



Article

Retinal Changes before and after Silicone Oil Removal in Eyes with Rhegmatogenous Retinal Detachment Using Swept-Source Optical Coherence Tomography

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Abstract: This study aimed to evaluate and compare the retinal and choroidal thickness and vessel density (VD) changes between silicone oil (SO) tamponade and after SO removal using swept-source optical coherence tomography (SS-OCT) and OCT angiography (OCTA). Thirty patients who underwent pars plana vitrectomy for retinal detachment (RD) with SO tamponade were included. SS-OCT and OCTA were conducted before RD surgery, during SO tamponade, and after SO removal. A 3-dimensional volumetric wide scan protocol was used for the analysis. The segmented retina, choroidal thickness map, and peripapillary thickness were then measured. For the OCTA analysis, 4.5 × 4.5 mm scans were used. Superficial and deep capillary plexus VDs in unaffected fellow eyes and eyes after SO removal were compared. During the SO tamponade period, the thickness of the parafoveal total retina, ganglion cell-inner plexiform layer, and peripapillary retinal nerve fiber layer (ppRNFL) were significantly thinner than those of unaffected fellow eyes ($p < 0.05$). The parafoveal layer thickness thinning recovered up to three to six months after SO removal. Moreover, six months after SO removal, the parafoveal thickness was not significantly different compared to that of unaffected fellow eyes ($p > 0.05$). However, the ppRNFL thickness was significantly decreased during SO tamponade and remained unrecovered six months after SO removal. There was no significant difference in the VD on the OCTA. Thus, SO tamponade and removal for RD resulted in a change in the retinal and peripapillary thickness. This may be due to the mechanical pressure effect of SO.

Keywords: retinal thickness; rhegmatogenous retinal detachment; silicone oil tamponade; silicone oil removal; swept-source optical coherence tomography; OCT angiography

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1. Introduction

Silicone oil (SO) tamponade is commonly used as a long-term endotamponade to manage various retinal diseases, such as proliferative vitreoretinopathy, complicated tractional or rhegmatogenous retinal detachment (rRD) with a giant retinal tear, and severe traumatic retinal detachment (RD). However, there are many reports about anterior and posterior ocular complications associated with SO, including band keratopathy, secondary glaucoma, cataract, increased intraocular pressure, and SO emulsification [1–4].

Another complication of SO tamponade is unexplained visual impairment [2]. Several studies investigated the effect of SO tamponade on the retinal layer, using spectral-domain optical coherence tomography (SD-OCT). SD-OCT studies suggested that SO tamponade causes thickness changes in the macular inner retinal layer such as in the ret-

Silicone Oil Removal After Rhegmatogenous Retinal

Olaf Dössel, Wolfgang C. Schlegel



Silicone Oil Removal After Rhegmatogenous Retinal:

Principles and Practice of Vitreoretinal Surgery Narendran V, Abhishek Kothari, 2014-05-30 This book is a comprehensive guide to the latest techniques in vitreoretinal surgery Beginning with an introduction to the basics each of the following chapters discusses surgical procedures for different retinal disorders A complete section is dedicated to paediatric retinal surgery Emerging techniques are also covered This practical guide is an invaluable resource for both practising ophthalmic surgeons as well as trainees More than 400 clinical photographs diagrams and tables enhance learning Key points Comprehensive guide to latest techniques in vitreoretinal surgery Covers numerous retinal disorders Paediatric retinal surgery covered Includes more than 400 clinical photographs diagrams and tables **Vitreoretinal Surgery** Sandeep Saxena, Carsten H. Meyer, Masahito Ohji, 2012-03-29 The value of this book lies in the quality and expertise of the text chapters contributed by multiple international experts across the globe Clearly written by the contributors providing a global perspective about the subject Attempts to update the state of the art vitreoretinal surgery in a lucid authoritative and well illustrated manner Detailed reference lists following each chapter provide extensive background support for the text Outstanding illustrations combined with excellent schematic drawings beautiful clinical photographs fluorescein angiograms and OCT images Illustrations Practical Manual of Vitreoretinal Surgery Ahmed B. Sallam, Ferenc Kuhn, Giampaolo Gini, Ron A. Adelman, 2024-06-22 The book written by renowned international experts from all over the world aims to guide the vitreoretinal surgeon on the management of different retinal surgery conditions in a clear practical way In 34 masterfully illustrated chapters this practical manual covers a wide spectrum of vitreoretinal disorders ranging from simple to complex Chapters range in topics written from applied anatomy and physiology and preoperative examination of vitreoretinal patients to pars plana vitrectomy set up and other peripheral retinal disorders such as retinal tears degenerations and retinoschisis Later chapters delve into more complex conditions such as vitreoretinal surgery for anterior segment complications vitreoretinal surgery in trauma pediatric retina surgery as well as advanced technology including endoscopy and 3 D visualization To ensure this book remains a practical resource for trainees as well as more established surgeons each chapter includes many high quality figures and illustrations along with a multitude of carefully edited surgical videos that walks the reader through more complex procedures in vitreoretinal surgery Additional teaching tools used in each chapter to communicate important information are clinical cases to give context to comorbid conditions and other complicating factors and short bullet points close each chapter for readers searching for a quick review Practical Manual of Vitreoretinal Surgery is a valuable resource for vitreoretinal retinal surgery trainees as well as established surgeons *Silicones—Advances in Research and Application: 2012 Edition*, 2012-12-26 Silicones Advances in Research and Application 2012 Edition is a ScholarlyBrief that delivers timely authoritative comprehensive and specialized information about Silicones in a concise format The editors have built Silicones Advances in Research and Application 2012 Edition on the vast information databases

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Vitreoretinal Disorders in Primary Care Thomas H. Williamson,2017-10-30 Emergency ophthalmology is an area full of pitfalls for the unwary primary care practitioner Vitreoretinal disorders make up the majority of emergency sight threatening conditions and a wide and increasingly varied range of conditions of the eye present in primary care settings Correct diagnosis at initial presentation and appropriate and speedy referral are extremely important This book is therefore an essential reference for the primary care physician who is often the first to see these patients and is in a position of responsibility for decision making

Vitreoretinal Surgery Thomas H. Williamson,2007-11-08 This lavishly illustrated book covers the most common diseases exploring appropriate approaches to a range of vitreoretinal problems All common vitreoretinal procedures are explained step by step with diagrams and color photos Finally the book provides a basic electronic patient record system which corresponds to the subject material using the same six main groups of diagnostic categories in the text and allows the surgeon to organize and audit their clinical data and compare their performance with the quoted success rates in the book

Operative Dictations in Ophthalmology Eric D. Rosenberg,Alanna S. Nattis,Richard J. Nattis,2017-04-24 This book provides residents with a comprehensive review of surgical cases within the field of ophthalmology Operative Dictations in Ophthalmology touches on important steps within each surgical case indications for the procedure possible complications and a sample dictation The review serves as both a preparation and debriefing for each surgeon or surgeon in training by improving comprehension time cultivating surgical forethought and refining post operative dictations

Surgical Management of Inflammatory Eye Disease Matthias D. Becker,Janet Davis,2008-04-24 This book offers evidence based information and a step by step guide on all surgical procedures relevant to inflammatory eye disease a rarity in the textbook literature Whereas drug management demands an interdisciplinary approach with well trained specialists surgical treatment of ocular complications due to inflammation requires an experienced surgeon In this superbly practical new work internationally renowned experts in the field provide answers to most of the frequently asked questions Readers will find answers a host of subjects including the spectrum of clinical manifestations of inflammatory complications and the point at which medical therapy is no longer helpful

Cutting-edge Vitreoretinal Surgery Astha Jain,S. Natarajan,Sandeep Saxena,2021-03-24 This book covers the entire range of vitreoretinal surgeries The first section covers essential information about the anatomy and the appropriate diagnostic techniques which helps in preoperative evaluation The second section is

on surgical instrumentation and includes adjuncts used in VR surgery Advanced instrumentation such as 3D visualization system endoscopic vitrectomy and robotic surgeries are well described in the chapters The later sections deal with the surgical technique for different disease entities Management of posterior segment complication of anterior segment surgeries such as cataract and keratoprosthesis are reviewed in detail A section on gene therapy has been incorporated This book will help the reader to gather a detailed round up of basics of and advances made in the field of vitreoretinal surgery It is supplemented with videos This book is meant for practicing retinal surgeons those in training as well as students with interest in vitreoretinal surgery

Gems of Ophthalmology: Retina HV Nema,Nitin Nema,2018-05-31 Part of the new series Gems of Ophthalmology this book provides the latest information in the diagnosis and management of retinal diseases and disorders Beginning with an overview of diagnostic imaging techniques ophthalmoscopy angiography fundus autofluorescence and choroidal imaging the next chapters discuss retinal disorders related to diabetes The following sections discuss numerous disorders such as proliferative vitreoretinopathy macular degeneration macular holes polypoidal choroidal vasculopathy and much more The final sections cover surgical management of retinal problems including giant retinal tears retinoblastoma cysts retinal detachment and microincision vitreoretinal surgery This comprehensive text is further enhanced by clinical and surgical photographs diagrams and tables Other topics in the series include Cornea Sclera Diseases of the Uvea Glaucoma and Cataract Surgery Key points Comprehensive guide to diagnosis and management of retinal diseases Part of the new Gems of Ophthalmology series Covers many common and more complex disorders and diseases Other topics in the series include Cornea Sclera Diseases of the Uvea Glaucoma and Cataract Surgery

Vitreoretinal Surgical Techniques Gholam A. Peyman,Stephen A. Meffert,Famin Chou,Mandi D. Conway,2000-11-27 The text provides basic and comprehensive coverage of all aspects of surgery for the vitreous and the retina The key to this volume is that it is technique based thus giving the surgeon clear instructions on how to perform vitreoretinal surgery Not only is this book authoritative it is practical Each chapter is fully illustrated with the steps performed in the actual surgical operation

Management of Complicated Vitreoretinal Diseases Fabio Patelli,Stanislao Rizzo,2015-05-20 This book provides the vitreoretinal surgeon with advice and guidance on how to treat and manage the unpredictable complexities and potential intra and postoperative complications that are encountered during the course of vitreoretinal surgery Internationally renowned surgeons share their extensive surgical experience in a clearly written and well illustrated format delivering helpful practical answers to the important problems frequently confronted in this ever challenging area of ophthalmic surgery Management of Complicated Vitreoretinal Diseases will appeal to surgeons young and old and will find its home not only in the library but also in the office and the operating room itself The open and positive way in which the many scenarios and difficulties encountered in surgery are confronted will improve the expertise of the surgeon and most importantly the outcomes for patients

Retinal Detachment Surgery and Proliferative Vitreoretinopathy Ulrich Spandau,Zoran Tomic,Diego Ruiz-Casas,2023-01-01 This

clinically oriented book provides a complete overview of retinal detachment and Proliferative vitreoretinopathy PVR a difficult surgical challenge faced by ophthalmologists Small gauge vitrectomy offers new possibilities to tackle this difficult pathology however this surgical approach may differ from one retinal surgeon to the next To reflect the various approaches to treating PVR the book is divided up in three parts In the first part the authors describe the complete variety of surgical techniques applied to retinal detachment In the second section the surgical approach for PVR detachment is demonstrated step by step In the third part a large variety of retinal surgeons from Europe discuss video case reports of PVR retinal detachment to give a complete overview of dealing with this complex retinal disorder The book is practical down to earth the surgeries are explained in detail illustrated with drawings photographs and refers to a huge number of videos available via Dr Spandau's YouTube channel

Current Bibliographies in Medicine, 1988

Intraocular Lens Calculations Jaime Aramberri, Kenneth J. Hoffer, Thomas Olsen, Giacomo Savini, H. John Shammas, 2024-07-03 Cataract surgery with 25 30 million surgeries per year has become one of most popular surgeries in the world The calculation of its power is of utmost importance As new premium intraocular lenses IOLs and modern surgical techniques have been developed the demand has grown exponentially not only for eliminating cataracts but also for getting rid of the need for glasses This book offers a comprehensive overview of IOL power calculations and its various formulas and methods Chapters discuss use of the diagnostic biometry devices that provide the measurements and the management of different clinical situations where particular modifications must be applied Chapters also discuss the newest generation of multifocal and toric IOLs that can only be implanted if no residual refraction is planned for which implies a perfect mastery of all the IOL calculation process This book marks the first time in ophthalmological history that all the main leaders in the field have collaborated in a project that will undoubtedly be the reference for the next ten years *Intraocular Lens Calculations* is a must have resource for cataract and refractive surgeons as well as technicians and anyone dealing with this subject

Mechanical Ocular Trauma Hua Yan, 2016-10-31 This book provides state of the art information for ophthalmologists and other clinicians facing tough cases helping them to make the most appropriate decision concerning the management of patients who have suffered mechanical ocular trauma The discussion of mechanical ocular trauma addresses various parts of the eye each chapter discusses a certain part of the eye supplemented by illustrative sample cases Though the latest consensus is provided for each topic or case different opinions on controversial topics will also be discussed in detail Pearls of advice at the end of each chapter highlight its main points Topics covered include Traumatic cataract and the timing of surgery and IOL implantation Traumatic hypotony Traumatic glaucoma Timing of vitrectomy after primary repair Use of silicone oil in traumatic eyes Intraocular Foreign Bodies Traumatic endophthalmitis and much more As a topic based clinical reference work on mechanical ocular trauma bringing together consensus and controversies the book offers useful and attractive information for ophthalmologists

Current Cataract Surgical Techniques Xiaogang Wang, 2021-07-07 The first clinical application of

the phacoemulsification cataract surgical technique often referred to as phaco was introduced in 1967 by Dr Charles Kelman This innovation is a big step forward for cataract surgery With the development of intraocular lens IOL design more and more premium presbyopia and astigmatism correction IOLs are being used in clinics This progress has greatly improved the visual quality of cataract patients This book discusses the basic surgical skills required to perform this procedure premium IOL surgical design specific surgical plans for clinically challenging cases and more It provides readers with a comprehensive knowledge of the current state of the art of cataract surgery and surgical design *Cumulated Index Medicus* ,2000

Principles and Practice of Ophthalmology E-Book Daniel M. Albert,Joan W. Miller,Dimitri T. Azar,Barbara A. Blodi,2008-02-27 Inside the 3rd edition of this esteemed masterwork hundreds of the most distinguished authorities from around the world provide today s best answers to every question that arises in your practice They deliver in depth guidance on new diagnostic approaches operative technique and treatment option as well as cogent explanations of every new scientific concept and its clinical importance With its new streamlined more user friendly full color format this 3rd edition makes reference much faster easier and more versatile More than ever it s the source you need to efficiently and confidently overcome any clinical challenge you may face Comprehensive authoritative and richly illustrated coverage of every scientific and clinical principle in ophthalmology ensures that you will always be able to find the guidance you need to diagnose and manage your patients ocular problems and meet today s standards of care Updates include completely new sections on Refractive Surgery and Ethics and Professionalism an updated and expanded Genetics section an updated Retina section featuring OCT imaging and new drug therapies for macular degeneration and many other important new developments that affect your patient care A streamlined format and a new more user friendly full color design with many at a glance summary tables algorithms boxes diagrams and thousands of phenomenal color illustrations allows you to locate the assistance you need more rapidly than ever **World Congress on Medical Physics and Biomedical Engineering September 7 - 12, 2009 Munich, Germany** Olaf Dössel,Wolfgang C. Schlegel,2010-01-04 Present Your Research to the World The World Congress 2009 on Medical Physics and Biomedical Engineering the triennial scientific meeting of the IUPESM is the world s leading forum for presenting the results of current scientific work in health related physics and technologies to an international audience With more than 2 800 presentations it will be the biggest conference in the fields of Medical Physics and Biomedical Engineering in 2009 Medical physics biomedical engineering and bioengineering have been driving forces of innovation and progress in medicine and healthcare over the past two decades As new key technologies arise with significant potential to open new options in diagnostics and therapeutics it is a multidisciplinary task to evaluate their benefit for medicine and healthcare with respect to the quality of performance and therapeutic output Covering key aspects such as information and communication technologies micro and nanosystems optics and biotechnology the congress will serve as an inter and multidisciplinary platform that brings together people from basic research R D industry and medical application to

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