NEW STRATEGIES IN OCULAR TRAUMA

“As the most recent advances in the field of instruments, technology, bio-engineering and pharmacology are changing the approach, the strategies and the outcome of ocular trauma”

Instructional Course 15
4 September 2010 h 8:00-10:00 am

Course Organizer: C. Forlini (Italy)
Faculty: C. Forlini (Italy), M. Forlini (Italy), G.P. Gini (Italy), F. Kuhn (U.S), C. Mateo (Spain), A. Nikolakopoulos (Greece), D. Pelayes (Argentina), P. Rossini (Italy), W. Schrader (Germany), P. Sullivan (UK)

In the latest years, with the development of new technologies and materials and the continuous effort to improve the surgical treatment of Ocular Traumas, we assisted to important improvements in terms of functional results after surgery with a great advantage for the patient. This Course wants to be a short guide especially for young Ophthalmologists; some of the basics on the treatment of the most common surgical emergencies and of complex traumatic injuries will be examined.

The knowledge, the autonomy and the skill to solve these dramatic situations are the result of the experience developed during the time spent to fight these battles always very competitive, often frustrating but sometimes rich of incredible satisfaction. In front of the Trauma, try not to be scared, to understand the general situation and to take the right direction.

“POLE TO POLE” SURGERY

Ocular Trauma goes beyond the traditional boundaries of the anterior and posterior segments... we should have a comprehensive view and tackle complex problems simultaneously... the vitreoretinal surgeon should act as a dancer dancing with precision and lightness within well defined spaces...

“No anterior segment team, no posterior segment team, ...one mind, one hand (better two), one staff”.
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NEW STRATEGIES IN OCULAR TRAUMA

Course Program:

Moderators: C. Forlini, A. Nikolakopoulos

Course Introduction: High School Ocular Trauma
C. Forlini

Traumatic Macular Hole
D. Pelayes

The anterior segment for the vitreoretinal surgeon: basic rules
F. Kuhn, W. Schrader

Bimanual foreign body removal using 25+ forceps and treating traumatic cataract using small G techniques
A. Nikolakopoulos

Intraocular Foreign Bodies: 17 Years of Experience
P. Sullivan

Secondary IOL implantation in the trans-conjunctival era
P. Rossini, C. Forlini, M. Forlini

The treatment of Ocular Trauma in the Mini-Invasive era
C. Forlini, M. Forlini, P. Rossini

The use of viscoelastics in Severe Trauma
C. Mateo

Management of traumatic retinal detachment associated with open globe injuries
G. Gini

Prophylaxis of proliferative vitreoretinopathy by early vitrectomy in severe ocular trauma
W. Schrader

ABSTRACT

Traumatic Macular Hole
David Pelayes
Synopsis: In the course will review the clinical, diagnosis and treatment options for patients presenting with traumatic macular hole, include:

traumatic macular hole. The indications for various surgical approaches will be discussed, along with risks, benefits and outcomes also not surgery in this cases. Using case presentations, illustrations, peer-reviewed publications and question/answer format, will discuss their specific approach. Objective: The course attendee will be able to better understand the various management options in the traumatic macular hole and will know the general indications for treatment options, along with risks, benefits and expected outcomes.

The anterior segment for the vitreoretinal surgeon: basic rules
Ferenc Kuhn, Wolfgang F. Schrader, Maximilians-Augenklinik, Erlenstegenstr. 30, D90491 Nürnberg, Germany
Unlike to other surgeries, there is no blueprint the surgeon can apply for each eye injury. Prior to surgery the trauma surgeon should try to gather as much as possible information about the extent of the injury. At the slitlamp, a corneal laceration is obvious. It is more difficult to recognize the extent of a scleral laceration, of injuries to the lens, the ciliary body and the iris base, especially, if the anterior chamber is filled with blood. Already in primary reconstruction, the surgery should not be started without a strategy for this case based on the findings that could be gathered prior to surgery. In the primary surgery, the first goal is to close all wounds. The principles of wound closure will be presented in detail. Also techniques for further reconstruction of the anterior segment in order to enable a alter posterior segment reconstruction are shown. However, any further anterior segment reconstruction within the primary surgery depends on the extent of damage as well as on the surgeon experience, his equipment, facility and personnel.

Intraocular foreign bodies: 17 years experience
Paul Sullivan
There have been major developments in the management of intraocular foreign bodies as vitreoretinal surgery has evolved. Has there been a corresponding improvement in or results? It is quite difficult to ascertain this using retrospective literature searches because of big variations in case mix which makes results incomparable. We therefore did a retrospective audit of the results over a 17 year period. This suggested a highly significant improvement when 59 cases operated before 1999 were compared with 55 cases operated after 1999 - the probability of a poor outcome (<20/200) halved in the latter period. This was most likely due to a combination of generally improved instrumentation including wide angle viewing systems, enhanced preoperative imaging and the development of tools such as intraocular magnets to atraumatically pick up foreign bodies on the retina surface. The possible role of earlier intervention remains controversial as does that of prophylactic intravitreal antibiotics.
Secondary lol implantation in the trans conjunctival era

Cesare Forlini, Matteo Forlini, Paolo Rossini.

The aim of this study was to report our long term evaluation of the use of retropupillary implantation of the iris claw intraocular lens (RPICIOL) in many aphakia conditions without capsular support in the era of transition to the transconjunctival mini- invasive sutureless vitrectomy techniques.

Methods: A retrospective analysis of 320 eyes which underwent RPICIOL implantation in post traumatic aphakia, post cataract surgery aphakia and in cases of penetrating keratoplasty associated with vitrectomy for post traumatic and post cataract surgery aphakia. All procedures were performed with 20 gauge or 23 or 25 gauge vitrectomy techniques. For these eyes we reviewed the refractive outcome, anatomical outcome, the long term stability of the implants and the possible long term complications.

Results: In our series the mean age for the included patients was 61.7. The mean follow up time was 5.3 years. The post operative residual spherical equivalent error was -1.34 ± 1.24 SD. In all cases the RPICIOL was stable without disenclavation except 3 cases with subluxation due to slippage of one of the iris claw haptics and 1 spontaneous complete posterior dislocation. We had also one case of retinal detachment. No cases of uveitis were observed. Eight cases complaint of chronic dull pain. Iridodonesis was seen in 5 cases. One case of postoperative macular oedema was observed. No postoperative increase in the mean intraocular pressure.

Conclusion: RPICIOL for secondary implantations in combination with transconjunctival mini invasive vitrectomy surgery is not only a valid alternative strategy to the classic scleral-fixed or angle supported IOL implantation but also a gold standard technique.

The Treatment of Ocular Trauma in The Mini Invasive era

Cesare Forlini, Matteo Forlini, Paolo Rossini

PURPOSE: The introduction of mini-invasive surgery systems by Fujii e coll. with the 25 gauge TSV in 2002 and by Eckardt with the 23 gauge system in 2005, have revolutionized the approach, the modus operandi and the functional results of the vitreoretinal diseases.

Aim of this presentation is to show the use of mini-invasive surgery in some not typical cases

METHODS: Since November 1st 2006 all (100%) vitreoretinal surgical interventions have been performed employing both 25G and 23G systems. When necessary we combined the two different systems placing the 25G infusion in the anterior chamber and performing the vitrectomy with the 23G system. Heavy tamponades (PFCL, F6HB, silicone oil 1000 cs, heavy silicon oil Oxane HD and Densiron 68) are usually introduced by means of mini-invasive sclerotomeries. At the end of each surgery we have carried out a transconjunctival suture. A combined 20-23G approach to achieve the aspiration of the heavy tamponades.

RESULTS: In comparison with the 20G system the delay in the exchange time has been calculated to be about 20% and 40% using the 23G and the 25G systems, respectively. No intraoperative complications due to the small gauge occurred. In general, the aspiration is more difficult with respect to the injection of heavy liquids into the eyeball. The annual costs have been increased to 25%.

CONCLUSIONS: Mini-invasive surgery used with wide angle view systems and transconjunctival xenon lights chandelier allow the treatment of complex vitreoretinal cases, reducing iatrogenic traumatism, with good functional recovery and less traumatism for the conjunctiva and the sclera, in particular cases with multiple surgeries.

Management of traumatic retinal detachment associated with open globe injuries

G. Gini

Open globe injuries are multi-faceted entities which pose a variety of surgical and reconstructive problems. Retinal detachment arising from such injuries is particularly challenging and its treatment has been addressed in this presentation.

The use of viscoelastics in Severe Trauma

Carlos Mateo M.D.

Perfluorocarbon liquids were described for its ophthalmological use as a manipulator during vitreoretinal surgery in nineteen eighty seven by Stanley Chang. The main characteristics of these Newtonian compounds are Low viscosity: from 0.8 to 8 Centistokes at 25°C They are clear Specific gravity higher than saline In early seventies Balazs suggested Sodium Hyaluronate as a substitute for vitreous. This compound has been commonly used in the anterior segment surgery, and also to manage the anterior chamber during vitrectomy to open and maintain the pupil ....or for example to help to stabilize a strange foreign body in the anterior chamber. Sodium hyaluronate (1%; Healon) has the most favorable viscoelastic properties. Its molecular weight is nearly 4 million daltons These compounds are Non Newtonian fluids with pseudoplasticity Shearing occurs when fluid is made to flow. At zero shear rate (steady state) they exhibit high viscosity, 400,000Cks whereas at high shear rates their viscosity decreases near to 110 centistokes. This behaviour allows the material to be injected through small gauge cannula and yet ensures that the material will regain its shape, and they are cohesive, maintain spaces and permit easy aspiration. All these differences make viscoelastics, the material of choice to “open the Retinal Balloon” in severe traumatized eyes where the funnel shape of the retinal detachment prevents enough visualization of the posterior retina and in some special PVR cases with posterior breaks. In this presentation we show how to deal with these severe cases using viscoelastics.

Prophyaxis of proliferative vitreoretinopathy by early vitrectomy in severe ocular trauma

Wolfgang F. Schrader, Maximilians-Augenklinik, Erlenstragenstr.

Background: In spite of the progress in vitreoretinal surgery, the anatomical and functional results of severe ocular injuries involving the posterior segment are still discouraging. Perforating injuries and ruptures, that extend posterior to the muscle insertions, have the worst outcome. At the time of secondary intervention between day 7 and 14 post trauma it is not unlikely that severe PVR already occurred. The authors present the preliminary results of an ongoing prospective international trial on severe ocular ruptures and perforating injuries (with entrance and exit wounds, with at least one wound behind the insertion of the rectus muscles), with the posterior segment reconstruction performed already within 100 hours following the trauma. Method: 6 centers contributed to the preliminary results of the ongoing multicenter prospective trial "Proactive Management of Eyes with Perforating/Rupture/IOFB Injuries" Results: Among the 23 cases, that were contributed for the study so far, anatomic and functional results seem to be better with this new approach than with the conventional technique. 69% of the cases reached a visual acuity of 0.1 or better, none became completely blind (NLP), or developed a phthisis or had to be enucleated.

Conclusion: Based on a new approach to act rather than to react on alterations secondary to severe posterior segment trauma the functional results of these injuries may be further improved. The prospective multicenter multinational study conducted by the World Eye Injury Register will be continued.

Bimanual foreign body removal using 25+ forceps and treating traumatic cataract using small G techniques

T.Nikolakopoulos

The strong and small 25 G Plus probes and forceps have bring new approaches to the FB removal surgery. Using the bimanual technique we can transfer the FB from one hand to the other in order to remove it through the smallest axis and that means less iatrogenic trauma. Also another favorable advantage of the 25G instruments is that we can go through the scarred conjunctiva and respect the already traumatized globe. The ability of 25+ to have easy access through the side ports can be very helpful in treating traumatic cataracts and we can preserve tissue like capsule remnants while we are removing the lens particles using cutting or aspiration only and the reconstruction of the globe is made in a closed system. We believe that with the new 25 G plus instruments we can perform a less traumatic surgery to the eye injuries...