

Long-Term Outcomes After Percutaneous Lower Extremity Arterial Interventions With Atherectomy vs. Balloon Angioplasty — Propensity Score-Matched Registry —

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Background: The impact of endovascular revascularization of the lower extremity arteries with atherectomy (AT) compared with percutaneous transluminal angioplasty (PTA) is still unclear. Therefore, the aim of the study was to compare long-term outcomes after percutaneous PTA and AT in patients requiring endovascular revascularization.

Methods and Results: This was a single-center, retrospective registry of obstructive and symptomatic PAD patients who underwent endovascular revascularization. PTA was performed in 215 patients, and AT in 204 (Silver Hawk, EV3, n=125; CSI 360°, n=66; Pathway Medical Technologies, n=13). There were no significant between-group differences in baseline characteristics except for increased CAD, dialysis and CLI prevalence in the PTA group. Following propensity score analysis 131 well-matched pairs were included in analysis. Bail-out stenting was more frequent in the reference group (PTA, 6.1% vs. AT, 0%; $P=0.004$). At 6- and 12-month follow-up there were no differences in TLR between the groups (PTA, 8.3% vs. AT, 5.3%; $P=0.47$; and PTA, 16.7% vs. AT, 13.7%; $P=0.73$, respectively). The difference was in favor of AT at 24-month follow-up (PTA, 29.0% vs. AT, 16.7%; $P=0.05$). No difference was observed in amputation rate (PTA, 0.7% vs. AT, 1.5%; $P=0.62$). On Kaplan-Meier analysis there were no significant differences between groups in time to TLR, amputation or death.

Conclusions: AT was associated with lower risk of TLR, and this should be confirmed in randomized controlled trials.

Key Words: Atherectomy; Claudication; Critical limb ischemia; Percutaneous transluminal angioplasty; Peripheral artery disease

According to recent clinical practice and evidence, endovascular revascularization of the lower limb arteries has superseded surgical procedures.^{1,2} Regardless of advancement in endovascular technology, restenosis and the need for repeat revascularization are still challenging. Moreover, the mortality in peripheral artery disease (PAD), especially in critical limb ischemia (CLI), is high, fluctuating at around 20% at 6-month follow-up, and exceeding 50% within 5 years from diagnosis.^{3,4} These numbers increase in patients with coexisting symptomatic coronary artery disease (CAD). Additionally, CLI is associated with poor quality of life⁵ and high treatment costs.⁶ Nowadays, multiple therapies for PAD have emerged, including pharmacological regimens, endovascular and open surgery, drug-coated balloons (DCB), and stem cell therapy.⁷ On top of that, stenting has become popular, due to the

reassuring early outcome. In contrast, in the femoropopliteal artery mechanical stress is high, thus implanted stents are exposed to the risk of stent fracture and malformation, increasing the rate of restenosis.^{8,9} In the below-the-knee (BTK) region, use of metal, balloon-expandable drug-eluting stents is more common than the self-expandable nitinol ones, because those stents are even more susceptible to fracture. Moreover, due to the characteristics of BTK lesions, in most cases multiple stents are needed.¹⁰ Therefore, atherectomy (AT), which removes the atherosclerotic plaque from the arterial wall, appears to be promising. This expectancy is linked to the fact that these devices cut out the plaque from the artery wall, thus significantly increasing lumen diameter and removing potential sources of inflammation, thus facilitating satisfactory outcome.¹¹

Thus far, the long-term outcomes after endovascular

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Long Term Results Of Arterial Interventions

Martin Schillinger, Erich Minar



Long Term Results Of Arterial Interventions:

Long-Term Results of Arterial Interventions Alain Branchereau, MD, Michael Jacobs, MD, 1997-10-07 This volume is particularly valuable as a current standard reference. It covers all the major vascular operations: carotid endarterectomy, aortoiliac reconstructions and infrainguinal bypasses in situ and reversed vein, Dacron and PTFE prosthetic thoracic and abdominal bypasses matching each to its competing endovascular procedure. In addition, it provides excellent long-term data on such less common procedures as internal carotid bypass, vertebral artery revascularization, adjunctive procedures to enhance the patency of infrainguinal prosthetic bypass and percutaneous intentional extraluminal revascularization. Finally, this framework is reinforced by in-depth chapters on current non-interventional management, surveillance programs to enhance long-term patency and the ultimate challenge for all practicing vascular surgeons: the management of infected aortic grafts. Such clear, comprehensive and current analysis should be of considerable and on-going value both by helping vascular surgeons to make more effective decisions and to more knowledgeably discuss functional results, complication risks, life expectancy and surgical outcome issues with the patient and family. *Peripheral Arterial Interventions* Nicolas W. Shamma, 2022-10-13 This book examines new technologies, device and pharmacologic that have evolved over the past few years in treating peripheral arterial disease. Chapters offer optimal strategies to treat PAD supported by peer-reviewed data. The pillars of this strategy will focus on a changing vessel compliance to allow better lumen expansion, less recoil and dissections and less bailout stenting. Chapters also review embolic protection devices and apply the adjunctive use of anti-proliferative therapy to maintain good long-term outcomes. In addition, the book reviews drug-coated balloons and drug-eluting stent technologies and other means of drug delivery into the vessel wall. The goal of this book is to discuss all these emerging technologies under the strategy of treating patients with the focus on both acute and long-term outcomes. Featuring world-renown experts, this book offers a critical and comprehensive overview of the current data and future directions that would pave the way for optimal PAD management. *Peripheral Arterial Interventions* is an essential resource for physicians, residents, fellows and medical students in cardiology, radiology, vascular surgery, primary care and health promotion and disease prevention as well as internal and vascular medicine specialists. **Cardiovascular Interventions in Clinical Practice** Jürgen Haase, Hans-Joachim Schäfers, Horst Sievert, Ron Waksman, 2010-04-01 Until the publication of this exciting volume, new treatment modalities in the rapidly growing field of interventional cardiology were described based on individual research findings. Now a multidisciplinary team of international experts puts catheter-based treatment techniques in context by exploring the pathobiology of specific diseases alongside a discussion of imaging tools and functional tests and a comparison to alternative treatment approaches provided by cardiovascular surgery. This comprehensive overview of interventional cardiology represents a landmark in the field. *Image-Guided Interventions* E-Book Matthew A. Mauro, Kieran P.J. Murphy, Kenneth R. Thomson, Anthony C. Venbrux, Robert A. Morgan, 2013-09-09 2014

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Complications During Percutaneous Interventions for Congenital and Structural Heart Disease Ziyad M.

Hijazi, Ted Feldman, John Cheatham, Horst Sievert, 2013-01-10 Created by world renown editors who have assembled a stellar team a Who's Who of pediatric and adult cardiologists surgeons and interventionalists who offer the reader pearls of wisdom based on daily practice in the cath lab this practical guide discusses methods to overcoming complications in the interventional treatment of congenital and structural lesions

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Peripheral Endovascular Interventions Thomas J. Fogarty, Rodney A. White, 2010-06-25 This book offers a comprehensive review of the rapidly advancing field of endovascular therapy written by internationally recognized authorities in the field many of whom are the innovators of the techniques and devices involved Broad in scope topics covered range from how to obtain training in approved endovascular techniques to promising new lines of investigational therapies

Cardio-Nephrology Janani Rangaswami, Edgar V. Lerma, Claudio Ronco, 2017-07-31 Extending from the outpatient management of cardiovascular and kidney disease to hospital based decision making in patients with cardio renal disease and complex interfaces such as hemodialysis in patients with ventricular assist device support this book serves as a

single reference point for cardiology and nephrology clinicians and researchers dealing with the significant overlap areas between these two specialties Chapters cover the physiology biomarkers therapeutic agents and full spectrum of these comorbidities and feature separate sections on cardiovascular and CKD evaluations stratification of kidney transplant patients lipid management in CKD interventional strategies and hypertension Leaders in cardiology nephrology hypertension and lipidology bring together the latest evidence with their collective clinical experience into this invaluable resource This textbook is an essential resource for physicians and allied professionals practicing cardiology nephrology students and physician trainees to deepen their understanding of this crucial field **Cardiovascular Intervention E-Book** Deepak L.

Bhatt,2023-09-08 Selected for 2025 Doody s Core Titles in Cardiology Part of the renowned Braunwald family of references Cardiovascular Intervention A Companion to Braunwald s Heart Disease provides today s clinicians with clear authoritative guidance on every aspect of catheterization of the heart and vasculature and the latest imaging technologies This practical reference on interventional cardiology is organized from a procedural perspective with chapters focused exclusively on how to manage complex cardiovascular disease Now fully updated from cover to cover the 2nd Edition offers authoritative and current point of care coverage of this highly complex technology driven specialty an ideal resource for practitioners at all levels of experience Offers concise focused coverage of all aspects of managing interventional cardiology patients highlighting cautions procedural nuances and tips and outcomes Covers all the newest catheterization techniques and equipment including new generation stents mechanical support devices imaging technology and closure devices Offers complete coverage of structural heart disease and new developments in heart valve disease including TAVI and mitral valve procedures Provides updates on the latest procedures devices and clinical guidelines for evidence based practice Uses a clear easy to follow organization with separate sections on coronary artery interventions peripheral artery interventions cerebrovascular interventions venous interventions structural heart interventions and congenital heart disease Features more than 506 high quality illustrations and access to 176 procedural videos Any additional digital ancillary content may publish up to 6 weeks following the publication date Complications of Cardiovascular Procedures Mauro

Moscucci,2012-03-28 This textbook provides interventional cardiologists endovascular interventionalists and physicians in training with a comprehensive resource on the prevention and management of complications in interventional cardiology The book focuses specifically on risk factors prevention and management with conventional and or with bailout techniques and devices It includes many images of common and rare complications and of devices The first section on general principles includes quality assurance training requirements legal considerations adjunctive pharmacotherapy and conscious sedation Subsequent sections cover general complications of invasive procedures and complications of specific coronary interventions noncoronary cardiac interventions peripheral vascular procedures pediatric interventions and electrophysiology procedures A companion website includes videos of over 30 complications and bailout techniques Grossman & Baim's Cardiac

Catheterization, Angiography, and Intervention Mauro Moscucci, 2020-09-10 The leading comprehensive reference on cardiac catheterization through eight outstanding editions Grossman Baim's Cardiac Catheterization Angiography and Intervention Ninth Edition continues to keep you up to date with every facet of this fast changing field Designed for quick access and easy reference this text offers expert overviews of the theoretical and practical aspects of clinical issues with emphasis given to hemodynamic data and tracings and interventional procedures An impressive multimedia library with new videos and cases make this reference even more valuable for cardiologists and interventional cardiologists at all levels of experience *Guide to Peripheral and Cerebrovascular Intervention* Deepak L. Bhatt, 2004 Provides a highly illustrated technical overview of endovascular procedures Each chapter contains an overview of a specific area supplemented by tables line diagrams and angiograms **Index Medicus**, 2004 Vols for 1963 include as pt 2 of the Jan issue Medical subject headings **Strategic Approaches in Coronary Intervention** Stephen Geoffrey Ellis, David R. Holmes, 2006 Updated to include the newest devices and procedures this practical reference is a clinically oriented guide to interventional cardiology Chapters by the foremost experts present step by step approaches to specific clinical problems and offer guidelines for selecting the most appropriate device and technique The authors recommendations are backed by their extensive experience and by evidence based clinical trials This Third Edition describes the latest stents and stenting procedures including local drug delivery with coated stents and provides state of the art information on local myocyte injection distal protection devices peripheral vascular intervention and new adjunctive therapies The concluding chapter previews future developments in the field

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procedures in structural heart disease such as percutaneous aortic valve replacement and mitral valve repair that although not presently mainstream will likely become an important domain of interventional cardiologists Given the importance of appropriate training and credentialing for clinicians the textbook also includes current national guidelines and policies on the performance of the various procedures *Textbook of Interventional Cardiology E-Book* Eric J. Topol,Paul S.

Teirstein,2015-08-21 Ideal for cardiologists surgeons and referring physicians who need a clinical guide to interventional procedures Textbook of Interventional Cardiology focuses on the latest treatment protocols for managing heart disorders at every level of complexity In this updated edition Dr Topol continues to bring together experts in the field who present the current state of knowledge and clinical practice in interventional cardiology including cutting edge theories trends and applications of diagnostic and interventional cardiology as well as peripheral vascular techniques and practices Offers an in depth understanding of cardiology making it well suited for cardiology and interventional cardiology exam preparation Expert guidance from leading authorities ensures a fresh and balanced perspective on every aspect of interventional cardiology Presents the most recent genetic information and clinical trials related to interventional cardiology Highlights the latest treatment advances procedures devices and techniques including transcatheter aortic valve implantation TAVI Brand new chapters include Radiation Safety Renal Denervation for Resistant Hypertension Post PCI Hospitalization Length of Stay and Discharge Planning and Interventional Heart Failure Offers balanced coverage of the entire scope of technologies available without favoring one particular device over another Integrates the latest trial data into discussions on clinical practice and recommendations Multiple images of devices and intra procedural imaging enhance your visual understanding of the material Key Points boxes at the beginning of each chapter summarize the most important facts *Textbook of Interventional Cardiology* Eric J. Topol, MD,Paul S. Teirstein, MD,2015-09-30 Ideal for cardiologists surgeons and referring physicians who need a clinical guide to interventional procedures Textbook of Interventional Cardiology focuses on the latest treatment protocols for managing heart disorders at every level of complexity In this updated edition Dr Topol continues to bring together experts in the field who present the current state of knowledge and clinical practice in interventional cardiology including cutting edge theories trends and applications of diagnostic and interventional cardiology as well as peripheral vascular techniques and practices Offers an in depth understanding of cardiology making it well suited for cardiology and interventional cardiology exam preparation Expert guidance from leading authorities ensures a fresh and balanced perspective on every aspect of interventional cardiology Presents the most recent genetic information and clinical trials related to interventional cardiology Highlights the latest treatment advances procedures devices and techniques including transcatheter aortic valve implantation TAVI Brand new chapters include Radiation Safety Renal Denervation for Resistant Hypertension Post PCI Hospitalization Length of Stay and Discharge Planning and Interventional Heart Failure Offers balanced coverage of the entire scope of technologies available without favoring one particular device over another

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