



10th Annual Residents Research Forum

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Jay H. Krachmer, M.D.

**Clinical Professor of Surgery (Ophthalmology), Pro Tempore,
Warren Alpert Medical School at Brown University**

Jay H. Krachmer became the Chairman of the Department of Ophthalmology at the University of Minnesota on July 1, 1992 and holder of the Mackall-Scheie Research Chair in Ophthalmology. Dr. Krachmer was formerly a Professor of Ophthalmology at the University of Iowa and had been on their faculty since 1974. He earned his medical degree at Tulane University in 1966 and then returned to Iowa to complete his internship and residency. From 1973 to 1974, he was a Cornea Fellow at the Wills Eye Hospital in Philadelphia.

A corneal and external eye disease specialist, he has published more than 100 scientific papers and reference books on the cornea.

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Keynote Speaker,

Jay H. Krachmer, MD
Clinical Professor of Surgery (Ophthalmology), Pro Tempore,
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“Keratoconus-Perspectives on Cause and Management”

Anticoagulation and Oculoplastic Surgery: A Discussion of Current Practice Patterns, Nicholas Butler, MD, Yoash R. Enzer, MD, (Mentor)

Abstract:

Purpose: To assess practice patterns of oral anticoagulation (OAC) management in oculoplastic surgery and identify trends and implications that may lead to safer management decisions.

Methods: Using an internet survey, we questioned oculoplastic surgeons regarding perioperative OAC management.

Results: 89 of 286 (31%) ASOPRS members responded. 95% stop OACs preoperatively (8-14 days for aspirin in 75%; 2-4 days for warfarin in 67%). A minority of surgeons (12% for ASA and 31% for warfarin) may allow excessive duration for discontinuation of OACs and 79% wait until postoperative day 1 or more before resuming warfarin. When stopping warfarin prior to surgery, greater than 90% of respondents consult medicine versus 76% for aspirin. 55% of respondents have had 1-3 perioperative hemorrhages requiring an intervention in the past 10 years, while 9% have had 4-7. When comparing discontinuation patterns for aspirin (less than or greater than 7 days prior to surgery) and warfarin (less than or greater than 2 days prior to surgery), there was no statistically significant difference in the number of bleeding events (ASA- OR 1.59 with 95% CI 0.39-6.49; warfarin- OR 0.60 with 95% CI 0.04-9.91). Most oculoplastic surgeons (77% vs. 23%) are more concerned with a perioperative hemorrhage than a serious thromboembolic (TE) event, despite 36% reporting 1-3 TE events in the past 10 years.

Conclusions: The vast majority of oculoplastic surgeons stop OACs preoperatively with a high degree of timing consistency and consult medicine/cardiology for assistance with various clinical scenarios. There is no statistically significant increased risk of bleeding based on timing of OAC discontinuation or on the decision to continue or stop OACs. The perceived risk of bleeding may be higher than available data support. Given the number of serious TE events, this study suggests that routine cessation of OACs may be injudicious.

Nicholas J. Butler, M.D. graduated from McGill University Faculty of Medicine in 2005. Prior to starting his residency in ophthalmology at Brown University in 2006, he completed a transitional medicine internship and earned the distinction of "Best Intern" at Tufts University affiliated Caritas Carney Hospital. He has published articles on the in-vivo bystander effect of radio-labeled tumor cells and the incidence and causes of ocular surgery cancellations in an ambulatory surgical center.

Michael Migliori, MD FACS, earned his degree in medicine at Brown University in 1982 and completed his ophthalmology residency at the Sinai Hospital of Detroit. Dr. Migliori completed a fellowship in ophthalmic plastic and reconstructive surgery at the University of Illinois Eye and Ear Infirmary and Michael Reese and University of Chicago Hospitals. He is currently the Director of Ophthalmic Plastic and Reconstructive Surgery at Rhode Island Hospital, and is clinical assistant professor of surgery (ophthalmology) at the Warren Alpert Medical School at Brown University.

Ectropion v. Entropion: The Influence of Globe Axial position Projection on Lower Eyelid Malposition

Mark Heimmel, MD, Yoash R. Enzer, MD, (Mentor)

Abstract:

Purpose: To evaluate the effect of axial globe projection on lower eyelid malposition with aging.

Methods: Consecutive patients presenting to two oculoplastic surgeons with lower eyelid and tarsal involutional ectropion or entropion underwent axial globe projection measurements with a Hertel exophthalmometer.

Results: Data on 36 lids of 31 patients from a Caucasian population was collected. Axial globe projection in the ectropion group, $\mu=19.9$, was significantly greater than in the entropion group, $\mu=16.1$ ($p < 0.01$). This held true even when controlled for population differences.

Conclusion: Tarsal ectropion directly correlates with more prominent axial globe position, and patients with relatively enophthalmic eyes tend to develop entropion.

Mark R. Heimmel M.D. is a first year resident at the Brown Ophthalmology Program. Dr. Heimmel graduated with honors from Rutgers University in 2002, and UMDNJ in 2005, completing the dual BA/MD program. During this time, Dr. Heimmel participated in a number of community service organizations including teaching English in Costa Rica, completing an international health mission in Fiji, and was founder and president of the local chapter of Unite for Sight. Dr. Heimmel's prior research investigated the use of intravitreal triamcinolone for diabetic macular edema.

R. Jeffrey Hofmann M.D. is an attending physician at Rhode Island Hospital, as well as a Clinical Assistant Professor of Ophthalmology at Brown Medical School. He earned both his B.S. and M.D. from Tulane University in New Orleans, Louisiana, and completed his residency at Washington University in Missouri. He followed his residency with a fellowship in Oculoplastic Surgery at the University of Texas in Houston. Dr. Hofmann specializes in plastic and reconstructive surgery, lacrimal and orbital diseases, as well as cosmetic laser surgery at the Rhode Island Eye Institute.

Accuracy of Predicted Refractive Error in a Cohort of Cataract Surgery Patients at a VA Medical Center using the Zeiss IOL Master

Nickolas Katsoulakis, MD, Paul B. Greenberg, MD, (Mentor)

Abstract:

Purpose: To determine the accuracy of predicted post-operative error in a cohort of patients undergoing cataract surgery at a VA Medical Center whose biometric measurements were pre-operatively obtained with the Zeiss IOLMaster.

Methods: Retrospective case series. All electronic medical records of patients undergoing cataract surgery at the VAMC in Providence, RI between February 2006 and March 2007 were reviewed and examined for exclusion criteria, which included: biometric calculations unobtainable by partial coherence tomography (PCI), IOL implantation outside the capsular bag, extracapsular cataract extraction without phacoemulsification, prior anterior or posterior segment surgery, high myopia > -5.00 D or hyperopia $> +5.00$ D, traumatic cataract, congenital ocular anomalies, best corrected final visual acuity less than 20/50. All surgeries were performed by residents with direct attending supervision. IOL calculations were performed using one of the following formulas: SRK II, SRK/T, or Holladay. Demographic data was collected as well as pre-operative visual acuity, refractive error, axial length, keratometric readings, concomitant eye conditions, predicted post-operative refraction, type and power of lens implanted, best-corrected visual acuity at least 2 months post-operatively and final refractive error.

Results: 148 eyes were identified. 54 of 148 eyes (36.5%) were excluded because PCI could not be used obtain axial length measurements due to advanced lens opacity. 41 eyes met all inclusion criteria. Mean age was 72.1 years. There were 38 males and 3 females; average pre-operative visual acuity was -0.44 (~20/50). Average post-operative best-corrected visual acuity was -0.01 (~20/20). Mean absolute error was 0.50 D [range 0-1.85]. 63% of eyes were within 0.5 D of refractive goal, 90% were within 1 D, 98% were within 1.5 D and 100% were within 2 D.

Conclusion: Refractive outcome in VAMC cataract patients using biometry by IOLMaster has a level of accuracy comparable to ultrasound methods. It has the advantage of being non-contact and is easy to use. However, a large percentage of VA patients have advanced cataracts that preclude axial length measurements by PCI.

Dr. Katsoulakis is a graduate of St John's University and SUNY Upstate Medical University. He completed a transitional Internship at St. Joseph's Hospital in Syracuse, NY. He is currently a second-year ophthalmology resident at the Warren Alpert Medical School at Brown University

Dr. Daly is a graduate of Harvard College and Johns Hopkins Medical School. She completed a Medicine Internship at St. Joseph Mercy Hospital in Ann Arbor, MI. She then completed her ophthalmology residency at the Wilmer Eye Institute in Baltimore, MD, followed by a Cornea and External Eye disease fellowship at Moorfields Eye Hospital in London, UK. She is currently Chief of Ophthalmology of the VA Boston Healthcare System. She holds academic appointments at Boston University Medical School and Harvard Medical School. She is primary investigator on 5 IRB/R&D approved studies and co-PI on two IRB/R&D clinical trials currently underway in the Department of Veterans Affairs.

Patterns of Uveitis in an Urban Population

Sunil Rao, MD, Robert H. Janigian, Jr, MD, (Mentor)

Abstract:

Purpose: To investigate the association immigration and uveitis in a US urban hospital-based eye clinic.

Design: Single center, retrospective, observational case series.

Participants: One hundred and forty-one patients diagnosed with uveitis.

Methods: Medical record review of all patients diagnosed with uveitis between 1998 and 2006 at a single hospital eye clinic.

Main outcome measures: Associated condition, type of inflammation (granulomatous versus non-granulomatous), infectious vs. noninfectious, laterality, race, and immigration status.

Results: Of the 141 patients, 37.6% Hispanic, 33.3% White, 21.3% Black, and 7.8% Asian. Anterior uveitis predominated (70.0%), followed by panuveitis (17.0%), posterior uveitis (11.0%), and intermediate uveitis (2.0%). Acute uveitis was the most common (41.0%), followed by recurrent (33.0%), and then chronic (26.0%). The majority of cases were noninfectious (65.2%), non-granulomatous (73.0%) and unilateral (58.9%). Twenty-three percent of the participants were immigrants. Toxoplasmosis was the most common associated condition. The immigrant cohort had a significantly higher prevalence of toxoplasmosis as compared to their nonimmigrant counterparts ($p < 0.05$).

Conclusions: This study reports on uveitis in a US urban eye clinic, which is diverse with regard to immigration status. Immigration and race served to influence the relative frequencies of uveitis with regard to anatomic localization, and associated conditions. Toxoplasmosis emerged as the most common associated condition secondary to the immigrant cohort.

Sunil Rao received both his undergraduate and medical degrees from Tufts University. He interned at Newton-Wellesley Hospital in Massachusetts and is currently a second year ophthalmology resident at Brown University/Rhode Island Hospital.

The appointment of Dr. Magdalena G. Kryzstolik as Clinical Assistant Professor of Surgery (Ophthalmology) became effective in 2001. She received both her undergraduate and medical degrees from the University of Chicago. She interned at the University of Chicago and completed her residency at the Massachusetts Eye and Ear Infirmary. In 2000, she completed a two-year surgical retina fellowship at Massachusetts Eye and Ear Infirmary.

Assessing the Current Status of the Rhode Island Ophthalmology Work force and Predicting Future Need

Molly E. Ritsema, MD, Kent L. Anderson, MD, PhD, (Mentor)

Abstract:

Purpose: To assess the Rhode Island ophthalmology workforce and predict future need.

Methods: We surveyed 74 RI ophthalmologists and reviewed census data and predictions about future demand for ophthalmologists.

Results: 62 ophthalmologists responded (response rate 84%) of whom 54% were fellowship trained and 65% were board certified prior to 1992. The majority of respondents supported an ophthalmology first model of general/comprehensive eyecare. 42% of respondents plan on retiring within ten years. A review of the literature forecasts an increase in the demand for ophthalmologists by the year 2020.

Conclusion: The number of RI ophthalmologists retiring over the next ten years will coincide with an increase in demand for services as the aging population increases.

Molly Ritsema, MD is in her final year of ophthalmology residency at Brown University/Rhode Island Hospital. She completed undergraduate studies at Rice University and medical school at the University of Pennsylvania. She will join Eye Associate of New Mexico this summer.

Elliot M. Perlman, MD is a specialist in cornea and external disease at the Rhode Island Eye Institute. He earned his medical degree from Harvard Medical School and completed his ophthalmology residency at Yale University and the New Haven Medical Center. He subsequently pursued a cornea fellowship at Baylor University and the University of Texas at Houston. He is currently director of the cornea service at Brown University/Rhode Island Hospital.

Anti-VEGF Molecules as Adjuncts in the Treatment of Neovascular Glaucoma

Theodoros Filippopoulos, M.D.¹, Joseph F. Ducharme, M.D, (Mentor)¹ and Magdalena G. Krzystolik M.D.^{1,2}

Abstract:

Background: Neovascular glaucoma, in association with vitreous hemorrhage and/or cataracts, represents a therapeutic challenge and usually is associated with poor visual outcomes. Often, adequate preoperative treatment with laser photocoagulation may be impossible because of the unclear media. Intravitreal injection of triamcinolone has been reported to reduce postoperative progression of the iris neovascularization presumably due to its anti-proliferative and anti-inflammatory properties. More selective antiangiogenic agents, like pegaptanib and ranibizumab have been shown to be safe for intravitreal injections in cases of exudative age-related macular degeneration and may be expand our armamentarium in the treatment of complicated cases of neovascular glaucoma.

Purpose: To evaluate the off-label use of antiangiogenic agents like pegaptanib (Macugen®), ranibizumab (Lucentis®) and bevacizumab (Avastin®) as adjuncts in the treatment of neovascular glaucoma.

Methods: Retrospective, uncontrolled, interventional non-comparative case series of seven patients (n=7 eyes) with neovascular glaucoma secondary to proliferative diabetic retinopathy or central retinal artery occlusion. One patient was injected with 0.3mg of pegaptanib and five patients with 1.25 mg of bevacizumab. One patient was injected pegaptanib and subsequently switched to 0.5mg of ranibizumab. Primary outcome measures were regression of iris neovascularization, intraocular pressure control after glaucoma filtration surgery and medical therapy as necessary, rate of phthisis, hypotony and/or enucleation. Secondary outcomes included safety data, visual acuity at the last follow-up, requirement for glaucoma filtration surgery, PRP or vitrectomy, need for subsequent re-injections.

Results: Average age at presentation was 63.4 ± 12.9 years. Average length of follow-up was 36.2 ± 37.5 weeks. Both pegaptanib and bevacizumab caused complete regression of iris neovascularization within 7-9 days. The intraocular pressures at presentation and at the last follow-up visit were 34.3 ± 10.5 and 16.9 ± 5.1 mmHg respectively. Four patients required glaucoma filtration surgery. Two eyes had to be re-injected secondary to reappearance of iris neovascularization. No eye developed phthisis, hypotony or had to be enucleated. All patients tolerated the intravitreal injections well without significant systemic complications; however one patient developed a sterile hypopyon that was temporally not associated with the injection. Vision improved in 4 eyes, remained stable in one and deteriorated in 2 eyes.

Conclusions: Antiangiogenic agents may be helpful adjuncts in managing patients with neovascular glaucoma. Randomized controlled clinical trials may be warranted to investigate their specific indications.

Theodoros Filippopoulos, M.D. is a 4th year resident at the Rhode Island Hospital/Brown Ophthalmology residency program. Dr. Filippopoulos earned his medical degree from the University of Athens in Greece. He completed a pre-residency research fellowship at the Mount Sinai School of Medicine in New York and is currently finishing his Ophthalmology training at the Warren Alpert Brown Medical School. He will subsequently pursue a glaucoma fellowship at the Massachusetts Eye and Ear Infirmary.

Michael K. Maley, M.D. is a glaucoma specialist at the Rhode Island Eye Institute and at the Rhode Island Hospital Eye Clinic. He is a Clinical Assistant Professor at the Warren Alpert Medical School in Surgery (Ophthalmology). Dr. Maley completed his undergraduate education at Harvard University and earned his medical degree from the University of Vermont College of Medicine. He completed his Ophthalmology residency at the New York Eye and Ear Infirmary and subsequently pursued a glaucoma fellowship at the University of Iowa.

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