

RESEARCH ARTICLE

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Current tobacco use is associated with higher rates of implant revision and deep infection after total hip or knee arthroplasty: a prospective cohort study

Jasvinder A. Singh^{1,2*}, Cathy Schleck³, W. Scott Hammien³, Adam K. Jacob³, David O. Warner³ and David G. Lewallen³

Abstract

Background: Tobacco smoking is a risk factor for several adverse post-operative outcomes. We aimed to compare the rates of complications in current tobacco users and non-users who underwent primary total hip arthroplasty (THA) or total knee arthroplasty (TKA).

Methods: All patients who underwent primary THA or TKA at the Mayo Clinic from 2010–2013 were included in the study. Current tobacco use was defined as the use of cigarettes, cigars, pipes, or smokeless tobacco reported at the time of index THA or TKA; current non-users were former users or never users. We used Cox proportional hazards regression to assess the association of current tobacco use status with each post-THA/TKA complication, using hazard ratios and 95 % confidence intervals (CI).

Results: Tobacco use status was available for 7926 patients (95 %) and not available for 446 patients (5 %); 565 (7 %) were current tobacco users. Compared to non-users, current tobacco users were more likely to be male ($p < 0.001$), and less likely to be obese ($p \leq 0.008$), be older than 60 years, have Charlson score >0 or have undergone TKA rather than THA ($p < 0.001$ each). The hazard ratios for deep infection (2.37; 95 % CI 1.19, 4.72; $p = 0.01$) and implant revision (1.78; 95 % CI 1.01, 3.13; $p = 0.04$) were higher in current tobacco users than in non-users. No significant differences were noted for periprosthetic fractures or superficial infections.

Conclusions: We noted that current tobacco use was associated with high risk of deep infection and implant revision after primary THA or TKA. Future studies should determine the optimal time for tobacco use cessation before elective surgeries such as THA and TKA to improve short-term and long-term arthroplasty outcomes.

Keywords: Arthroplasty, Complications, Outcomes, Smoker, Smoking, THA, THR, TKA, TKR, Tobacco use, Total hip replacement, Total knee replacement

Background

Tobacco smoking is a risk factor for several adverse post-operative outcomes, including wound-related complications, in part owing to its effect on tissue oxygenation and inflammatory healing processes [1, 2]. For

example, in a study of >33,000 patients undergoing total knee arthroplasty (THA) or total hip arthroplasty (TKA) using the Veterans Affairs Surgical Quality Improvement Program database, current smokers had higher risk of 30-day surgical site infections (SSIs) than non-smokers [3]. However, studies describing the association of smoking on short-term or long-term arthroplasty surgical outcomes are limited.

In a study that included 621 patients, the rate of arthroplasty revision was significantly higher in smokers compared to non-smokers in univariate analyses [4]; rates of other surgical complications were no different

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Current Associated Revision Infection Arthroplasty

**Claudette M. Lajam, Anna Cohen-
Rosenblum**



Current Associated Revision Infection Arthroplasty:

Device-Associated Infections, An Issue of Infectious Disease Clinics of North America Vivian H Chu,2018-11-06

In collaboration with Consulting Editor Dr Helen Boucher Dr Vivian Chu has created an issue that provides current clinical updates on device associated infections Authors are represented by experts across the world who have contributed clinical reviews on the following topics Intravascular Catheter Related Bloodstream Infections Vascular Graft Infections Cardiovascular Implantable Electronic Device Associated Infections Left Ventricular Device Associated Infections Urinary Catheter Associated Infections Prosthetic Joint Infections Neurosurgical Device Related Infections Breast Implant Infections Cochlear Implant Infections Gastrointestinal Scope Related Infections Understanding Biofilms and Novel Approaches to the Diagnosis Prevention and Treatment of Medical Device Associated infections and Infections of Hemodialysis Access Devices Readers will come away with the information they need to make informed clinical decisions that improve patient outcomes

Current Concepts in Bone Pathology, An Issue of Surgical Pathology Clinics John D. Reith,2012-02-28 Bone Tumor

Radiology 101 for Pathologists Update on Arthritis Periprosthetic Infections Bone Cytology A Realistic Approach for Clinical Utilization Benign Bone Forming Tumors Osteosarcoma Differential Diagnosis Considerations Osteosarcoma Differential Diagnosis Considerations Well differentiated Cartilage Tumors Chondrosarcoma Variants Giant Cell Tumor Overview and Update Fibro osseous Lesions Round Cell Tumors Vascular Tumors Pseudotumors and Reactive Lesions Practical Work up of Metastatic Carcinoma Update on Treatment of Bone Tumors *Current Concepts of Infections in Orthopedic Surgery* E.

Stahl,H.K. Uthoff,2012-12-06 **Current Orthopaedic Practice** Sanjeev Agarwal,2012-10-01 The book is intended as a concise overview of current orthopaedic practice It will be of interest to orthopaedic surgeons in practice and to orthopaedic trainees both specialist and basic surgical in particular orthopaedic specialist registrars in the UK preparing for the FRCS Orth exam or trainees in other countries at an equivalent stage of orthopaedic training Medical students doing orthopaedic attachments will find it a practical reference tool In addition individuals involved in the care of orthopaedic patients such as physiotherapists and nurse practitioners will find the book useful With increasing subspecialisation in orthopaedic surgery it is more difficult for the specialist to keep abreast of recent changes and current trends in the management of orthopaedic conditions other than their own area of interest This book aims to fill that void and will be an easily readable source with information that is concise and current Emphasis is placed on the current literature and an effort has been made to provide evidence on controversial topics with annotated references incorporated into the text These will be a useful resource for further reading Any reader wishing to gain insight into 21st century orthopaedic surgery will find this book of interest and value *Evaluation and Management of Hip and Knee Arthritis in Women* Claudette M. Lajam,Anna

Cohen-Rosenblum,2025-03-28 Women often experience arthritis differently from men for many reasons ranging from biological and joint anatomy differences to pain perception and psychosocial factors Evaluation and Management of Hip and

Knee Arthritis in Women is the first reference to directly address the unique needs of women in this challenging area helping you improve diagnosis and treatment outcomes for your female patients Offering comprehensive up to date coverage of medical surgical and sociological considerations this title is an essential resource for orthopaedic surgeons and primary care physicians in training and practice rheumatologists adult reconstruction fellows advanced practice practitioners and other clinicians who provide care to women with hip and knee osteoarthritis Covers all aspects of hip and knee osteoarthritis that are specifically relevant to women s health biological differences and hormonal changes pain perception joint anatomy comorbid conditions that are more prevalent in women psychosocial factors and expectations response to treatment and research gaps Features concise detailed text accompanied by abundant high quality clinical and radiologic images to provide a practical tool for use in the office in the clinic and at point of care Discusses intraoperative considerations including implant design implant sizing use of technology bearing surfaces and fixation Covers etiology of and gender differences in bone health and development of hip and knee arthritis Addresses postoperative pain and unique social considerations for women with fibromyalgia mental health disorders and or chronic opioid use Includes value based care considerations such as impact on health disparities the doctor patient relationship cost to patients and access to care Any additional digital ancillary content may publish up to 6 weeks following the publication date

Bone and joint infection: past, present, and future Hongyi Shao,Guoli Hu,Chaofan Zhang,Chi Xu,2024-04-09 Bone and joint infections BJI cause serious morbidity and pose significant management challenges They may cause acute sepsis with bone and joint destruction discharging wounds chronic pain and permanent disability With increasing age and expanding populations bone and joint infections especially those involving devices will have a growing impact on healthcare resources Specifically one typical type of BJI periprosthetic joint infection is even more difficult to manage Although the incidence of PJI is not high the diagnosis is difficult the treatment is complicated and the efficacy is uncertain Patients usually need to undergo multiple operations with long term antibiotic treatment

Periprosthetic Joint Infection: Practical Management Guide Parvizi Javad ,Kerr Glenn J,Glynn Aaron,Higuera Carlos A,Hansen Erik N,2013-12-15 This book Periprosthetic Joint Infection is a portable guide to the practical management of surgical site infections following orthopedic procedures It designed to help answer clinician s questions regarding the prevention and treatment of periprosthetic infections It organized for rapid review featuring evidence reviews pitfalls Rothman Institute Current Practices and Controversies The guide is being included in the course materials for the 29th Annual Current Concepts in Joint Replacement CCJR meeting thanks to a generous educational grant from 3M Health Care

Orthopaedic Knowledge Update®: Hip and Knee Reconstruction 6 Michael A Mont,Michael Tanzer,2020-11-30 Explore the many changes in hip and knee arthroplasty in recent years with completely new chapters on thromboprophylaxis outpatient surgery pain management retrieval hip and knee medical and biologic treatment of arthritis nonarthroplasty management infection periprosthetic fracture anatomy and surgical approaches and dual mobility cups and large diameter

heads for primary and revision total hip arthroplasty Expand your knowledge with the standard in adult hip and knee reconstruction while you advance patient care with the best practices available Developed in partnership with The Hip Society and The Knee Society OKU Hip and Knee Reconstruction 6 examines current research and reviews of the most relevant topics chosen by recognized authorities Find a wealth of information on cutting edge developments and approaches for surgically challenging conditions Orthopaedic surgeons with a specialty interest in hip and knee reconstruction and physicians and allied health interested in staying up to date on best practices will benefit from this edition Residents in training can review key topics paired with helpful guidelines and images Evidence-based Orthopedics Mohit Bhandari, 2011-12-27 Surgical orthopedic procedures such as hip replacements arthroscopy or knee replacements are surrounded by pre and post operative complications and there are varying different methods for the procedures themselves This book for the first time brings together the best evidence for treatments as well as any complications Not only does it cover the evidence base for orthopedic surgery but also orthopedic conditions requiring medical treatment and pediatric orthopedics Using the approved EBM methodology and edited by teachers of evidence based medicine this is a genuine EBM textbook for all orthopedic specialists and trainees Evidence-Based Medicine, An Issue of Orthopedic Clinics Frederick M. Azar, John C. Weinlein, Michael J. Beebe, Clayton C. Bettin, James H. Calandruccio, Benjamin J. Grear, Benjamin M. Mauck, William M. Mihalko, Jeffrey R. Sawyer, Patrick C. Toy, 2018-03-16 This issue of Orthopedics Clinics will be surveying a broad range of topics across sub specialty areas on Evidence based Medicine in Orthopedics Each issue in the series is edited by an experienced team of surgeons from the Campbell Clinic Articles will discuss the following topics among others Use of Tourniquets in Limb Trauma Surgery Cerebral Palsy Injection therapies for rotator cuff disease Antibiotic prophylaxis in shoulder and elbow surgery venous thromboembolism prophylaxis in shoulder surgery Patient Reported Outcomes in Foot and Ankle Surgery and VTED prophylaxis in foot and ankle surgery Perioperative Care of the Orthopedic Patient C. Ronald MacKenzie, Charles N. Cornell, Stavros G. Memtsoudis, 2020-03-19 Although a number of comprehensive texts pertaining to perioperative medicine are available this remains the only one that focuses specifically on the patient undergoing orthopedic surgery now in a revised and expanded second edition Beginning with chapters covering preoperative evaluations and general principles and practices of perioperative medicine the book then considers anesthesiologic management in orthopedic surgery and the role of postoperative pain management This is followed by a section on medical management in specific clinical settings discussing patients with connective tissue disease cardiac disease chronic pulmonary and renal diseases diabetes and neurological diseases among others A fourth section covers specific perioperative problems in orthopedic surgery such as care of the elderly patient venous thromboembolism infection nutrition compartment syndrome and bone health Finally the role of allied services quality improvement and ethics are highlighted Selected case studies are included to illustrate real world perioperative issues and management strategies in orthopedic surgery now

moved to their respective chapters for ease of use and reference The shaded key points and chapter objectives boxes at the beginning of each chapter and the summary points at the end of each chapter have been retained and updated within a full color interior Written by experts at the top ranked Hospital for Special Surgery in New York Perioperative Care of the Orthopedic Patient 2e will be a comprehensive multidisciplinary manual providing preoperative considerations postoperative complications and guidelines for the anesthetic and medical management of patients undergoing orthopedic surgery It will be an valuable resource for orthopedic surgeons sports medicine specialists and allied professionals involved in orthopedic surgery

World Clinics: Orthopedics: Current Controversies in Joint Replacement Matthew S. Austin, Gregg R. Klein, 2014-09-30 This book is the first volume in the World Clinics Orthopedics series providing orthopaedic surgeons with the most recent advances and controversies in joint replacement Presented as a series of articles each chapter provides both basic and advanced insights into hip and knee replacement surgeries Advances in total joint arthroplasty are discussed in depth with separate chapters dedicated to European and Asian perspectives Each article is followed by a comment from the editors highlighting the key points of the chapter New techniques are also covered including advances in robotic technology in the operating theatre Edited by internationally recognised experts from the Rothman Institute Philadelphia and Hackensack University Medical Centre New Jersey this useful guide includes numerous images figures and tables as well as extensive referencing throughout Key points Provides orthopaedic surgeons with latest advances and controversies in joint replacement Covers new techniques including advances in robotic technology Numerous images and illustrations and extensive referencing Internationally recognised editor and author team

Arthritis and Related Conditions, An Issue of Orthopedic Clinics, E-Book Frederick M. Azar, 2024-09-03 In this issue of Orthopedic Clinics guest editors from the esteemed Campbell Clinic bring their considerable expertise to the topic of Arthritis and Related Conditions Despite ongoing research and development of new treatment modalities arthritis remains a serious health crisis and is the leading cause of disability and earning loss among adults in the United States In this issue ten top experts present information about causes and treatments in adults and children with arthritis to keep readers up to date with recent advances in the field Contains 10 relevant practice oriented topics including total joint arthroplasty in the patient with inflammatory arthritis post traumatic arthritis of the knee and ankle transient toxic synovitis outcomes of total ankle replacement and more Provides in depth clinical reviews on arthritis and related conditions offering actionable insights for clinical practice Presents the latest information on this timely focused topic under the leadership of experienced editors in the field Authors synthesize and distill the latest research and practice guidelines to create clinically significant topic based reviews

Value of a multidisciplinary approach for modern diagnosis of infectious diseases Stefano Marletta, Stefano Stracquadanio, Andrea Marino, 2024-12-02 An early and accurate diagnosis plays a pivotal role in the successful management and treatment of infectious diseases However the traditional investigative methods used for detecting infections are often time consuming costly and can lack sensitivity

and specificity Thus there is a need for the development of new and more efficient diagnostic tools and techniques This Research Topic aims to bring together research articles reviews and case studies that focus on the recent advancements in the diagnosis of infections from a multidisciplinary perspective microbiological clinical molecular and histopathological approaches to diagnosis will be collected highlighting the importance of the collaboration among the specialists in the management of infectious diseases Infectious Diseases Emergencies Arjun S. Channmugam,Andrew Bissonette,,Sanjay Desai,Shannon Putman,2016-09-30 Infectious Diseases Emergencies is a compact reference that summarizes the key topics of those infectious disease processes that are most commonly seen in practice The opening section reviews principles of management and general management of severe infection in acute and emergency environments The following sections provide a head to toe synopsis of common infections presenting in both outpatient and acute care settings The concluding sections discuss vector borne infections infections in special populations and bioterrorism Concisely written and consistently organized chapters outline the most useful elements of diagnosis and treatment for easy memorization and clarity

Volume 45, Issue 3, An Issue of Orthopedic Clinics Asif M. Ilyas,2014-07-28 Each issue of Orthopedic Clinics offers clinical review articles on the most cutting edge technologies techniques and more in the field Major topic areas include adult reconstruction upper extremity pediatrics trauma oncology hand foot and ankle Disorders of the Shoulder Joseph P. Iannotti,Gerald R. Williams,2007 Now includes a brand new companion Website The Iannotti management of bone and soft tissue loss in revision arthroplasty minimally invasive techniques for proximal humeral fractures hemiarthroplasty for proximal humeral fractures and suprascapular and axillary nerve injuries All clinical chapters include treatment algorithms and the authors preferred treatment More than 2 400 illustrations 743 in full color complement the text The new companion Website The Iannotti Williams Solution gives you instant access to the fully searchable text an Image Bank featured clinical cases and the Gaining Speed and Tricks of the Trade chapter of Burkhart s View of the Shoulder A Cowboy s Guide to Advanced Shoulder Arthroscopy Comprehensive Biomaterials Paul Ducheyne,Kevin Healy,Dietmar W. Hutmacher,David W. Grainger,C. James Kirkpatrick,2015-08-28 Comprehensive Biomaterials brings together the myriad facets of biomaterials into one major series of six edited volumes that would cover the field of biomaterials in a major extensive fashion Volume 1 Metallic Ceramic and Polymeric BiomaterialsVolume 2 Biologically Inspired and Biomolecular MaterialsVolume 3 Methods of AnalysisVolume 4 Biocompatibility Surface Engineering and Delivery Of Drugs Genes and Other MoleculesVolume 5 Tissue and Organ EngineeringVolume 6 Biomaterials and Clinical Use Experts from around the world in hundreds of related biomaterials areas have contributed to this publication resulting in a continuum of rich information appropriate for many audiences The work addresses the current status of nearly all biomaterials in the field their strengths and weaknesses their future prospects appropriate analytical methods and testing device applications and performance emerging candidate materials as competitors and disruptive technologies and strategic insights for those entering and operational in diverse

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Rockwood and Green's Fractures in Adults Robert W. Bucholz, 2012-03-29 In its thoroughly revised updated Seventh Edition Rockwood and Green's Fractures in Adults offers a complete print and multimedia package the established gold standard two volume reference on fractures and access to an integrated content website More than 80 of the world's foremost authorities provide comprehensive coverage of all bone and joint injuries thoroughly discuss alternative methods for treating each injury and present their own preferred methods This edition has 33 new contributors and new chapters on principles of nerve injury and complex regional pain syndrome psychological aspects of trauma gunshot and wartime injuries principles of mangled extremity management amputations limb salvage reconstruction principles of post traumatic infections principles of nonunions and principles of malunions

Orthopaedic Knowledge Update Hip Society (U.S.), Knee Society (U.S.), American Academy of Orthopaedic Surgeons, 2000 A powerful in depth guide to important developments Its concise procedure oriented format guides you through virtually every consideration in preparing for the most complex surgeries

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