

Retina

Chairperson: K Highland

Pupil Capture Post Pars Plana Vitrectomy and Gas Tamponade

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Background: Pupil capture is an unusual complication of cataract surgery. This can occur in the early postoperative or late postoperative stages. Pupil capture occurs when the edge of the intraocular lens goes posterior to the pupil edge, making the lens appear as if it is in the anterior chamber. Early capture probably results from internal pressure forces as the gas expands. Late capture results from lens epithelium hyperplasia.

Method: A retrospective review of the notes of four patients representing five eyes was done. This gave five cases of pupil capture post combined vitrectomy and cataract surgery; one patient had bilateral pupil capture. All patients had internal gas tamponade.

Results: Whereas the effect of pupil capture is mostly cosmetic in routine phacoemulsification, most patients showed progressive pupil capture leading to lens destabilization. We therefore performed surgery to release the pupil in four of the five eyes where this occurred. Postoperative, all patients recovered well with minor cosmetic damage to the pupils.

Conclusion: Pupil capture is normally a benign, unusual condition seen post cataract surgery. Post pars plana vitrectomy this appears to be progressive and requires surgical intervention.

Optical Coherence Tomography – What Is on the Horizon?

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Optical coherence tomography (OCT) has revolutionized the practice of ophthalmology. The OCT gives an *in vivo* “optical biopsy” of ocular tissues. The initial diagnostic capability has expanded its role of detection, to also include

classification, management and prognosis of ocular disease. It has also aided in redefining some diseases with its high definition resolution.

The OCT was initially used in the assessment of retinal disorders. Its use is now established in the management of glaucoma and imaging of the optic disc, retinal nerve fibre layer (RNFL) and ganglion cell complexes. Anterior segment OCTs are able to visualize the cornea and angle with similar capabilities of the ultrasound biomicroscopy (UBM).

Several studies have shown that RNFL thinning reflects the degenerative changes in the central nervous system. Retinal nerve fibre layer thickness is inversely correlated to the severity of neurodegenerative disease such as Parkinson’s. Because of its structure and function correlation, RNFL measurements may become a biomarker of disease progression and treatment effectiveness in Parkinson’s disease. The OCT can differentiate optic neuropathy resulting from multiple sclerosis (MS) and from non-MS conditions.

Intra-operative OCT has allowed an improved understanding about the dynamics of epiretinal membrane peeling. Angiographic OCT assessment may soon be possible without the need for intravenous injection of a dye. The OCT continues to improve the quality of management of our patients.

Standardized Echography in the Diagnosis of Ocular Tumours

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Standardized echography (SE) is a very important diagnostic tool in the orbit. Even with the availability of advanced forms of imaging such as computed tomography (CT) and magnetic resonance imaging (MRI), this technology is still helpful, and it can reveal the internal structure of lesions better than some of the more advanced imaging technologies.

The diagnostic technique of SE was pioneered by Karl C Ossoinig in the 1960s. With the use of specific

equipment, including standardized ophthalmic ultrasound A-scan, contact B-scan and Doppler instrumentation, a well-trained examiner can detect and characterize multiple types of intraocular tumours and other conditions with high reliability. More than 60 orbital and periorbital conditions can be detected and differentiated with high reliability, especially when the technique is used by an experienced examiner. Standardized echography allows the clinician to perform tissue differentiation in the eye, orbit and ocular adnexa.

The ability to differentiate tissue depends on correct interpretation of the images that sound (*ie* ultrasound) produces as it travels through a particular type of tissue and facilitates differentiation of, for example, a malignant from a benign tumour. In SE, ultrasound images are correlated with internal structures through the use of well-validated, established patterns. Topographic, quantitative and kinetic examination techniques are used to establish the location, size and acoustic characteristics of the tissues in question.

Orbital screening with SE can be used to rule out mass lesions in the presence of proptosis, and to assess conditions suggestive of secondary changes due to space occupying lesions, such as optic atrophy of unknown origin, chronic conjunctivitis or lid oedema, or alterations of ocular motility. A-scan imaging is useful to assess numerous structures of the orbit and adnexa, offering helpful information regarding extraocular muscle pathology, orbital tumours, optic nerve pathology, preseptal lesions and the lacrimal glands. Most of the remarks in this lecture are devoted to its oncologic applications.

We present a review of some of the capabilities of SE and the types of tumour differentiation that are possible with use of this technology.

Adult Onset Coats' Disease Resistant to Bevacizumab

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Coats' disease is an idiopathic retinal vasculopathy characterized by telangiectasia, aneurysmal vascular dilation, lipid exudation, macular oedema and capillary non-perfusion. Although typically found in children, it may present in adults where it must be distinguished from other exudative retinopathies such as Eales disease, diabetes, radiation retinopathy and venous occlusive disease, among others. Adult onset disease is similar to that seen in children, but may be more limited in extent and slower to progress. Vision loss occurs secondary to macular oedema and exudative retinal detachment. Although thermal laser has been the standard primary treatment modality, the finding of elevated intraocular levels of vascular endothelial growth factor (VEGF) in some patients has suggested a role for anti-VEGF therapy with or without adjunctive laser treatment. We report a case of Coats' disease in a 31-year old male with macular oedema and lipid exudation threatening the fovea, who received seven monthly intraocular injections of bevacizumab without a demonstrable response. He subsequently showed a dramatic improvement following a single application of focal and grid laser. The poor response to bevacizumab in this case suggests that elevated VEGF levels may not be the principal cause for leakage and exudation in some patients with Coats', and supports the continued use of laser for patients with this disease.