Experts weigh in on various operative approaches to macular hole retinal detachment (MHRD) repair in high myopia.

Current clinical evidence on the treatment of polypoidal choroidal vasculopathy (PCV) was discussed in one of yesterday’s symposium.

Taipei’s weather cooperated when the rain stopped just in time for Run for Nepal. Check out some of the photos...

The 31st Asia-Pacific Academy of Ophthalmology Congress (APAO 2016) held in conjunction with the 57th Annual Meeting of the Ophthalmological Society of Chinese Taipei hosted around 750 speakers and more than 5,000 delegates from across various subspecialties in ophthalmology and visual sciences worldwide.

Precision eye care, patient-centered prevention, and treatment served as important themes of the 4-day event. Delegates were “treated” to an array of novel procedures and tools, as well as current disease management options based on individualized cases.

Just yesterday, we learned that retinal hemorrhages in babies – which occur in no small part due to the trauma of birth – has still unknown clinical impact. Data about that impact is due out this year, said Professor Darius Moshfeghi, M.D., Stanford University School of Medicine, U.S.A., who speculates that there may be some tie-in to the development of lazy eye.

Technology is booming in ophthalmology, whether it be in terms of medical devices, pharmaceuticals or formulas. Experts indeed need venues such as APAO to convene in a regular manner to bridge the knowledge gap and to collaborate with peers to further improve patient outcomes.

Besides, the social program of APAO 2016 was second to none.

Retina Night, held last night, was evidence of these specialists’ ability to put scientific learning aside, bond and network over a fun-filled evening of performance and comedy. That MC was great!

Two nights ago, the Gala Dinner also provided a stunning visual show of lights. But not to be forgotten was the Welcome Reception, which reminded attendees that Taiwan has aborigines too.

Culture. That was the perk of coming to Taiwan for APAO 2016, where the fantastic food, and polite manners of local people set the tone for this Asian congress in a refreshing way.

And get ready for APAO 2017, to be held in Singapore.

Land of the Merlion, delicious satay, stunning architecture and lush greenery, Singapore is poised to delight the senses and intellect.

Home to Singapore National Eye Centre – and its myriad of innovative research and world-class ophthalmology services – Singapore will host regional and international ophthalmologists that are sure to benefit from attending this congress.

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SPECIAL REPORT on OCT

SPECTRALIS MultiColor Scanning Laser Imaging: A New Level of Diagnostic Power

Traditional diagnostic imaging tools such as the color fundus camera may not be sufficient anymore in determining retinal diseases.

In screening for diabetic retinopathy and diabetic macular edema, for example, detection of early features is critical to ensure timely intervention. The shortcomings of traditional fundus photography are being addressed with the utilization of newer technologies such as scanning laser fundus imaging, optical coherence tomography (OCT) and widefield imaging.1

Compared to its predecessors, spectral domain OCT (SD-OCT) is known for a much faster acquisition time and in delivering a largely increased amount of data that can be obtained during a given scan duration.2 SD-OCT acquires all information in a single axial scan through the tissue simultaneously through evaluation of the frequency spectrum of the interference between the reflected light and a stationary reference mirror.

The SPECTRALIS MultiColor Scanning Laser Imaging (Heidelberg Engineering, Heidelberg, Germany) combines simultaneous and selective color fundus imaging and gives detail and contrast that can better help clinicians in identifying pathologies that are unclear or difficult to see in the corresponding fundus image.

Providing a new dimension in multi-modality fundus imaging with the SPECTRALIS platform, MultiColor Scanning Laser Imaging uses multiple laser colors simultaneously to selectively capture and display images of different retinal structures in one examination. The resulting diagnostic information can then be extracted out of high contrast, detailed fundus images even in cases of difficult patients (i.e. those with cataracts, nystagmus, etc.). Simultaneous imaging using multiple laser colors provides diagnostic information that originates from various structures at different depths within the retina.

The key features and advantages of MultiColor imaging:

- Identification of fine anatomic details is made possible by the high contrast and quality of the MultiColor image.
- The presence and extent of multiple reticular drusen is readily visible.
- The full extent of subretinal and RPE alterations is revealed.
- Since the MultiColor image is composed of three simultaneously acquired selective color laser images, users have the option to view both the MultiColor image and the individual color images. This versatile feature provides additional diagnostic power by highlighting structural detail from different depths within the retina.

In diagnostic imaging of DR and DME, the fundus camera and MultiColor image reveal multiple areas of fibrotic tissue due to laser photocoagulation. Areas of abnormal structure in the macula, which may be difficult to identify from the fundus camera image, are clearly visible in the MultiColor image. Furthermore, the corresponding OCT image shows diffusive thickening of the retina and cystoid macular edema.

Out of Heidelberg Engineering’s core strengths including the confocal scanning laser, active live eye tracking and noise reduction technology, the new MultiColor imaging modality of the SPECTRALIS platform was born. Experts agree that the combination of MultiColor fundus imaging and OCT in a single device puts the SPECTRALIS multi-modality platform on a whole new level of diagnostic power.

References:
Symposium in Focus: 
Variety of Operative Approaches for MHRD Repair

by Claire Noonan

Rates of myopia are projected to increase to up to 50% of the population by 2050. It is likely that over 100 million people would then meet the criteria for myopic macular degeneration (MMD), so it is more important than ever to refine the surgical approaches for management of macular hole and retinal detachment.

Professor Tien Wong M.D., Ph.D., Director of Singapore National Eye Centre, addressed delegates at the 31st Asia-Pacific Academy of Ophthalmology Congress (APAO 2016) about the epidemiology of MMD, which is increasing in incidence. It is now about as common as glaucoma, said Professor Wong.

Ten percent of people with MMD will develop myopic choroidal neovascularisation (CNV), so 5 to 10 million people are likely to develop CNV by 2050, meaning it will outweigh diabetic retinopathy in incidence. Professor Wong says industry is interested, and with good reason.

“Myopic CNV is treatable and potentially curable,” he said.

Professor Yasushi Ikuno M.D. of the Ikuno Eye Centre and Osaka University Medical School in Japan, explained the pathogenesis of surgical maculopathy in high myopia.

“There are a lot of underlying tractional forces in myopic eyes,” said Professor Ikuno. “The inner retina is lifted and pulled off the outer retina that is being pulled back by the posterior staphyloma formation,” he said. Finally, the Muller cell cone ruptures and a hole forms.

He explained there are two types of macular holes in myopes: the flat type and the schisis type. The latter is rapidly progressive. He mentioned that for one patient with this type of hole, visual acuity declined from 20/60 to 20/200 in only two weeks.

During the session, retinal surgeons discussed their preferred techniques for treating macular hole retinal detachment (MHRD), sharing cases and videos. Procedures included internal limiting membrane (ILM) implantation and lens capsule flap transplantation.

Professor Masahito Ohji, M.D. of the Shiga University of Medical Science, said regarding scleral shortening for refractory cases, lamella resection and scleral imbrication are comparable. Imbrication is preferred by some practitioners as it is a shorter, easier procedure.

The optical coherence tomography (OCT) at follow-up post-imbrication shows excellent anatomical results with a 100% rate of retinal reattachment in one case series. Macular holes close, and axial length shortening is sustained.

Professor San-ni Chen, M.D. of the Changhua Christian Hospital in Taiwan, discussed the outcomes of various methods of macular hole closure. She also reminded delegates why closure is one aim of treatment.

“It is an important variable in visual outcome,” she said.

Professor Chen described a repair technique where a large semicircular inverted ILM flap was performed. “We tear a circle of fascia around the macular hole to make a donut shape,” she said. “Then we carefully attach the ILM to the edge of the macular hole [and insert it].”

The remaining intravitreal fluid helps bring down the ILM flap to cover the macular hole.

With the development of these new techniques, patient prone-time postoperatively could be reduced.

Professor Tzyy-Chang Ho, M.D. from the National Taiwan University, compared the merits of various surgical approaches. He noted that with foveola preservation, contour recovered as did Muller cell cones. Foveola preservation also had an axial shortening effect.
Symposium in Focus:
New and Evolving Laser Ophthalmic Surgery

by Helin Räägel

Technological advances in laser eye surgery are in pursuit of making the surgical interventions ever more safer and faster. This session highlighted both the advantages and pitfalls of the emerging technology on the market for cataract surgery – the femtolaser system.

Dr. Viraj Vasavada (Raghudeep Eye Hospital, Gujarat, India) introduced her study on using femtolaser technology in pediatric cataract surgery and highlighted that in her practice the system produces better results than the standard phaco-technology, leaving her young patients in good postoperative condition with no damage or inflammation even after only 1 day of surgery.

The ‘father of LASIK’ Dr. Ioannis Pallikaris (University of Crete, Greece) agreed with Dr. Vasavada and presented his own data using a modified next generation ReLEx system for small incision lenticule extraction (SMILE). SMILE uses femtolaser technology and promises a faster and more minimally invasive treatment due to smaller incisions created by single-step laser cutting. Moreover, he emphasized that because this system allows better preservation of the biomechanical properties of the anterior stroma, cornea, as well as corneal nerves, patients are less likely to develop post-surgical complications, like dry eye syndrome.

In addition to applying femtolaser technology to cataract surgery, Dr. Jorge Alio (University Miguel Hernandez de Elche, Alicante, Spain) proposed an alternative utilization of the technology for keratopigmentation (KTP). KTP or corneal tattooing is a cosmetic treatment of eyes, where the pigmentation of the cornea can be altered with superficial addition of pigments, and can be used for example in cases, where the patient’s eye has undergone iris atrophy and lost its normal color due to trauma (like traffic accidents).

Major limitations in femtolaser surgery however, arise from the fact that it is an emerging approach, and due to this the possible long-term side effects are still unknown, emphasized Dr. Vasavada. Moreover, as the femtolaser setup is still in its infancy, the costs for setting it up for use are extremely high. Dr. Mark Wilkins (Moorfields Eye Hospital, United Kingdom), Dr. Daniel Epstein (University Hospital, Zurich, Switzerland) and Dr. Peter Barry (The Eye Clinic, Dublin, Ireland), also added the importance of conducting comparative studies that would address the question whether the femto system indeed outperforms the current practice phaco-system, or is the fuss around femto only a clever marketing “strategy”.

Dr. Epstein emphasized that currently there are no published results showing that the femtolaser approach for corneal incisions provide better outcomes than manual cuts with blades. In fact, “a small study (n=56) shows decrease of pupil size (myosis), a slightly higher occurrence of corneal edema (0.5% compared to 0.2%), and a higher probability of reduced visual acuity (3.3% compared to 1.1%) post-surgery than with the phaco-system. Dr. Barry added that a case control study, carried out by the European Society Of Cataract and Retractive Surgeons (ESCRS) including over 2,800 patients who received femtolaser surgery and nearly 5,000 patients with phaco-surgery, demonstrated that femto system produced slightly worse results in postoperative complications, including reduction in visual acuity, and development of uveitis. However, he noted that in the case of post-surgical astigmatism, femto-results were better than the outcomes of phaco-surgery. Another comparative study is currently being carried out in Britain in a government-funded healthcare environment, said Dr. Wilkins, and they hope to get more answers in the upcoming years.

“We have to realize that femto is still in its infancy, while the phaco-system has been in business for 30 years. And even though skepticism about the superiority of the new system exists, it doesn’t mean than in 5 to 10 years the femto and automated surgery will not take over,” said Dr. Barry. However, Dr. Wilkins concluded that before the price of the femtosystem drops dramatically, he doesn’t see it being implemented any time soon at least in the government-funded healthcare system.
Towards Universal Infant Screening with The Aid of New Wide Angle Retinal Imaging Technology

Professor Darius Moshfeghi, M.D., from Stanford University School of Medicine, USA, opened the session. He described how telemedicine has transitioned since the year 2000, and the role played by the Sundrop network, a community telemedicine initiative that began in 2007.

**Benefits of mobile screening**

Telemedicine screening has now become an acceptable and viable option, with ophthalmologists reading images much as a radiologist does, rather than doing a live evaluation. This can increase the availability of early screening.

Professor Moshfeghi spoke of the wish he shares with many ophthalmologists around the globe that newborn wide angle visual screening become universal and mandatory, the way early hearing screening is in many countries.

Professor Moshfeghi said that for a screening test to have a socioeconomic benefit, one of its characteristics should be that it targets a prevalent disease. Compared with a 1 in 300 to 500 rate of hearing deficits among newborns, the prevalence of visual defects of 1 in 70 clearly shows that newborn visual screening is warranted.

“It’s not an original thought on my side,” he said, noting that in some countries a screening program is already in place. “People have been doing it on the sly and not really talking about it.”

An opportunity is provided with the millions of newborn examinations that are already being done in the USA every year. “For something that we’re doing that often, we should have some sort of confidence that it’s worthwhile,” he pointed out.

The wide angle imaging results gleaned from data after seven years of Sundrop shows that screening is 100% sensitive and 99.8% specific. He compared this to the standard paediatric eye exam, which has a sensitivity of only 12.9% and 91.7% specificity, and a low rate of agreement between specialists as to their findings.

The quality of images is continuing to improve as the technology evolves. The cameras are expensive however, and all the hours they sit unused can waste valuable potential screening time.

The Panocam increases available screening opportunities by enabling mobile screening. The handpiece can be taken with the health professional who takes images that can later be synced, wirelessly, with the main unit. After syncing, the images can be viewed on the main unit, or anywhere with internet and a laptop.

Professor Moshfeghi has initiated the Global Universal Eye Screen testing (GUEST) study, which is examining data from an international cohort and aims to identify screening that could be done with the least training and the highest rate of agreement on results.

“What I really want to do is to find the cheapest screener that can identify whether disease is present or not.”
Imaging technology aids collaboration and training

Discussion moved to the panel and Professor R.V. Paul Chan, M.D., FACS, of the University of Illinois College of Medicine, USA, agreed that imaging facilitates optimal care in the way it enables ease of access to a second opinion.

“The imaging helps us communicate and really share expertise, and I think that’s very helpful,” he said.

Professor Moshfeghi agreed. “You can phone a friend, and that’s very powerful.”

Professor Chan says that in his opinion, imaging and indirect ophthalmoscopy are not exclusive, but rather synergistic.

“Ophthalmoscopy can visualize things that imaging can’t detect, and vice versa,” he added.

Professor Wei-Chi Wu, M.D., Ph.D., from Chang Gung Memorial Hospital, Taoyuan, Taiwan, has a RetCam at the hospital where he works but it is not yet being used in a telemedicine program. He points out the usefulness of imaging also extends to the ability to document and track progression.

Discussion turned to the importance of credentials and mentorship in learning to reliably perform pediatric evaluations.

Professor Chan commented on the lack of existing training during residency for doing retinopathy of prematurity (ROP) screening.

“There are major deficiencies in how we train,” he said.

Creating new systems to educate doctors can be facilitating using imaging and web based technology.

“One of the things we can do in this global community is this concept of telementoring. Now, we have the technology to support it,” added Professor Chan.

On the other hand, Professor Wu commented on the usefulness of digital imaging as a teaching tool. With the aid of imaging, large groups of doctors can view the same case, whereas it would hardly be practical for 20 doctors to all perform ophthalmoscopy on the patient.

“It’s impossible for all of us to do the examination. It’s stressful for the babies.”

Increased availability of imaging would aid in triaging cases, he added. Patients have been referred to him on an urgent bases who turn out to only have stage 1 or stage 2 ROP. Imaging could enhance communication between different parts of the medical team.

Future directions

Ray Hunt, director of Sales of Visunex, took the podium to inform delegates that although Visunex is a young company, they have a lot of expertise on board.

He recognises the need to have not only reliable hardware, but also good software.

Ray Hunt outlined how the Panocam system could be used in a wide reaching screening program, with its mobile handpiece and wireless feedback of images. He assured delegates that the accompanying software is ‘robust.’

“Creating new systems to educate doctors can be facilitating using imaging and web based technology. One of the things we can do in this global community is this concept of telementoring. Now, we have the technology to support it,” added Professor Chan.

Professor Moshfeghi said the handpiece is lightweight at between 500-600g. New lenses are being developed to also enable fluorescein angiography and wide angle OCT.

“This will be very nice,” he said.

“It’s an exciting time to be in the pediatric imaging space,” he added.
Three experts in the field highlighted clinical studies from the United States, Taiwan and Japan showcasing the latest data on comparative studies on treatments for PCV. As current first-line treatment agents vary drastically from region to region in the world, from the use of photodynamic therapy (PDT) (in countries like Japan) to anti-VEGF agents like Ranibizumab or Afibercept (in countries like USA), there is a strong need for the development of uniform detailed guidelines for the best care options for the patients.

Dr. Seenu Hariprasad (The University of Chicago Medicine) reported on results from the study VIEW1 and VIEW2 conducted in the US, where effects and outcomes of two different VEGF-inhibitors – Ranibizumab and Afibercept – were assessed. During the study, the participating patients received either monthly injections of Ranibizumab or bimonthly injections of Afibercept. The study highlighted that both drugs proved to have similar efficacy in reducing the number of intraretinal cysts, and improved vision in the majority of the patients. “The biggest difference between Ranibizumab and Afibercept is the durability and therefore the frequency of injection of the drugs. Thus, if we can accomplish the same efficacy in the outcome of treatment with Afibercept with less burden on patients due to lower number of injections, we should always opt for that,” said Dr. Hariprasad.

However, a concern always persists with how translatable is this data to other populations in the world. Dr. Hariprasad showed results from studies in France (RAINBOW), Germany (PERSEUS), and Italy (PERSEUS-IT), which demonstrated similar outcomes to the study reported from the US. Nevertheless, since ethnic (genetic) diversity may play a role in how treatment affects patients, and as the Asian population seems to be more susceptible to the development of PCV, analogous trials were carried out in South Korea and Japan. Dr. Ji Eun Lee, an associate professor at Pusan National University Hospital carried out a study in 48 patients in South Korea. He reported that 87.5% of patients receiving bimonthly injection of Afibercept experienced better visual acuity after 12 months of treatment with reduced fluid and regression of polyps in the eye. Nevertheless, there were some patients who despite receiving the same treatment, developed sudden hemorrhages and new polyps with a dramatic decrease in visual acuity after 6 to 12 months of Afibercept injections.

Finally, Dr. Yuji Oshima (Kyushu University) presented a study performed in Japan. Current guidelines in Japan direct the ophthalmologists to treating PCV with PDT as a first-line treatment option. However, as seen from the data presented by Dr. Oshima, better outcomes were achieved with Afibercept treatment with either partial or complete polypoidal regression observed in over 90% of patients. He emphasized that this study should be used to change the current protocol from PDT to Afibercept as the first-line drug, and that PDT should only be utilized in patients not responding to Afibercept treatment.

“With the advent of efficient and durable anti-VEGF agents such as Afibercept on the market, policies for treatment of PCV should be assessed to promote the use of more potent and patient-friendly drugs,” concluded Dr. Hariprasad.
Symposium in Focus:

Using Technology to Optimize Cataract and Refractive Workflow

by Helin Räägel

The key to successful treatment of cataract arises from three aspects: the use of the best available technology, best available intraocular lenses (IOLs), and the best postoperative outcomes.

The technological advances in the development of superior surgical systems continuously improve the outcome of surgery. Dr. Boonchai Wangsupadilok (Prince of Songkla University, Thailand) showcased the latest version of the CENTURION Vision System (Alcon, Texas, USA) with modules for active fluidics control and balanced energy. “The new optical dual pressure system monitors the intraocular pressure (IOP) as well as corrects faster for any fluctuations during surgery, creating a more stable environment for the eye during the operation,” he said. He also added that the balanced energy module introduces innovative software, novel tips and infusion sleeves that make the system more easily usable by surgeons, customizable to individual patient’s needs, and thus is a safer, more uniformly successful system for cataract surgery.

Dr. Jony Chang emphasized the importance of choosing the right IOL for the patient. He himself has been using the family of AcrySof IOLs (Alcon, Texas, USA) due to the high quality of their lenses, precise edge design technology, and superior bioadhesion, resulting in higher stability of the lens and more satisfied patients even after years of surgery.

“We want happy patients, and to achieve that we need to perform long-term follow-ups with patients to monitor the stability of their IOLs,” said Dr. Chang. Ninety four percent (94%) of his patients enjoy long-term stable vision and less than 5-degree rotation of the lens. He added that since AcrySof has a full spectrum of lenses with different properties available, it makes it easy for the doctor to customize the lens for individual patients’ needs.

Moreover, in his opinion, AcrySof IOLs outperform other IOL materials in functional tests, such as in night-driving conditions, and because of these reasons, he will continue to use them in his practice.

The final cornerstone for successful surgery is postoperative care, said Dr. Tat Keong Chan (Singapore National Eye Centre, Singapore). “We can use the best technology possible, and the best materials available, but we have to always look out for post-op complications, such as infections or inflammation, and be ready to start with treatment at the first signs of occurrence.”

Infection is typically caused by either bacterial or fungal contamination and can evoke the generation of endophthalmitis, which if left untreated could lead to the loss of vision and of the eye itself. However, it can be treated with timely intravitreal injection of antibiotics. Inflammation brought about by, for example, toxic anterior segment syndrome (TASS) is another postoperative complication that requires swift intervention, without which it might induce keratic precipitates on the cornea, possible secondary glaucoma or in the worst case scenario destroy the entire cornea leading to blindness. TASS is caused by toxicity to antibiotics, endotoxins, substances from liquids or hardware used in surgery, among others. Current treatments for TASS include steroidal drugs; however, Dr. Chan introduced a novel non-steroidal anti-inflammatory drug (NSAID) called Nepafenac, which in his hands have proven to have superior efficacy in suppressing inflammatory responses in cataract patients. Nepafenac is a prodrug, meaning it becomes active only once inside the eye. Intraocular enzymes convert it into its active Amfenac form providing minimal toxicity in the surrounding tissues, and efficient target specific reduction of intraocular inflammation and associated swelling. Despite its positive applications in Dr. Chan’s practice, this drug is not approved for use in many countries.

The continuous advances made to technology, IOL materials, and post-surgical patient care, as well as the increasing level of technical skills of surgeons carrying out the operation will hopefully make the procedure for cataract surgery removal increasingly successful for the patients in the future.

In this issue:

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APA O
Asia-Pacific Eye Care Week

Held annually in the second week of October, the Asia-Pacific Eye Care Week is an initiative to raise public awareness about eye care and eye health in the region. To that end, member societies are invited to organize various activities, which may include:

- Organizing a screening event in your local institute / hospital
- Giving lectures to patient support groups / the general public
- Participating in radio and TV shows to talk about any eye diseases and to answer questions
- Contacting newspapers to publish information about eye care, eye health and/or any eye diseases
Eylea适应症
‧適用於治療血管新生型 (溼性) 年齡相關性黃斑部退化病變。
‧中央視網膜靜脈阻塞(CRVO)續發黃斑部水腫所導致的視力損害。
‧糖尿病黃斑部水腫(DME)所導致的視力損傷

劑量與投藥方式
Eylea的建議劑量為2 mg aflibercept (相當於50微升)。
血管新生型(溼性)年齡相關性黃斑部退化病變(wAMD)
‧Eylea開始治療時為前三個月每個月注射1次,連續注射3次,之後則為每2個月注射1次。患者於治療一年後,若病情需要,建議注射方式為每4~12週接受1次治療。

中央視網膜靜脈阻塞(CRVO)續發黃斑部水腫
‧每個月注射1次;樞紐試驗中,前6個月為每個月注射,大部分的進步出現在前3個月。治療必須持續並依據視力和/或解剖學結果延長治療間隔,但目前沒有足夠的證據決定應該延長多久的治療間隔。正常情況下,應於注射採訪時做監測。

糖尿病黃斑部水腫(DME)所導致的視力損害
‧Eylea治療開始時為每個月注射1劑,連續注射5劑,之後則為每2個月注射1劑。若視力與解剖結果顯示病患未因持續治療而受益,應停用Eylea。

禁忌
禁用於對活性物質aflibercept或本產品任何賦形劑過敏的病患。

警語與注意事項
玻璃體內注射相關反應(眼內壓升高)、致免疫原性及全身性反應(包括非眼球出血及動脈血栓栓塞事件)。

最常見的不良反應(至少5%的EYLEA治療病患)為結膜出血(25.0%)、眼睛疼痛(10.2%)、白內障(7.6%)、眼內壓升高(7.5%)、玻璃體剝離(7.4%)與玻璃體浮物(6.9%)。