



THURSDAY 21 JUNE

Paper #0030

Positron Emission Tomography Changing Ocular Adnexal Lymphoma

Christopher Allen, David Grimes, Timothy Sullivan , Alejandra Valenzuela,
David Wong

Abstract:

Purpose. Optimal staging, management and treatment of ocular adnexal lymphoma (OAL) requires appropriate staging, which can be optimized by the use fluorine-18 deoxyglucose positron emission tomography (FDG PET).

Methods. Seventeen patients with OAL that underwent FDG PET study at staging were retrospectively reviewed having full access to their clinical and imaging data.

Results. FDG PET found distant disease in 7/9 lymphoma patients with concomitant systemic involvement and 6/9 (66%) were upstaged, changing the clinical management. Orbital lesions were demonstrated in 7/11 patients, giving PET a sensitivity of 41% in the orbit and 78% systemically for lymphoma detection.

Conclusion. PET is a non-invasive imaging detection method that refines and improves the staging and treatment in OAL patients providing functional data and a whole body screening, not detected with traditional imaging. However, the technique has limitations in the ocular adnexae, possibly because of the large amount of background as a result of the high choroidal flow, movement of the extra-ocular muscular, frontal and temporal lobe activities and the small volume of some orbital deposits.



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Paper #0039

Venous thrombosis as a mechanism of presentation of venous and venous-lymphatic lesions of the orbit

Ioannis Mavrikakis, Jack Rootman, Valerie White

Abstract:

Purpose: To evaluate venous thrombosis as a mechanism of presentation in orbital vascular malformations.

Methods: We did a retrospective review of the University of British Columbia (UBC) Orbital Clinic experience with vascular malformations.

Results: Of 148 lesions, 6 were isolated varices with evidence of thrombosis and 5 combined lymphangioma-varices with thrombosis. The isolated varices were characterized by a clinical presentation of acute onset and pain occurring in an age range of the fourth to the seventh decade. Imaging demonstrated that all lesions were located in the deep orbit, 5 inferolaterally and 1 superomedially. All were circumscribed and 4 of the 6 demonstrated peripheral enhancement. All 6 showed an intralesional thrombus. Injection fills the lesion and demonstrates out-flow around the thrombus. One was excised and the remaining 5 were observed and resolved spontaneously.

Of our total series, 23 patients had lymphangioma-varices and within this group, 5 with thrombosis as a mechanism for acceleration. All were children or young adults and all presented with acute proptosis with swelling and ecchymosis. All had diffuse involvement of the orbit with distortion of the bony structures and 2 of the 5 had intracranial venous anomalies and 3 had extraorbital facial anomalies. The thrombus showed peripheral enhancement on scanning and the lymphangioma component had minimal or no enhancement. Two of three patients who underwent scanning with Valsalva manoeuvre showed a positive Valsalva. All had successful resection of the combined lesion.

Conclusion: Thrombosis in orbital vascular malformations can lead to sudden onset of orbital pain with proptosis. In varices, the course is benign and may be managed expectantly; however, in combined venous-lymphatic lesions, surgical intervention may be necessary.

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Paper #0045

Drilling the Porous Orbital Implant: a simple and safe technique

Royce Johnson

Abstract:

To present an efficient and safe technique for drilling a porous (HA) orbital implant to allow osseointegration.

To demonstrate the procedure and review results, complications, and outcomes



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Paper #0051

Autologous Micro-Fat Grafts for Orbital Volume Augmentation

Thomas Hardy, Naresh Joshi, Martin Kelly, David Rossman

Abstract:

Purpose: To describe the technique and evaluate the effectiveness of autologous micro-fat grafts for orbital volume augmentation in patients with either an anophthalmic or enophthalmic orbit.

Methods: A retrospective case note review was conducted from the oculoplastics and craniofacial service at the Chelsea and Westminster Hospital, London, UK. Results: The procedure was well tolerated in all patients and there were no embolic complications. The volume of fat injected ranged from 0.8ml to 4.5ml per orbit. Pre- and post-operative clinical photographs confirmed an improved cosmetic result in most patients. Conclusion: Micro-Fat grafting to the anophthalmic or enophthalmic socket is a safe and effective technique for orbital volume augmentation.



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Paper #0068

Working with Graves' Ophthalmopathy

Lorne Bellan, Kulbir Gill, Matthew Lee-Wing

Abstract:

Purpose: Through the use of a health related quality of life (HRQL) questionnaire, we assessed how patients living with Graves' ophthalmopathy (GO) function in their respective work environments. The goal of the study was to examine the possible effects GO has on an individual's ability to perform his/her regular work activities by examining clinical symptoms and subjective social experiences.

Methods: A questionnaire to examine the impact of GO in the workplace was created through the assistance of internal and external reviewers. Patients for the study were drawn from the practices of the two oculoplastic surgeons in Manitoba who treat patients with severe Graves' disease. The 26 question questionnaire addressed each patient's general well being, clinical severity of their GO, and social experiences in regards to their GO. A total of 79 questionnaires were distributed to past and current patients who had visited the clinic during the previous year.

Results: 30 questionnaires were returned as of December 2006. Worry about visual impairment is a common finding. Difficulties in reading and working in unfavorable conditions (night/glare) presented as the greatest impairment in the workplace for the majority of patients surveyed. Productivity at work was also affected by GO. People often either need to take extended leaves from work or switch to working part-time. Patients reported decreased self confidence in the workplace and negative social interactions in the workplace due to their GO.

Conclusion: These results suggest that GO has a negative impact on patients in the work environment through both clinical symptoms of the disease and its subsequent negative social experiences.



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Paper #0079

MR Imaging of the Eyelids: Detailed Normal Anatomy

L.A.Hayman, Jerrod Kent, Shefalee Shukla

Abstract:

Purpose: This Magnetic Resonance (MR) imaging guide provides information on normal eyelid variants in a comparative imaging atlas. The detailed images demonstrate the anatomical variants between Caucasian, Asian and the elderly eyelids and aid in more accurate clinical diagnoses. **Methods:** A review of orbital MRI's, with either normal variants or ocular pathology was performed. Six MRI's of patients of Asian descent and six MRI's of Caucasian patients were obtained in axial, coronal, and sagittal planes on a 1.5 T MR head imager. **Results:** Ten structures could be identified: tarsal plate, obicularis oculi muscle, levator palpebrae muscle, Muller's muscle, inferior tarsal muscle, canthal tendon, Whitnall's ligament, orbital septum, orbital fat pad, and palpebral part of lacrimal gland. The unique anatomic features in Asian and elderly lids are shown along with colored schematics as comparisons. Asian eyelids have a more anterior extension of the preaponeurotic fat pad. They do not have an upper eyelid crease as in Asians the preanponeurtic fat pad is inserted more anteriorly and inferiorly as compared to their Caucasian counterparts. In the elderly, a developed weakness of the orbital fat pad allows protrusion of fat pad into the upper and lower eyelid in all races. **Conclusion:** Knowledge of variants of normal eyelid anatomy on MRI images facilitates detection of eyelid malignancies and infections and supports surgical reconstruction. To our knowledge, anatomic eyelid variants have never been demonstrated before in a complete ophthalmologic guide to be used for clinical correlation.



THURSDAY 21 JUNE

Paper #0087

Traumatic dislocation of the globe into the maxillary sinus

Mohammed Al-Kahtani, Joesph Leong-Sit, James McCabe, Cory Ramstead

Abstract:

Purpose: To report a case of complete dislocation of the globe into the maxillary sinus following trauma.

Methods: A 32 year old male was surgically treated for dislocation of his left globe into the left maxillary sinus following being stepped on by a bull.

Results: Physical examination and CT imaging revealed the left globe to be dislocated completely within the maxillary sinus following blunt trauma. Immediate surgical repair was performed to reposition the eye and further investigate the integrity of the globe and internal structures. Post-operatively the visual acuity improved from no light perception to 20/200 by 7 months post-injury.

Conclusions: Despite suffering significant blunt trauma with enough force to dislocate the globe into the maxillary sinus there is hope for useful vision if the eye is still intact. Attempts should be made to replace the eye into its anatomical position as soon as possible.



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Paper #0091

The Bioceramic Orbital Implant

Jonathon Dutton, Steve Gilberg, David Jordan, Louise Mawn, Peter Spittelie, Amy Wong

Abstract:

Purpose: To assess the problems associated with the Bioceramic (Aluminum oxide, AL203) orbital implant.

Methods: A consecutive case series of 350 patients receiving a Bioceramic orbital implant by four surgeons over 6 year period were reviewed. The authors analysed patient age, type of surgery, size of implant, peg system, follow-up duration, time of pegging, complications encountered, and treatment.

Results: Implant related problems such as discharge, exposure, conjunctival thinning, socket discomfort, pyogenic granuloma formation as well as problems associated with the pegging procedure will be highlighted and compared to other implants such as the Bio-Eye hydroxyapatite and Synthetic Hydroxyapatite orbital implant.

Conclusions: The Bioceramic orbital implant represents an alternative porous orbital implant that is biocompatible with orbital tissues, easy to manufacture, structurally strong, and less expensive than other commercially available porous orbital implants (e.g. Bio-Eye hydroxyapatite implant). Problems encountered with its use are similar to those seen with the Bio-Eye orbital implants but at this time appear to occur less often.



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Paper #0093

Sinonasal Undifferentiated Carcinoma with a Frozen Globe

Seymour Brownstein, Patrick Gooi, David Jordan, Peter Spitellie

Abstract:

Purpose: To report a 42-year-old woman who presented with severe headache, facial numbness and eventually vision loss and motility restriction as the initial manifestation of her sinonasal undifferentiated carcinoma

Design
Case Report

Methods: The patient underwent a Ct scan followed by biopsy to confirm the diagnosis.

Results: CT scan showed tumor involving the posterior ethmoids, pterygopalatine fossa and posterior inferior orbit. Histopathological examination of a biopsy specimen of the inferior orbital mass disclosed a very neoplastic growth consistent with sinonasal undifferentiated carcinoma. An urgent oncology assessment was requested and radiation was administered to the posterior orbit on three subsequent days with a dramatic improvement in pain. Further radiation and chemotherapy was initiated within 2 weeks.

Conclusion: Sinonasal undifferentiated carcinoma (SNUC) is a rare tumor of the paranasal sinuses. It grows rapidly, with symptoms developing over a period of weeks to months. As a result, most patients present with advanced disease. Several case series have been published and although an optimal treatment strategy has yet to be defined, most authors agree that a multimodality approach offers the best chance for improving what have been poor outcomes.



THURSDAY 21 JUNE

Paper #0101

Ostium healing after endoscopic dacryocystorhinostomy with preservation of mucosal flaps

Abdullah Almujaani, François Codère, Justin Friebel, Serene Jouhargy,

Abstract:

Purpose: To describe the (endoscopic) healing characteristics of the internal nasal mucosal ostium (INMO) following mucosal sparing endonasal dacryocystorhinostomy (MSenDCR). Specifically to measure its dimensions at time of surgery, and at one and three months post-operatively.

Design:

Retrospective clinical case series.

Characteristic of the study population:

Included in the study is any adult patient who underwent an endoscopic endonasal dacryocystorhinostomy between November 1st 2005 to November 3rd 2006 for partial or total nasolacrimal obstruction.

Patients with canalicular obstruction or history of previous unsuccessful surgery were excluded from the study.

Methods:

82 nasal ostia of 71 patients that underwent routine standardized MSenDCR were observed with the measurement of the newly created internal nasal mucosal ostium recorded at the time of surgery and at one and three months post-operatively with the endoscope as part of their routine post-operative care.

Result:

Mean age: 60.04 y (83-26), 38 right eyes and 44 left eyes.

Nasal ostium at the time of surgery: 20.23 mm² (surface area)

Nasal ostium at one month (with exclusion of 2 failures): 17.08 mm²

Nasal ostium at one month (all cases): 16.57 mm²

Nasal ostium at 3 months (with exclusion of 6 failures): 16.87 mm²

Nasal ostium at 3 months (all cases): 15.28 mm²

2.44% (2 cases) showed occlusion at 1st month postoperatively.

7.32% (6 cases) showed occlusion at the time of final examination.

On average a typical ostium after DCR contracts by

16.36 % over a 3 months period (with exclusion of 6 failed cases).

On average a typical ostium after DCR contracts by

22.40 % over a 3 months period (all cases)

Discussion will compare these results with the healing external DCR.

Conclusion; Despite a small osteotomy with MSenDCR at the time of surgery compared to external DCR, the final ostium at 3 months shows minimal contracture with a final ostium larger than what has been reported with external DCR. This series shows that MSenDCR yields results comparable to external DCR.



THURSDAY 21 JUNE

Paper #0102

Clinicopathologic characterization of orbital arteriovenous malformations (AVM) – a case series

Jean Chuo, Tony Ng, Jack Rootman, Valerie White

Abstract:

Purpose: To review the clinical and histologic features of orbital AVM with sudden growth.

Methods: We did a retrospective review of the University of British Columbia (UBC) Orbital Clinic experience with AVM presenting with sudden growth. Clinical findings and treatment employed were noted, and histologic features of the lesions were reviewed with an ocular pathologist.

Results: The age of presentation of the 6 patients who presented with a sudden growth of their orbital AVM ranged from 0.6 years to 34 years. The mean age of onset was 13.2 years and the median age of onset was 11 years. Most lesions were characterized by a clinical presentation of chronic onset, proptosis, and swelling. Imaging demonstrated irregular, rapidly enhancing lesions, 5 of which had anterior orbital involvement, 3 had facial involvement, 1 had mid orbital involvement, and 1 had posterior orbital involvement. All 6 lesions required surgical excision – 1 was treated with topical and systemic steroids prior to excision and 2 were embolized prior to excision.

Histologically, all lesions showing sudden growth were characterized mainly by a large-vessel arteriovenous malformation component. In other areas, a capillary hemangioma-like proliferation associated with a prominent reactive inflammatory cell infiltrate was consistently seen.

Conclusion: Orbital AVM are congenital lesions which grow commensurate with the growth of the patient and may generally be managed expectantly. In lesions where sudden growth and expansion occur, surgical intervention is likely necessary. The capillary hemangioma-like component seen in the lesions with an associated reactive inflammatory infiltrate resembles a proliferative response to injury. As the etiology of this sudden growth in orbital AVM remains unknown, such a mechanism of growth, and the contribution of the inflammatory infiltrate, warrants further investigation.



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Paper #0122

The Role of Ubiquitous Airborne Fungi in Chronic Dacryocystitis

Dan D. DeAngelis, John T. Harvey, David Howarth, Jeffrey J. Hurwitz,
Tony Mazzulli, James H. Oestreicher, Noelene K. Pang

Abstract:

Purpose: To elucidate an association between ubiquitous airborne fungi and nasolacrimal duct obstruction (NLDO). Ponikau et al¹⁻⁴ have implicated an eosinophilic immune response against fungi in the pathogenesis of chronic rhinosinusitis (CRS) in several studies and in chronic dacryocystitis in one case report. Fungi, in particular *Alternaria* sp., have been found in nasal mucus surrounded by eosinophil clusters, with eosinophil infiltration in nasal mucosa. Although *Alternaria* sp. have been recovered from the sinonasal cavities of CRS patients, it has not been previously identified in the lacrimal sac of patients with chronic dacryocystitis or NLDO. Identification of *Alternaria* or other fungal species in association with an eosinophilic immune response in the lacrimal sac may support an etiologic relationship between NLDO and fungi.

Methods: Lacrimal sac mucosa and mucus samples were prospectively collected from patients undergoing elective dacryocystorhinostomy. All patients were pre-operatively diagnosed with primary acquired NLDO. Specimens were analyzed by histopathological and microbiological methods (H&E, PAS-D, GMS, Gram stain, calcofluor white, fungal cultures). Parameters recorded include history of epiphora, mucocele, dacryocystitis, chronic rhinosinusitis, degree of NLDO, and microbiology and histopathology results. The primary outcome measure was the identification of fungi in the lacrimal sac.

Results: Twenty-two lacrimal sac mucosa and mucus samples were collected from 20 patients, mean age 60 years (range 32-90). Epiphora was present in 21/22 cases, complete NLDO in 18/22 cases, mucocele in 5/22 cases, and dacryocystitis in 3/22 cases. Microbiology and histopathology results were negative for the presence of fungi.

Conclusions: The results of this study suggest ubiquitous airborne fungi are not present in the lacrimal sac of patients with NLDO. Although an eosinophilic immune response to ubiquitous airborne fungi has been demonstrated in chronic rhinosinusitis, a similar association has not been confirmed in NLDO.



THURSDAY 21 JUNE

Paper #0128

Medpor implant associated with Orbital Cellulitis and Abscess

Larry Allen, Jerrod Kent, David Nicolle, Shefalee Shukla

Abstract:

Purpose: To report a case of orbital cellulitis and abscess formation, after orbital floor fracture repair with a Medpor implant.

Methods: A case report describing a rare complication of medpor implants used in repair of an orbital floor fracture.

Results: A previously well 30 year old male suffered an orbital blowout fracture, which was surgically repaired with a medpor implant. Two months after the implant the patient developed a preseptal cellulitis, orbital cellulitis, and orbital abscess with mixed group of bacteria. There was no documented sinusitis within two months following the injury. His condition rapidly worsened despite antibiotics coverage within 48 hours, and subsequently, surgical drainage and removal of the implant was required.

Conclusion: Orbital cellulitis and abscess formation secondary to orbital floor fracture is a rare complication, and is usually associated with a history of sinusitis at the time of the fracture or within the first two weeks of healing. It often occurs within the first five weeks postoperatively. To our knowledge there has been no reported cases of orbital cellulitis and abscess associated with a medpor implant occurring two months post-repair.



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Paper #0180

Orbital Globe Positioning System (orbital-GPS)

Vladimir Kratky, Richard Sellens, Erin Smith, James Stewart

Abstract:

Purpose: We introduce a novel technique to determine the position of the globe within the three dimensional space of the orbital cavity utilizing a digital camera system and image based rendering software analysis.

Methods: The device consists of two digital cameras mounted on a horizontal beam attached to a slit lamp base. The cameras are coupled to a computer that uses an image based rendering algorithm to construct a 3D computer model of the anterior surface of the eye and the surrounding soft-tissue area of the face. The contours of the globes are assessed in vertical and horizontal planes through the corneal apex. A time series of 3D computer models of the same patient can be superimposed to determine the progression of globeorbital displacement.

Results: Our preliminary testing confirms the feasibility of the 3D globe position measurement using this relatively simple non-invasive device. The readings are done in all three axes as compared to the current standard of Hertel exophthalmometry, which only measures the z-axis. The orbital measurements are repeatable, accurate and operator-independent. Comparative examples of different globe malpositions measured by this novel process will also be presented.

Conclusion: This device provides a robust, non-invasive, operator-independent 3D measurement of the globe position within the frontal space of the face, which is superior to the 1D axial displacement measure currently done by Hertel exophthalmometry. Furthermore, this 'orbital-GPS' device will permit us to build a statistical shape model of the 3D orbitalglobe position in the general population, against which an individual patient can be compared.