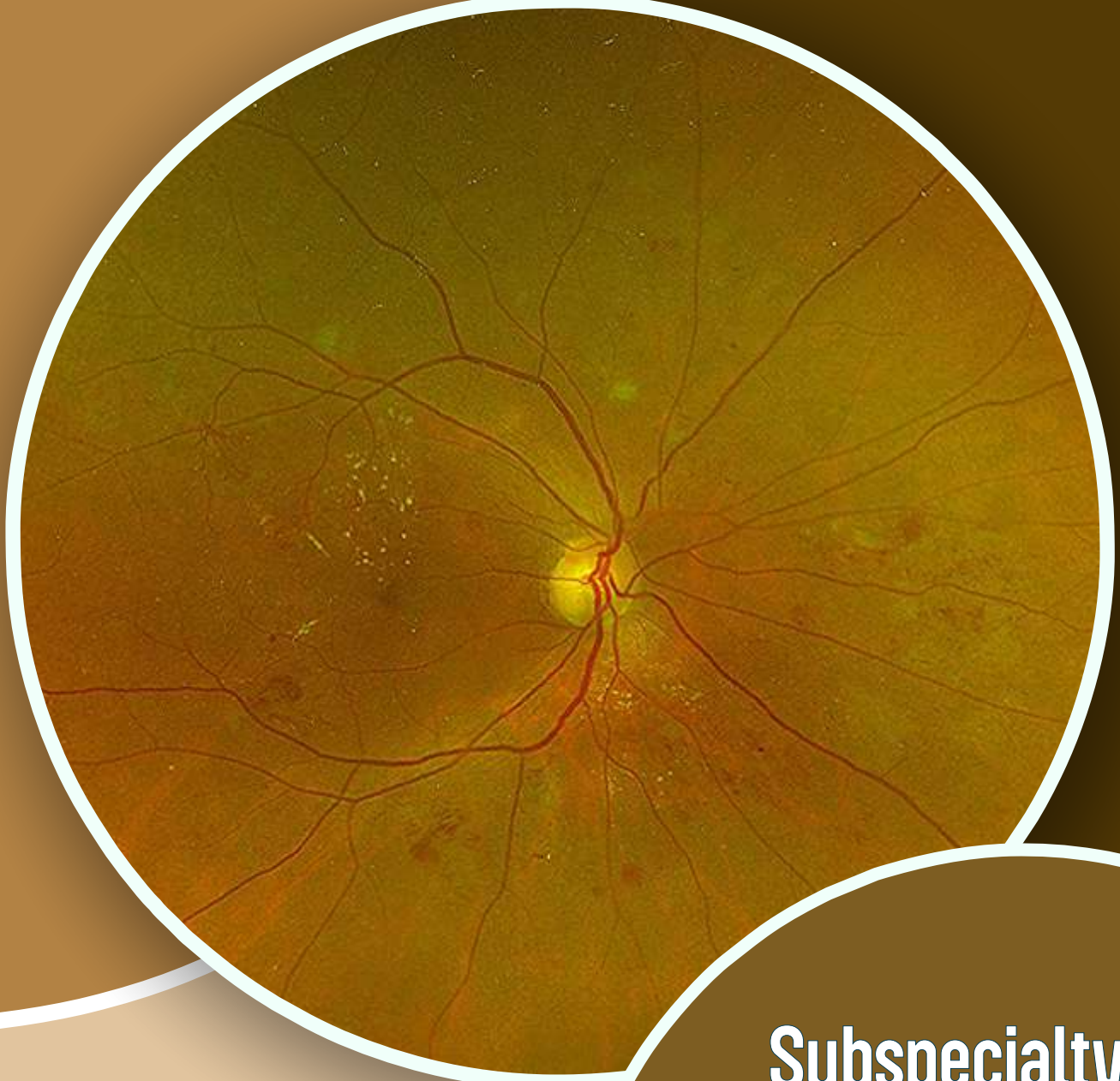
Retina 2024

A Vision for 2024 and Beyond



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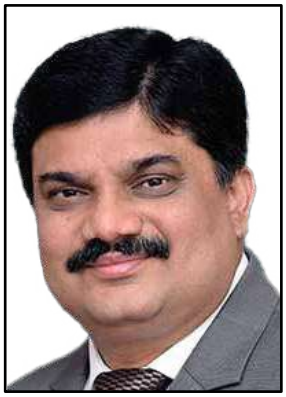

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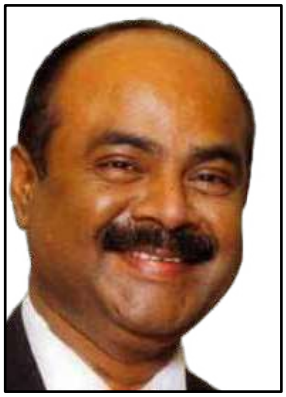

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The diagnosis and management of polypoidal choroidal vasculopathy (PCV) with non-nvasive imaging

Dr Anna Tan

PCV is an Asian form of age-related macular degeneration and to distinguish it from typical AMD has implications for management and prognosis. The current gold standard for the diagnosis of PCV in invasive dye based indocyanine green angiography which is expensive and not widely available. However, non-invasive multi-modal imaging advances have made it possible to diagnose and monitor treatment response in PCV with a high level of sensitivity and specificity. In my talk, we will examine the various multi-modal imaging such as colour fundus photography, optical coherence tomography (OCT) and OCT angiography to both diagnose and monitor treatment response in PCV. We will also highlight specific OCT and OCTA features of PCV which have recently been described in the literature to help distinguish PCV from typical AMD and to determine if the polypoidal lesion has closed in response to therapy.

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Dr. Ashish Lall

Biosimilars to the rescue in management of Chorio-Retinal diseases

Dr. Ashish Sharma

Dr. Ashvin Bafna

Dr. Avnindra Gupta

Asian profile of retinal inherited diseases

Dr. Beau Fenner

Dr. Bhavik Panchal

Dr. Chaitra Jayadev

Amniotic membranes in MH

Dr. Cyrus Shroff

Dr. Debdulal Chakraborty

Dr. Deependra Singh

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Tips for Prevention of PVR

Prof Dhanashree Ratra

With advances in the surgical technique and instrumentation, vitrectomy has become safe and effective. The success rate of retinal detachment surgery has greatly increased. The failure of retinal reattachment is seen in about 10-15% cases. And proliferative vitreoretinopathy (PVR) is still the major cause for failure of retinal detachment surgery accounting for 80% of failed cases. Thus, knowledge about prevention and management of PVR is essential.

Primary prevention includes treating all lesions with associated risk of RD such as symptomatic lattices, tears, etc. A prompt repair of the primary retinal detachment will prevent PVR. However, secondary prevention is more important which includes surgical measures and pharmacotherapy. The surgical prevention begins with planning of sclerotomies to reduce iatrogenic retinal injury. I situations where the retina is pulled anteriorly, the sclerotomies need to be placed more anteriorly than normal to avoid placing them through the peripheral retina and causing retinal tears. This can worsen the situation, make the surgery more difficult and predispose for further PVR and recurrence. A thorough removal of the cortical vitreous including induction of PVD is a must to prevent PVR. Meticulous removal of both preretinal as well as subretinal membranes will prevent contracture and recurrence. The scleral buckle or a belt buckle has a big role in prevention. For areas of vitreous traction, supporting the area with a scleral buckle, more so when the involved area is in the inferior quadrants, will mitigate greatly the possibility of PVR.

In cases with contracted retina, adequate relaxing retinectomy and excision of the anterior redundant retina are needed to prevent future contraction. Often the anterior part of the retina is neglected which without the support of laser photocoagulation can contract and lead to PVR and recurrent RD. Increased permeability of the blood retinal barrier will lead to PVR. Hence it is advisable to avoid cryotherapy or use it sparingly. Hemostasis should be done immediately and avoid collection of blood.

Due to gravitational forces the inflammatory material tends to accumulate inferiorly, leading to higher chances of PVR inferiorly. Another reason for the predilection of the inferior retina for PVR is due to inadequate tamponading effect of silicone oil or gas. Both the elements tend to move superiorly leaving the inferior retina inadequately tamonaded. The use of perfluorocarbon liquids (PFCL), heavy silicone oil or Densiron can help prevent the inferior retinal contracture and redetachment. In certain situations, the PFCL can be left in situ for a few days to allow the retina to get reattached and then replace it with silicone oil. Some surgeons have reported success with this kind of a staged procedure.

The role of ILM peeling is debatable. ILM peeling can prevent ERM formation, may reduce recurrence rate but there is no added visual benefit. It may have a role in early PVR but does not have any role in advanced PVR.

Secondary prevention also includes pharmacotherapy, but so far none of the agents have shown any promise. It is known from histological studies that PVR is composed primarily of RPE cells, fibroblasts, glial cells, inflammatory cells and type 4 collagen.[1] Any intervention that prevents the signaling and congregation of these elements secondarily prevents PVR. The important factors in the signaling and proliferation of PVR including platelet-derived growth factor, tumor necrosis factor, transforming growth factor and calcium-independent phospholipase A2. Although these components likely play major roles in the signaling and development of PVR, there are probably other players in this process. Among all the agents, steroids have shown promise as a drug helpful in preventing PVR and thus are used very commonly. Oral steroids, periocular steroids and sometimes even intravitreal steroids are used to prevent PVR. Anti-neoplastic drugs, such as 5-fluorouracil and daunorubicin, displayed mixed results. In addition, their use is limited by systemic toxicity. A promising agent in the treatment of severe postoperative PVR is the antimetabolite agent methotrexate. Weekly intravitreal methotrexate injections of 400 mcg/0.05 mL beginning intraoperatively have been successfully employed to reduce PVR- associated recurrent detachment in high-risk patients.

In conclusion, modern vitreoretinal surgery results in successful retinal reattachment in most cases mitigating the formation of PVR. Timely intervention and meticulous removal of vitreous and retinal membranes helps in preventing PVR. Several adjunctive measures can further help mitigate the risk of PVR.

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Dr. George Manayath

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Dr. Guru Prasad Ayachit

Dr. Harshit Vaidya

Seeking the unseen- detection of secondary membranes for successful outcomes in vitrectomy for diabetic Tractional retinal detachment

Dr Hemanth Murthy

Financial disclosures: Nil

During vitrectomy for diabetic tractional retinal detachment (TRD) the ease of membrane dissection is dependent on identification of secondary membranes. The fibrovascular proliferations often have an edge attached to the hyloid face. This however gives a false plane and makes dissection difficult. This video will demonstrate the identification of the secondary membranes and consequently the cleavage plane using either a pick fashioned out of a hypodermic needle or using Triamcinolone. This way the surgery is more atraumatic and prevents iatrogenic trauma to the retina.

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1. Recognition of vitreoschisis in PDR: A useful landmark in vitrectomy for Diabetic traction detachment, Schwartz et al, Ophthalmology 1996;103(2):323-328

Dr. Hrushikesh Naigaonkar

Dr. Jatinder Singh

Dr. Jay Sheth

Subretinal PVR management

Dr. Jayant Guha

Surgical Nightmares

Dr. Karobi Lahiri

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Dr. Kartikey Singh

Sub threshold laser for macula diseases : Proposed guidelines

Dr Kenneth Fong

Financial disclosures : Honorarium : Abbvie, Bayer, Roche, Lumibird Medical Consultant : Iveric Bio, Lumibird Medical , Rxelient,

Abstract

Subthreshold laser remains an important modality of treatment for common macula diseases like diabetic macula oedema and central serous chorioretinopathy. This talk will cover the history , indications and proposed guidelines for use of subthreshold laser.

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Updates in Myopic Maculopathy

Dr Khaled M Mourad

ICG Angiography

Dr Krishnendu Nandi

Tricks and traps in endophthalmitis

Dr Lalit Verma

Dr Mahesh Shanmugan

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Fibrin Glue to close Retinal Breaks successfully in Complex Retinal Detachment (RD) with Silicon Oil in-situ

Dr Mallika Goyal, MD

Retina-Vitreous & Uveitis Service, Apollo Health City, Hyderabad, India

Concept

Fibrin glue has been used in systemic surgery for hemostasis, tissue sealing, & suture support. It has been used in ocular surgery to seal corneal perforations, leaks, for scleral fixation of IOLs & sealing sclerotomies that leak.

Fibrin glue for retinal indications

Glue-assisted retinopexy for simple rhegmatogenous retinal detachments (CDs) (GuARD) was described by Mudit Tyagi, Sayan Basu et al to seal retinal breaks and obviate the need for oil/ gas tamponade. However, it has not been reported in the management of complex RDs with silicon oil injection.

We first used fibrin glue in September 2022 to close an open retinal break in an eye with failed combined tractional rhegmatogenous RD secondary to Proliferative Diabetic Retinopathy (PDR). The eye had silicon oil in-situ from the primary surgery. An open break superior to macula was the cause of surgical failure. During resurgery, after adequate membrane peeling around the retinal break & sub-retinal fluid (SRF) aspiration the break continued to remain open & was not amenable to endolaser. Fibrin glue was instilled to seal the break on table and silicon oil was retained.

Postoperatively, retina was completely reattached by the end of 1st week. Reviewed a year later there was no inflammation, IOP rise, fibrosis, traction or oil emulsification.

Fibrin glue was subsequently used with success in 2 other eyes with PDR-RD where laser for retinal breaks was not feasible due to overlying retinal bleed & retinal edema.

It was then used in a case of PDR-RD where the retinal break was very close to foveal centre making strong laser an unsafe proposition.

The indication was then extended to non-PDR complex RDs where laser was not feasible: 2 eyes with failed macular hole RD where ILM peeling had already been done in the primary surgery but hole was open; fibrin glue was instilled was over the macular hole with rapid retinal reattachment.

However, a word of caution when used to seal macular holes: the glue migrates subretinally through the macular hole and can cause RPE atrophy which can adversely affect visual outcome as we were able to document in one case.

Hence its use in this indication can be restricted to only where ILM peeling is unsuccessful reducing the chances of surgical success.

Glue was no longer visualised as early as 3 days to 4 weeks after surgery.

No adverse effect was noted when fibrin glue was used with silicon oil in-situ: no case of inflammation, IOP rise or early silicon oil emulsification in the 18 months follow up. Further, the need for postoperative prone positioning was significantly reduced as the break was already closed on the table and closure was not dependant on oil tamponade.

Conclusion:

Fibrin glue can be a useful adjunct in the management of complex RD when laser for retinal breaks is not possible due to bleed, edema, proximity of retinal break to macular centre or macular hole RD.

GP 49: Retinal imaging and Investigations – Differentiating PCV and Wet AMD

Dr Manavi D Sindal

No financial disclosures.

Polypoidal choroidal vasculopathy (PCV) is characterised by nodular dilatations (polypoidal lesions) at the terminal ends of neovascular network – the branching neovascular network (BNN). PCV is one of the "Pachychoroid spectra of diseases".

Indocyanine Green Angiography (ICGA)-
ICGA has been considered as gold standard[1] for the definitive diagnosis of PCV and to differentiating PCV from typical wet AMD. It enables the visualization of choroidal vasculature under RPE even through subretinal or intraretinal fluid, RPE, lipid, and hemorrhage. A typical polyp shows early hyperfluorescence with a halo of hypofluorescence. ICGA is mainly indicated for cases non responsive to treatment or to diagnose extrafoveal polyps that can be lasered.

Optical coherence tomography (OCT)-
Asia-Pacific Ocular Imaging Society (APOIS) proposed a consensus revised nomenclature for PCV component lesions and established "major" and "minor" non-ICGA-based criteria for differentiating PCV from neovascular AMD in treatment-naïve eyes.[2]

The OCT features suggestive of PCV are sharply peaked PED, sub RPE ring like lesion, a notched or multi-lobulated PED, double layer sign, thick choroid, Predominant SRF and BNN on En-face OCT are indicative of PCV. The tall peaked PED seen on OCT corresponds to the polypoidal lesion seen on ICGA.

The 3 major criteria for diagnosis of PCV are sub-RPE ring-like structure on cross-sectional OCT, complex RPE elevation on En face OCT, and sharp-peaked PED on cross sectional OCT. The four minor features are orange nodule on colour fundus image, with thick choroid with dilated Haller's layer, complex or multilobular PED, and double layer sign on OCT.

Optical coherence tomography angiography (OCTA) -
Recent imaging has revealed that the BNN and polyps lie at various levels in a 3-dimentional structure. The polyps are placed nearest to the RPE with the BNN in a deeper layer. A stack is seen at an even further level near the choroid.[3]

Multicolour Imaging (MC)-
Even though BVN is not very well delineated, polyps are well highlighted as dark green oval lesions on the multicolour composite images with higher contrast as compared to the nodular orange appearance on standard colour fundus photographs.[4]

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Dr Maneesh Bapayee

Surgical Management of Stage 4 & 5 Retinopathy of Prematurity (ROP)

Dr Mangat Ram Dogra
Director Retina Services, Grewal eye Institute, Chandigarh

ROP surgery is different from adult retinal surgery. There is great discrepancy in anatomic and functional outcome. Explaining risks benefits ratio to parents and obtaining informed consent is most important. Experienced anesthetists especially for ROP surgery is required.

Surgical management options for stage 4 and 5 ROP include scleral buckling, lens sparing vitrectomy (LSV) or lensectomy vitrectomy.

At present scleral buckling is rarely performed for ROP

However, lens sparing small gauge vitrectomy is the most important and frequently undertaken procedure for stage 4A and 4B ROP. Early LSV is preferred for progression despite laser/anti-VEGF treatment or in late presentation of ROP. It gives best result and prevent progression to stage 5 ROP. Lens sparing vitrectomy prevents risk of amblyopia and glaucoma. A novel 'all-nasal' LSV can be safely performed and the lens can be salvaged in a majority of the 4B cases with temporal tractional retinal detachment. Success rates for LSV in stage 4A is 47% - 97% and in stage 4B is 44% - 78%. Success rate for stage 5 with lensectomy and vitrectomy is dismal and varies from 15%- 33%.

Bilateral sequential ROP surgeries are routinely performed in western world and in India due to aggressive nature of the disease which progresses fast and risk for repeated anesthesia at short interval is avoided. Bilateral same day ROP surgeries are safe in clinical practice has been reported with very low rate of complications including endophthalmitis in several studies. Need of the hour is to have more ROP surgeon in our country.

Dr Manisha Agarwal

Dr Manoj khatri

Dr Manoj Sasawde

Dr Manoj Soman

Pachychoroid spectrum: All you need to know

Dr Mohit Dogra

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Endoscopic Vitrectomy and Endoscopic vitrectomy in endophthalmitis

Dr Mudit Tyagi

A direct visualization of the posterior segment is not possible with conventional imaging techniques in eyes with corneal opacification.

Ever since the introduction of the first ophthalmic endoscope by Thorpe1 in 1934 for the extraction of non-magnetic intraocular foreign bodies, it has served a unique advantage of viewing the posterior segment with less surgical trauma, overcoming the problems of media opacity. In 1990, a 20- gauge endoscope with image projection on an electronic monitor was described.2 An endoscope inserted via pars plana, with minimum manipulation of the eye gives a realistic picture of the posterior segment can help in obviating the challenges posed by opaque media and eyes with keratoprosthesis However endoscopic vitrectomy has its own sets of challenges including a steep learning curve, a lack of stereopsis and a narrow viewing angle as compared to conventional vitrectomies.

These 2 talks will cover the indications of endoscopic vitrectomy including an introduction to endoscopic systems, role of endoscopy in diagnosis and prognostication and video based discussions of role of endoscopy in cases of ocular trauma and endophthalmitis.

An endoscopic intervention in cases of endophthalmitis and in eyes with compromised view because of corneal opacities and / or anterior chamber infiltrates allows for an early intervention and can aid in assessing the retinal status along with better diagnostic yields and a more thorough vitrectomy which would be difficult with conventional viewing systems.

Vitrectomy in Giant retinal tear

Dr Muhammad Moniruzzaman

Dr Naresh Babu

Dr Natasha Radhakrishnan

Dr Navendu Rai

Aflibercept 8 mg in Patients with Neovascular Age-related Macular Degeneration (PULSAR) and Diabetic macular Edema(PHOTON): Results of the Phase 3 Trial at 96-weeks

Dr Nitin Verma on behalf of the Pulsar and Photon study groups

FINANCIAL DISCLOSURES:
Nitin Verma is an investigator in the PULSAR study (Sponsored by Bayer)

PULSAR:

Purpose:
To evaluate aflibercept 8 mg vs aflibercept 2 mg in patients with treatmentnaive nAMD.

Methods:
PULSAR (NCT04423718) is a doublemasked, 96-week (wk), phase 3 trial: patients were randomized 1:1:1 to receive aflibercept 8 FREE PAPERS 44 Retina (Medical) mg every 12 or 16 wks (8q12 [n = 335] or 8q16 [n = 338]) or aflibercept 2 mg every 8 wks (2q8 [n = 336]), each after 3 monthly injections. The dosing intervals for patients in the 8q12 and 8q16 groups could be shortened from wk 16 and extended from wk 52 based on protocol criteria.

Results:
LS mean (SE) BCVA change from baseline at wk 96 (exploratory endpoint) was +6.6 (0.73), +5.6 (0.77), and +5.5 (0.75) ETDRS letters with aflibercept 2q8, 8q12, and 8q16, respectively (non-inferiority at 4-letter margin 8q12 vs 2q8: p = 0.0006; 8q16 vs 2q8: p = 0.0007 [p values are nominal]). Through wk 96, 75% (8q12) and 70% (8q16) of patients maintained ≥12- and ≥16-wk dosing intervals. Among all patients receiving aflibercept 8 mg (8q12 and 8q16 combined), 47% had planned dosing intervals of ≥20 wks at wk 96; 28% had planned 24-wk dosing interval at wk 96. No new safety signals were identified.

PHOTON:

Purpose:
To evaluate aflibercept 8 mg vs 2 mg efficacy and safety in DME.

Methods:
PHOTON (NCT04429503) was a double-masked, 96-week, phase 2/3, noninferiority trial in which patients with DME were randomized to receive aflibercept 8 mg every 12 or 16 weeks after 3 monthly doses (8q12 [n = 328] or 8q16 [n = 163]) or aflibercept 2 mg every 8 weeks after 5 monthly doses (2q8; n = 167). The dosing interval for patients in the 8q12 and 8q16 groups could be shortened from week 16 and extended from week 52 based on protocol criteria. Exploratory endpoints included mean change from baseline in best-corrected visual acuity (BCVA) at week 96 and the proportion of patients with ≥12- and ≥16-week dosing intervals through week 96.

Results:
Mean BCVA change from baseline at week 96 was +8.4 (2q8), +8.8 (8q12), and +7.5 (8q16) letters (least squares mean difference: non-inferiority 8q12 vs 2q8: [nominal P < 0.0001]; 8q16 vs 2q8: [nominal P = 0.0044]). Through week 96, 88% (8q12) and 84% (8q16) of patients maintained ≥12- and ≥16-week dosing intervals, respectively. In the 8 mgcombined group, 44% of patients had assigned dosing intervals of ≥20 weeks at week 96. Of these patients, 27% had assigned dosing intervals of 24 weeks at week 96. Aflibercept 8 mg and 2 mg safety outcomes were similar through week 96.

Conclusions:
PULSAR : Aflibercept 8 mg maintained comparable BCVA gains vs aflibercept 2 mg
PHOTON:Aflibercept 8 mg maintained non-inferior BCVA gains vs 2 mg, with no new safety signals through 96 weeks. Most patients maintained extended dosing intervals of ≥12 weeks (88% in 8q12) and ≥16 weeks (84% in 8q16).

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Managing Macular Edema through suprachoroidal triamcinolone injections: A Four-year Reflection on My Practical Experience

Dr. P. Sriharanathan

Financial Disclosure-Non

This presentation delves into the management of macular edema post-retinal vein occlusion, with a focus on the suprachoroidal triamcinolone injections despite widespread use of intravitreal anti-VEGFs as the another supplementary treatment option for this condition. However, anti VEGF treatment the considerable treatment burden and high costs associated with intravitreal anti-VEGF injections pose significant challenges.

The rapid advancements in suprachoroidal drug delivery technology have provided a promising alternative for administering therapeutic agents to address various ocular diseases, ranging from neovascular age-related macular degeneration to choroidal melanoma. Suprachoroidal delivery of steroids offers a therapeutic efficacy comparable to intravitreal administration, with notable advantages such as an extended half-life (eliminating washout effects and prolonging absorption time) and a lower incidence of intraocular pressure (IOP) elevation.

In this presentation, I will share insights gained from my unit's four years of experience with suprachoroidal triamcinolone injections, highlighting the efficacy bolts and nuts of technique and potential benefits of this approach in managing macular edema following retinal vein occlusion.

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2. Efficacy and safety of Suprachoroidal Triamcinolone Acetonide in cases of resistant diabetic Macular edema Haroon Tayyab,[1] Chaudhry Nasir Ahmed,[2] and Muhammad Ali Ayaz Sadiq[3]
3. A beginner's guide to suprachoroidal injections Carol Villafuerte-Trisolini, MD, and Glenn Yiu, MD, PhD

Vitrectomy for Diabetic TRD

Dr Parveen Sen

The utility of multimodal imaging in retinal diagnosis

Dr Peter Hadden

No financial disclosures

Multimodal imaging is defined as 'using more than one technological system to acquire images ...that complement one another for the purposes of diagnosis, prognostication, management and monitoring of disease (includes say both an OCT B-scan and OCTA).[1] The advent of multimodal imaging has allowed the identification and diagnosis of clinical conditions at a much earlier stage and with greater accuracy than was the case previously. Modalities include:

Photography:
Useful in diagnosis, telehealth and monitoring (e.g. naevi)
Wide field imaging such as Optos also captures the peripheral fundus

Different filters can be used:
- Red filter photography images the choroid better
- Red free photography highlights retinal haemorrhages and vessels
- Autofluorescence identifies lipofuscin and other fluorophores
  - Identifies RPE dysfunction
  - Identifies loss of photoreceptors
  - Identifies subretinal fluid
- Fluorescein and ICG angiography also still relevant, e.g. in juxtafoveal telangiectasis and choroidal neovascularisation, but often not required

OCT:
B scan – can either use single B-scan or computer reconstruction of multiple slices
Variations include:
- Enhanced depth imaging – for imaging the choroid
- OCT angiography – using doppler shift to image flowing blood[2]
  - Beware segmentation artifact

Ultrasound:
Images on a larger scale, using sound
- Allows measurements of lesion size
- Allows diagnosis based on echogenicity and morphology
- Images through opaque media

Examples of multimedia imaging are given including:
- Choroidal melanoma[3]
  - 'To find small ocular melanoma using imaging'
- Adenocarcinoma of the RPE
  - Dark on FAF, not choroidal on OCT EDI and hyperechoic on B scan
- Torpedo maculopathy[4]
  - OCT shows serous separation (cavitation defect),
  - Pale orange lesion shows up bright on red-free imaging
- Peripheral exudative haemorrhagic chorioretinopathy
  - Changes over time on photographs
  - OCT may show lesion
- Crystalline maculopathy
  - Thin macula with hyperreflective lesions in inner retina and FAF changes centrally
- Choroidal osteoma
  - Very hyperechoic on B scan, with acoustic shadowing

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Surgery in Vitreo macular interface disorders

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Managing PVR

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Silicone oil in endophthalmitis

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Endoscopic vitrectomy in endophthalmitis

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Therapeutic Targets for Anti-VEGF: Molecular Insights and Clinical Translation

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Retinal autograft in macular hole

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Through the last decade, the surgical prognosis of an idiopathic macular hole (MH) has improved significantly, mainly because of the constant refinement of surgical techniques as well as the development of new and specialized surgical instruments and dyes. Such improvements have encouraged retinal surgeons to try expanding surgical indications to MH with clinical characteristics associated with poorer prognosis like MH associated with high myopia, or retinal detachment, inflammatory diseases, and extremely large macular holes.

The Full Thickness Autologous Retinal Transplant (ART) technique provides a useful surgical option in these special circumstances where conventional Internal Limiting Membrane peeling does not yield high anatomical closure rates.

The neurosensory retinal graft serves the double purpose of a barrier between the vitreous cavity and subretinal space and as a scaffold for the migration of muller cells. Its advantages over other tissues used for transplantation include easy availability, easy handling due to greater thickness, and better tissue integration. OCT- and OCTA-based studies have shown that the transplanted retinal graft tends to integrate into the host retina with centripetal migration of the surrounding retina, partial outer retinal layers recovery, cellular rehabilitation, and partial vascular reperfusion of the graft. It is hypothesized that the transplanted photoreceptor cells establish synapsis with bipolar cells in the host area. The retinal graft may also contain retinal progenitor cells (RPCs), which have the capability to differentiate into photoreceptor and ganglion cells.

Studies evaluating microperimetry have shown an improvement in sensitivity. Multifocal electroretinography (mfERG) showed 50% recovery in the responses from the retina stimulated by the first ring and complete 100% responses from paracentral retina covered by the second ring.
The various intraoperative complications include graft slippage, undersized graft, sub foveal retinal pigment epithelium damage and intraoperative bleeding. Great care must be exercised to maintain the correct polarity of the graft. Postoperative complications include graft shrinkage and dislocation, proliferative vitreoretinopathy changes, retinal detachment, sub foveal RPE damage, choroidal neovascularization.

This ART has been proved to be a good reliable technique for refractory and large macular hole cases with highly rewarding anatomical and functional success rate.

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Nucleus drop/iol fixation- combined surgery

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ERG and its clinical application

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Limited vitrectomy

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Refractory DME

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Current role of retinal lasers

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Scleral buckle in the era of vitrectomy

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Managing Suprachoroidal Hemorrhage

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Macular Buckle

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Outline

- Evolution of macular buckle
- Understanding posterior staphyloma and the related mismatches between sclera and retina
- Describe the components of myopic traction maculopathy namely retinoschisis, posterior cortical vitreous attachment, lamellar macular hole, full thickness macular hole, epiretinal membrane, neurosensory detachment, subretinal fluid, and macular detachment
- OCT in myopic traction maculopathy
- Indications for isolated macular buckle and combination with vitrectomy
- Contraindications
- Anatomical outcome of the surgical intervention were resolution of schisis, reattachment of fovea and macula, and closure of macular hole.
- Prognostication of outcomes on the basis of Curtin's classification.
- Complications

Conclusions

- Combined vitrectomy with macular buckling is an effective approach to attain closure of macular holes in eyes with associated foveoschisis and posterior staphyloma
- Macular buckle is better suited in moderate to severe posterior staphylomas measuring >2 mm on B scan
- For Curtin's types 1, 2, and 9 posterior staphylomas macular buckle technique is successful
- Retinal pigment epithelium changes, malpositioning, perforation, and choroidal detachment were the main complications.

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Intraoperative Three-Dimensional Fluorescein angiography assisted Vitrectomy

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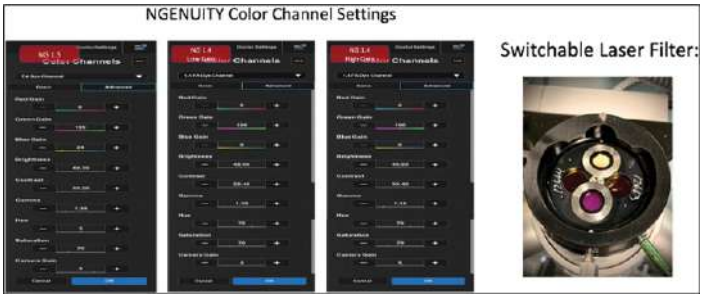
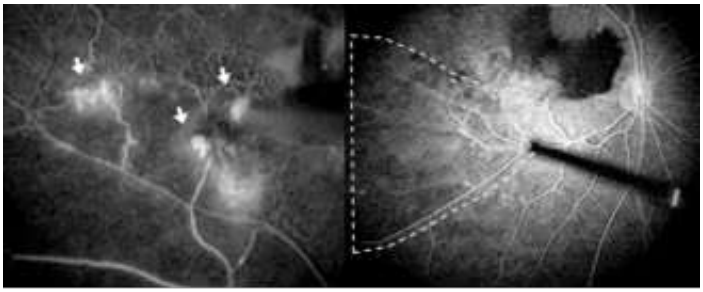
Intraoperative fluorescein angiography (IOFA) was first reported by Charles1 in 1980s. However, the captured images were limited by both resolution and two dimensionality.2 As cameras and digital imaging processing became more advanced, digitally assisted vitreoretinal surgery (DAVS) was refined. Imai et al3 developed IOFA during DAVS for pars plana vitrectomy (PPV) using excitation and the barrier filter to fit into a light source and an operating microscope, respectively. MS Cardamone et al4 modified the method of Imai, by placing the exciter filter directly into the Constellation Vision System to avoid switching to an alternative light source and ultimately designing a digital barrier filter for DAVS that omits the need for placement of an analog barrier filter in the surgical microscope. The NGENUITY 3D visualization system (Alcon Laboratories, Inc) used as a platform for imaging processing. The settings of NGENUITY 3D visualization system were adjusted.

Fluorescein Angiography Procedure-A 485-nm bandpass filter, 14 mm in diameter, was placed into the filter holder of the accessory light sources of the CVS with steel modified washers. The steel washers were engineered with an outer diameter of 24.77 mm, inner diameter of 14.00 mm, and width of 2.0 mm to produce an exciter source. Initially, a 535-nm bandpass filter, 12.5 mm in diameter, was placed in another steel washer with an outer diameter of 20 mm, inner diameter of 12.5 mm, and width of 2.0 mm and was ultimately placed into the blank slot of a switchable laser filter to produce a barrier filter. As an alternative to the physical barrier filter, a specific color channel was developed for DAVS using NGENUITY to engineer a digital barrier filter. To perform IOFA, a light pipe endoilluminator and/or a chandelier was placed into the accessory light source of the CVS, where the exciter filters had been installed and the light source intensities were increased to 100 for the light pipe and 105 for the chandelier. Sodium fluorescein, 2.5 to 5 mL, 100 mg/mL, was then injected intravenously to produce a signal. Vascular fillings were observed in real time. The choroidal phase is qualitatively more pronounced with relative increased fluorescence to that noted in the clinic. Increased filling were observed in the settings of increased intraocular pressure, systemic hypotension and poor microvascular circulation. Discrete vascular blockages are readily identified in BRVO. In the scenario of CRVO, increased vascular filling time, venous tortuosity, and AV shunt vessels can be identified. Multiple intravascular abnormalities can also be identified. Residual microvascular abnormalities with leakage can be found after membrane delamination for PDR or other ischemic retinopathies only with IOFA. Laser or diathermy can be applied to residual microvascular abnormalities to decrease the risk of postop vitreous hemorrhage. Regions of retinal capillary dropout can be identified by IOFA so that the panretinal laser can be altered to treat areas of ischemia with more confluent laser to relatively spare areas of better perfused retina. Both inflammatory CME and perivascular leakage can be visualized in eyes affected by uveitis or infection. In addition, relative activity of inflammatory lesions can be observed by the presence or absence of fluorescein leakage. Retinal neovascularization often adjacent to areas of retinal capillary dropout were easily observable during IOFA. Often, the delineation of neovascularization helpful to identify tissue to delaminate during vitrectomy. High degree of depth of resolution permits precise delamination of ILM in some cases.





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The transition to IOFA and back to standard DAVS routinely takes less than 1 minute. This negligible delay intraoperatively allows IOFA to be routinely used without significantly increasing operative time. Intraoperative fluorescein angiography reliably reproduced many routine clinical biomarkers such as vascular filling times, vascular occlusions, shunt vessels, retinal capillary dropout, and both retinal and choroidal neovascularization. Together with the other advantages of DAVS, IOFA provides access to important fluorescein angiography data to truly enhance surgical visualization during vitrectomies. Moreover, identification of fluorescein angiography biomarkers permitted modification and optimization of many surgical interventions intraoperatively.

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Dr. Sunny Sengupta

Antimicrobial Susceptibility in Endophthalmitis Management Study

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The Endophthalmitis Management Study (EMS) is a multicentre prospective randomised clinical trial of post-cataract surgery endophthalmitis.[1] it is registered in the Clinical Trial Registry of India (CTRI/2019/02/017876). One of the objectives of EMS is to identify the most suitable intravitreal antibiotic combination for treating acute post-cataract endophthalmitis in India.

The EMS recruited 348 patients; the average age was 63.08 (range 31 to 88) years, and 53.7% (187 of 348) were males. The vitreous culture was available from 337 (96.8%) patients. The culture positivity was 28.8% (97 of 337). There were growth of 97 microorganisms (90; 92.8% bacteria and 7; 7.2% fungi). The sample was inadequate in the remaining 11 patients (not dry tap) for a complete microbiology work-up. Polymerase Chain Reaction (PCR) was positive in another 92 vitreous samples; thus, microbiology positivity was 56.1% (189 of 337). Multi-drug resistance, defined as resistance to three or more antibiotics, was 40.2%, and in most instances, it was for gram-negative bacilli (83.8%).

In this communication, we confine to the conventional culture-susceptibility results. In general, the gram-positive cocci had good susceptibility to cefazolin, linezolid, and vancomycin; the gram-negative bacilli had good susceptibility to amikacin, ceftazidime, ciprofloxacin, colistin, and imipenem. A higher proportion of gram-positive and gram-negative organisms were susceptible to vancomycin and colistin, respectively. (Table 1) [2] There were 27 microbiologically positive (culture + PCR) fungal infections, but only seven were culture-positive. The culture-positive fungi were resistant to commonly used antifungal agents- amphotericin B and voriconazole. (Table 2) [2]

Table 1. Antibiotic susceptibility (against bacteria) in the Endophthalmitis Management Study. Given the small numbers, gram-positive bacilli (n=3) is not tabulated. [2]

No.	Antibiotic	GPC (n= 30)% 33.3% of bacteria		GNB (n= 57)% 63.4% of bacteria	
		(n) %	p vs. ciprofloxacin unless specified	(n) %	p vs. moxifloxacin unless specified
1	Amikacin	NP	-	(43) 75.4%	<0.000 vs. ceftazidime = 0.763
2	Cefazoline	(30)100%	<0.0001	NP	-
3	Ciprofloxacin	(10) 33.3%	-	(31) 54.4%	<0.0001
4	Ceftazidime	NP	-	(41) 71.9%	<0.0001 vs. colistin= 0.047
5	Colistin	NP	-	(50) 87.7%	<0.0001
6	Imipenem	NP	-	(41) 71.9%	<0.0001 vs. ceftazidime= 1.0
7	Linezolid	(28) 93.3%	<0.0001 vs. vancomycin = 0.238	NP	-
8	Moxifloxacin	(14) 46.7%	0.61	(14) 24.5%	-
9	Piperacillin-Tazobactam	NP	-	(28/49) 57.1%	0.16 vs. ceftazidime = 0.094
10	Vancomycin	(29) 96.7%	<0.0001 vs. cefazolin= 0.999	NP	-

NP- not performed

Table 2. Antifungal Susceptibility in the Endophthalmitis Management Study.[2]

#	Fungal growth	Susceptible	Resistant
		Molecule	
1	Acremonium spp.	Caspo, Posa.	Ampho, Keto, Mica, Vori
2	Aspergillus flavus	Caspo, Posa.	Ampho, Keto Mica, Vori.
3	Aspergillus fumigatus	Caspo, Keto, Nata, Posa, Vori.	Ampho, Mica.
4	Aspergillus nidulans	none	Resistant to all tested antifungal molecules
5	Fusarium solani	Nata	Ampho, Caspo, Keto, Posa, Mica, Vori
6	Fusarium spp.	Nata	Ampho, Caspo, Keto, Posa, Mica, Vori
7	Fusarium spp.	Nata	Ampho, Caspo, Keto, Posa, Mica, Vori

Ampho- Amphotericin B, Caspo- Caspofungin, Keto- Ketoconazole, Posa- Posaconazole, Mica- Micafungin, Nata- Natamycin, Vori- Voriconazole

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Management of advanced diabetic eye disease: A hope to the desperate

Dr. Tarek Maamoun

Diabetic Membrane Shaving

Dr. Tariq Reza Ali

OCTA clinched the diagnosis

Dr. Unnikrishnan Iyer

Supine positioning post RD surgery

Dr. Vinod Agarwal

Role of ultrawidefield imaging in everyday practice

Dr. Vishal Agarwal

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