEW HOURS TO A COUPLE OF DAYS, DEPENDING ON THE FACILITY AND HOW QUICKLY THE IMAGES ARE ANALYZED BY A RADIOLOGIST.

Q: ARE THERE ANY CONTRAINDICATIONS FOR CORONARY CT ANGIOGRAPHY?

A: CONTRAINDICATIONS MAY INCLUDE SEVERE CONTRAST ALLERGIES, SIGNIFICANT RENAL IMPAIRMENT, OR PREGNANCY. A THOROUGH MEDICAL HISTORY AND ASSESSMENT ARE CONDUCTED BEFORE THE PROCEDURE.

Q: WHAT TECHNOLOGY ADVANCEMENTS ARE BEING MADE IN CORONARY CT ANGIOGRAPHY?

A: CURRENT ADVANCEMENTS INCLUDE HIGHER RESOLUTION IMAGING, REDUCED RADIATION DOSES, AND THE USE OF ARTIFICIAL INTELLIGENCE TO IMPROVE IMAGE INTERPRETATION AND DIAGNOSTIC ACCURACY.

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coronary ct angiography anatomy: The Complete Guide To Cardiac CT (PB) Simeon Abramson, 2011-12-07 Acquire a thorough understanding of cardiac imaging! A Doody's Core Title for 2019! I believe radiologists, cardiologists, and clinicians, as well as trainees, will find The Complete Guide to Cardiac CT to be an indispensable tool for learning the subject matter....It is practical in approach, but is solidly grounded in evidence-based medicine with a comprehensive review of the literature and timely references. The textbook provides an ideal resource for the cardiac imager and serves as an exceptional reference tool for understanding the anatomy and disease processes of the heart and coronary circulatory systems.--Theresa C. McLoud, MD, Dept. of Radiology, Massachusetts General Hospital, and Professor of Radiology, Harvard Medical School (from the foreword) Based on the popular review courses of educator and radiologist Dr. Simeon Abramson, The Complete Guide to Cardiac CT is a timely, hands-on learning tool—one that will help you master every important aspect of cardiac CT, from acquisition to interpretation. This unique

guide translates complex concepts and topics into understandable, relevant subject matter and includes contributions from international leaders in cardiac CT. Designed for the practical, day-to-day application of cardiac CT, the text also serves as a comprehensive visual resource more than 1000 laser-precise images and illustrations, all of which reflect the latest clinical acumen and cardiac imaging technology. **FEATURES** Focuses on the recognition, identification, and comprehension of heart and coronary circulatory pathology Valuable to clinicians at any experience level Logical 4-part organization consists of: Technology section that encompasses coronary CT angiography technique, radiation concepts, and successful application of radiation dose reduction tools—plus a detailed review of strategies for overcoming suboptimal examinations, complete with case examples. Coronary Arteries section that thoroughly examines plaque detection and characterization, stenosis assessment, stents and bypass grafts, and assessment of coronary artery anomalies. Beyond the Coronary Arteries details cardiac CT anatomy; myocardial, pericardial and valvular pathology; electrophysiology applications; and congenital heart disease in both pediatric and adult populations. Controversial topics focuses on the utilization of cardiac CT in the acute setting, institution of the triple rule-out protocol, and anatomic versus physiologic imaging with Rubidium PET/CT/ Helpful pedagogy includes numerous tables, diagrams, figures, and illustrations

coronary ct angiography anatomy: Cardiac CT Angiography Manual Robert Pelberg, Wojciech Mazur, 2007-06-26 'Cardiac CT Angiography: The Coronaries and Beyond' will educate the medical professional in all relevant aspects of cardiac CTA & calcium scoring in a simple, practical & concise manner, preparing individuals for clinical training experiences. A comprehensive A-Z reference & guide to successfully performing cardiac CTA & calcium scoring are included. The book will also serve as a reference & review for those who have already completed training.

coronary ct angiography anatomy: Coronary Artery CTA Claudio Smuclovsky, 2009-10-03 This compendium of cardiac CT angiographic cases is a sampling of the breadth of real-world cases encountered in a busy practice with examples of pathology and normal variants. Dr. Claudio Smuclovsky has assimilated the key image findings from cardiac CT and coupled these with complementary imaging documentation and key clinical history pieces that define the diagnosis of each case. These cases include not only coronary artery anatomy, anomalies, and pathology but also thoracic and cardiac anomalies and pathology encountered when performing cardiac CT angiography. Importantly, these cases serve as examples that enhance the educational experience for less-experienced interpreters, while providing a reference for more-experienced imagers. Documented within are also many unusual findings not routinely encountered in a low-volume practice. Experience and exposure to the breadth of cardiac anatomic variants and disease processes are a major component of building an imaging fund of knowledge. Cases of congenital heart disease, for example (less frequently encountered in the adult population), have important clinical and prognostic value that require communication to the referring physician. These attributes may not be fully characterized or may be missed if the CT angiography (CTA) imager is only focused on the coronary arteries and not the entire set of images. This compendium will widen the exposure of new interpreters and also serve as a reference when difficult cases are encountered.

coronary ct angiography anatomy: Clinical Cardiac CT Ethan J. Halpern, 2011-01-19 Praise for the First Edition: Well written, well organized [and] easy to read...provides everything that a physician would need to know in order to include cardiac CT in his or her practice...this book was a pleasure to read.--Radiology With a special emphasis on the complementary nature of anatomic and functional cardiac data, Clinical Cardiac CT: Anatomy and Function -- now in a lavishly illustrated Second Edition -- ensures physicians develop the skills they need to interpret cardiac CT images with confidence. This volume begins with a brief introduction to the essentials of CT technique, normal cardiac anatomy, and anatomic anomalies. The expert authors then discuss the clinical application of cardiac CT for risk stratification, how to evaluate coronary artery disease, and the preoperative planning for and postoperative assessment of percutaneous cardiac procedures, including coronary stents and bypass grafts. Features Entirely new chapters address evaluation of the thoracic aorta, congenital heart disease in the adult, triple rule-out CT angiography, and the latest innovations in

cardiac CT 1,157 high-resolution CT images -- including over 500 images that are new to this edition -- demonstrate the full range of normal cardiac variations and pathologic findings An accompanying DVD contains 3-D displays of anatomic relationships and cine clips of more than 200 cases that demonstrate cardiac function and valve evaluation New information on frontier techniques, including myocardial perfusion and targeted contrast agents This highly visual reference is a must-have for anyone involved in performing or interpreting cardiac CT images. It is an essential resource for radiologists, cardiologists, or cardiothoracic surgeons, as well as for residents or fellows preparing for Boards or a cardiac imaging rotation.

coronary ct angiography anatomy: *Coronary Artery CTA* Claudio Smuclovsky, 2018-02-10 The second edition of this important work provides a broad range of cardiac CT angiography (CCTA) cases covering normal anatomy, congenital coronary anomalies, coronary artery disease, percutaneous coronary intervention, postsurgical coronary revascularization, and extra-coronary abnormalities. It is designed to help practicing radiologists, cardiologists, and cardiothoracic surgeons understand the current issues involved with clinical, interventional, and surgical management of coronary artery CTA. Each case consists of detailed CCTA images, a brief history, diagnosis, discussion, and pearls and pitfalls. This updated and expanded edition includes new chapters on principles of cardiac CT, patient preparation, cardiomyopathies, pediatric cardiac CT, cardiac CT in the emergency department, CT-FFR, and reporting cardiac CT.

coronary ct angiography anatomy: *Coronary CT Angiography* Marc Dewey, 2008-10-14 Coronary CT angiography has attained increasing scientific attention at academic institutions and has become a highly accurate diagnostic modality. Extending this knowledge into a practice setting is the purpose of *Coronary CT Angiography*. This book will assist you in integrating cardiac CT into your daily practice, while also giving an overview of the current technical status and applications. The specific features of scanners from all four main vendors are also presented providing an objective overview of noninvasive coronary angiography using CT.

coronary ct angiography anatomy: *Atlas of Cardiovascular Computed Tomography* Allen J. Taylor, 2010-01-01 *Atlas of Cardiac CT*, by Allen J. Taylor, MD, is a practical cardiac imaging reference that provides comprehensive coverage of all aspects of this modality. Inside you'll find user-friendly case-based structured sections that offer a brief clinical introduction, multiple CT images, highlights of strengths and pitfalls, brief commentary, and further suggested readings-equipping you with everything you need to know to obtain the best imaging results. Expert Consult functionality further enhances your reference power with convenient online access to the complete contents of the book-fully searchable-along with additional images and videos. Features a clinically oriented, case-based and evidence-based approach for coverage that you can readily apply in your daily practice. Offers the guidance of today's experts in cardiac CT, along with input of the editorial team behind Braunwald's Heart Disease, to ensure that you have only the best knowledge at your fingertips. Includes a final chapter, Which Modality for Which Disease, to help you determine the best imaging modality to use for a specific problem. Presents abundant high-quality images that clearly depict the use of cardiac CT and visually reinforce the text. Provides complete guidance on obtaining the best image quality possible and the avoidance of artifacts. Uses a consistent chapter format that makes it easy to find the information you need. Offers access to the complete contents online, fully searchable, along with additional images and videos, at expertconsult.com. Your purchase entitles you to access the web site until the next edition is published, or until the current edition is no longer offered for sale by Elsevier, whichever occurs first. Elsevier reserves the right to offer a suitable replacement product (such as a downloadable or CD-ROM-based electronic version) should access to the web site be discontinued.

coronary ct angiography anatomy: *Imaging Coronary Arteries* David A. Dowe, Massimo Fioranelli, Paolo Pavone, 2013-11-26 In non-fatal cases, cardiovascular diseases are associated with a decreased quality of life as well as a substantial economic burden to society. Most sudden cardiac events are related to the complications of a non-stenosing marginal plaque. For this reason, the ability to properly identify the atherosclerotic plaque with rapid, non-invasive techniques is of

utmost clinical interest in diagnostic workup and therapeutic planning of symptomatic patient. Nowadays CT produces high-quality images of the coronary arteries, in addition to defining their location and the extent of the atherosclerotic involvement. This new edition is enriched with two important additions. Firstly, dedicated chapters on intravascular ultrasound (IVUS), catheter angiography, and nuclear imaging have been included, with some discussions on theoretical techniques such as optical coherence tomography (OCT) and magnetic resonance imaging (MRI). Secondly, a completely new section comprising more than 70 clinical cases remarkably expands the horizons reached by the previous edition. This volume provides general practitioners and cardiologists with a basic understanding of the imaging techniques. For radiologists with no direct experience in cardiac imaging, the book serves as an important source of information on coronary pathophysiology and anatomy.

coronary ct angiography anatomy: *Atlas of Cardiovascular Computed Tomography* Matthew J. Budoff, Stephan S. Achenbach, Harvey S. Hecht, Jagat Narula, 2018-05-23 This atlas is a comprehensive visual reference for the use of cardiovascular computed tomography (CT) containing photomicrographs, anatomic illustrations, tables, and charts paired with extensive legends and explanations that are supplemented by extensive research, peer-reviewed articles, and textbooks. In addition to providing historical perspective and current direction for CT, this new edition of *Atlas of Cardiovascular Computed Tomography 2e* focuses on research involving coronary artery diseases and anomalies, congestive heart failure, atherosclerotic plaques and asymptomatic disease, as well as imaging techniques, including preparation, acquisition, and processing, involving the great vessels and carotids, the peripheral vasculature, and coronary and pulmonary veins. The increasing role of CT in the emergency room and in private cardiology practice is also reviewed thoroughly, making this an essential read for all involved in cardiac imaging, cardiology and emergency medicine.

coronary ct angiography anatomy: *Principles of Cardiac and Vascular Computed Tomography* Stuart J. Hutchison, Naeem Merchant, 2014-04-15 *Principles of Cardiac and Vascular Computed Tomography* has everything you need to successfully obtain and interpret CT and CTA images. Stuart J. Hutchison-a premier cardiac imaging specialist-explains the dos and don'ts of CCT so you get the best images and avoid artifacts. Get only the coverage-from evidence-based CTA to noncoronary lesions-you need with clinically oriented, practical information presented in a consistent format that makes finding everything quick and easy. High-quality images and access to the text and more at Expert Consult makes this the one cardiovascular computed tomography resource that has it all. Access videos of CTA procedures at Expert Consult. Get only the coverage that you need-from evidence-based CTA to determination of coronary calcium to noncoronary lesions-from focused, clinically oriented, and practical information. Obtain the best image quality and avoid artifacts through instructions on how to and how not to perform cardiovascular computed tomography. Gain a clear visual understanding through high-quality images-many in color-that reinforce the quality of information in the text. Master probe settings and measurements using numerous tables with useful values and settings. Find information easily thanks to a consistent format.

coronary ct angiography anatomy: Cardiac CT Marc Dewey, 2010-11-16 Computed tomography of the heart has become a highly accurate diagnostic modality that is attracting increasing attention. This extensively illustrated book aims to assist the reader in integrating cardiac CT into daily clinical practice, while also reviewing its current technical status and applications. Clear guidance is provided on the performance and interpretation of imaging using the latest technology, which offers greater coverage, better spatial resolution, and faster imaging. The specific features of scanners from all four main vendors, including those that have only recently become available, are presented. Among the wide range of applications and issues to be discussed are coronary artery bypass grafts, stents, plaques, and anomalies, cardiac valves, congenital and acquired heart disease, and radiation exposure. Upcoming clinical uses of cardiac CT, such as plaque imaging and functional assessment, are also explored.

coronary ct angiography anatomy: *Cardiac CT Imaging, An Issue of Radiologic Clinics of North America* Suhny Abbbara, Prabhakar Rajiah, 2018-11-21 This issue of Radiologic Clinics of North America focuses on Cardiac CT Imaging, and is edited by Drs. Suhny Abbbara and Prabhakar Rajiah. Articles will include: Calcium scoring for cardiovascular CT: how, when and why?; Coronary CTA: acquisition, interpretation and state of the evidence; TAVR and TCMVR; Cardiac masses; Nonischemic cardiomyopathies; Acute and chronic myocardial infarcts, spectrum of manifestations; Pericardial disease; Relevant Adult Congenital Heart Disease; Congenital aortic disease; Cardiac Valves (excluding TAVR); Acute coronary and acute aortic syndromes; Acquired aortic disease (excluding acute aortic syndromes); Cardiac Trauma; Post Cardiovascular surgery findings; and more!

coronary ct angiography anatomy: *Atlas of Non-Invasive Coronary Angiography by Multidetector Computed Tomography* Guillem Pons-Llado, Ruben Leta-Petracca, 2007-03-06 Chapter 1: Basics and Performance of Cardiac Computed Tomography 3 Xavier Alomar-Serrallach, Ernesto Castillo-Gallo, Guillem Pons-Lladó 1. 1 Introduction 3 1. 2 Historical Perspective of Computed Tomography 3 1. 3 Basic Principles of Multidetector Computed Tomography in the Study of the Heart 4 1. 3. 1 Detectors 5 1. 3. 2 Image reconstruction 5 1. 3. 3 Temporal resolution 7 1. 3. 4 Spatial resolution 7 1. 3. 5 Control of radiation dose 8 1. 4 Performance of a Cardiac MDCT Study 9 1. 4. 1 Preparation of the patient 9 1. 4. 2 Image acquisition and contrast administration 9 1. 4. 3 Image reconstruction 11 Chapter 2: Normal Anatomy and Congenital Abnormalities of the Coronary Arteries 15 Rubén Leta-Petracca 2. 1 Introduction 15 2. 2 Left Coronary Artery 17 2. 2. 1 Left main (LM) artery 17 2. 2. 2 Left anterior descending (LAD) 18 2. 2. 3 Left circumflex (LCx) 22 2. 2. 4 Intermediate coronary artery 23 2. 3 Right Coronary Artery (RCA) 26 2. 4 Pattern of Dominance of the Coronary Arteries 30 2. 5 Congenital Anomalies of the Coronary Arteries 33 2. 5. 1 Anomalies relatable to myocardial ischemia 35 2. 5. 2 Anomalies not leading to myocardial ischemia 37 Chapter 3: Detection and Quantification of Coronary Artery Calcium by MDCT 43 Francesc Carreras 3. 1 Introduction 43 3. 2 CAC Quantification: The Agatston Method 44 3.

coronary ct angiography anatomy: *Cardiac CT Imaging* Matthew J. Budoff, Jerold S. Shinbane, 2006-09-03 CT is an accurate technique for assessing cardiac structure and function, but advances in computing power and scanning technology have resulted in increased popularity. It is useful in evaluating the myocardium, coronary arteries, pulmonary veins, thoracic aorta, pericardium, and cardiac masses; because of this and the speed at which scans can be performed, CT is even more attractive as a cost-effective and integral part of patient evaluation. This book collates all the current knowledge of cardiac CT and presents it in a clinically relevant and practical format appropriate for both cardiologists and radiologists. The images have been supplied by an experienced set of contributing authors and represent the full spectrum of cardiac CT. As increasing numbers have access to cardiac CT scanners, this book provides all the relevant information on this modality.

coronary ct angiography anatomy: *Cardiac CT Made Easy* Paul Schoenhagen MD FAHA, Carl J. Schultz MD, Sandra S. Halliburton, 2014-05-19 Obtaining and interpreting images of the heart is critical to the successful management of any cardiac disorders. Several imaging modalities are used to help cardiologists correctly diagnose these disorders and initiate the most appropriate form of treatment. Since the first publication of this book, the use of cardiovascular CT imaging has increase

coronary ct angiography anatomy: *Cardiac CT and MR for Adult Congenital Heart Disease* Farhood Saremi, 2013-11-22 This is the first major textbook to address both computed tomography (CT) and magnetic resonance (MR) cardiac imaging of adults for the diagnosis and treatment of congenital heart disease (CHD). Since the introduction of faster CT scanners, there has been tremendous advancement in the diagnosis of CHD in adults. This is mostly due to the higher spatial resolution of CT compared to MR, which enables radiologists to create more detailed visualizations of cardiac anatomic structures, leading to the discovery of anomalous pathologies often missed by conventional MR imaging. This book is unique in highlighting the advantages of both CT and MR for the diagnosis of CHD in adults, focusing on the complementary collaboration between the two

modalities that is possible. Chapters include discussions of case examples, clinical data, MR and CT image findings, and correlative cadaveric pictures. The chapters focus not only on the diagnosis of the primary problem, but also give readers information on visual clues to look for that often reveal associated pathologies. This book appeals primarily to diagnostic and interventional radiologists, as well as cardiologists and interventional cardiologists.

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