BASCOM PALMER EYE INSTITUTE

49th Annual Residents’ Days

June 14-15, 2013
Jose Berrocal Auditorium
Bascom Palmer Eye Institute
Miami, Florida

Presented by
Bascom Palmer Eye Institute Alumni Association
Department of Ophthalmology
University of Miami Miller School of Medicine

Sponsored by the
University of Miami Miller School of Medicine
# Table of Contents

Upcoming CME Courses 2013-2014 ................................................................. 7

Upcoming Distinguished Lecture Series 2013-2014 ..................................... 8

Accreditation Information ............................................................................. 9

Faculty Disclosure of Relationships ............................................................. 11

Program Faculty .......................................................................................... 13

Program Agenda ......................................................................................... 16

*SD-OCT En Face Imaging of the Outer Retina Can Predict the Progression of Geographic Atrophy in Age-related Macular Degeneration*

Renata Portella Nunes, MD........................................................................... 23

*Long Term Outcome of Filtration Surgery for Normal-Tension Glaucoma with Visual Field Progression at Low Intraocular Pressure*

Scott K. Schultz, MD .................................................................................... 25

*Orbital Histopathology After Intra-arterial Chemotherapy for Lacrimal Gland Adenoid Cystic Carcinoma*

Sophie D. Liao, MD ...................................................................................... 27

*Enhanced Depth Imaging Optical Coherence Tomography of Normal Eyes to Establish a Nomogram of Choroidal Thickness Measurements*

Ashkan M. Abbey, MD .................................................................................. 29

*Management of Submacular Hemorrhage Secondary to Neovascular AMD with Anti-VEGF Monotherapy: Extended Follow-up*

Gary Shienbaum, MD .................................................................................... 32

*An 18-year Review of Microbial Keratitis: Isolate Trends and Susceptibilities*

Basil K. Williams, MD ................................................................................... 34

*Choroidal Thickness and Outer Retinal Disruption Measurements in Macular Telangiectasis Type 2*

Zayna Nahas, MD .......................................................................................... 36

*Giant Retinal Tears After Intraocular Surgery: Risk Factors, Surgical Techniques, and Outcomes*

Marco A. Gonzalez, MD ................................................................................ 38
Surgical Management and Outcomes in Proliferative Sickle Retinopathy
Royce W.S. Chen, MD ................................................................. 40

Long-Term Safety and Efficacy of Bevacizumab for the Treatment of Pediatric Retinal and Choroidal Diseases
Christopher R. Henry, MD .......................................................... 42

Results of a Novel Scheme for Patient-directed Self-Refraction and Glasses Production
Benjamin J. Thomas, MD ............................................................... 44

Ophthalmology Emergency Room Utilization Review 2012-2013
Jayanth Sridhar, MD .................................................................. 46

Orbital Infections and Subperiosteal Abscess in Pediatric and Adult Patients
Benjamin P. Erickson, MD .............................................................. 48

Posterior Segment Epithelial Downgrowth
Aleksandra V. Rachitskaya, MD .................................................... 50

Expression of Serotonin Receptor HTR2B as a Predictor of Hepatic Metastasis in Uveal Melanoma
Scott D. Walter, MD, MSc ............................................................. 52

MHC Class I Testing in Pediatric Panuveitis
Ashvini K. Reddy, MD ................................................................. 54

Retinal Detachment Following Retinal Dialysis: Characteristics and Clinical Outcomes
Jonathan S. Chang, MD ............................................................... 56

Comparison of Postoperative Pain with Two Different Types of Local Anesthesia in Surgery for a Drooping Eyelid
Marcus J. Ko, MD .................................................................... 58

Sympathetic Ophthalmia: A Clinicopathological Correlation
Hassan A. Aziz, MD ................................................................ 60

Esotropia in the Adult Patient
Sara F. Grace, MD .................................................................... 62

Analysis of Epiretinal Membranes Using Spectral Domain Optical Coherence Tomography (OCT)
Ajay E. Kuriyan, MD, MS ............................................................ 64
<table>
<thead>
<tr>
<th>Title</th>
<th>Author(s)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison of Graft Survival Following Penetrating Keratoplasty and Descemet’s Stripping Endothelial Keratoplasty in Medically and Surgically Treated Glaucoma Patients</td>
<td>George C. Papachristou, MD</td>
<td>66</td>
</tr>
<tr>
<td>Visual Acuity and Macular Optical Coherence Tomography Abnormalities in Children with a History of Retinopathy of Prematurity</td>
<td>Victor M. Villegas, MD</td>
<td>68</td>
</tr>
<tr>
<td>Clinical Outcomes of Pneumatic Retinopexy over a 12-Year Period</td>
<td>Yasha S. Modi, MD</td>
<td>70</td>
</tr>
<tr>
<td>The Switch to Aflibercept: 6 Month Follow-Up</td>
<td>Rishi R. Doshi, MD</td>
<td>72</td>
</tr>
<tr>
<td>Dislocated Intraocular Lenses - Surgical Management and Outcomes</td>
<td>Samuel K. Houston III, MD</td>
<td>74</td>
</tr>
<tr>
<td>Evaluation of the Ganglion Cell Layer After Anterior Ischemic Optic Neuropathy Using OCT</td>
<td>Gathline Etienne, MD</td>
<td>76</td>
</tr>
<tr>
<td>UV Independent p53 Mutations in Sebaceous Carcinoma of the Eyelid</td>
<td>Rehan M. Hussain, MD</td>
<td>78</td>
</tr>
<tr>
<td>Elucidating Molecular Mechanisms of Blood Retina Barrier Permeability</td>
<td>Daniel L. Chao, MD, PhD</td>
<td>80</td>
</tr>
<tr>
<td>Ganglion Cell Function in Acute Optic Neuritis</td>
<td>Veeral Shah, MD, PhD</td>
<td>82</td>
</tr>
<tr>
<td>Clinical Outcomes of Coats Disease Using Anti-VEGF and Laser Photocoagulation</td>
<td>Jonathan H. Tzu, MD</td>
<td>83</td>
</tr>
<tr>
<td>Operating Times of Experienced Surgeons Beginning Femtosecond Laser-assisted Cataract Surgery</td>
<td>Jordon G. Lubahn, MD</td>
<td>85</td>
</tr>
<tr>
<td>Outcomes Following Intravitreal Injections of Ocriplasmin</td>
<td>Brian T. Kim, MD</td>
<td>87</td>
</tr>
<tr>
<td>Cost Analysis of Topical Interferon Alpha 2B vs. Surgery in the Treatment of Ocular Surface Squamous Neoplasia</td>
<td>Christina S. Moon, MD</td>
<td>89</td>
</tr>
<tr>
<td>Title</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Visual and Anatomic Outcomes of Epiretinal Membrane Peeling After Previous Retinal Detachment Repair</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Open Globe Injuries with Positive Intraocular Cultures, 2000 to 2012: A Case Series</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>Visual Field Outcomes in the Tube vs. Trabeculectomy (TVT) Study</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>Clinicopathological Correlation of Orbital Rhabdomyosarcomas</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>Peripheral Retinal Abnormalities and Nonperfusion in Childhood Glaucoma</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>Laboratory Surveillance of Antibiotic Susceptibilities of Staphylococcus Species Isolated to the Vitreous and Anterior Chamber at BPEI from 1999 – 2011</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Pulsed Light Therapy for Meibomian Gland Dysfunction, Ocular Rosacea and Dry Eye Syndrome</td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>Comparative Anti-fungal Susceptibility Analysis of Candida Albicans vs. Non-Albicans Corneal Isolates</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td>Surgical vs. Medical Treatment of Ocular Surface Squamous Neoplasia: A Comparison of Recurrences and Complications</td>
<td>106</td>
<td></td>
</tr>
<tr>
<td>Fluorescein Angiographic Features in Distinguishing FEVR and ROP</td>
<td>108</td>
<td></td>
</tr>
<tr>
<td>Risk Factors for Reoperation Following Initial Angle Surgery for Infantile Glaucoma</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Pseudotumor Cerebri in the Pediatric Population</td>
<td>112</td>
<td></td>
</tr>
<tr>
<td>An Animal Model of Epithelial Downgrowth</td>
<td>114</td>
<td></td>
</tr>
</tbody>
</table>
The Epidemiology of Ocular Surface Squamous Neoplasia in a Veterans Affairs Population
Andrew J. McClellan, MD ................................................................. 116

Comparison of Postoperative Pain and Surgical Outcomes with Two Different Types of Local Anesthesia for Conjunctival Mullerectomy
Matthew D. Lowrance, DO ............................................................... 118
XXXV Inter-American Course in Clinical Ophthalmology
Date: November 24-27, 2013
Location: InterContinental Hotel
Miami, FL
Course Directors: Eduardo C. Alfonso, MD
Paul F. Palmberg, MD, PhD
Victor L. Perez, MD
CME Credits: N/A

Ophthalmic Imaging 2014: Optical Coherence Tomography (OCT) Applications and Future Technology
Date: December 7, 2013
Location: The Breakers
Palm Beach, FL
Course Directors: Richard K. Lee, MD, PhD, Donald L. Budenz, MD
CME Credits: TBD

Glaucoma Mid-Winter Symposium
Date: January 25, 2014
Location: Mandarin Oriental Miami, Miami, FL
Course Directors: Richard K. Parish II, MD, Richard K. Lee, MD, PhD
CME Credits: TBD

Angiogenesis, Exudation, and Degeneration 2014
Date: February 9, 2014
Location: Mandarin Oriental Miami, Miami, FL
Course Directors: Philip J. Rosenfeld, MD, PhD, Harry W. Flynn, Jr., MD
CME Credits: TBD

Cataract and Refractive Surgery Congress
Date: February 21-22, 2014
Location: Jose Berrocal Auditorium, Bascom Palmer Eye Institute, Miami, FL
Course Directors: Sonia H. Yoo, MD
William Culbertson, MD, Guillermo Amescua, MD
CME Credits: TBD

50th Annual Residents’ Days
Date: June 13-14, 2014
Location: Jose Berrocal Auditorium, Bascom Palmer Eye Institute, Miami, FL
Course Directors: Richard K. Lee, MD, PhD, Patrick E. Rubsamem, MD
CME Credits: TBD
Frontiers in Vision Science Lecture
Thursday, August 29, 2013
Speaker: TBD

Frontiers in Vision Science Lecture
Thursday, October 10, 2013
Speaker: TBD

Edward W.D. Norton Lecture
Thursday, November 7, 2013
Speaker: Stephen F. Pflugfelder, MD

Frontiers in Vision Science Lecture
Thursday, January 16, 2014
Speaker: TBD

Victor T. Curtin Lecture
Thursday, February 6, 2014
Speaker: William Mieler, MD

Frontiers in Vision Science Lecture
Thursday, March 6, 2014
Speaker: TBD

Randy Campo Memorial Lecture
Thursday, April 10, 2014
Speaker: Don Kikkawa, MD

Robert Haimovici Memorial Lecture
Thursday, May 1, 2014
Speaker: Julia A. Haller, MD
49th Annual Residents’ Days  
June 14-15, 2013  
Bascom Palmer Eye Institute  
Miami, FL

ACCREDITATION

The University of Miami Leonard M. Miller School of Medicine is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing education for physicians.

CREDIT DESIGNATION

University of Miami Leonard M. Miller School of Medicine designates this live activity for a maximum of **10.25 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

LEARNING OBJECTIVES

Upon completion of the course, participants will be able to:

- Compare indications and techniques for vitreoretinal surgical procedures
- Diagnose ocular infectious diseases through the use of microbiology
- Identify ocular neoplasms and other corneal conditions
- Determine appropriate use of intraocular injections
- Examine diagnostic capabilities of imaging for glaucoma and formulate treatment plans based on imaging data

DOCUMENTATION OF ATTENDANCE FOR CME

1. Complete Credit Adjustment Form.
2. Certificates of Attendance will be e-mailed to attendees approximately 6 to 8 weeks after the conference.
Conference evaluations are a valuable tool in assisting to better serve you. An e-mail with a link to the electronic evaluation form will be sent to you at the end of the program. Please complete your evaluation form on-line. We welcome your comments and suggestions. You may access the evaluation by visiting: https://www.surveymonkey.com/s/49thResidentsDays2013 or scanning the QR code pictured here.

An outcome evaluation will be conducted 2 to 3 months following the course to measure the impact this activity has had in changing performance and patient outcomes. We encourage and appreciate your participation.

ACKNOWLEDGEMENTS

This CME Activity is partially supported by unrestricted educational grants from:

Alcon Laboratories
AMO
Merck Sharpe & Dohme Corp.
The following speakers and planners have indicated that they do not have relevant financial interests with commercial interests:

- Ashkan M. Abbey, MD
- Hassan A. Aziz, MD
- Michelle R. Butler, MD
- Kara M. Cauvoto, MD
- Jonathan S. Chang, MD
- Daniel L. Chao, MD, PhD
- Royce W.S. Chen, MD
- Rishi R. Doshi, MD
- Sander R. Dubovy, MD
- Jyoti R. Dugar, MD
- Benjamin P. Erickson, MD
- Gathline Etienne, MD
- Marco A. Gonzalez, MD
- Sara F. Grace, MD
- Christopher R. Henry, MD
- Samuel K. Houston III, MD
- Rehan Hussain, MD
- Korey A. Jaben, MD
- Vishak John, MD
- Carol L. Karp, MD
- Brian T. Kim, MD
- Hanna Y. Kim, MD
- Audrey Ko, MD
- Marcus J. Ko, MD
- Ajay E. Kuriyan, MD, MS
- Bradford Lee, MD, MSc
- Richard K. Lee, MD, PhD
- Sophie D. Liao, MD
- Matthew D. Lowrance, DO
- Jordon G. Lubahn, MD
- Andrew J. McClellan, MD
- Craig A. McKeown, MD
- Yasha S. Modi, MD
- Christina S. Moon, MD
- Zayna Nahas, MD
The following speakers and planners have indicated relevant financial relationships with the following commercial interests:

<table>
<thead>
<tr>
<th>Speaker Name</th>
<th>Name(s) of Commercial Interest(s)/ Financial Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eduardo C. Alfonso, MD</td>
<td><strong>Bio-Tissue</strong>: Advisory Board or Panel</td>
</tr>
<tr>
<td>Guillermo Amescua, MD</td>
<td><strong>Bausch &amp; Lomb</strong>: Advisory Board or Panel</td>
</tr>
<tr>
<td>J. William Harbour, MD</td>
<td><strong>Castle Biosciences</strong>: Consultant</td>
</tr>
<tr>
<td>Renata Portella Nunes, MD</td>
<td><strong>Carl Zeiss</strong>: /Grants/Research Support</td>
</tr>
</tbody>
</table>

All conflicts of interest have been resolved.
49th ANNUAL RESIDENTS’ DAYS
June 14-15, 2013

Course Director

Richard K. Lee, MD, PhD
Associate Professor of Ophthalmology
Bascom Palmer Eye Institute
University of Miami Miller School of Medicine

Patrick E. Rubsam, MD
Voluntary Associate Professor of Ophthalmology
University of Miami Miller School of Medicine
Bascom Palmer Eye Institute
Retina Group of Florida
Boca Raton, FL
Course Co-Director, 49th Annual Residents’ Day

Bascom Palmer Eye Institute Faculty

Eduardo C. Alfonso, MD
Professor and Chairman of Ophthalmology

Guillermo Amescua, MD
Assistant Professor of Clinical Ophthalmology

Kara Cavuoto, MD
Assistant Professor of Clinical Ophthalmology

Sander R. Dubovy, MD
Associate Professor of Ophthalmology

J. William Harbour, MD
Professor of Ophthalmology

Carol L. Karp, MD
Professor of Clinical Ophthalmology

Craig A. McKeown, MD
Professor of Clinical Ophthalmology
Bascom Palmer Eye Institute Residents

FIRST YEAR
Sara F. Grace, MD
Korey A. Jaben, MD
Audrey Ko, MD
Andrew J. McClellan, MD
Rebecca A. Shields, MD
Scott D. Walter, MD, MSc
Basil K. Williams, MD

SECOND YEAR
Hassan A. Aziz, MD
Daniel L. Chao, MD, PhD
Benjamin P. Erickson, MD
Ajay E. Kuriyan, MD, MS
Yasha S. Modi, MD
Jayanth Sridhar, MD
Ryan C. Young, MD

THIRD YEAR
Ashkan M. Abbey, MD
Marco A. Gonzalez, MD
Christopher R. Henry, MD
Samuel K. Houston III, MD
Bradford W. Lee, MD, MSc
Benjamin J. Thomas, MD
Jonathan H. Tzu, MD

CHIEF RESIDENTS
Ryan F. Iso m, MD
David W. Parke, III, MD

Bascom Palmer Eye Institute Fellows

Michelle R. Butler, MD (Glaucoma)
Jonathan S. Chang, MD (Retina)
Royce W.S. Chen, MD (Retina)
Rishi R. Doshi, MD (Medical Retina)
Jyoti R. Dugar, MD (Medical Retina)
Gathline Etienne, MD (Neuro-ophthalmology)
Rehan Hussain, MD (Pathology)
Vishak John, MD (Retina)
Brian T. Kim, MD (Medical Retina)
Friday, June 14, 2013
(Schedule to change)

7:30 am  **Registration and Continental Breakfast**

8:00  Introduction/Welcome
      Eduardo C. Alfonso, MD; Richard K. Lee, MD, PhD

**Session I**
Moderator: Sander R. Dubovy, MD
Discussion to follow each presentation

8:10  SD-OCT En Face Imaging of the Outer Retina Can Predict the Progression of Geographic Atrophy in Age-related Macular Degeneration
      Renata Portella Nunes, MD

8:22  Long Term Outcome of Filtration Surgery for Normal-Tension Glaucoma with Visual Field Progression at Low Intraocular Pressure
      Scott K. Schultz, MD

8:34  Orbital Histopathology After Intra-arterial Chemotherapy for Lacrimal Gland Adenoid Cystic Carcinoma
      Sophie D. Liao, MD

8:46  Enhanced Depth Imaging Optical Coherence Tomography of Normal Eyes to Establish a Nomogram of Choroidal Thickness Measurements
      Ashkan M. Abbey, MD

8:58  Management of Submacular Hemorrhage Secondary to Neovascular AMD with Anti-VEGF Monotherapy: Extended Follow-up
      Gary Shienbaum, MD
9:10 An 18-year Review of Microbial Keratitis: Isolate Trends and Susceptibilities
Basil K. Williams, MD

9:22 Choroidal Thickness and Outer Retinal Disruption Measurements in Macular Telangiectasis Type 2
Zayna Nahas, MD

9:34 Giant Retinal Tears After Intraocular Surgery: Risk Factors, Surgical Techniques, and Outcomes
Marco A. Gonzalez, MD

9:46 Surgical Management and Outcomes in Proliferative Sickle Retinopathy
Royce W.S. Chen, MD

9:58  
Break

Session II
Moderator: J. William Harbour, MD
Discussion to follow each presentation

10:20 Long-Term Safety and Efficacy of Bevacizumab for the Treatment of Pediatric Retinal and Choroidal Diseases
Christopher R. Henry, MD

10:32 Results of a Novel Scheme for Patient-directed Self-Refraction and Glasses Production
Benjamin J. Thomas, MD

10:44 Ophthalmology Emergency Room Utilization Review 2012-2013
Jayanth Sridhar, MD

10:56 Orbital Infections and Subperiosteal Abscess in Pediatric and Adult Patients
Benjamin P. Erickson, MD

11:08 Posterior Segment Epithelial Downgrowth
Aleksandra Rachitskaya, MD

11:20 Expression of Serotonin Receptor HTR2B as a Predictor of Hepatic Metastasis in Uveal Melanoma
Scott D. Walter, MD, MSc

11:32 MHC Class I Testing in Pediatric Panuveitis
Ashvini K. Reddy, MD
11:44 Retinal Detachment Following Retinal Dialysis: Characteristics and Clinical Outcomes
Jonathan S. Chang, MD

11:56 Lunch

Session III
Moderator: Craig A. McKeown, MD
Discussion to follow each presentation

1:00 pm Comparison of Postoperative Pain with Two Different Types of Local Anesthesia in Surgery for a Drooping Eyelid
Marcus J. Ko, MD

1:12 Sympathetic Ophthalmia: A Clinicopathological Correlation
Hassan A. Aziz, MD

1:24 Esotropia in the Adult Patient
Sara F. Grace, MD

1:36 Analysis of Epiretinal Membranes Using Spectral Domain Optical Coherence Tomography
Ajay E. Kuriyan, MD, MS

1:48 Comparison of Graft Survival Following Penetrating Keratoplasty and Descemet’s Stripping Endothelial Keratoplasty in Medically and Surgically Treated Glaucoma Patients
George C. Papachristou, MD

2:00 Visual Acuity and Macular Optical Coherence Tomography Abnormalities in Children with a History of Retinopathy of Prematurity
Victor M. Villegas, MD

2:12 Clinical Outcomes of Pneumatic Retinopexy over a 12-Year Period
Yasha S. Modi, MD

2:24 The Switch to Aflibercept: 6 Month Follow-Up
Rishi R. Doshi, MD

2:36 Dislocated Intraocular Lenses - Surgical Management and Outcomes
Samuel K. Houston III, MD

2:48 Break
Session IV
Moderator: Kara M. Cauvoto, MD
Discussion to follow each presentation

3:08       Evaluation of the Ganglion Cell Layer After Anterior Ischemic Optic Neuropathy Using OCT
            Gathline Etienne, MD

3:20       UV Independent p53 Mutations in Sebaceous Carcinoma of the Eyelid
            Rehan Hussain, MD

3:32       Elucidating Molecular Mechanisms of Blood Retina Barrier Permeability
            Daniel L. Chao, MD, PhD

3:44       Ganglion Cell Function in Acute Optic Neuritis
            Veeral Shah, MD, PhD

3:56       Clinical Outcomes of Coats Disease Using Anti-VEGF and Laser Photocoagulation
            Jonathan H. Tzu, MD

4:08       Operating Times of Experienced Surgeons Beginning Femtosecond Laser-assisted
            Cataract Surgery
            Jordon G. Lubahn, MD

4:20       Outcomes Following Intravitreal Injections of Ocriplasmin
            Brian T. Kim, MD

4:32       Adjourn

Saturday, June 15, 2013

7:30 am     Registration and Continental Breakfast

8:00        Introduction/Welcome
            Eduardo C. Alfonso, MD; Richard K. Lee, MD, PhD

Session I
Moderator: Guillermo Amescua, MD
Discussion to follow each presentation

8:10        Cost Analysis of Topical Interferon Alpha 2B vs. Surgery in the Treatment of Ocular Surface Squamous Neoplasia
            Christina S. Moon, MD
8:22  Visual and Anatomic Outcomes of Epiretinal Membrane Peeling After Previous Retinal Detachment Repair  
Christina Y. Weng, MD, MBA

8:34  Open Globe Injuries with Positive Intraocular Cultures, 2000 to 2012: A Case Series  
Ryan C. Young, MD

8:46  Visual Field Outcomes in the Tube vs. Trabeculectomy (TVT) Study  
Michelle R. Butler, MD

8:58  Clinicopathological Correlation of Orbital Rhabdomyosarcomas  
Audrey Ko, MD

9:10  Peripheral Retinal Abnormalities and Nonperfusion in Childhood Glaucoma  
Hanna Y. Kim, MD

9:22  Laboratory Surveillance of Antibiotic Susceptibilities of Staphylococcus Species Isolated to the Vitreous and Anterior Chamber at BPEI from 1999 - 2011  
Korey A. Jaben, MD

9:34  Pulsed Light Therapy for Meibomian Gland Dysfunction, Ocular Rosacea and Dry Eye Syndrome  
Bradford W. Lee, MD, MSc

9:46  Break

**Session II**  
**Moderator:** Carol L. Karp, MD  
Discussion to follow each presentation

10:10  Comparative Anti-fungal Susceptibility Analysis of Candida Albicans vs. Non-Albicans Corneal Isolates  
Jyoti R. Dugar, MD

10:22  Surgical vs. Medical Treatment of Ocular Surface Squamous Neoplasia: A Comparison of Recurrences and Complications  
Afshan A. Nanji, MD, MPH

10:34  Fluorescein Angiographic Features in Distinguishing FEVR and ROP  
Vishak John, MD
10:46 Risk Factors for Reoperation Following Initial Angle Surgery for Infantile Glaucoma
Mark N. Welch, DO

10:58 Pseudotumor Cerebri in the Pediatric Population
Rebecca A. Shields, MD

11:10 An Animal Model of Epithelial Downtgrowth
Matthew J. Weiss, MD

11:22 The Epidemiology of Ocular Surface Squamous Neoplasia in a Veterans Affairs Population
Andrew J. McClellan, MD

11:34 Comparison of Choroidal Thickness Measurements in Eyes with Geographic Atrophy Secondary to Stargardt Disease and Age-Related Macular Degeneration
Matthew D. Lowrance, DO

11:46 **Best of Grand Rounds**

12:10 pm **Adjourn**

12:15 **BPEI ALUMNI ASSOCIATION BUSINESS MEETING**

7:00 **COCKTAILS /DINNER**
**RITZ CARLTON, COCONUT GROVE**
PRESENTATIONS
Sd-Oct En Face Imaging Of The Outer Retina Can Predict The Progression Of Geographic Atrophy In Age-Related Macular Degeneration

Renata Portella Nunes, MD

Primary Supervisor: Philip J. Rosenfeld, MD, PhD

Co-Authors: Giovanni Gregori, PhD, Zohar Yehoshua, MD, MHA, Paul F. Stetson, MS, PhD, William Feuer, MS, Andrew A. Moshfeghi, MD, MBA

Purpose: Spectral domain optical coherence tomography (SDOCT) en face imaging was used to measure the growth of geographic atrophy (GA) and identify baseline anatomic changes in the outer retina around the area of GA. These baseline outer retinal changes were correlated with the progression of GA over 1 year in these eyes with non-exudative age-related macular degeneration (AMD).

Methods: Patients with non-exudative AMD were enrolled in a prospective SDOCT imaging study. Eyes were imaged using the 200X200 and the 512X128 A-scan raster patterns (Cirrusä HD-OCT, Carl Zeiss Meditec Inc.). Outer retinal anatomy was visualized using en-face imaging of a 20 µm thick slab encompassing the inner segment/outer segment (IS/OS) band. This slab represented the region located between 20 and 40 µm above the retinal pigment epithelium segmentation line.

Results: Thirty study eyes and 19 fellow eyes with GA were analyzed. En face SDOCT imaging of the IS/OS region revealed a bilaterally symmetrical pattern of outer retinal disruption extending beyond the borders of GA. These areas of disruption accurately predicted the progression of GA over 1 year in 13 out of 30 eyes (43.3%). In the remaining cases, the area of disruption was much larger than the area of progression. On en face imaging, eyes with subretinal drusenoid deposits displayed a characteristic lacy pattern.
**Conclusion:** En face imaging of the outer retina can predict the growth of GA in some eyes. Due to the bilateral symmetry of these findings, this imaging strategy may identify a genetic subset of patients in which photoreceptor loss precedes the progression of GA. These areas with outer retinal disruption should be followed in clinical trials designed to test treatments for dry AMD.

**References:**
Long Term Outcomes Of Filtration Surgery For Normal-Tension Glaucoma With Visual Field Progression At Low Intraocular Pressure

Scott K. Schultz, MD

Primary Supervisor: David S. Greenfield, MD

Co-Authors: Shawn M. Iverson, DO, Wei Shi, MS, Joyce C. Schiffman, MS

Purpose: The purpose of this study was to examine the long-term outcome of glaucoma filtration surgery for progressive normal-tension glaucoma (NTG) at low intraocular pressure (IOP).

Methods: A retrospective chart review was conducted to identify NTG patients that underwent trabeculectomy with mitomycin C (MMC) between February 2006 and October 2010 for progressive visual field (VF) loss with preoperative intraocular pressure ≤ 15 mmHg during the 12-month period prior to surgery. All eyes had evidence of glaucomatous optic neuropathy and progressive VF loss, uncontrolled IOP on maximum medical therapy, and minimum postoperative follow-up of 12 months. Exclusion criteria consisted of age ≤ 18, recorded IOP > 22 mmHg, ocular disease other than glaucoma, or prior incisional surgery except uncomplicated cataract extraction. Failure was defined as IOP reduction < 20% below baseline (criteria 1), <30% (criteria 2), or <40% (criteria 3) on two consecutive follow-up visits after 3 months, reoperation for glaucoma, or loss of light perception, and was assessed using Kaplan-Meier survival analyses.

Results: Thirty eyes of 28 patients were followed for a mean of 50 ± 30 mos. Postoperative IOP (7.86 ± 2.4 mmHg) and number of medications (0.09 ± 0.3) at 5 years was significantly reduced (p<0.01) compared to prior to surgery (13.2 ± 1.4 mmHg and 2.5 ± 1.2, respectively). The probability of success at 5 years of follow-up was 68% (criteria A), 52% (criteria B), and 33% (criteria C). Hypotony was observed in 9 eyes. Two
eyes developed clinical evidence of chorioretinal folds in the macula. Best corrected visual acuity in eyes with hypotony was not significantly different than eyes without hypotony (p=0.45). Other complications included CME (3), bleb leakage (2), endophthalmitis (1), blebitis (1), corneal edema (1), and choroidal effusion (1).

**Conclusion:**
Trabeculectomy with MMC is an effective method for achieving a long-term IOP reduction of 20-40% in NTG eyes with progression at low IOP. Hypotony is a common postoperative occurrence but did not result in a significantly greater degree of vision loss compared to the patients without hypotony in this series.

**References:**
Orbital Histopathology After Intra-Arterial Chemotherapy For Lacrimal Gland Adenoid Cystic Carcinoma

Sophie D. Liao, MD

Primary Supervisor: David T. Tse, MD, FACS
Co-Authors: Sander Dubovy, MD; Neha Kapila

Purpose: To evaluate the ocular and adnexal sequelae of neoadjuvant chemotherapy (IACC) administered to the lacrimal gland in patients with lacrimal gland adenoid cystic carcinoma (ACC).

Methods: The exenterated specimens of patients who received IACC prior to orbital exenteration for lacrimal gland ACC were examined and histopathologic findings characterized.

Results: Of all orbital exenteration specimens available for review, those that received IACC via the external carotid artery demonstrated no adverse histopathologic findings. One patient received infusion of IACC via the internal carotid artery and had pathological evidence of ophthalmic arterial occlusion.

Conclusion: IACC is well tolerated by the ocular and adnexal tissues, targeting the lacrimal gland ACC as designed. In selected patients, globe-sparing tumor removal may be a viable alternative to disfiguring orbital exenteration.

cytoreductive chemotherapy in treatment of lacrimal gland adenoid cystic carcinoma.
Enhanced Depth Imaging Optical Coherence Tomography Of Normal Eyes To Establish A Nomogram Of Choroidal Thickness Measurements

Ashkan M. Abbey, MD

Primary Supervisor: Philip J. Rosenfeld, MD, PhD

Co-Authors: Mariana Rossi Thorell, MD

Purpose: The goal of this study is to establish a nomogram of choroidal thickness that will be adjusted based upon age and axial length. Choroidal thickness measurements will be compared using optical coherence tomography enhanced depth imaging on both the Zeiss Cirrus and Heidelberg Spectralis Instruments.

Methods: Choroidal thickness measurements were performed on patients between the ages of 20 and 89. Dilated funduscopic examinations revealed no retinal pathology in any of the included patients. Patients with diabetes and glaucoma were also excluded. The patients were stratified into the following seven age groups:

- 20-29
- 30-39
- 40-49
- 50-59
- 60-69
- 70-79
- 80-89

Seven major endpoints were recorded for each patient:

1. Age
2. Ethnicity
3. Gender
4. Presence of hypertension (using at least one antihypertensive)
5. Axial length by IOL master (Average of 5 measurements)
6. Heidelberg SD-OCT (EDI) subfoveal choroidal thickness measurement by two independent observers
7. Carl Zeiss Meditec Cirrus SD-OCT (EDI) subfoveal choroidal thickness measurement by two independent observers

Furthermore, the infrared image provided by the Heidelberg OCT was reviewed to confirm that each patient had no fundus abnormalities.

After data collection was completed, statistical analysis was applied to compare subfoveal choroidal thickness measurements between the Cirrus and Heidelberg modalities. Furthermore, the data was analyzed to create a choroidal thickness nomogram adjusted based upon age and axial length.

**Results:** Choroidal thicknesses of 75 patients (75 eyes) were measured on both the Heidelberg and Cirrus EDI-OCT. Mean subfoveal choroidal thickness (CT) for the Heidelberg was 280.5 µm, and mean subfoveal CT for the Cirrus was 286.1 µm (5.6 µm difference, p=0.035). Despite the small difference, intraclass correlation coefficient was 0.97, showing excellent agreement between the two modalities. There was no significant correlation between Heidelberg-Cirrus CT difference and average CT. No significant correlation (P = 0.43) was found between axial length and choroidal thickness within the range of axial lengths included (21 mm to 26 mm). A significant negative correlation was found between choroidal thickness and age (R-squared = 0.220, P<0.001). A forward stepwise multiple regression analysis of the influence of age, axial length, gender, ethnicity, and hypertension found that only age was significantly associated with choroidal thickness.

**Conclusion:** Cirrus EDI-OCT subfoveal CT measurements are slightly thicker than those of the Heidelberg. Despite the small difference, there is excellent agreement between the two modalities. Age appears to be significantly associated with choroidal thickness, while axial length, gender, ethnicity, and hypertension do not.

**References:**


Management Of Submacular Hemorrhage Secondary To Neovascular AMD With Anti-VEGF Monotherapy: Extended Follow-Up

Gary Shienbaum, MD

Primary Supervisor: Harry W. Flynn Jr., MD

Co-Authors: Philip J. Rosenfeld, MD, PhD; William E. Smiddy, MD

Purpose: To report the long-term visual outcomes of anti-vascular endothelial growth factor (VEGF) monotherapy in the management of marked submacular hemorrhage secondary to neovascular age-related macular degeneration (AMD).

Methods: Retrospective, interventional, consecutive case series. Nineteen eyes of 18 patients with neovascular AMD and fovea involving submacular hemorrhage comprising greater than 50% of the lesion area were treated with anti-VEGF monotherapy. Main outcome measures included mean visual acuity change from baseline, mean number of injections at 1 year, and adverse events. Snellen visual acuity was converted to approximate ETDRS letter score for the purpose of statistical analysis.

Results: The mean change in approximate ETDRS letter score from baseline was +17 letters at 6 months (p = 0.0003, n = 19), +17 letters at 12 months (p = 0.001, n = 16), and +9 letters at 12 months follow-up (p = 0.12, n = 9). Seven eyes received ranibizumab, 5 eyes received bevacizumab, and 7 eyes received ranibizumab, bevacizumab, and/or aflibercept at various time points. The mean number of injections over the first year and between years 1 and 2 was 7.0 (n = 16) and 3.8 (n = 9), respectively.

Conclusion: Management with anti-VEGF monotherapy may yield long-term visual gains surpassing that of the natural history in eyes with marked submacular hemorrhage secondary to neovascular AMD.
References:
Trends And Spectrum Of Infectious Keratitis And Antibiotic Susceptibility In South Florida: A 18-Year Review Of Emergency Department Cases

Basil K. Williams Jr., MD

Primary Supervisor: James T. Banta, MD

Co-Authors: Basil K. Williams Jr., MD; Darlene Miller, DHSc, MPH; James T. Banta, MD

Purpose: To describe the isolate trends and susceptibilities of microbial keratitis at a single institution over a 18-year period.

Methods: 5654 cases of presumed microbial keratitis presenting to the emergency department of the Bascom Palmer Eye Institute from 1995-2012 were evaluated.

Results: A pathogen was isolated in 2525 of 5654 cultures (45%). The data was divided into three 6-year groups, and P. aeruginosa and S. aureus comprised the two most common isolates in each time period. Fungi remained a stable proportion of isolates representing approximately 15% of total isolates in each group.

Conclusion: Gram-negative organisms have become an increasingly larger source of microbial keratitis, while fungal organisms have remained stable. Initial antimicrobial therapy with topical tobramycin and fortified vancomycin will successfully cover nearly all bacterial isolates and is first-line therapy for vision-threatening microbial keratitis in our emergency department.

Choroidal Thickness And Outer Retinal Disruption Measurements In Macular Telangiectasis Type 2

Zayna Nahas, MD

Primary Supervisor: Philip J. Rosenfeld, MD, PhD

Co-Authors: Renata Portella Nunes, MD; Milan Shah, MD; Carlos Alexandre de Amorim Garcia Filho, MD; Raquel Goldhardt, MD; Cristina M. Lage-Rodriguez, MS, CCRC; Jean Claude Mwanza, MD, MPH, PhD; Donald Budenz, MD, MPH; William Feuer, MS

Purpose: To evaluate subfoveal choroidal thickness (CT) and the extent of outer retinal disruption in patients with macular telangiectasia type 2 (MacTel2) compared with normal eyes.

Methods: In this prospective, observational, cohort study, patients with the diagnosis of MacTel2 were enrolled in The MacTel Project at the Bascom Palmer Eye Institute. Eyes previously treated with photodynamic therapy (PDT) were excluded. The control group was comprised of individuals with no known ocular disease. All patients in the study and control groups underwent a complete ophthalmological exam, SD-OCT imaging (Cirrus (Carl Zeiss Meditec), Spectralis (Heidelberg), which included enhanced depth imaging and axial length measurements (IOL master, Carl Zeiss Meditec). Patients in the study group also underwent color fundus photography, fundus autofluorescence (FAF), and fluorescein angiography (FA). Medical records were used to obtain information about current and past medical conditions and previous treatments such as PDT, intravitreal drug therapy, and focal laser. To analyze photoreceptor abnormalities, the outer retinal anatomy was visualized using en-face imaging of a 20 µm thick slab encompassing the inner segment/outer segment (IS/OS) band, obtained using the 200X200 A-scan raster pattern from the Cirrus SD-OCT. Two independent graders obtained manual subfoveal CT measurements from all study eyes as well as measurements of the IS/OS disruption. Multiple linear regressions were used to compare CT between patients and normal controls adjusting for age and axial length.
**Results:** A total of 62 eyes from 62 patients were included in the study group, from this group, 52 eyes were found to have IS/OS disruption. The control group was comprised of 34 eyes of 34 normal individuals. Mean ages in the study and control groups were 63.4 (SD=9.9) years and 59.6 (SD=13.6) years, respectively. The mean subfoveal CT was 324.4 (SD108.1) in the MacTel2 group and 237.0 (SD72.3) in the control group (p<0.001). The intraclass correlation coefficient between the two graders was 99.2. After adjusting for age and axial length using linear regression, eyes with MacTel2 had a mean CT measurement greater than normal control eyes by 70.1 µm (SD21.2); p<0.001. There was no correlation between the visual acuity and CT in the study group. The mean area of IS/OS damage was 2.0 mm (SD1.4). No statistically significant correlation was seen between the CT and the area of IS/OS damage, as well as between the VA and the area of IS/OS damage.

**Conclusion:** On average, patients with MacTel 2 were found to have greater CT measurements than control subjects. The CT measurements had no correlation with the extent of IS/OS damage and do not appear to be associated with disease progression. This observation suggests that MacTel 2 primarily affects the vasculature in the choroid as well as the retina, and may help in understanding the underlying pathophysiology of this disease.

**References:**
Giant Retinal Tears After Intraocular Surgery: Risk Factors, Surgical Techniques, And Outcomes

Marco A. Gonzalez, MD

Primary Supervisor: Harry W. Flynn Jr., MD

Co-Authors: William E. Smiddy, MD; Thomas A. Albini, MD; Audina M. Berrocal, MD; Paul Tenzel, MD

Purpose: To report surgical management and visual acuity (VA) outcomes for patients with giant retinal tear (GRT) and retinal detachment (RD) that had undergone previous pars plana vitrectomy (PPV).

Methods: This is a non-comparative consecutive case series from January 2005 through July 2010. Inclusion criteria were a history of prior PPV for non-RD related pathology and undergoing a second operation for RD in the presence of GRTs. Data was collected on surgical techniques as well as anatomic success and VA outcomes.

Results: 227 cases of ICD-9 coded GRTs were identified. A total of 9 eyes in 9 patients were identified. The mean age was 42.1 years (range of 10 to 79). The mean time between PPV and diagnosis of GRT was 2.3 months. The mean follow up after RD surgery was 30.1 months. Presenting VA was $\geq 20/400$ in 5 of 9 patients (56%). All patients underwent repeat PPV with either gas or oil tamponade. 8 patients (89%) underwent scleral buckle procedure. 4 patients (44%) had perfluorocarbon use during reattachment surgery. 8 of 9 patients (89%) achieved anatomic success at the last follow up examination. Final VA was $\geq 20/400$ in 6 patients (67%) and $\geq 20/40$ in 2 patients (22%).

Conclusion: In the current study, the majority of patients underwent combined PPV, scleral buckling, and silicone oil tamponade. Patients in the current study achieved high rates of anatomic success but VA outcomes were variable.
References:


Surgical Management And Outcomes In Proliferative Sickle Retinopathy

Royce W.S. Chen, MD

Primary Supervisor: Harry W. Flynn, Jr., MD

Co-Authors: Wen-Hsiang Lee, MD, PhD

Purpose: To evaluate the current methods for treating retinal disorders associated with proliferative sickle retinopathy (PSR) and to compare to historical approaches.

Methods: Retrospective Study of the past 25 years of patients with PSR who underwent surgical management at the Bascom Palmer Eye Institute.

Results: 8 male and 4 female patients presented with a mean age of 49 years. A total of 14 eyes of the 12 patients underwent surgical procedures during this time period, with a mean follow-up time of 38 months (range 2 - 252 months). 8 patients were SC, 1 was SS, 1 was AS, 1 was S-Thal, and 1 was unknown. All 14 eyes underwent pars plana vitrectomy (PPV), and 3 eyes had encircling buckles. Vision improved in 11 of 14 eyes (79%). Anterior segment ischemia developed several years after the initial procedure in one patient who did not have a scleral buckle. An exchange transfusion was given prior to only 1 procedure in this cohort.

Conclusion: The eyes of patients with PSR respond well to modern surgical techniques. Even in eyes undergoing multiple procedures and/or scleral buckling, anterior segment ischemia is a rare occurrence, and improved visual outcomes may be maintained successfully.


Long-Term Safety And Efficacy Of Bevacizumab For The Treatment Of Pediatric Retinal And Choroidal Diseases

Christopher R. Henry, MD

Primary Supervisor: Audina M. Berrocal, MD

Co-Authors:

Purpose: To describe the long-term safety and efficacy of off-label intravitreal bevacizumab (IVB) for the treatment of pediatric retinal and choroidal diseases.

Methods: Non-randomized, retrospective case series. Patients younger than 18 years of age treated with IVB between January 1, 2005 and January 1, 2012 were included in the current study. Patients with a history of retinopathy of prematurity, follow up of less than 3 months, and presenting visual acuity of light perception or worse were excluded from the study. The primary outcome measure was visual acuity. Secondary outcome measures included central macular thickness, adverse systemic events, and adverse ocular events.

Results: Over the eight year period of the study, 85 eyes of 81 patients < 18 years of age were treated with off-label IVB. 14 eyes were excluded from the study for inadequate follow up (n=9) or presenting visual acuity of light perception or worse (n=5). The average age of patients at the time of IVB injection was 9.1 years, the mean number of IVB injections was 3.3 (range 1-17), and the mean follow was 671 days. Presenting diagnosis included Coats' disease (n=26), choroidal neovascular membrane (n=24), familial exudative vitreoretinopathy (n=11), cystoid macular edema (n=5), and other (n=5). Mean snellen visual acuity improved from 20/214 to 20/109 at 12 months follow up (p=0.04). The largest visual acuity gains were seen in eyes with choroidal neovascular membrane, where mean snellen visual acuity improved from 20/129 to 20/42 (p=0.02). Mean central macular thickness improved from 427 microns to 347 microns at 12 months follow up (p=0.07). Adverse systemic events included idiopathic intracranial hypertension in one patient. Adverse ocular events attributable to IVB included ocular...
hypertension in one patient and worsening of tractional retinal detachment in two patients with familial exudative vitreoretinopathy.

**Conclusion:** Patients receiving IVB for the treatment of pediatric retinal and choroidal diseases experienced significant visual acuity gains and reductions in central macular thickness. IVB was well tolerated with minimal ocular or systemic side effects at a mean follow up of 671 days.

Results Of A Novel Scheme For Patient-Directed Self-Refraction And Glasses Production

Benjamin J. Thomas, MD

Primary Supervisor: Richard K. Lee, MD, PhD

Co-Authors: n/a

Purpose: The purpose of this study is to examine the visual acuity measurements and outcomes of a novel scheme for patient-directed self-refraction and subsequent production of ready-made, spherical equivalent spectacles. These visual acuity outcomes are then to be compared against the visual acuity outcomes achieved by matching donated lenses to a patient's refractive error--the more common method for glasses distribution in indigent or underserved populations.

Methods: Prospective, interventional study

Results: 20 eyes of 11 patients were tested. Comparing spherical equivalent values of professional refraction (with 0.25D) to results obtained by self-refraction, mean difference between values was 0.20D (SD 0.68, p-value=0.205). 90% of patients were able to self-refract within 1.0D of their previously determined spherical equivalent refractive error. Comparing LogMAR visual acuity using ready-made lenses to that obtained by best-fit donated glasses, ready-made lenses were found to yield an increased average LogMAR score of 0.06 (SD 0.14, p-value=0.093).

Conclusion: Employing a novel scheme for patient self-refraction and on-site glasses assembly, in the absence of trained ophthalmic personnel, initial data show that--within the context of the Bascom Palmer Free Glasses Clinic--patients are able to reliably approximate their spherical equivalent refractive error, and ready-made spherical equivalent glasses provide non-inferior visual acuity results.
References:


Ophthalmology Specific Emergency Departments Utilization Review: 2012-2013 Update

Jayanth S. Sridhar, MD

Primary Supervisor: James T. Banta, MD

Co-Authors: Ryan Isom, MD, Joyce Schiffman, MS

Purpose: To determine the utilization of the Bascom Palmer ophthalmology specific emergency room and identify areas where efficiency and cost-effective care may be enhanced.

Methods: Prospective survey of residents, fellows, and attendings in the ER for each patient visit over a period of at least 30 days. The survey contained information on the date of service, time of day, gender, age, duration of symptoms, physician referral, insurance status, preliminary diagnosis, and follow up date. The physician was also asked to classify the visit as emergent or non-emergent.

Results: 1306 patient surveys were filled out by treating physicians for 1442 patient visits (91% completion rate). The most common diagnosis was viral conjunctivitis (8.8%) followed by dry eye syndrome (6.1%). 60% of patient visits were classified as emergent by the treating physician. Factors associated with non-emergent visits included female sex (42% non-emergent, p<0.001), age greater than 65 (46% non-emergent, p<0.001), public health trust insurance status (46% non-emergent, p<0.001), self-referral (42% non-emergent, p<0.001), and duration of symptoms greater than 1 week (70% non-emergent, p<0.001). 34% of patients in the study were uninsured.

Conclusion: Factors predictive of a non-emergent visit to the Bascom Palmer ophthalmology specific emergency room included age greater than 65, duration of symptoms greater than 1 week, female sex, self-referral, and public health trust insurance. Over 1/3 of emergency room visits were non-emergent.


Clinical Characteristics Of Orbital Infection And Subperiosteal Abscess

Benjamin P. Erickson, M.D.

Primary Supervisor: Wendy W. Lee, M.D.

Co-Authors:

Purpose: Orbital infections with and without subperiosteal abscess are a relatively common condition seen in both pediatric and adult patients, and can have vision and even life-threatening consequences. Prompt and effective treatment is necessary to prevent permanent damage. The development of subperiosteal abscess in particular can rapidly lead to visual compromise.

The goal of this study is to systematically investigate the demographics, comorbidities, microbiology, ophthalmic sequelae, and functional outcomes of patients that present to Jackson Memorial Hospital, Holtz Children's Hospital and Bascom Palmer.

Methods: Five years of admission records with a primary diagnosis code of ICD-9 376.01 (orbital cellulitis) were reviewed. Those patients with well-documented clinical and radiographic evidence of orbital cellulitis were included.

Results: Records for 133 patients were reviewed, yielding a total of 30 who met inclusion criteria. Distribution was bimodal; the average adult was 52.6 and the average child 8.7 years old. Of the adult patients, two thirds had predisposing risk factors such as poor dentition, diabetes, HIV, antecedent trauma or chronic sinusitis. By contrast, only one third of pediatric patients had a known diathesis, such as allergic rhinitis or a relevant trauma history. The male to female ratio was 2:1. Half of patients were managed medically while remainder required surgical drainage. Abscesses were present in 56.7% of the study cohort. Of those with abscesses, 76.5% were managed surgically. Pain scores, temperature and white blood cell counts at the time of
admission did not help predict the presence of abscess or the need for surgery. Relative proptosis predicted the need for surgery (P = 0.002) but not the presence of an abscess (P = 0.08). Patients requiring surgery had a greater average length of stay (19.27 +/- 19.80 days) than those who did not (7.60 +/- 7.39 days), but there was no significant difference based on abscess status. Abscesses that were surgically drained were larger (4.33 +/- 1.27 mL) than those treated medically (0.72 +/- 0.49 mL). Cultures from drainage were positive in 66.7% of cases; methicillin sensitive staphylococcus aureus, coagulase negative staphylococcus aureus and streptococcus viridans each accounted for 30% of positive cultures. Notably, there were several instances where either cultures from endoscopic sinus surgery or from external orbital drainage, but not both, were positive. Culture results changed management in 20% of cases, permitting the narrowing of antibiotic coverage. Five patients (33%) required repeat drainage procedures. The most common risk factor was a superior/medial abscess initially treated by endoscopic drainage alone. Three patients (17.6%) developed NLP vision as the result of their infections. Two of the three had odontogenic infections, and one developed cavernous sinus thrombosis.

**Conclusion:** Even in the antibiotic era, orbital cellulitis with subperiosteal abscess remains a dangerous, vision threatening condition, which must be treated and monitored aggressively. Abscesses with a superior component are best managed with a combination of external drainage and endoscopic sinus surgery.

**References:**


Posterior Segment Epithelial Downgrowth

Aleksandra V. Rachitskaya, MD

Primary Supervisor: Audina M. Berrocal, MD

Co-Authors: Rehan Hussain, MD; Sander R. Dubovy, MD; Victor L. Perez, MD; Eduardo C. Alfonso, MD

Purpose: To report clinical course and visual and anatomical outcomes of six eyes with histopathologically confirmed vitreous cavity and retina epithelial downgrowth.

Methods: This is a retrospective fifteen-year review of Florida Lions Ocular Pathology Laboratory archived pathology slides. Posterior segment epithelial downgrowth was defined as epithelial or goblet cells in the vitreous cavity or on the surface of the retina. The specimens were fixed in formalin, dehydrated with alcohol, and embedded in paraffin blocks that were cut into sections stained with hematoxylin and eosin. The cytokeratin stain confirmed the presence of nonkeratinized squamous epithelium. The data collected included the patients’ age, sex, initial diagnosis, previous surgeries, presenting signs and symptoms, imaging studies, surgical intervention, and visual outcome.

Results: Histopathologic diagnosis of epithelial downgrowth was made in 122 patients. Of those, 6 (5%) patients had vitreous cavity and retina epithelial downgrowth. Three patients developed blind painful eye and epithelial downgrowth was identified in enucleation specimens. The other three eyes with visual potential presented with tractional retinal detachments. Epithelial downgrowth was identified in epiretinal membranes obtained during pars plana vitrectomy. These patients had more previous surgeries (p=0.03) and all had keratoprosthesis implantation as their last surgery. All three had pathological specimens obtained at the time of the keratoprosthesis implantation; no anterior segment epithelial downgrowth was noted in two, and one patient had involvement of corneal button, iris, and posterior capsule. Tractional retinal
detachments were treated with pars plana vitrectomy, membrane peel, and injection of silicone oil. The final visual acuity ranged from hand motion to light perception.

**Conclusion:** In the current study, vitreous cavity and retina epithelial downgrowth occurred after multiple intraocular surgeries, including repair of the open globe injuries in both enucleated specimens and in eyes with visual potential. In the eyes with visual potential, keratoprosthesis implantation appears to predispose to development of posterior segment epithelial downgrowth. In these patients, the treatment is challenging and visual acuity outcomes are poor.

**References:**
Expression Of Serotonin Receptor HTR2B As A Predictor Of Hepatic Metastasis In Uveal Melanoma

Scott D. Walter, MD, MSc

Primary Supervisor: J. William Harbour, MD

Co-Authors: Christina Decatur, Dien Pham, George Harocopos MD, Sander Dubovy MD

Purpose: To explore the use of immunohistochemistry directed against serotonin receptor HTR2B as a surrogate biomarker for Class 2 uveal melanoma.

Methods: A retrospective analysis was performed on 64 cases of uveal melanoma from the Department of Ophthalmology at the Washington University School of Medicine. Histopathological sections were obtained status post enucleation of the primary tumor and examined with immunohistochemical staining against the serotonin receptor HTR2B. Cell surface expression of HTR2B was scored and analyzed as a biomarker of gene expression profile (tumor class 1 vs. 2), hepatic metastasis, and overall survival.

Results: Preliminary investigations reveal positive immunohistochemical staining for HTR2B on 3/3 uveal melanoma specimens. Due to inconsistent staining observed in several positive control tissues (human cirrhotic liver, rat hippocampus, rat adrenal gland), the immunohistochemistry protocol is undergoing modifications to optimize performance before proceeding with the remainder of the study.

Conclusion: Variable patterns of HTR2B expression are observed at the cellular level in uveal melanoma. It remains to be seen whether cellular expression correlates with gene expression profile, probability of hepatic metastasis, and overall survival. HTR2B expression is expected to perform well as a biomarker of Class 2 uveal melanoma, and may represent an important target for future diagnostic and therapeutic interventions.
Purpose: Tubulointerstitial nephritis and uveitis syndrome is a rare cause of pediatric uveitis. There are some reports suggesting that HLA-DRB-1 and HLA-DQB-5 carry an increased risk of TINU. The purpose of this research is to describe a pattern of panuveitis associated with these HLA types.


Results: There were 15 patients with otherwise unexplained panuveitis underwent HLA typing. Three of six cases of definite TINU also underwent HLA typing. Fourteen of the 15 patients (93%) with otherwise unexplained panuveitis and all three patients with definite TINU were either HLA-DRB1*01 or HLA-DQB1*05. Characteristic chorioretinal lesions had a punched-out appearance and were seen in 100% of patients with definite TINU.

Conclusion: Certain HLA types may be more common in pediatric patients with otherwise unexplained panuveitis and characteristic chorioretinal lesions.

Retinal Detachment Repair Following Retinal Dialysis: Characteristics And Clinical Outcomes

Jonathan S. Chang, MD

Primary Supervisor: Harry W. Flynn, Jr., MD

Co-Authors: Audina M. Berrocal, MD

Purpose: To review characteristics and clinical outcomes following surgical repair of retinal detachment following retinal dialysis.

Methods: A retrospective, interventional, non-compartmental case series of patients treated for retinal detachment due to retinal dialysis from 1/1/2003 to 12/31/2012. Patients had primary surgery with pars plana vitrectomy and/or scleral buckling. Characteristics measured included patient age, eye, mechanism of retinal dialysis, surgical procedure performed, re-operations required, duration of follow-up, presenting Snellen visual acuity (VA) and final Snellen VA.

Results: 16 patients were identified that met inclusion criteria. The mean age was 23.8 years (range 6-59). 12 (75%) patients were < 35 years old. A total of 7 (44%) right eyes and 9 (56%) left eyes of 11 (69%) males and 5 (31%) females were evaluated. A history of ocular trauma was present in 13 (81%) of patients, 4 (25%) presenting < 7 days prior, 4 (25%) 1 week or more prior and 5 (31%) with an unknown timeframe. The location of retinal dialysis was noted to be inferotemporal in 9 (56%) patients, inferior in 2 (12%) patients and inferonasal, nasal and superonasal in 1 (6%) each. In this group, 15 (94%) of patients were phakic.

The mean presenting VA was 20/387 (range 20/20-hand motions), with 4 (25%) patients with VA of 20/20. The mean post-operative VA was 20/174 (range 20/20-count fingers). A total of 4 (25%) patients had VA 20/20, 4 (25%) patients had VA 20/25-20/40, 5 (31%) patients had VA 20/50-20/100 and 3 patients had VA > 20/100. VA improved in 6 (38%) of patients and was stable in 4 (25%) of patients.
The re-attachment rate after a single surgery was 13 (81%) patients. The primary procedure used was scleral buckling in 16 (100%) patients, pars plana vitrectomy in 6 (38%). A tamponade agent was used in 8 cases, 6 (38%) with gas and 2 (12%) with silicone oil. Cryotherapy was used in 10 (63%) cases and laser in 6 (37%) of cases. The mean follow-up was 552 days (range 4 days-5.7 years). The three patients who did not reattach after a single surgery had reattachment after as second procedure. Other complications included macular hole, diplopia, cataract and epiretinal membrane formation.

Conclusion:
- Retinal dialysis was a relatively infrequent cause of retinal detachment after trauma
- VA improved in most cases after scleral buckling alone
- Recurrent retinal detachment occurred in 18% of cases and were usually successfully repaired

References:
Comparison Of Postoperative Pain And Surgical Outcomes With Two Different Types Of Local Anesthesia For Conjunctival Mullerectomy

Marcus J. Ko, MD

Primary Supervisor: Wendy Lee, MD

Co-Authors: Chad Zatezalo, MD; Sara Wester, MD; Wei Shi, MS; Joyce Shiffman, MS; William Feuer, MS

**Purpose:** Compare postoperative pain and surgical outcomes with two different types of local anesthesia for conjunctival Mullerectomy for the treatment of blepharoptosis.

**Methods:** Prospective, randomized interventional trial. Only bilateral ptosis patients are recruited for this study. Each patient is examined in the clinic and preoperative ptosis measurements are performed. Each patient is randomized to receive either frontal nerve block or subconjunctival injection of local anesthetic in the right upper eyelid. The left upper eyelid of each patient is then given the other anesthetic method. Intraoperative, postoperative pain at 1 hr and at 24 hrs are assessed via questionnaire. Postoperative ptosis measurements are taken at 1 week, 1 month, and 3 months postoperatively.

**Results:** There were non-statistically significant trends towards better intraoperative and postoperative pain control in the subconjunctival injection group compared to the frontal nerve block group. Postoperative complaints were similar in both groups, but there was a trend towards less sharp pain in the subconjunctival group. There was nearly statistically significant patient preference on postoperative day 1 for subconjunctival injection. There was no significant differences or trends in postoperative outcome in eyelid elevation between groups.
**Conclusion:** Subconjunctival injection for conjunctival mullerectomy has equivalent if not better pain control when compared to front nerve block. At the same time, subconjunctival injection is less invasive and safer than frontal nerve block. Finally, subconjunctival injection does not appear to alter the platform for conjunctival mullerectomy as postoperative results are similar between groups.

**References:**
Sympathetic Ophthalmia: A Clinicopathological Correlation

Hassan A. Aziz, MD

Primary Supervisor: Sander R. Dubovy, MD

Co-Authors: Janet L. Davis, MD; Harry W. Flynn Jr., MD

Purpose: To clinically correlate and evaluate the histopathological and immunohistochemical characteristics of the inciting eye in sixteen patients diagnosed with sympathetic ophthalmia.

Methods: Records of Bascom Palmer Eye Institute were reviewed to identify 16 patients clinically diagnosed with sympathetic ophthalmia who underwent enucleation by our Retina/Uveitis service between 1980 and 2009.

Results: Histopathologic evaluation of the 16 inciting eyes disclosed that 9 of 16 were diagnostic for sympathetic ophthalmia. Eosinophils were present in 9 of 9 eyes. All patients (7 of 7) with negative histology were taking corticosteroids at the time of enucleation vs. 2 of 9 patients with positive histology. The median follow-up after enucleation was 5.8 years (2 months to 16.2 years). At 6 months after enucleation, 4 of 7 patients with negative histology had a visual acuity of ≥ 20/40 compared to 8 of 8 patients with positive histology (NS). The infiltrate of the histopathologically positive eyes showed an average of 2.5+ CD68 (macrophages), 2.5+ CD20 (B cells) and 1.5+ CD3 (T cells). There was no consistent pattern of cytokine receptor staining.

Conclusion: Corticosteroid treatment prior to enucleation may make the pathological confirmation of SO diagnosis more challenging. Histopathological findings had minimal correlation with the clinical course of SO in this cases series. In the current study, B-lymphocytes and macrophages were more abundant than T-lymphocytes. This may represent different stages of the disease process and the time at which the enucleation was performed relative to the onset of disease.
Esotropia In The Adult Patient

Sara F. Grace, MD

Primary Supervisor: Hilda Capo, MD
Co-Authors: Kara Cauvoto, MD

**Purpose:** Characterize the etiologies of esotropia of patients undergoing strabismus surgery at Bascom Palmer. Compare types of surgical interventions for adult esotropia. Examine the use of adjustable suture for adult esotropia, and in relation how much surgery is needed for certain deviations.

**Methods:** Retrospective chart review of adult patients with esotropia undergoing strabismus surgery at Bascom Palmer in the past 10 years.

**Results:** Most common etiology of adult esotropia in our study was thyroid eye disease. Other common etiologies are cranial nerve VI palsies, divergence insufficiency and sensory ET. I am in the process of comparing the surgical interventions, namely bilateral medial rectus recessions vs recess and resect. I am also in the process of comparing the amount of surgery needed for divergence insufficiency, taking into account the amount of surgery performed as well as the suture adjustment post-operatively.

**Conclusion:** Thyroid eye disease is the most common cause of adult ET in our study. Other conclusions as described above to be determined by statistical analysis which will be performed prior to my presentation.

**References:**
Analysis Of Epiretinal Membranes Using Spectral Domain Optical Coherence Tomography (Oct)

Ajay E. Kuriyan, MD, MS

Primary Supervisor: William E. Smiddy, MD

Co-Authors: Delia Cabrera DeBuc, PhD

Purpose: To determine differences in reflectance and thickness of the retinal layers between normal eyes and eyes before and after epiretinal membrane (ERM) removal using spectral domain optical coherence tomography (SD-OCT) images.

Methods: Thirty-four eyes with idiopathic ERM and 12 normal fellow eyes were imaged preoperatively and postoperatively using SD-OCT. SD-OCT images were segmented and analyzed for thickness and reflectance using a custom-built algorithm. Differences in preoperative and postoperative best corrected visual acuity (BCVA, logMAR) were analyzed using a paired t-test. Differences in reflectivity and thickness between the control, preoperative ERM patients, and postoperative ERM patients were analyzed using a one-way ANOVA with post-hoc Tukey HSD test. The correlation of retinal layer thickness and reflectance with change in BCVA was assessed using a Pearson correlation test. A p-value less than 0.05 was considered statistically significant.

Results: There was an improvement (p = 0.001) in postoperative BCVA (logMAR, mean: 0.31, SD: 0.19) compared to preoperative BCVA (logMAR, mean: 0.54, SD: 0.31). There were differences in preoperative ERM OCT thickness of the internal limiting membrane to outer plexiform layer (ILM to OPL), outer nuclear layer (ONL), and external limiting membrane (ELM) and both postoperative (p=0.000, p=0.046, and p=0.020, respectively) and normal OCTs (p=0.000, p=0.001, and p=0.001, respectively). Postoperative ERM OCT thickness of ILM to OPL and PRL were thicker than normal OCTs (p=0.001 and p=0.001). There were differences in preoperative ERM OCT total reflectance of the ILM to OPL and ELM and both postoperative (p=0.009 and p=0.032, respectively) and normal (p=0.000 and p=0.001, respectively) OCTs. Postoperative ERM
OCT total reflectance of the ILM to OPL was higher than normal OCTs (p=0.039). Overall, BCVA was correlated with thickness of the ILM to OPL (p=0.000), ONL (p=0.002), and ELM (p=0.042) and total reflectance of the ILM to OPL (p=0.045), ELM (p=0.000), PRL (p=0.000), and RPE (p=0.022). Final BCVA was correlated with the preoperative OCT ILM to OPL thickness (p=0.039) and reflectance (0.036). Change in BCVA was correlated with preoperative OCT ONL thickness (p=0.001) and total reflectance of the ONL (p=0.038), PRL (p=0.000), and RPE (p=0.010).

**Conclusion:** ERM-peeling surgery resulted in significantly improved BCVA. Quantitative changes are seen in thickness and total reflectance of the retinal layers among the pre-and post-operative ERM and normal OCTs. Thickness and total reflectance of the different retinal layers are correlated with BCVA overall, final BCVA, and change in BCVA.

**References:**
Comparison Of Graft Survival Following Penetrating Keratoplasty & Descemet’s Stripping Endothelial Keratoplasty In Medically & Surgically Treated Glaucoma Patients

George C. Papachristou, MD

Primary Supervisor: David S. Greenfield, MD

Co-Authors: David S. Greenfield, MD; Terrence P. O’Brien, MD; Joyce C. Schiffman, MS; Wei Shi, MS; Shawn M. Iverson, DO

Purpose: To compare corneal graft survival rates after primary penetrating keratoplasty (PKP) and Descemet’s stripping endothelial keratoplasty (DSEK) in patients with medically and surgically treated glaucoma.

Methods: A retrospective review of patients who underwent primary corneal transplant surgery (PKP or DSEK) at Bascom Palmer Eye Institute with pre-existing glaucoma from January 1, 2005 to December 31, 2010. Inclusion criteria consisted of patients with glaucomatous optic nerve damage and visual field loss, age ≥ 18, corneal decompensation requiring corneal transplant surgery, and ≥6 months of follow-up. Only the first eye per patient was selected. Corneal edema or opacification unresponsive to medical management in which there was loss of central graft clarity sufficient to reduce vision worse than 20/50 or less than 3 line improvement in BCVA for a minimum of 3 consecutive months, or resulting in repeat corneal transplantation. Corneal graft survival was calculated using Kaplan-Meier survival analysis.

Results: A total of 332 corneal transplants (261 PKP, 97 DSEK) were performed during the study period. Fifty eyes (24 PKP, 26 DSEK) of 50 patients (mean age 75 ± 12 yrs in PKP and 76 ± 10 in the DSEK group, p = 0.65) met the enrollment criteria. Glaucoma diagnoses consisted of POAG 27 (54%), XFG 11 (22%), CACG 6 (12%), uveitic glaucoma 3 (6%), NTG 1 (2%), and others 2 (4%). The PKP group appeared to have a higher 1, 3, and 5-year graft survival rate (96%, 62%, and 62%) as compared with the DSEK group (57%,...
50%, and 30%) though this did not reach clinical significance (p = 0.07). Medically treated glaucoma patients appeared to have a higher 1, 3, and 5-year graft survival rate (81%, 81%, and 65%) as compared to the surgically treated patients (73%, 45%, and 34%) though again this did not reach clinical significance (p = 0.16).

**Conclusion:** Patients with pre-existing glaucoma had a trend towards higher graft survival in the PKP compared to the DSEK group. Medically treated glaucoma patients appear to have higher survival rates than surgically treated patients.

**References:**
Visual Acuity And Macular Optical Coherence Tomography Abnormalities In Children With History Of Retinopathy Of Prematurity

Víctor M. Villegas, MD

Primary Supervisor: Hilda Capó, MD

Co-Authors: Kara Cavuoto, MD; Audina M. Berrocal, MD; Hilda Capó, MD

Purpose: To correlate Va and macular OCT findings in patients with history of ROP.

Methods: This retrospective cohort study reviewed the charts of all ROP patients evaluated during the last 2 years. Children with prior OCT were included. Patients with abnormal macular fundoscopy or prior vitrectomy were excluded. Subjects were divided by VA into group 1 if ≥20/40, and group 2 if <20/40.

Results: 44 patients were identified: 44 eyes in group 1 and 29 in group 2. Mean values in groups 1 and 2 included: age in years, 9.7 vs. 7.9, spherical equivalent, -5.6 D vs. -10.2 D, and gestational age in weeks, 24.9 vs. 25.3. Mean central foveal thickness in micrometers was 313 and 299 in groups 1 and 2 respectively. Retention of inner retinal layers was found in 62% in group 1 and 67% in group 2.

Conclusion: Patients with history of ROP frequently have abnormal foveal morphology by OCT, including retention of inner retinal layers. Abnormal foveal contour associated with ROP does not necessarily imply poor VA. Other factors may play a role in the visual development of children with history of ROP.

References:
1. Wu WC, Lin RI, Shih CP, Wang NK, Chen YP, Chao AN, Chen KJ, Chen TL, Hwang YS, Lai CC, Huang CY, Tsai S. Visual acuity, optical components, and macular abnormalities in


Clinical Outcomes Of Pneumatic Retinopexy Over A 12-Year Period

Yasha S. Modi, MD

Primary Supervisor: Harry W. Flynn, Jr., MD

Co-Authors: William Smiddy, MD

Purpose: To investigate clinical outcomes and complications after pneumatic retinopexy over a 12-year period at a single institution.

Methods: Retrospective consecutive case series of all patients receiving primary pneumatic retinopexy between 2000-2012.

Results: Forty three patients with primary retinal detachment who underwent pneumatic retinopexy were evaluated. Single operation success, defined as pneumatic retinopexy with additional gas injection, laser, or cryo within 72 hours, was achieved in 28/43 patients (65%). Use of cryotherapy was associated with higher rates of single-operation failure (9/15 eyes) compared to laser retinopexy (4/15 eyes). Median BCVA was 20/30 for all patients with 77% of patients achieving BCVA of ≥ 20/40. For patients with macula-on retinal detachments at presentation, BCVA at final follow-up was 20/25, significantly better than patients with macula-off retinal detachments (20/40, p=0.02). For patients with single-operation failure, median BCVA after repeat surgery at last follow up was 20/25. There was no difference in final BCVA between patients that achieved single-operation success versus single-operation failure (p-0.97). The most common complication resulting in single-operation failure was new or missed breaks occurring in 8/15 eyes (53%).

Conclusion: Single-operation success was 65% in this small series. Additional surgeries after failed pneumatic retinopexy did not disadvantage final BCVA with the majority of patients achieving better than 20/40 final visual acuity. Limitations of this study include it's retrospective design, small sample size, and surgeon bias.
References:


The Switch To Aflibercept: 6 Month Follow-Up

Rishi R. Doshi, MD

Primary Supervisor: Philip J. Rosenfeld, MD PhD

Co-Authors: Brian Kim, MD; Zayna Nahas, MD; Matt Lowrance, DO; Renata Portella Nunes, MD

Purpose: To describe the effect of switching to aflibercept in patients with difficult-to-treat wet macular degeneration.

Methods: A retrospective chart review was performed of patients with wet age-related macular degeneration who underwent a switch in therapy from bevacizumab or ranibizumab to aflibercept therapy. Patients had a minimum of six months follow-up on aflibercept with at least 1 year of prior therapy with bevacizumab or ranibizumab. Data collected included visual acuity, number of injections, presence of fluid, and volume of pigment epithelial detachments imaged using optical coherence tomography before and after the switch to aflibercept.

Results: Mean visual acuity did not significantly change after 6 months of therapy with aflibercept (+0.2 approximate ETDRS letters, p=0.81). Mean central retinal thickness significantly decreased over this time period (-18.3 micrometers, p=0.001). The average number of injections over the six month period on aflibercept therapy (4.5 injections) was significantly fewer than the average number of injections over the six months prior to switching therapy (4.9 injections; p=0.001). The percentage of retinal pigment epithelial detachments with a serous component decreased from 56% to 39% after six months of aflibercept, with the percentage of purely fibrovascular pigment epithelial detachments increasing from 37% to 52%.

Conclusion: In patients with difficult-to-treat wet macular degeneration, switching therapy to aflibercept has no significant effect on visual acuity, but does significantly
decrease the need for reinjection, central retinal thickness, and the serous component of retinal pigment epithelial detachments.

**References:**


Dislocated Intraocular Lenses - Surgical Management And Outcomes

Samuel K. Houston, MD

Primary Supervisor: Harry W. Flynn, MD

Co-Authors:

**Purpose:** To evaluate the surgical management and outcomes of patients with dislocated intraocular lenses.

**Methods:** The study was approved by the University of Miami IRB. The study was a retrospective chart review of patients with dislocated intraocular lenses from June 2002 through June 2005 and prior data set from January 1991 to March 1998 (Mello et al.) operated by two vitreoretinal surgeons at Bascom Palmer Eye Institute (H.F. and W.S). Main outcome measures include visual acuity and surgical complications.

**Results:** The study included 36 patients with a mean age of 73.4 (range 55 - 89). Male and female were evenly distributed. Pseudoexfoliation was present in 19%, Yag capsulotomy in 14%, and complicated cataract surgery in 11%. Mean time from cataract surgery to IOL dislocation was 31.9 months, with a mean follow-up after surgical management of IOL dislocation of 19.2 months. 42% underwent IOL repositioning, 44% sclerally fixated IOL, and 14% IOL exchange with an ACIOL. Median pre-operative visual acuity was 20/100, which improved to 20/30 post-operatively. Complications included re-dislocation, vitreous hemorrhage, ocular hypertension, cystoid macular edema, and hypotony.

**Conclusion:** Surgical management of dislocated IOLs with IOL repositioning or IOL exchange may improve visual acuity with final visual acuity limited by surgical complications or pre-existing ocular pathology.
Evaluation Of Ganglion Cell Layer After Anterior Ischemic Optic Neuropathy Using Oct

Gathline Etienne, MD

Primary Supervisor: Joshua Pasol, MD

Co-Authors: Byron L. Lam MD

**Purpose:** To quantify the degree of loss of the retinal ganglion cell layer GCL in patients with Anterior Ischemic Optic Neuropathy (AION)

**Methods:** A retrospective study, looking at consecutive patients evaluated at Bascom Palmer Eye Institute with AION from January 1st 2008 to April 30th, 2013. 245 patients were seen, however 228 patients were excluded for several reasons, such as arteritic AION, lack of a macula OCT scan, cystoid macula edema. Seventeen patients met criteria and the Ganglion Cell Analysis on the Cirrus HD OCT was applied to each macula scan.

**Results:** 17 patients, 26 eyes were analyzed. Mean age was 63 years (41-89), with 10 males, 7 females. The mean time of evaluation from symptom onset was 12 months (0.2-218 months) or 370 days(5-6540 days). Only the GCIPL of the affected eye (62.0um) compared to the non-affected eye(68.8um) met statistical significance (p=0.003). The average RNFL (90.8 vs 85.0 p= 0.47), mean macula thickness (263 vs 267 p =0.16) did not meet statistical significance.

**Conclusion:** In the acute phase of NAION, the GCIPL is a better outcome measure for axonal cell loss as oppose to the RNFL, since the latter is elevated due to disc edema.

**References:**


Uv Independent P53 Mutations In Sebaceous Carcinoma Of The Eyelid

Rehan M. Hussain, MD

Primary Supervisor: Sander R. Dubovy, MD
Co-Authors: Jared L. Matthews, MD; Gaofeng Wang, PhD; Sander R. Dubovy, MD

Purpose: In the present study, we performed genetic analysis on 14 cases of sebaceous carcinoma of the eyelid in caucasians, in order to determine the frequency of p53 mutations and correlate the presence of p53 mutations with clinical outcome.

Methods: Sebaceous carcinomas of the eyelid that had been surgically resected from 14 patients (Caucasian descendants) at Bascom Palmer Eye Institute between 1994 and 2010 were reviewed. An ophthalmic pathologist (SRD) performed histologic evaluation of each specimen. 6~8 sections (10 mm thick) were examined under a light microscope and carcinoma tissues were cut out by sterilized needles. Genomic DNA was extracted from paraffin-embedded tissues using RecoverAll total nucleic acid isolation kits (Life Technologies) according to the manufacturer's instructions. PCR primers except for exon 2/3 were chosen from a published study. [6] All 11 exons including flanking intronic regions were amplified by PCR and were sequenced in both directions by an ABI3730 sequencer (Life Technologies). Sequencing traces were analyzed using the Sequencher software 4.10.1. Sequence aberrations were confirmed by re-PCR and re-sequencing.

Results: Of the 14 sebaceous carcinoma samples included in the study, 7 of them were found to have p53 mutations. Therefore, the frequency of p53 mutation in these samples is 50%. Four specimens were found to have one p53 mutation (missense, nonsense or in-frame insertion). Two samples carried two mutations (missenses or in-frame deletion/nonsense). One sample was identified with three missense mutations. Two mutations appear in multiple samples, such as the nonsense mutation 637C/T in two cases (#2 and #4) and missense mutation Y220C in another two cases (#3 and #7). We examined whether there is a possible relationship between the severity of p53
mutations and pathological features. No significant pathological difference was identified by comparing sebaceous carcinomas with or without p53 mutations. We do not find any obvious correlation between mutations in p53 and tumor size, stage, recurrence or metastasis either.

**Conclusion:** A high frequency of p53 mutation has been reported in sebaceous carcinoma of the eyelid from Asian patients [4]. Our data suggest that the frequency of p53 mutation is also high (50%) in sebaceous carcinoma of the eyelid from Caucasian patients. Mutations of p53 identified in previous studies are point mutations. In addition to 7 novel point mutations, a 9 bp deletion and a 6 bp insertion are also identified in our samples. None of the identified mutations are tandem mutations, suggesting that aberrant p53 is likely UV independent. While this study included a smaller size of samples, it appears there is no obvious correlation between severity of p53 mutation and pathological characterizations. More studies with larger sample sizes are needed to further examine if a correlation exists. In conclusion, the results suggest that UV independent mutations in p53 could be a pathogenic factor for sebaceous carcinoma of the eyelid.

**References:**
Elucidating Molecular Mechanisms Of Blood Retina Barrier Permeability

Daniel L. Chao, MD, PhD

Primary Supervisor: Jeffrey L. Goldberg, MD, PhD
Co-Authors: Enrique Salero PhD

Purpose: Disruption of this blood retina barrier is central to a variety of retinal vascular diseases such as diabetic retinopathy and age related macular degeneration. Although some of the key regulators of vascular permeability such as VEGF have been uncovered, the regulation of the retinal vascular permeability remains poorly understood. We have adapted an in vitro assay of blood retina barrier permeability in order to utilize an unbiased high throughput chemical genetic approach to identify novel regulators of blood retina barrier.

Methods: Primary bovine retinal endothelial cells (BREC) are plated in transwell plates in a multiwell format using a standard two chamber assay, and permeability to 70kDa dextrans as well as transendothelial resistance are used as readouts for blood retina barrier permeability.

Results: Addition of VEGF, TNF-alpha, and IL-1 beta, molecules which have been shown to be implicated in blood retina barrier breakdown in ocular disease, increased the permeability of BREC monolayers by increasing both permeability to 70 kDa dextran as well as decreasing transendothelial resistance in vitro. Preliminary results of a high throughput screen will be discussed as well as methods to validate these candidates in vivo.

Conclusion: We have developed and validated an in vitro model of the blood retina barrier which is amenable to high throughput screening. This approach will be used in
order to identify novel regulators of retinal vascular permeability. Click here to enter conclusion

References:

Ganglion Cell Function In Acute Optic Neuritis

Veeral S. Shah, MD, PhD

Primary Supervisor: Byron Lam, MD

Co-Authors: none

**Purpose:** To examine the function of ganglion cell function, using pERG, in the setting of acute optic neuritis

**Methods:** Retrospective study comparing the initial pERG of optic neuritis patients.

**Results:** Analysis of pERG latency and amplitude in optic neuritis patients in the acute setting.

**Conclusion:** To define the Ganglion function in acute optic neuritis

**References:**

- Holder GE. The pattern ERG in anterior visual pathway dysfunction and its relationship to the pattern visual evoked potential: a personal clinical review of 743 eyes. Eye. 1997; 11924-934
Clinical Outcomes Of Coats Disease Using Anti-Vegf And Laser Photocoagulation

Jonathan H. Tzu, MD

Primary Supervisor: Audina M. Berrocal, MD
Co-Authors: Aleksandra Ratchitskaya, MD; Christopher R. Henry, MD

Purpose: The describe the long term clinical outcomes of patients with Coats disease at Bascom Palmer with a combination of laser photocoagulation and intravitreal bevacizumab

Methods: Case control retrospective study looking at patients treated with laser photocoagulation only compared to patients treated with both laser and bevacizumab. Primary outcomes included visual acuity, OCT findings, and anatomic success. Secondary outcomes included overall safety profile

Results: Over the 8-year period of the study, 28 eyes of 28 patients were treated with combination of laser and intravitreal bevacizumab for Coats’ disease. 2 eyes were excluded from the study. Average age on presentation: 8.3 ± 4.4 years. Male gender: 24/28 (86%). Mean number IVB: 4.1 ± 3.8 [range: 1-17]. Mean follow up: 696 ± 516 days [range: 125 -1879]. Mean logMAR visual acuity at presentation: 1.36. Snellen equivalent: 20/462. Mean number of laser treatments: 5 ± 3.8. All 2 stage and 3 reached clinical improvement and anatomic success. All globes were salvaged. No vitreoretinal fibrosis encountered. No systemic complications reported.

Conclusion: Combination therapy of intravitreal bevacizumab and photocoagulation is a safe and has produced excellent anatomic outcomes in patients with Coats’ disease. Most patients are able to avoid surgery in our series. All globes were salvaged in our series.
References:
Operating Times Of Experienced Surgeons Beginning Femtosecond Laser-Assisted Cataract Surgery

Jordon G. Lubahn, MD

Primary Supervisor: Sonia H. Yoo, MD

Co-Authors: William W. Culbertson, MD; Kendall E. Donaldson

Purpose: Femtosecond laser-assisted cataract surgery has been shown to be safe and effective. However, there are no studies in the English literature comparing surgical times of femtosecond laser-assisted cataract surgery to conventional cataract surgery.

Methods: Total duration of time in the operating room (patient-in to patient-out) was compared between conventional surgery and femtosecond-assisted cataract surgery.

Results: Three surgeons completed 420 cataract surgeries in the operating room that contained the femtosecond laser during the first 6 months at our institution, 162 (38.6%) of which were completed with the femtosecond laser. Surgeons 1, 2, and 3 had mean conventional case times of 33.1, 40.9, and 29.5 minutes, while their femtosecond-assisted times were 45.1, 52.9, and 40.6 minutes, respectively.

Conclusion: We found that, even in those experienced cataract surgeons with refractive surgery expertise, using the femtosecond laser in cataract surgery resulted operating room times 11.1-13.4 minutes longer than conventional cataract surgery.

References:
Outcomes Following Intravitreal Injections Of Ocriplasmin

Brian T. Kim, MD

Primary Supervisor: Jorge A. Fortun, MD

Co-Authors: Rishi Doshi, MD; Zayna Nahas, MD; Philip Rosenfeld, MD, PhD

Purpose: To describe the initial clinical outcomes of symptomatic vitreomacular traction treated with ocriplasmin at Bascom Palmer Eye Institute.

Methods: Retrospective case series of all patients who received ocriplasmin for clinically significant vitreomacular adhesion (VMA). 19 patients received ocriplasmin at Bascom Palmer Eye Institute since its commercial availability in January 2013. Patient demographics, visual acuity, lens status, and OCT imaging characteristics of VMA were recorded at baseline and each follow-up visit. The efficacy of ocriplasmin to resolve clinically significant VMA was then determined and compared to the previously reported results.

Results: VMA release was identified in 8 of 19 patients (42%) treated with ocriplasmin. Macular hole closure was seen in 3 of 7 patients (43%). In the absence of epiretinal membranes and focal VMA diameter < 1500 um, the success of VMA release was 42% and 44% respectively. One in three patients under age 65 and 7 of 15 (47%) of phakic patients demonstrated pharmacological resolution of VMA.

Conclusion: The incidence of VMA resolution with intravitreal ocriplasmin at BPEI is comparable to the MIVI-TRUST results but in a typical clinical setting. Specific baseline characteristics may influence outcomes with intravitreal ocriplasmin.

References:
Cost Analysis Of Topical Interferon Alpha 2b Vs. Surgery In The Treatment Of Ocular Surface Squamous Neoplasia

Christina S. Moon, M.D.

Primary Supervisor: Carol L. Karp, M.D.

Co-Authors: Anat Galor, M.D., Afshan Nanji, M.D., Julia Sein, M.D., Patrick Oellers, M.D.

Purpose: To perform a cost analysis of interferon alpha-2B versus surgical excision for ocular surface squamous neoplasia (OSSN).

Methods: Retrospective, matched, case-control study. The charts of 98 patients who presented to the Bascom Palmer Eye Institute between 01/1997 to 11/2011 were reviewed. 49 patients had complete resolution of their OSSN with interferon treatment and were matched with 49 patients who had complete resolution of their OSSN with surgical excision. Billing records were obtained to perform a cost analysis.

Results: In the first year, surgery patients had higher hospital costs than the interferon group but a lower amount of clinic visits than the surgery group. (p<0.005)

Conclusion: Patients receiving excisional biopsy had less visits but incurred greater hospital billing charges than patients on interferon therapy.

References:
Visual And Anatomic Outcomes Of Epiretinal Membrane Peeling After Previous Retinal Detachment Repair

Christina Y. Weng, MD, MBA

Primary Supervisor: Ninel Z. Gregori, MD

Co-Authors: Stavros N. Moysidis, BS; Joyce Schiffman, MS; Wei Shi, MS; William E. Smiddy, MD; Harry W. Flynn, Jr., MD

Purpose: To assess visual and anatomic outcomes after epiretinal membrane (ERM) peeling surgery in patients with prior rhegmatogenous retinal detachment (RRD) repair.

Methods: Patients who had undergone vitrectomy/membrane peel for ERM after prior RRD repair were identified and their charts reviewed. Information collected included Snellen best-corrected visual acuity (BCVA), optical coherence tomography (OCT) characteristics at pre- and post-op visits (1, 3, 6 months), lens status, surgical dates, and characteristics of prior RRD repair. Visual acuities (VA) were converted to ETDRS letter scores in order to calculate the mean and median visual improvement at each time point. OCTs were analyzed for the presence and location of fluid as well as to assess retinal layer appearance. The time course of OCT and BCVA changes during the postoperative period was studied.

Results: Twenty-nine patients were identified. Eight had a macula-on RD. Mean BCVA improved from 31 (SD=22) letters at pre-op to 43 (SD=21, P=0.004), 48 (SD=24, P=0.001), and 47 (SD=23, P=0.001) letters at 1, 3, and 6 months, respectively. Mean central foveal thickness (CFT) improved from 485 (SD=129) microns at pre-op to 364 (SD=74, P=0.002), 322 (SD=63, P=0.001), and 337 (SD=92, P=0.02) at 1, 3, and 6 months follow-up, respectively. Mean macular volume improved from 11.6 mm3 (SD=3.4) at pre-op to 10.2 (SD=3.1, P=0.02), 9.0 (SD=4.1, P=0.02), and 6.7 (SD=4.6, P=0.23) at 1, 3, and 6 months follow-up, respectively. There was no significant correlation between CFT and BCVA. At 6 months, VA was significantly better in patients with intact IS/OS junction.
Conclusion: Visual acuity improved significantly after ERM peeling in patients with history of prior retinal detachment repair. Significant anatomic improvement was documented by OCT through at least 6 months postoperatively. Patients with a significant ERM following rhegmatogenous retinal detachment repair may benefit from ERM peeling surgery, even after a macula-off detachment.


Ryan C. Young, MD

Primary Supervisor: Harry W. Flynn Jr., MD

Co-Authors: David W. Parke, MD

Purpose: To investigate the clinical features influencing final visual outcomes of eyes with positive intraocular cultures after penetrating ocular injury.

Methods: A retrospective interventional consecutive case series of all patients treated at Bascom Palmer Eye Institute for traumatic penetrating ocular injury with positive intraocular cultures between January 1, 2000 and December 31, 2012. Examination on presentation, timing and mechanism of injury, zone of injury, presence of intraocular foreign body, etiology of endophthalmitis, management, postoperative course, and visual outcomes are analyzed.

Results: 51 patients were included during the study period, with 45 male (88.5%) and 6 female. The mean age at presentation was 34.5 years (range 1.5 to 85 years). The right eye was involved in 23 patients and the left eye in 28. Presenting visual acuity was greater than 20/400 in 10 patients and less than 20/400 in 41 patients. The zone of injury included zone 1 in 43 (84.5%), zone 2 in 3, and zone 3 in 5 patients. Retained intraocular foreign body was noted in 22 (43%) on presentation, retinal detachment in 10 (20%), traumatic cataract in 33 (65%). Primary surgical management included prophylactic intraocular antibiotics in 72% and pars plana vitrectomy in 57%. 33 (65%) patients presented with clinical endophthalmitis, 11 (22%) developed endophthalmitis post-repair, and 9 (17.6%) had positive intraocular cultures without developing clinical endophthalmitis. Microbial isolates included bacteria in 34 (67%), fungi in 6, and mixed isolates in 11. The most common organism identified in this study was Staphylococcus epidermidis. Poor final best corrected visual acuity was associated with decreased presenting visual acuity (p=0.043) and retinal detachment (p=0.033).
**Conclusion:** Endophthalmitis is a serious and sight-threatening complication of open globe injury. Staph epidermidis was the most commonly isolated organism in this and a prior series. Fungal isolates comprise a minority of organisms responsible for open globe-associated endophthalmitis. Poor final BCVA outcomes are associated with presenting visual acuity and retinal detachment.

**References:**
Visual Field Outcomes In The Tube Vs. Trabeculectomy (TVT) Study

Michelle R. Butler, M.D.

Primary Supervisor: Steven J. Gedde, M.D.

Co-Authors: Lauren Blieden, M.D.; Joyce Schiffman, M.S.; William J. Feuer, M.S.; Douglas Anderson, M.D.

Purpose: To describe the visual field outcomes in the TVT Study during five years of follow up.

Methods: This is a multicentered, randominzed clinical trial that compared the safety and efficacy of tube shunt surgery and trabeculectomy with mitomycin C in eyes that had previous cataract surgery and/or failed glaucoma surgery. Humphrey visual field (HVF) 24-2 size III was perfomed at baseline and at annual follow up visit. An acceptable field required a false positive rate ≤ 15%. The slope of the change in mean deviation (MD) was calculated for each patient then a weighted average based on number of fields and variability was calculated for each treatment group.

Results: There were 212 participants, 107 in the tube shunt group and 105 in the trabeculectomy group. Baseline MD in the tube group was -16.0 dB ± 10.2 and -15.8 dB ± 9.6 in the trabeculectomy group. Sixty-two percent completed five years of follow up in the tube shunt group and 72% in the trabeculectomy group. HVF 24-2 Size III exams were performed between 53-80% of the time at follow up. Ninety four percent of all visual fields performed were acceptable. When including all acceptable fields, the average MD decreased by -0.45 dB/year (SE = 0.19) in the tube group and -0.34 dB/year (SE = 0.10) in the trabeculectomy group (p=0.59). Excluding patients with vision loss not attributed to glaucoma, the MD decreased -0.51 dB/year (SE = 0.14) and -0.30 dB/year (SE = 0.09) in the tube and trabeculectomy group respectively (p = 0.21).
**Conclusion:** At baseline both groups had severe visual field loss. There was a small but significant decline in MD in both groups over five years. There was no statistical difference in the rate of decline in the tube shunt versus the trabeculectomy group when all acceptable yields were included or when vision loss for reasons other than glaucoma was excluded.

**References:**
Clinicopathological Correlation Of Orbital Rhabdomyosarcoma

Audrey C. Ko, MD

Primary Supervisor: Thomas E. Johnson, MD

Co-Authors: Rehan M. Hussain, MD

Purpose: Rhabdomyosarcoma is the most common primary malignany orbital tumor of childhood. Patients typically present with acute onset and rapid progression of a superonasal mass accompanied with unilateral proptosis. In the management of this tumor, a biopsy is required to provide confirmation of diagnosis and to guide treatment and prognosis. This tumor is classified by histologic type, which includes the following: embryonal, alveolar, pleomorphic, and botryoid. The purpose of this study is to report the clinical presentation, imaging and pathology specimen characteristics, treatments, and final outcome of all orbital rhabdomyosarcoma cases treated at the Bascom Palmer Eye Institute.

Methods: This retrospective chart review analyzed the medical records and pathology specimens of all patients diagnosed and treated for orbital rhabdomyosarcoma at the Bascom Palmer Eye Institute between January 1, 1980 and May 22, 2013. Patient demographics, clinical presentation, characteristics of pathology specimens, and clinical outcomes were reviewed.

Results: pending at time of abstract submission.

Conclusion: pending at time of abstract submission.

References:
Peripheral Retinal Abnormalities And Nonperfusion In Childhood Glaucoma

Hanna Y. Kim, MD

Primary Supervisor: Audina M. Berrocal, MD
Co-Authors: Elizabeth A. Hodapp, MD, Alana L. Grajewski, MD, Ditte J. Hess, Vishak John, MD

Purpose: The pathogenesis of the developmental abnormalities in childhood glaucoma is not completely understood. To date, little attention has been paid to whether development of the retinal vasculature may play a role in the pathophysiology of glaucoma in the pediatric population. The purpose of this study is to evaluate the peripheral retina using fluorescein angiography in eyes with childhood glaucoma.

Methods: Records of patients with childhood glaucoma who underwent fluorescein angiography were reviewed retrospectively. Age, sex, birth history, laterality of disease, the presence of systemic conditions, and details of the ocular examinations were recorded. Fluorescein angiogram images taken by the RetCam system were reviewed for retinal vasculature abnormalities, including the presence of vessel anastomosis, leakage, delayed filling, and peripheral retinal nonperfusion.

Results: A total of 12 patients (7 males and 5 females) diagnosed with childhood glaucoma underwent fluorescein angiography. 22 of the 24 eyes were affected by glaucoma. 6 patients had a primary diagnosis of bilateral congenital glaucoma and 1 patient had unilateral congenital glaucoma. 3 patients had glaucoma associated with bilateral congenital cataract surgery, and 1 patient each had glaucoma associated with phacomatosis pigmentovascularis type IIb and Rubenstein Taybi syndrome.

The mean age at the time of the fluorescein angiogram was 36 months (range, 6 to 92 months). The most common finding observed in our series was peripheral retinal nonperfusion, which affected 21 eyes (100%). Several patterns of abnormal branching of
vessels were observed in the peripheral retina. The most distinctive feature seen at the junction between vascular and avascular retina was circumferential branching parallel to the ora serrata. Other notable features include arteriovenous shunts, and abnormal branching starting at the precapillary level, including capillary projections and “tangle” like capillary extensions.

Unlike other pediatric retinal diseases such as retinopathy of prematurity and familial exudative vitreoretinopathy, leakage at the junction of vascular and avascular retina was not commonly seen. Other infrequent findings include focal dilatation of the capillaries (4.8%) and macular edema (4.8%). Bilateral hyperfluorescence of the optic nerve head was also seen in one patient with glaucoma associated with congenital cataract surgery.

**Conclusion:** In conclusion, retinal vascular abnormalities and peripheral nonperfusion are novel findings in childhood glaucoma. Wide angle fluorescein angiogram is a powerful tool that highlights the abnormal vasculature that otherwise may be difficult to appreciate on clinical exam. Further studies to evaluate a larger population of patients with childhood glaucoma should be considered to elucidate the significance of these findings and the long-term consequences.

**References:**
Shifting In Vitro Susceptibility Trends Among Common Gram Positive Isolates In Intraocular Fluids (Bpei 2011-2013)

Korey A. Jaben, MD

Primary Supervisor: Harry W. Flynn, Jr., MD

Co-Authors: Darlene Miller, DHSc, MPH, SM, CIC

Purpose: To determine distribution and antibiotic sensitivities of gram positive organisms in vitreous isolates at BPEI from 2011-2013

Methods: Laboratory database of all cases of vitreous and anterior chamber samples positive for gram positive species were reviewed at BPEI from 2011-2013. Antibiotic sensitivities of these species were also obtained from database. This data was compared to that of data from 2006-2010 at BPEI.

Results: There has been a relative increase in frequency of gram positive organisms as the causitive agent for endophthalmitis from 61.8% to 69.4% of isolates over the past 8 years at BPEI. Among gram positives, Staph epidermidis has consistently remained the most frequent intraocular isolate. MIC's for commonly used antimicrobials, including vancomycin and the fluoroquinolones, continue to rise for staph aureus, staph epidermidis, and streptococcus species.

Conclusion:
- Gram positive organisms are the most common isolate from intraocular specimens (Staphylococcus and streptococcus remain the most common)
- MIC for S. aureus, S. epidermidis, and Streptococcus species has increased over the past 8 years at BPEI
- Increased microbial resistance may be associated with poorer outcomes in treating patients with ocular infections
References:


Pulsed Light Therapy For Meibomian Gland Dysfunction, Ocular Rosacea And Dry Eye Syndrome

Bradford W. Lee, MD, MSc

Primary Supervisor: Wendy W. Lee, MD, MS

Co-Authors: Guillermo Amescua, MD; Carolina Betancourt, OD; William Feuer, MS; Astrid Gonzalez, MD; Samantha Herretes, MD; Juan Carlos Murillo, MD; Hilal Ozturk, MD; Victor L. Perez, MD; Joyce Schiffman, MS; Sara Wester, MD

Purpose: To evaluate changes in subjective symptoms and objective examination findings in patients with meibomian gland dysfunction, ocular rosacea, and dry eye syndrome who were treated with pulsed light therapy.

Methods: This retrospective case-series evaluated three patients with meibomian gland dysfunction, ocular rosacea, and symptomatic dry eye syndrome who were treated with multiple sessions of pulsed light therapy. Charts were reviewed in terms of therapeutic regimens used, type and severity of symptoms, and objective examination findings of the ocular surface both before, during, and after treatments.

Results: All patients had symptomatic dry eyes prior to treatment (mean pre-treatment Ocular Surface Disease Index = 53.3) and were on treatment regimens that included artificial lubricants, warm compresses, tea tree oil lid scrubs, preservative-free dexamethasone drops, and Omega-3 oil dietary supplements. Each patient underwent three treatment sessions, and all reported overall improvement in symptoms (mean post-treatment Ocular Surface Disease Index = 26.3). Objective examination findings were overall improved in all patients, although individual metrics were somewhat variable. All patients were able to comfortably reduce or stop their pre-treatment regimens for dry eyes. Patients reported some mild transient redness but no significant adverse effects.
**Conclusion:** Pulsed light therapy may have an important role in treating meibomian gland dysfunction, ocular rosacea, and dry eye syndrome, particularly in those patients who have persistent symptoms despite trying alternate treatment modalities. In this small case series, patients had minimal side effects with overall improvement in symptoms and examination findings and were able to reduce their treatment regimens for dry eyes. Further research is warranted to better study pulsed light therapy as a treatment option for this disease.

**References:**


Comparative Anti-Fungal Susceptibility Analysis Of Candida Albicans Versus Non-Albicans Corneal Isolates

Jyoti R. Dugar, MD

Primary Supervisor: Terrence O'Brien, MD
Co-Authors: Darlene Miller, DHSc, MPH, CIC


Methods: 36 Candida Albicans and 36 Non-Albicans corneal isolates from keratitis cases at Bascom Palmer Eye Institute from 1999-2013 were tested in vitro for susceptibility using a single shot of four commercially available anti-fungal agents: Fluconazole 2mg/mL, Amphotericin B 0.15%, Voriconazole 1%, and Natamycin 5%.

Results: The 36 Candida Albicans and 36 Non-Albicans corneal isolates were subcultured with resultant 26 Candida Albicans growth and 30 Non-Albicans growth. The remaining isolates either had no growth or were mixed with other organisms including Pseudomonas. The concentration of the four commercially available anti-fungal agents was diluted to $10^6$ and tested on the 56 corneal isolates. At 48 hours, Amphotericin B 0.15% and Natamycin 5% showed 100% inhibition for all 56 corneal isolates (26/26 of Candida Albicans and 30/30 for Non-Albicans). Voriconazole 1% showed 85% inhibition of the 56 corneal isolates- with 77% inhibition of Candida Albicans (20/26 corneal isolates with inhibition) and 93% inhibition of Non-Albicans (28/30 corneal isolates with inhibition). Fluconazole 2mg/mL showed 19.6% inhibition of the 56 corneal isolates- with 7.7% inhibition of Candida Albicans (2/26 corneal isolates with inhibition) and 30% inhibition of Non-Albicans (9/30 corneal isolates with inhibition).

Conclusion: Amphotericin B 0.15% and Natamycin 5% showed equal effectiveness and full inhibition against Candida Albicans and Non-Albicans keratitis. The newer Azole (voriconazole) proves to be more effective as a single shot than the older generation...
fluconazole against both Candida Albicans and Non-Albicans keratitis. This may show some emerging resistance to Fluconazole and indicates that Fluconazole is not the drug of choice in both Candida Albicans and Non-Albicans keratitis. Voriconazole may need a stronger concentration for higher effectiveness but may be helpful as a second agent in treatment of Candida Albicans and Non-Albicans keratitis.

References:


Surgical Vs. Medical Treatment Of Ocular Surface Squamous Neoplasia: A Comparison Of Recurrences And Complications

Afshan A. Nanji, MD, MPH

Primary Supervisor: Carol L. Karp, MD

Co-Authors: Christina S. Moon, MD; Anat Galor, MD, MSPH; Julia Sein, BS; Patrick Oellers, MD; Carol L. Karp, MD

Purpose: To compare recurrence and complication rates of surgical versus interferon-α2b (IFNα2b) therapy in the treatment of ocular surface squamous neoplasia (OSSN).

Methods: A case control study of patients with OSSN treated with surgery (n=49) versus IFNα2b therapy, either in topical or injection form (n=49).

Results: Mean patient age and gender was similar between the groups. There was a trend toward higher clinical AJCC tumor grade in the IFNα2b group. Despite this, the number of recurrences was equal at 3 per group. The 1 and 5 year recurrence rates in the surgical group were 5% and 11% versus 3% and 25% in the medical group (p=0.80). Non-limbal location was a risk factor for recurrence (hazard ratio 8.96). Side effects of the treatments were generally similar.

Conclusion: Surgical and IFNα2b therapies were found to have similar recurrence rates for OSSN.

References:
Fluorescein Angiographic Features In Distinguishing Fevr And Rop

Vishak J. John, MD

Primary Supervisor: Audina M. Berrocal, MD

Co-Authors:

Purpose: to examine clinical and angiographic features of children diagnosed with familial exudative vitreoretinopathy [FEVR] but were born prematurely

Methods: retrospective review of charts and angiograms of patients seen through the Pediatric Retina Service at Jackson Memorial Hospital and Bascom Palmer Eye Institute. IRB approval was obtained.

Results: Baseline data including gestational age, birth weight were analyzed in 8 children. Through angiography, we compared zones of disease, areas of non-perfusion, features of the vascular-vascular junction, presence of arteriovenous shunts, vascular dilatation, degree of leakage, and foveal avascularity. In eyes of children with FEVR, regardless of prematurity of birth, FA clearly shows extreme variability in both retinal and choroidal filling patterns and in the clinical course of the disease despite adequate laser treatment.

Conclusion: The clinical similarities in ROP and FEVR have long been recognized. As fluorescein angiography becomes more widely available for pediatrics through the RETCAM system, it may provide valuable information in understanding the pathophysiologic similarities and differences between the diseases. In the future, genetic studies and improved imaging technologies will further increase our knowledge.


Risk Factors For Reoperation Following Initial Angle Surgery For Infantile Glaucoma

Mark N. Welch, DO

Primary Supervisor: Mark A. Werner, MD

Co-Authors: Nashay Clemetson, MD

Purpose: To evaluate the risk factors for requiring further intervention following initial angle surgery for infantile developmental glaucoma, and report success rates for different groups based on data obtained at baseline and initial follow-up examination under anesthesia.

Methods: A retrospective chart review was conducted of 69 eyes from 69 patients undergoing initial angle surgery for infantile glaucoma at BPEI from January 2005 until July 2012. Patients that required glaucoma surgery other than angle surgery as the initial procedure and those with non-developmental/aphakic glaucoma were excluded. The main outcome measure was time to failure, and failure was defined as need for further surgery. Risk factors examined in the analysis included data from baseline and initial follow-up examinations including diagnosis, age of presentation/surgery, intraocular pressures (IOP), axial length (AL), cup-to-disc ratio (cdr), extent of angle treated, type of surgery, and changes in IOP, cdr, and AL after surgery. Paired t-tests were done for risk factor analysis for reoperation vs. no reoperation. Kaplan Meier survival analysis were also performed for these data points.

Results: The mean age at surgery was 7.78 months. Male/Female ratio was 38/31. The ethnic mix was black (26), caucasian (30), latino (10) and other (3). The diagnoses were primary infantile (43) and secondary (26). There were 58 trabeculotomies, 10 goniotomies, and 1 trabectome procedure. The risk factor analyses showed a statistically significant likelihood that reversal of cupping and reversal of axial length on
follow-up exams and an initial full 360 degree treatment were all statistically significant for reducing the likelihood for needing further glaucoma surgery.

**Conclusion:** We verified the hypotheses that other clinical factors may be relevant to follow (reversal of of cup to disc ratio and reversal of axial length), because these can predict a reduced rate of need for future glaucoma surgery. We also confirmed that less than 360 degree treatment is a risk factor for reoperation.

**References:**
8. AAO, Basic and Clinical Science Course, Section 6: Pediatric Ophthalmology and Strabismus, 2009-2010.
Pseudotumor Cerebri In The Pediatric Population

Rebecca A. Shields, MD

Primary Supervisor: Kara M. Cauvoto, MD

Co-Authors: Wendy W. Lee, MD

Purpose: To evaluate pediatric patients between 4-17 years of age, diagnosed with Pseudotumor Cerebri or Idiopathic Intracranial Hypertension (IIH) from the years 2002-2012 at Bascom Palmer Eye Institute.

Methods: A retrospective case series was performed at Bascom Palmer Eye Institute identifying children from ages 4-17 between 2002-2012. Medical records identified 66 children with the ICD9 code 348.2 (pseudotumorcerebri). Charts were reviewed and 30 patients fit the modified Dandy criteria for pseudotumorcerebri. In these patients, data was collected to identify gender, age, weight, height, BMI, initial vision, opening pressure, grade of optic nerve head edema prior to intervention, surgical versus medical management, vision post intervention, and optic nerve head edema (ONH) post intervention.

Results: A total of 30 patients were reviewed (11M, 19F). Average age in the male patient was 9.7 years old +/- 3.2 (p 0.001) and 13.1 years old .1 +/- 1.9 (p 0.001) in the female patient. Median ONH edema was grade 3 in male patients versus grade 4 in female patients. Opening pressure was 39 mm Hg +/- 12 and 69 mm Hg +/- 16 (p 0.48) in male and female patients, respectively. Ten patients underwent surgical therapy and 19 patients were managed with medical therapy. Seven patients (70%) in the surgical therapy group were female and 3 patients (30%) were male. ONH edema was found to be a median of grade 4 in this group. Median vision was found to be 20/70 and ranged from 20/20-LP. In the medical therapy group, 11 patients (58%) were female and 8 patients (42%) were male. Optic nerve head edema in this group was found to have a median of Grade 2 edema. Median vision was found to be 20/25 and ranged from
20/20-20/70. Optic nerve head edema was found to be reduced after both medial and surgical therapy, some residual edema in the surgical group.

**Conclusion:** Idiopathic intracranial hypertension in the pediatric population appears to follow a different pathogenesis of disease. As seen in our results, female patients are older, and present with more severe ONH edema and vision loss, with greater number requiring surgical intervention. These characteristics are similar to those found in adults. Male patients, however, are younger with less ONH edema, and often managed medically.

**References:**
An Animal Model Of Epithelial Downgrowth

Matthew J. Weiss, MD

Primary Supervisor: Jeffrey L. Goldberg, MD, PhD

Co-Authors: Jeffrey L. Goldberg, MD, PhD; Jessica Weinstein, BS

Purpose: In this project we will attempt to create a practical animal model for epithelial downgrowth.

Methods: Rodent corneal epithelial cells were cultured them in vitro. During this period they were transfected the cells with lentivirus GFP. The resulting labeled epithelial cells were then placed in suspension and injected steriley into the anterior chamber of living adult rats. The rats were then followed for one day, one week and one month to allow for the development of intraocular epithelial membranes analogous to those seen in human epithelial downgrowth. Epithelial cells were then examined through both immunohistological and immunofluorescence techniques, using a combination of serial sectioning.

Results: Gross corneal changes were noted on the examination of rats in the experimental group patients. In addition, these eyes demonstrated a multilayer of hypercellularity on immunofluorescence microscopy (positive for Dapi, GFP, CK AE1/AE3) which was visible at the level of the corneal endothelium.

Conclusion: We have identified cell surface markers specific to ocular surface epithelium. Using these markers, we have developed an animal model of epithelial downgrowth.

References:


The Epidemiology Of Ocular Surface Squamous Neoplasia In A Veterans Affairs Population

Andrew J. McClellan, MD

Primary Supervisor: Anat Galor, MD, MSPH

Co-Authors: Allison L. McClellan, OD; Candido F. Pezon, BS, Carol L. Karp, MD, William Feuer, MS

Purpose: To evaluate the epidemiology of ocular surface squamous neoplasia (OSSN) and its associated risk factors in a South Florida Veterans Affairs Hospital population. Design: Retrospective case-control study.

Methods: Participants: 28 confirmed cases of OSSN from 24,179 veterans who received care at the Miami Veterans Affairs Healthcare System (VA) and affiliated satellite eye clinics between March 1, 2007, and March 1, 2012. Methods: Data extracted from the veterans administration database comprised of demographic information and medical diagnosis information (based on International Classification of Disease (ICD-9) codes). Main Outcome Measures: The period prevalence of OSSN and identification of factors associated with the presence of disease.

Results: The period prevalence of OSSN in our population was 0.1%. Studied risk factors included human immunodeficiency virus (HIV) seropositivity, human papilloma virus (HPV)-related diseases, tobacco use, and ultra-violet (UV)-related dermatologic diseases (melanoma, squamous and basal cell cancer, and actinic keratosis.) All risk factors showed a positive correlation with presence of OSSN although only skin malignancy (squamous cell carcinoma (SCC) and basal cell carcinoma (BCC)) were found to be statistically significant (odds ratio (OR) 4.40, 95% CI 2.03-9.55, p <0.001).

Conclusion: Sun related neoplasia was the most important risk factor for the presence of OSSN in a South Florida VA population consistent with previous epidemiological reports worldwide.
References:
Comparison Of Choroidal Thickness Measurements In Eyes With Geographic Atrophy Secondary To Stargardt Disease And Age-Related Macular Degeneration

Matthew D. Lowrance, DO

Primary Supervisor: Philip J. Rosenfeld, MD, PhD

Co-Authors: Renata Portella Nunes, MD; Potyra Rosa, MD; Benjamin Thomas, MD; Carlos Alexandre Garcia Filho, MD; Giovanni Gregori, PhD; William Feuer, MS; Byron Lam, MD

**Purpose:** Stargardt disease primarily affects photoreceptors followed by loss of the retinal pigment epithelium (RPE loss) with the formation of central geographic atrophy (GA). In age-related macular degeneration (AMD), the primary cause of GA is not known, but the formation of GA is accompanied by a decrease in choroidal thickness (CT) in some patients. The loss of CT in AMD is thought to be secondary to the loss of photoreceptors and the RPE. If this is true, then we would expect similar age-adjusted decrease in the CT measurements of eyes with Stargardt disease. To test this hypothesis, we compared CT measurements in eyes with GA secondary to Stargardt disease and AMD.

**Methods:** Patients with the diagnosis of GA secondary to Stargardt disease and AMD were enrolled in a prospective SD-OCT imaging study. SD-OCT imaging was performed using the Cirrus (Carl Zeiss Meditec, Inc.) and the Spectralis (Heidelberg, Heidelberg, Germany) instruments. The area of GA was measured on the Heidelberg fundus autofluorescence (FAF) image, which was registered to the OCT fundus image generated using the Cirrus scan pattern of 200x200 A-scans. Subfoveal CT was measured from the central B-scan using the Spectralis enhanced depth imaging protocol. Two independent graders measured the subfoveal CT. Axial length was measured using the IOL Master (Carl Zeiss Meditec Inc., Dublin, CA). Multiple linear regressions were used to compare
CT measurements after adjusting for age and axial length. These two groups of patients were also compared to normal controls.

**Results:** A total of 14 eyes of 14 patients were included in the Stargardt group and 14 eyes with AMD were frequency matched with respect to the area of GA. Mean area measurements of GA were 5.5 mm² (SD=5.8) and 5.6 mm² (SD=5.3) for the Stargardt and AMD groups, respectively. The mean age of the Stargardt patients was 41.1 (SD=15.3) and 80.5 (SD=6.8) for the AMD patients. Mean axial length was 23.9 mm (SD=0.9) for the Stargardt patients and 23.4 mm (SD=0.9) for the AMD patients. Eyes with Stargardt disease had mean CT measurements greater than the AMD eyes (368.6 and 194.6µm respectively; p=<0.001), and this difference remained statistically significant after adjusting for age. Likewise, the patients with Stargardt disease had thicker choroids when compared to a population of normal eyes (p<0.001). CT in eyes with AMD did not differ significantly from CT in normal eyes.

**Conclusion:** AMD eyes with GA had thinner CT measurements than Stargardt eyes with GA suggesting that the loss of photoreceptors and RPE does not cause a compensatory decrease in the CT. While the mean CT of AMD eyes was not statistically different from normal eyes, the CT measurements in AMD eyes tended to be thinner suggesting there may be a subset of AMD patients in which the choroid is primarily affected by the disease process.

**References:**