

NOTES FROM THE 46TH ANNUAL ARDS MEETING



Our second round of presentation summaries from this year's Aspen Retinal Detachment Society (ARDS) meeting hits directly at some of the core missions of the meeting. The ARDS aims to provide meeting participants with cutting-edge techniques and concepts to better equip them to diagnose and treat vitreoretinal diseases while enhancing patient outcomes.

Among the presentations at this year's meeting, Maria H. Berrocal, MD, spoke about whether we should be intervening sooner with pars plana vitrectomy in patients with complex diabetes, and Charles Eifrig, MD, presented a review of the literature, focusing on controversies in the world of surgical retina ranging from timing of face-down positioning to 3D viewing systems, helping meeting participants better understand these controversies by looking at the facts.

Below, Kimberly D. Tran, MD, and Yi Jiang, MD, provide comprehensive overviews of these insightful and informative presentations.

—Timothy G. Murray, MD, MBA

SHOULD WE BE INTERVENING SOONER?

Allowing new technologies to change the status quo.

By Kimberly D. Tran, MD



In her lecture on the surgical management of complications of diabetic retinopathy (DR), Maria H.

Berrocal, MD, highlighted the importance of recent technological advances in facilitating better outcomes in pars plana vitrectomy (PPV). She also discussed whether retina surgeons should be performing PPV sooner in patients with complex diabetes.

After years of treating complex combined tractional/rhegmatogenous retinal detachments (T/RRDs) Dr. Berrocal considers whether retina surgeons are performing PPV too late. The indications for vitrectomy are guided by data from the Diabetic Retinopathy Vitrectomy Study (DRVS). At the time of that study, irrigating contact lenses offered limited posterior visualization, intraoperative IOP control was poor, and intraoperative hemorrhage, iatrogenic retinal incarceration, and tears were challenging. Today, these limitations have been markedly reduced as a result of new technologies.

The DRVS data may be losing relevance because of today's improved instrumentation and outcomes, Dr. Berrocal suggested. Early PPV may help prevent irreversible vision loss.

Removing the posterior hyaloid and the scaffolding for neovascular membranes and adding endolaser panretinal photocoagulation (PRP) can prevent tractional retinal detachment (TRD) and may minimize macular edema with less need for additional ophthalmic interventions, she noted.

PRP has been the gold standard for treating proliferative diabetic retinopathy (PDR); however, it is not a panacea. After PRP, patients have severe visual field defects and night vision reduction, and they may progress to TRD and T/RRD despite treatment. In DRCR.net Protocol S, 45% of eyes treated with PRP required additional laser.¹

Anti-VEGF therapy is not without issues either. Despite injections, at 2-year follow-up in Protocol S, 27% of patients developed vitreous hemorrhage, 6% developed retinal detachment (RD), 2% developed neovascular glaucoma, 4% required vitrectomy, and 0.5% developed endophthalmitis. The treatment burden over 2 years was 22 visits. Extrapolated over a lifetime, this would lead to high costs and issues with compliance.¹

Years ago, Dr. Berrocal started performing early PPV on the worse eye of young patients with diabetes, coupled with PRP in the fellow eye. She presented on 60 patients followed over a minimum

▶ DR. BERROCAL'S RECAP ◀



▶ [BIT.LY/BERROCAL0918](https://bit.ly/Berrocal0918)

of 8 years whom she stratified by age into groups of patients younger than 50 years and those older than 50 years. In the younger patients, the mean VA at last follow-up was 20/80, with 8% hand motion or light perception (HM-LP) in the PPV eyes, compared with mean 20/400 with 36% HM-LP in the PRP eyes. Over an 8-year period, the percentage of eyes that required additional laser was 16% for PPV versus 72% for PRP; PPV was required in 12% versus 60% in those two groups, respectively. The rate of cataract progression requiring surgery was 40% for PPV eyes versus 24% for PRP eyes. In the patients older than 50 years, the results were similar. The mean VA at last follow-up was 20/80 with 14% counting fingers (CF) or worse in the PPV eyes, compared with 20/200 with 36% CF or worse in the PRP eyes.

Over an 8-year period, the percentage of eyes that required additional laser was 8% for PPV versus 70% for PRP; 8% versus 28% required PPV, and the rate of cataract progression requiring surgery was 44% versus 16% in the two groups, respectively.

Advantages of early PPV in PDR include prevention of TRD and T/RRD, long-term stabilization of the eye, and reduction of complications, treatment burden, compliance issues, and cost. In patients younger than 50 years, PRP eyes were four times more likely than PPV eyes to have HM or less VA, and in patients older than 50 years, PRP eyes were 2.5 times more likely than PPV eyes to have CF or less VA.



Dr. Berrocal giving her lecture on the surgical management of complications of diabetic retinopathy.

Photo courtesy of Kevin Caldwell

Dr. Berrocal explained the importance of tailoring treatment to the reality of the individual patient. An insured and reliable patient can be treated with monthly anti-VEGF injections, whereas working-age diabetic patients often have little time to keep up with multiple visits to their physicians, and many are poorly insured or uninsured. PRP has an important role to play in this population, as these are the patients who are likely to present with TRD, T/RRD, or very severe PDR. Early vitrectomy in young diabetic patients with poor control and poor access to care may play a pivotal role in preventing blindness.

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CONTROVERSIES IN VITREORETINAL SURGERY

A review of the literature.

By Yi Jiang, MD



In his presentation, Charles Eifrig, MD, reviewed the literature and incorporated his experiences on several

controversial topics. His talk encompassed many aspects of vitreoretinal surgery, from endophthalmitis rates in transconjunctival vitrectomy to postoperative positioning and 3D or digitally enhanced vitreoretinal surgery.

ENDOPHTHALMITIS IN SMALL-GAUGE VITRECTOMY

In a study at Bascom Palmer Eye Institute, Dr. Eifrig and colleagues found that endophthalmitis occurred in six out of 15,326 patients, an incidence rate of 0.039%, after 20-gauge vitrectomy over a 20-year period.¹ With the transition to 23- and 25-gauge vitrectomy, a few early reports suggested that there might be an increased risk of endophthalmitis associated with smaller-gauge surgery.^{2,3} However, other reports, including current studies, have shown no increased risk associated with smaller gauge surgery, Dr. Eifrig said.

In the Pan American Collaborative Retina Study, Wu et al found an equal incidence rate of endophthalmitis with 20-gauge (0.020%), 23-gauge (0.028%), and 25-gauge vitrectomy (0.021%).⁴ Recently, Chen et al published a large meta-analysis that showed similar rates of endophthalmitis after 20-gauge and 23-gauge vitrectomy and higher rates after 25-gauge vitrectomy. Dr. Eifrig pointed out that the current consensus is that the rates of endophthalmitis after vitrectomy are similar among 20-, 23-, and 25-gauge surgery.⁵

THE ILM-ERM CONNECTION

Numerous reports show better anatomic outcomes and less risk of recurrence of epiretinal membrane (ERM) with internal limiting membrane (ILM) peeling during macular pucker surgery. Sandali et al showed that the risk of recurrence is twice as likely without ILM peeling.⁶

A recent American Society of Retina Specialists Preferences and Trends (PAT) survey asked retina surgeons in what percentage of cases they peel the ILM for a routine vitrectomy for

ERM. The survey results indicated that the rate of ILM peeling has increased over the years. In 2017, more than 60% of respondents peeled the ILM 76% to 100% of the time in routine ERM surgery. The US rate of routine ILM peel for ERM vitrectomy (61.9%) was similar to the non-US rate (63.6%).⁷

The disadvantages of ILM peeling include iatrogenic trauma, transient anatomic changes from superficial retinal hemorrhage, nerve fiber layer damage, distortion of macular anatomy, and small scotomas. Visual outcomes are still controversial. Elliot et al and Schachat et al reported that there was no difference in vision or central macular thickness with or without peeling of the ILM.^{8,9}

MANAGING MACULAR HOLES

The Role of ILM Peeling

Dr. Eifrig presented several reports showing ILM peeling associated with increased rates of macular hole closure success. Cornish et al found that ILM peeling was associated with a higher closure rate for stage 2, 3, and 4 macular holes.¹⁰ Rahimy and McCannel showed a reopening rate of 7% in

patients without ILM peel versus 1.18% with ILM peel.¹¹ In regard to the safety of ILM peeling, an analysis of a database of 23,465 patients showed that reoperations were less common in those with ILM peeling and that retinal detachments were slightly more likely to occur in patients without ILM peeling.¹²

Facedown Positioning

Dr. Eifrig then reviewed evidence on the need for facedown positioning. Since Kelley and Wendel's pilot study in 1991 showing successful closure of macular holes with vitrectomy, gas, and facedown positioning, it has become part of the usual postoperative regimen. However, there are risks, including soreness, ulnar nerve palsy, pressure ulcers, deep vein thrombosis, and patient discomfort.

Tornambe et al reported a 79% rate of macular hole closure without facedown positioning in 33 eyes with the use of C₃F₈ gas. Other case series show high rates of macular hole closure with no positioning. However, Dr. Eifrig cautioned that a careful review of the studies is warranted because of variations in positioning instructions. There is evidence of potentially higher closure rates with facedown positioning in stage 4 holes, but less difference in stage 2 or 3 holes. Additionally, he suggested that SF₆ currently appears to be the gas of preference for tamponade.

Dr. Eifrig emphasized that cases might differ depending on the patient's postoperative anatomy. He showed a preoperative OCT of a patient with a macular hole on postoperative day 1, with near closure of the hole within 24 hours. "If we're able to get that picture on the day after macular hole surgery," Dr. Eifrig said, "I will adjust my facedown positioning based on that about 50% of the time. Almost all of my patients will get facedown positioning for 1 night, but, depending on this and other factors, they may only get 2 or 3 more days after that."

Dr. Eifrig stressed that peeling of the ILM enhances success of macular hole closure and that the use of facedown

positioning is dependent on the stage of the hole and is rarely needed for a long duration. He also commented on complex and recurrent macular holes and noted that these eyes may benefit from longer-acting gas (C₃F₈) with longer-duration facedown positioning.

RETAINED LENS FRAGMENTS

Cataract surgery is the most often named procedure in malpractice claims against ophthalmologists. Kim et al reported that 12.5% of closed claims associated with cataract surgery were related to retained lens fragments.¹³ Interestingly, referral to a retina specialist was delayed in the claims that went to trial.¹³ (Note: early referral to a retina specialist reduces the risk of malpractice liability.) Of the cases reviewed, only 3% involved retina surgeons.

Overall, the incidence of retained lens fragments is between 0.1% and 1.6%. A meta-analysis by Vander and Stewart including 27 studies showed no difference between same-day removal of retained lens fragments and up to 2 weeks' delay.¹⁴ Another paper by Flynn et al of 569 eyes found no difference in visual outcomes between removal of retained lens fragments on the same day, within 1 week, or at greater than 7 days.¹⁵ Dr. Eifrig noted that in the overwhelming majority of patients, immediate removal of retained lens fragments by the retina surgeon is not necessary.

3D VISUALIZATION SYSTEMS

Dr. Eifrig wrapped up his talk with a discussion of digitized 3D visualization systems for surgery. He said the main advantage of 3D surgery is enhanced depth of field, which is especially useful in macular work, with the clarity achieved under high magnification. However, there can be initial difficulty with peripheral work, he admitted. There is also a learning curve when the system is implemented. Dr. Eifrig believes that in the future we will see purely digital microscopes, showing real-time vitrectomy parameters, intraoperative OCT, and other technological advances. ■

DR. EIFRIG'S RECAP



▶ [BIT.LY/EIFRIG0918](http://bit.ly/eifrig0918)

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