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#### Progressive lenses X multifocal lenses: a study based on the analytic geometry of the cone

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**PURPOSE:** To understand, by means of illustrations and mathematical functions of the cone, the progressive lenses and to show that they are not multifocus lenses because in these the light refraction does not obey the laws of the Euclidian geometry. **METHODS:** A study was carried out on the analytic geometry of the cone, with a computer program called Auto-CAD 14 focusing on the geometric illustrations obtained with its section. **RESULTS:** Through the analysis of the obtained illustrations of the cone section we could observe that: the surfaces that compose the progressive lenses are made of ellipse, circle, parabola and hyperbola. Differently from literature, we found the ellipses with a larger diameter and the same direction followed by parabola and posterior hyperbola and not the other way. **CONCLUSIONS:** Unlike the multifocus lenses, the progressive lenses present prisms in the optical centers as a consequence of their structure. We analyzed their forms showing the theoretical limit of these evolutions.

Keywords: Ocular lens; refraction mistakes [therapy]; ocular refraction; theoretical models; visual cortex [physiology]; mathematics.

#### Evaluation of sterility and biocide activity on microorganisms of commercially available cyanoacrylate

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**PURPOSE:** To evaluate the sterility of the Super Bonder® cyanoacrylate and its biocide activity on microorganisms. **METHODS:** For verification of contamination, twenty samples of Super Bonder® cyanoacrylate were applied to brain heart infusion (BHI) media and incubated at 37° C. After 7 days of incubation, they were plated on blood, chocolate and Sabouraud agar. For the determination of the biocide effect, *Staphylococcus xylois*, *Staphylococcus aureus* and *Pseudomonas aeruginosa* strains of the American Type Culture Collection (ATCC) were used in three different models, modifying the way Super Bonder® cyanoacrylate application (in microholes, pipes and on the agar). **RESULTS:** No positive growth was observed on the plated samples of cyanoacrylate in brain heart infusion. In the plates with microholes, growth of *P. aeruginosa* and inhibition of *S. xylois* and *S. aureus* were observed. After removal of the adhesive, bacterial

growth in all microholes was observed. In the plates with *S. xylois* and *S. aureus* the presence of an apparent inhibition halo, that did not occur with *P. aeruginosa* was observed. **CONCLUSION:** The performed tests of sterility demonstrated that Super Bonder® cyanoacrylate is a safe alternative, regarding sterility, for treatment of small corneal perforations. No bacteriostatic or bactericidal effects were demonstrated with the tested cyanoacrylate, regarding *S. aureus*, *S. xylois* and *P. aeruginosa*.

Keywords: Cyanoacrylates [therapeutic use]; Tissue adhesives; Cornea [injuries]; Anti-infective; *Pseudomonas aeruginosa* [isolation & purification]; *Staphylococcus* [isolation & purification].

#### Intravitreal triamcinolone acetonide injection in the treatment of Vogt-Koyanagi-Harada syndrome

Andrade, Rafael Ernane Almeida; Muccioli, Cristina; Farah, Michel Eid

**PURPOSE:** To report the use of intravitreal injection of triamcinolone acetonide in the acute phase of Vogt-Koyanagi-Harada's disease. **METHODS:** Nine eyes from five patients in the acute phase of Vogt-Koyanagi-Harada's disease with serous retinal detachments were treated with a single 4-mg intravitreal injection of triamcinolone acetonide. The following parameters were evaluated: visual acuity, intraocular pressure, as well as the height of the serous retinal detachment using optical coherence tomography. **RESULTS:** Optical coherence tomography images showed a marked decrease in the retinal detachment in the first week after the injection with subsequent return to normal retinal thickness in all eyes. Follow-up ranged from 5 to 12 months with a mean of 7.8 months. No complications were observed. **CONCLUSIONS:** Intravitreal triamcinolone acetonide provides short-term improvement in visual acuity and serous retinal detachments associated with Vogt-Koyanagi-Harada's disease. These findings should be followed by further studies to evaluate long-term effects.

Keywords: Retinal detachment; Uveomeningoencephalitic syndrome [drug therapy]; Triamcinolone [therapeutic use]; Tomography, optical coherence.

#### Analysis of correlation between pseudoexfoliation syndrome and aneurysm of the abdominal aorta

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**PURPOSE:** To investigate the suggested association between pseudoexfoliation syndrome and aneurysm of the abdominal aorta. **METHODS:** 65 patients recently operated for abdominal aortic aneurysm and 51 controls with peripheral atherosclerosis, without aneurysm, underwent an ophthalmologic examination under pupillary dilatation to detect the presence of pseudoexfoliation syndrome. **RESULTS:** There were no significant differences regarding mean age and distribution by gender and race between the groups ( $p > 0.05$ ). Two of 65 patients with aortic aneurysm and one of 51 controls presented pseudoexfoliation syndrome ( $p=1.00$ ). **CONCLUSION:** The prevalence of pseudoexfoliation syndrome in patients

operated for abdominal aortic aneurysm and in patients with peripheral atherosclerosis were similar. This finding does not support the proposed association between pseudoexfoliation syndrome and abdominal aortic aneurysm.

Keywords: Exfoliation syndrome; Aortic aneurism, abdominal; Vascular diseases; Glaucoma; Prospective studies.

### Participation of atopic sensitivity in patients with vernal allergic keratoconjunctivitis

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**PURPOSE:** To study the response to skin prick tests in patients with vernal keratoconjunctivitis and compare with the allergic population without ocular disease. **METHODS:** We performed skin prick tests in 48 patients with VKC (10 with limbal form, 19 with palpebral and 19 with both). Controls were 52 patients from Allergy Clinic of the Santa Casa de São Paulo, with systemic allergy but without ocular disease. Skin prick tests were performed in 48 patients from the Ocular Allergy Sector at the Ophthalmology Department of the Santa Casa de São Paulo's Hospital, from July 2001 to September 2002. We studied responses to the following allergens: house dust mite, *Dermatophagoides pteronissynus*, *Dermatophagoides farinae*, *Tyrophagus putrescentiae*, *Blomia tropicalis*, *Rhizopus* spp, *Penicilium*, *Alternaria alternata* and rye grass. **RESULTS:** Male sex was the most frequent, with 32 patients (66.6%) in the study group, and 27 (51.9%) in controls. Mean age was  $10.0 \pm 4.7$  years in the study group and  $6.83 \pm 3.6$  in controls. The most frequent allergen was *Dermatophagoides pteronissynus*, followed by *Dermatophagoides farinae*, *Blomia tropicalis*, house dust mite, *Tyrophagus putrescentiae* and *Rhizopus* spp. **CONCLUSIONS:** The resemblance of the results in the control group indicates that allergic conjunctivitis is nothing else but another form of atopy, just as rhinitis, bronchitis and dermatitis.

Keywords: Conjunctivitis, allergic; Allergens [diagnostic use]; Cornea [pathology]; Cornea [immunology]; Differential diagnosis; Skin tests.

### Keratoconus: visual results, complications and life quality after penetrating keratoplasty performed by a resident physician

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**PURPOSE:** To evaluate the visual results, complication rates and life quality, using the VF-14 test, after penetrating keratoplasty for keratoconus, performed at the «Altino Ventura Foundation», Recife - Pernambuco, Brazil. **METHODS:** Forty-three patients who underwent penetrating keratoplasty were evaluated by the VF-14 test. The mean age of the patients was  $29.5 \pm 9.8$  years. The minimal follow-up was 18 months. The ophthalmological examination data were collected from their medical records. Pearson correlation coefficient was used to analyze the correlation between quantitative variants.  $r < 0.8$  was accepted as indicative of strong correlation. **RESULTS:**

At the last follow-up, 71.7% of the patients achieved 0.5 or better best corrected visual acuity (BCVA). Among the most common complications in the postoperative phase were glaucoma (26.1%) and graft rejection (17.4%). The VF-14 final mean score was 78.7. Best scores were obtained in activities such as: car driving during the day (100) and reading large print material (94), while the worst scores were for reading small print material (79.8) and driving car at night (78.1). The correlation between the scores obtained and the VA after keratoplasty was weak ( $r = 0.46$ ). **CONCLUSIONS:** The visual results were good, as 71,7% of patients presented BCVA  $\geq 0.5$  in the postoperative phase. The correlation between VA after keratoplasty and mean score of VF-14 test was weak. The complications rates were low and glaucoma was the most frequent of them.

Keywords: Keratoconus/complications; Keratoplasty, penetrating; Treatment outcome; Postoperative complications; Quality of life.

### Drop volume and cost of treatment with generic 0.5% timolol maleate preparations

Prata Junior, João Antonio; Prata, João Antonio

**PURPOSE:** To compare drop volume and treatment cost of generic 0.5% timolol maleate preparations. **METHODS:** The drop volume of Timoptol® 0.5% (Merck Sharp & Dohme) and its generic preparations (Allergan-Lok, Cristália and Falcon) were determined. Five bottles of each medication were purchased at local drugstores. Using a precision scale, ten drops and one milliliter of each bottle were weighed. Drop volume was calculated by the relation between volume and weight. Duration, in days, of each bottle and annual cost were calculated considering a daily use of 4 drops and maximum price to consumers published May, 2003. **RESULTS:** Statistically significant differences were observed between drop volumes ( $p < 0.0001\%$ ). Allergan-Lok timolol maleate had the largest drop (35.1  $\mu$ l) and the smallest was Falcon timolol maleate (27.3  $\mu$ l). Timoptol® drop volume was 27.9  $\mu$ l. Annual treatment costs were R\$ 68.87 for Timoptol, R\$ 72.76 for Allergan-Lok timolol maleate, R\$ 50.00 for Cristália timolol maleate and R\$ 43.11 for Falcon timolol maleate ( $p < 0.0001$ ). Allergan-Lok timolol maleate was statistically more expensive than the others and it was 68.8% more expensive than the cheapest. **CONCLUSION:** There are differences in drop volume among generic medications for glaucoma which are related to their annual cost. Drop volume should be considered in the analysis of quality of generic preparations.

Keywords: Glaucoma [drug therapy]; Glaucoma [economics]; Health care costs; Drug costs; Ophthalmic solutions [administration & dosage]; Drug quality; Socioeconomic factors.

### A rapid polymerase chain reaction protocol to detect adenovirus in eye swabs

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**PURPOSE:** Viruses of the Adenoviridae family are associa-

ted with many clinical syndromes, possessing 50 serotypes. These agents and viruses of the Herpesviridae family are the two major agents responsible for viral conjunctivitis, and a rapid diagnosis is important due to the epidemic character of adenoviral infections. **METHODS:** We developed a PCR without DNA extraction for adenovirus using primers that amplify a 300 bp fragment of the hexon capsid protein gene from many serotypes. **RESULTS:** Swab samples from cornea of seven patients with keratoconjunctivitis were analyzed, and one of them was PCR positive for adenovirus. The sequence of this fragment shows a 100% homology with the sequence of adenovirus type 8. **CONCLUSION:** Sequencing of 300 bp from the hexon gene allows to identify almost all Ad serotypes, including all serotypes related to epidemic keratoconjunctivitis (8,19,37) and almost all serotypes involved with Ad-associated conjunctivitis.

Keywords: Polymerase chain reaction [methods]; Adenoviruses, human [isolation & purification]; Keratoconjunctivitis [diagnosis]; Adenovirus infections, human; Eye infections, viral [diagnosis]; Herpesviridae infections.

#### **Type 1 neurofibromatosis: orbital and eyelid manifestations: review of 16 cases**

Curi, Carolina Lemos; Herzog, Guilherme; Sebastião, Roberto

**PURPOSE:** To study the orbital and eyelid manifestations of Neurofibromatosis type 1 and to report the surgical approach. **METHODS:** Retrospective study of patients presenting with neurofibromatosis type 1 examined at the Oculoplastic Department of the «Universidade Federal Fluminense and the 38<sup>th</sup> ward of the Santa Casa de Misericórdia do Rio de Janeiro». **RESULTS:** Of the 16 patients, 12 had orbital and eyelid neurofibromas, 3 had optic glioma and 3 had osseous dysplasia. Ten patients underwent reconstructive oculo-plastic surgery. **CONCLUSION:** Our results are in agreement with the international literature. Most patients required multiple procedures.

Keywords: Neurofibromatosis 1 [surgery]; Neurofibromatosis 1 [complications]; Orbital diseases [etiology]; Eyelid diseases [etiology].

#### **Diabetic retinopathy among patients assisted by a multidisciplinary program at the University Hospital of Ribeirão Preto, São Paulo - USP**

Souza, Eduardo Vieira de; Souza, Nivaldo V. de; Rodrigues, Maria de Lourdes Veronese

**PURPOSE:** To analyze the ophthalmological profile of diabetic patients assisted by the multidisciplinary program at the Clinical Hospital of Ribeirão Preto-USP. **METHODS:** The analysis of the records of fundus ophthalmoscopy, performed by the same ophthalmologist, was carried out in 2.360 diabetic patients from 1983 to 2002, who were divided according to the follow-up period: group A - 0 to 4, group B - 5 to 9, group C - 10 to 14 and group D - 15 to 19 years. **RESULTS:** The frequency of retinopathy was: A - 16%, B - 29%, C - 36% and D - 44%. There were significant differences between A and the other groups ( $p < 0,05$ ) and no differences between B, C and

D ( $p > 0,05$ ). **CONCLUSION:** Even with an organized and multidisciplinary care, diabetic retinopathy continues to be a frequent and hard control disease among diabetic patients.

Keywords: Diabetic retinopathy [epidemiology]; Regional medical programs; Delivery of health care; Hospitals, public.

#### **Animal model-based strategy of palpebral surgery training**

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**OBJETIVE:** Development of an animal model for practical instruction of eyelid surgery, directed to the general ophthalmologist and to the beginner in ophthalmic plastic surgery.

**METHODS:** The porcine model was selected due to its similarity with the human lid anatomy. After a quick guided study with instructive material concerning basic aspects in eyelid surgery, with detailed instructions on the procedures to be performed, the practical training was started. The trained surgery techniques were pentagonal resection with direct reconstruction of the eyelid and Bick's original technique. The training was carefully monitored by instructors with wide experience in the subject. Each student used 4 lids. **RESULTS:** 14 ophthalmologists were trained using this model, applied in the «1<sup>o</sup> Curso de Cirurgia Palpebral em Animal» in December, 2001. At the end of the model, the students showed a high degree of subjective skill confidence, believing that the experience had contributed positively to their practical development in eyelid surgery. **CONCLUSION:** The porcine animal model can be an important step in the transition of the theoretical sphere to practical skill qualification in ocular plastic surgery, and it can be used as an effective instruction strategy for pentagonal resection with direct reconstruction of the eyelid and Bick's original technique.

Keywords: Eyelids [surgery]; Models, animal; Training; Surgery [education]; Surgical procedures, operative [education].

#### **Phacoemulsification, pars plana vitrectomy and intraocular lens implant in eyes with proliferative diabetic retinopathy**

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**PURPOSE:** To evaluate the outcomes and the best technique for a combined phacoemulsification (PHACO), pars plana vitrectomy (PPV) and posterior chamber intraocular lens insertion (PCIOL) in one single procedure for patients with proliferative diabetic retinopathy. **METHODS:** We reviewed charts of 47 (53 eyes) patients with proliferative diabetic retinopathy who underwent combined phacoemulsification with posterior chamber intraocular lens implant and pars plana vitrectomy performed between January 1991 and September 1998 at the Bascom Palmer Eye Institute, eye hospital affiliated with the University of Miami. The study was done in conjunction with the Federal University of São Paulo. A total of 43 eyes from 40 patients were elected to participate

in the study. **RESULTS:** The follow-up range was three to 60 months (mean 20 months). The age ranged from 37 to 77 years with a mean of 59. Preoperative visual acuity improved two lines or more in 26 (60.4%) eyes, remained the same in 9 (20.9%) and got worse in 8 (18.6%). In 10 (23.2%) eyes visual acuity improved to 20/40. The study showed to be statistically significant for the improvement of the final visual acuity. Recurrent vitreous hemorrhage was the most frequent postoperative complication found in 12 (27.9%) eyes and it was followed by transient anterior chamber reaction in 9 (20.9%) eyes. Intraoperative and postoperative complications related to phacoemulsification were rare. IOL capture was found in 2 (4.6%) eyes and intraocular lens subluxation in 1 (2.3%) eye. **CONCLUSION:** Combined phacoemulsification with posterior chamber intraocular lens implant and pars plana vitrectomy in proliferative diabetic retinopathy is a feasible procedure, well-tolerated and usually presents significant visual acuity improvement. One single procedure, to remove the cataract and to perform pars plana vitrectomy, instead of performing a second surgery that would be only to remove the cataract after the pars plana vitrectomy is safe, improves visual acuity and is also less aggressive for the patient. The potential for improving final visual acuity is limited by the severity of retinopathy.

Keywords: Diabetic retinopathy [surgery]; Phacoemulsification [methods]; Cataract extraction; Lenses, intraocular; Vitrectomy.

#### Single institutional retrospective analysis: treatment of choroidal melanomas with cobalt-60 brachytherapy

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**PURPOSE:** To evaluate the outcome of patients with choroidal melanoma treated with conservative therapy with brachytherapy (episcleral Co-60 plaque therapy) at the «Hospital do Cancer» São Paulo, Brazil. **METHODS:** We evaluated 102 patients consecutively treated from January, 1999 to June, 1999. Median age, maximum tumor base diameter and apex size were 55.5 years, 9.75 mm and 5 mm, respectively. Doses at the base of the tumor, including 1 mm of sclera, ranged from 157 to 487 Gy (median 284.5 Gy) and to the apex from 37 to 220 Gy (median 106 Gy). **RESULTS:** The crude eye preservation rate with conservative therapy alone was 78.5%. Five-year overall actuarial survival rate was 92.2% and eye conservation rate was 78%. Side effects were mostly an uncomplicated retinopathy in 39/102 patients (38.2%); macular degeneration or scarring led to poor central vision in 31/102 patients (30.3%) of cases. **CONCLUSION:** Our experience with cobalt-60 plaque brachytherapy achieved a satisfactory rate of local tumor control, despite the oversized base diameters of treated tumors.

Keywords: Choroid neoplasms; Melanoma; Cobalt radioisotopes [therapeutic use]; Eye enucleation; Brachytherapy; Radiotherapy dosage.

#### The effect of darkness on the upper eyelid position

Neves, Lígia Cristina Viana; Akaishi, Patrícia Mitiko; Polegato, Cláudio; Cruz, Antonio Augusto Velasco e

**PURPOSE:** To determine if the resting position of the upper eyelid is affected by darkness. **METHODS:** Palpebral fissure images of normal subjects were acquired in photopic conditions and in total darkness. The subjects were divided in to three groups aged 2-11 months, 22-36 months and 19-61 years. The first palpebral fissure image was acquired in photopic conditions. The lights were then turned off and a second image of the same eye was obtained in total darkness. For both images the distance between the midpupil and upper eyelid margin was measured. **RESULTS:** Darkness increased this distance in all subjects. The increment in palpebral position was greater in children. **CONCLUSION:** Darkness provoked upper eyelid retraction in all subjects tested. This effect probably results from stimulation of the sympathetic tone to Müller's muscle.

Keywords: Darkness [adverse effects]; Eyelids [physiology]; Age groups; Infant; Child, preschool.

#### Neural network approach for planning surgical correction of strabismus

Souza, Murilo Barreto; Tomikawa, Vivian Onoda; Oliveira, Bráulio Folco Telles de; Polati, Mariza

**PURPOSE:** To develop a neural network model for planning of the surgical strategy of patients with sensorial strabismus. **METHODS:** In this retrospective study, medical records of 95 patients with sensorial strabismus were reviewed. All patients were seen at the Strabismus Sector of the Hospital das Clínicas of the University of São Paulo. The neural network was designed containing 3 layers. Sixty-eight patients were used in the training and validation set, and 27 in the test set. **RESULTS:** In the 68 patients used in the training and validation set, 37 had exotropia, and 31 esotropia. The backpropagation approach was used for training the neural network. A learning rate of 0.6, and a tolerance error of 0.05 were used. In the 27 patients used in the test set, 18 had exotropia, and 9 had esotropia. The efficacy of the neural network was analyzed using the average of the difference between the indication supplied by the network and the original indication. In patients with exotropia, the average error was 0.4 mm ( $\pm 0.4$ ), for recession of the lateral rectus muscle, and 0.3 mm ( $\pm 0.3$ ), for the resection of the medial rectus muscle. In the esotropia group, the average error was 0.2 mm ( $\pm 0.2$ ) for the recession of the medial rectus muscle, and 0.5 mm ( $\pm 0.3$ ) for resection of the lateral rectus muscle. **CONCLUSION:** As the artificial neural network can simulate a biological central nervous system, and is able to carry out cognitive tasks, it can be a viable option to help the surgical planning for strabismus correction.

Keywords: Strabismus [surgery]; Surgical procedures, operative; Esotropia [surgery]; Exotropia [surgery]; Nerve Net.

#### Influence of the topic use of mitomycin C on the differentiation process of rabbit cornea epithelium

Holzchuh, Nilo; Holzchuh, Ricardo; Arieta, Carlos Eduardo Leite; Kara-José, Newton; Alves, Milton Ruiz

**PURPOSE:** To evaluate the effects of mitomycin C eye drops (0.2 mg/ml) on the corneal epithelium of rabbits. The changes in clinical examination, histopathologic and immuno-histochemical analysis were investigated. **METHODS:** Mitomycin C and distilled water (controls) were instilled 4 times daily for 14 consecutive days in the eyes with intact ocular surface. The ocular surface was evaluated by slit-lamp examination, during the days of the drug instillation. The animals were sacrificed on the 15th, 50th and 100th day of the experiment. The histopathologic analysis of the corneal epithelium was complemented by immunohistochemical studies using monoclonal antibodies to cytokeratins (AE1 and AE5). **RESULTS:** During the use of mitomycin C eye drops mild conjunctival hiperemia was detected. It disappeared 7 days after the drug was discontinued. There was no other clinical sign by slit-lamp examination. No histopathologic alterations in the corneal epithelium were detected, epithelium continuity was observed as well as maturation and presence of atypical cells. The use of 0.02% mitomycin C not influence the differentiation pattern of the corneal epithelial cell. **CONCLUSION:** The results of this investigation, in conditions of the study, showed that 0.02% mitomycin C, instilled 4 times daily for 14 consecutive days, showed a low toxic potential regarding the intact ocular surface.

Keywords: Mitomycin C [therapeutic use]; Mitomycin C [administration & dosage]; Epithelium, corneal [drug effects]; Cell differentiation; Ophthalmic solutions; Rabbits.

#### Quality of life of pseudophakic patients with accommodative intraocular lens implant

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**PURPOSE:** To evaluate the visual function and satisfaction of patients who underwent cataract surgery and were implanted with an accommodative intraocular lens and the impact in their quality of life. **METHODS:** Retrospectively, questionnaires applied one year after cataract surgery of 22 patients who were included in a clinical trial to evaluate the safety and effectiveness of a silicone multipiece intraocular lens designed to provide distance and near vision were analyzed. **RESULTS:** Twenty-two patients with mean age of 70.2 years were enrolled in the study. Sixteen (73%) patients received bilateral and 6 (27%) unilateral implants of the unilateral implant group, 5 (83.3%) patients declared marked improvement of vision, 1 (16.7%) referred maximum improvement. Regarding satisfaction, 5 (83.3%) declared to be satisfied and 1 (16.7%) was very satisfied with the results of the surgery in general. Night vision was declared as without difficulty by 3 patients (50.0%), mild difficulty by 2 (33.3%) and moderate difficulty by 1 (16.7%). In the bilateral group, 7 (43.8%) considered near vision to be of excellent quality, 7 (43.8%) very good, 1 (6.2%) adequate and 1 (6.2%) poor. The quality of intermediate vision was classified as excellent by 6 (37.5%) patients, very good by 9 (56.3%) and adequate by 1 (6.2%). The quality of distance vision was considered excellent by 9 (56.3%) patients, very good by 3 (43.8%),

adequate by 2 (12.5%) and not very good by 2 (12.5%). Regarding night vision, 9 (56.3%) patients declared no difficulty, 5 (31.2%) mild difficulty and 2 (12.5%) moderate difficulty. **CONCLUSION:** Considering IOL optical property, most patients presented important improvement of visual function, without need to wear spectacles and with positive impact on their quality of life.

Keywords: Quality of life; Pseudophakia [therapy]; Pseudophakia [surgery]; Cataract extraction; Lenses, intraocular.

#### Trabeculectomy with mitomycin C in patients with refractory congenital glaucoma

Cronemberger, Sebastião; Santos, Daniel Vítor de Vasconcelos; Ramos, Luís Felipe Fornaciari; Oliveira, Ana Cláudia Monteiro; Maestrini, Heloísa Andrade; Calixto, Nassim

**PURPOSE:** To describe the results of mitomycin-C (MMC) in refractory congenital glaucoma surgery. **METHODS:** Forty-four eyes of 30 patients with refractory primary congenital glaucoma submitted to trabeculectomy with MMC (0.5 mg/ml for 5 minutes) between 1993 and 2002 at the São Geraldo Eye Hospital/HC-UFMG were retrospectively studied, through review of medical records with a minimum follow-up of six months. **RESULTS:** The mean intraocular pressure (IOP) under antiglaucomatous medication was reduced from  $21.7 \pm 7.2$  to  $12.2 \pm 6.8$  mmHg at a mean follow-up of 42.8 months ( $p < 0.001$ ). The only postoperative complication was chronic ocular hypotony (IOP  $< 6$  mmHg) in four eyes (9,1%) with aqueous humor leakage from the bleb (positive Seidel test) in one of them. No statistical relationship was detected between the incidence of complications and gender ( $p = 0.14$ ), age at the time of surgery ( $p = 0.65$ ), initial IOP ( $p = 0.29$ ), initial number of antiglaucomatous drugs ( $p = 0.39$ ) and number of previous surgeries ( $p = 0.94$ ). **CONCLUSION:** MMC in filtering surgery of refractory primary congenital glaucoma has shown to be effective in the reduction of IOP. However, the ocular hypotony is a great concern.

Keywords: Trabeculectomy [methods]; Mitomycin [therapeutic use]; Glaucoma [congenital]; Glaucoma [surgery]; Intraocular pressure [drug effects].

#### Phacoemulsification and manual extracapsular extraction: costs analysis

Kara-José Junior, Newton; Avakian, Amaryllis; Lower, Leda Mine Takei; Rocha, Ana Maria; Cursino, Marcio; Alves, Milton Ruiz

**PURPOSE:** To evaluate the clinical and economic aspects of cataract surgery by phacoemulsification, when compared to extracapsular extraction. **METHODS:** A prospective study on 162 subjects was carried out at the «Hospital das Clínicas», Medical School of the University of São Paulo in 2002. The subjects who had cataract were randomized for surgery by phacoemulsification and by extracapsular extraction. **RESULTS:** In this study, phacoemulsification technique allowed the use of local anesthesia. The number of follow-up visits and the postoperative time offered quick visual restoration and clinical discharge. The use of phacoemulsification in the «Hospital das Clínicas» of the Medical School of the Uni-

versity of São Paulo contributed to quick surgery, optimized the surgery theater and showed cost-effective advantages for the hospital. **CONCLUSION:** According to the conditions of the «Hospital das Clínicas» of the Medical School of the University of São Paulo, we concluded that the total costs of cataract surgery by phacoemulsification are higher than those by extracapsular extraction, and surgery fees offered by the Public Health Service to the «Hospital das Clínicas» of the Medical School of the University of São Paulo have shown more cost-effective advantages for phacoemulsification than for extracapsular extraction.

Keywords: Cataract extraction [methods]; Cataract extraction [economics]; Phacoemulsification [methods]; Phacoemulsification [economics]; Blindness [prevention & control]; Economic factors; Hospitals, teaching; Comparative study.

### **Scotopic fast wave retinal dystrophy (SFWRD) associated with loose anagen hair syndrome (LAHS). Part I: Ophthalmological findings**

Sato, Mário Teruo; Marzagão, Rodrigo; Moreira Júnior, Carlos Augusto

**PURPOSE:** To describe the ophthalmological findings of a new macular dystrophy associated with loose anagen hair syndrome (LAHS). **METHODS:** Eleven patients of the same family, four of whom presented ocular abnormalities, were examined. Seven patients were submitted to the following examinations: a complete ophthalmological examination, color test, ultrasonography, angiography, visual field, optic disc topography, electro-oculogram (EOG), electroretinogram (ERG), laboratory and dermatological tests, sweat testing, light microscopy (LM) and scanning electron microscopy (SEM) of the scalp hair. In four patients, children of affected, examination was restricted to an ophthalmological examination and light microscopy and the scanning electron microscopy of the scalp hair. **RESULTS:** Of the four affected patients, two affected sisters showed pigmentary dispersions in the posterior pole of the retina with macular coloboma. Two brothers showed pigmentary dispersions in the posterior pole, with greater pigmentation and a yellowish aspect of the macular area without coloboma. The results of the electro-oculogram and electroretinogram were within normal limits in three patients without ocular abnormalities. Whereas, electro-oculogram was subnormal and electroretinogram was subnormal with short implicit time (fast) in the scotopic phase of the patients with the macular dystrophy, suggesting that the site of this dystrophy is at the level of the retinal pigment epithelium. Due to this peculiar behavior of the implicit time of the wave, such finding can be considered as fundamental to make the diagnosis of this dystrophy. The denomination could be scotopic fast wave retinal dystrophy (SFWRD). Light microscopy and scanning electron microscopy of scalp hair confirmed the loose anagen hair syndrome. **CONCLUSIONS:** We describe the findings of scotopic fast wave retinal dystrophy associated with the loose anagen hair syndrome, dystrophy whose funduscopy findings differ between men and women and with characteristic electroretinographic tracing.

Keywords: Macular degeneration; Hair diseases, Syndrome;

Coloboma; Microscopy, electron, scanning; Microscopy, electron; Electroretinography.

### **Motor disturbances after refractive surgery in patients with strabismus**

Cunha, Rosana Nogueira Pires da; Isoldi, Inez Eloísa; Cunha, Marcelo

**PURPOSE:** To evaluate patients with strabismus submitted to excimer laser refractive procedure. **METHODS:** Complete eye examination was performed, including motor and sensorial evaluation in 15 patients from October, 2000 to September, 2001. Follow-up was at least 6 months after excimer laser procedure. Patients who had been submitted to laser were named the first group and those who were seen before laser formed the second group. **RESULTS:** All patients of the first group required strabismus surgery in order to control symptoms of double vision or to correct the ocular deviation. The majority of the patients of the second group had worsening of their sensorial condition and some also presented worsening of their motor conditions. Half of the patients of the second group showed some relief of asthenopia when eyeglasses for near were used. Those with accommodative esotropia did not have any or had less symptoms after the laser procedure and the follow-up showed more stable clinical feature. **CONCLUSIONS:** Refractive surgeons must select their patients and avoid underestimating some conditions that might compromise fusion capability after laser. We recommend motor and sensorial evaluation as part of their preoperative work up for candidates for refractive surgery.

Keywords: Laser surgery [adverse effects]; Strabismus [surgery]; Strabismus [complications].

### **Analysis of new technique for Ferrara ring implantation in keratoconus**

Oliveira, Cínara Sakuma de; Moreira, Hamilton; Wahab, Sâmia Ali; Godoy, Glaucio de

**PURPOSE:** To describe a new surgical technique for Ferrara ring implantation and to evaluate its safety and efficacy in keratoconus patients. **METHODS:** A new technique was developed for implanting the Ferrara ring through a single corneal incision. A prospective study of twenty keratoconus patients operated on with this new technique was performed. The exclusion criteria included good contact lens tolerance, presence of significant corneal scar, presence of other ocular or systemic diseases, pachymetry lower than 400 micrometers and keratometry limits higher than 65D. LogMAR visual acuity and keratometry were analyzed both pre- and postoperatively. All complications and complaints during and after surgery were registered. The minimum follow-up period was twelve months. **RESULTS:** The mean uncorrected visual acuity improved from  $1.045 \pm 0.478$  (preop) to  $0.586 \pm 0.373$  LogMAR units after a twelve month follow-up. The mean corrected visual acuity improved from  $0.714 \pm 0.542$  (preop) to  $0.264 \pm 0.162$  LogMAR units ( $p=0.001$ ) twelve months after surgery. The mean keratometric values varied from  $55.9D \pm 4.4D$  to  $51.5D \pm 4.8D$  in the follow-up period ( $p<0.0001$ ). Three months after surgery, all patients had stable visual

acuity. There were no per- or postoperative complications. **CONCLUSIONS:** This study showed that it is possible to implant the Ferrara ring through a single incision. This new surgical technique showed significant improvement in both corrected and uncorrected visual acuity and showed corneal flattening twelve months after surgery. No complications or complaints were observed.

Keywords: Keratoconus [surgery]; Ophthalmic surgical procedures [methods]; Prostheses and implants; Efficacy; Safety; Quality of control.

### **Comparative macroscopic and dynamometric study of implants (covered magnets) and techniques of their fixation in orbits of female rabbits**

Kleinpaul, Elcio Roque; Bicas, Harley Edison Amaral

**PURPOSE:** To evaluate the clinical signs of inflammatory reaction in the fixation of an orbitary implant (magnet, covered by gold), and to evaluate the macroscopic resistance to organic fluids of the used implants. **METHODS:** An experimental study was performed in 54 adult female rabbits, divided into 3 groups of eighteen with 3 subgroups of 6 according to the material used for fixation; the implants were evaluated at weeks 1, 3 and 6 after surgery. An implant (magnet, covered by gold) was fixed in the inferior edge of the orbit using glue, a screw or nonabsorbable suture (Mersilene 5.0®). The opposite orbits (without implants) represented the control group. Measurement of tangential traction of fixed implant displacement. **RESULTS:** Clinical signs of inflammatory reaction due to orbitary fixation of the implant were observed, with glue (cyanoacrylate), screw or nonabsorbable suture (Mersilene 5.0®), until six weeks after surgery, the reaction being more severe in group F (suture). The implants showed resistance to organic fluids in 90.7% of the cases. The tangential traction force of 80 gf showed better results in the groups where screw and unabsorbable suture were used, in the fixation group with glue two implants did not resist to that tangential force. **CONCLUSIONS:** Clinical signs of inflammatory reaction of the implant and its fixation were observed up to the sixth week after surgery, with cyano-acrylate, screw, or nonabsorbable suture (Mersilene 5,0®), being more intense in the latter group. The traction force of 80 gf, regardless of the type of fixation, did not produce any displacement in 94.5% of the implants in the first week, 100% in the third week and in 94,5% of the cases in the sixth week. There was no resistance of the implants to organic fluids in 9.3% (damaged implant).

Keywords: Magnetics [therapeutic use]; Gold [adverse effects]; Nystagmus pathologic [surgery]; Rabbits; Female.

### **Performance and visual comfort comparison between photosensitive and colorless lenses**

Oliveira, Regina Carvalho de Salles; Kara José, Newton

**PURPOSE:** Comparison on vision-related quality of life and acceptance to wear a new kind of photosensitive lenses versus colorless lenses in a group of young people. **METHODS:** Thirty individuals aged 21 to 35 years with no eye abnormalities and best corrected visual acuity 20/20 in each eye, were separated into two groups for a cross-over study.

Phase 1: Consisted of Group 1 wearing clear resin lenses for 30 days and Group 2, photochromic lenses also for 30 days. Phase II: The groups changed lenses. A questionnaire based on Transitions Vision-Related Quality of Life Instrument was submitted before and after the experiment. **RESULT:** In this study photochromic Next Generation Transitions® lenses provide more comfort and were preferred to clear lenses for outdoor use. **CONCLUSIONS:** No difficulty was reported concerning the indoor use. For activities such as TV and movie watching a slight preference toward the use of clear lenses was reported.

Keywords: Quality of life; Questionnaires; Patient satisfaction; Visual acuity [therapy]; Eyeglasses; Equipment design; Ultraviolet rays; Comparative study

### **Teratoid medulloepithelioma of the retina: case report**

Ghanem, Ramon Coral; Lopes, João França; Malerbi, Fernando Korn; Santo, Ruth Miyuki; Takahashi, Walter

Medulloepithelioma is a congenital intraocular tumor that usually arises from the primitive medullary epithelium that is destined to form the nonpigmented ciliary epithelium of the ciliary body. It occurs most frequently in early childhood and is unilateral. This report documents a rare case of teratoid medulloepithelioma arising from the retina in a 9-year-old child. Gradual decrease in visual acuity (VA), strabismus and leukocoria in the left eye (LE) were observed in a 9-year-old girl. VA was 1.0 in the right eye (RE) and hand movement in the LE. Examination revealed a yellowish tumor in the retrolenticular space, apparently subretinal, vascularized, with cystic changes on its surface. Right eye was normal. Brain and orbital tomography was performed, and ocular ultra-sonogram was obtained. The clinical diagnosis was retinoblastoma and the eye was enucleated. Histopathologic examination showed a benign teratoid medulloepithelioma arising from the retina. Most previously reported cases described medulloepitheliomas arising from the ciliary body. In our case, however, the tumor seemed to arise from the retina because on histopathology the ciliary body was preserved and the retina structure was not identified. Although the tumor presented was classified as benign, the fact that it is an extensive lesion with apparent recent growth justifies enucleation. The main objective of treatment is early total excision to avoid extraocular spread of the tumor.

Keywords: Neuroectodermal tumors, primitive [congenital]; Teratoma; Retinal neoplasms; Retinoblastoma; Child; Female.

### **Cat-scratch disease causing atypical granulomatous conjunctivitis: case report**

Oliveira, Alexandre Hassler Príncipe de; Pereira, Carlos Alberto Pires; Sousa, Luciene Barbosa de; Freitas, Denise de

We report a case of a 23-year-old female patient, Brazilian, resident of Germany, who presented with a bilateral chronic granulomatous conjunctivitis, without lymphadenopathy and irresponsive to topical treatment. Laboratorial work-up confirmed *Bartonella henselae* as the etiologic agent. The case shows that the absence of lymphadenopathy does not

exclude the diagnosis of cat-scratch disease.

Keywords: Conjunctivitis, bacterial; Bartonella henselae; Cat-scratch disease; Granuloma; Conjunctival diseases; Case report.

#### **Choroidal epithelioid melanoma in an adolescent: case report**

Araújo, Ângelo Augusto; Fontes, Anselmo Mariano; Araújo Neta, Vitalina Martins de; C. Junior, José Fernando; Góis, Max Rollemberg

Uveal malignant melanoma is uncommon before thirty years of age. This is a case report of a 12-year-old girl with choroidal epithelioid melanoma whose presumptive diagnosis was made by clinical examination, magnetic resonance imaging and ultrasound and was confirmed by anatomopathological examination.

Keywords: Melanoma [ultrasonography]; Choroid neoplasms [ultrasonography]; Uveal neoplasms [ultrasonography]; Magnetic resonance imaging; Case report.

#### **Xantogranuloma of the eyelid and orbit: case report**

Schellini, Silvana Artioli; Sampaio Junior, Amilton de Almeida; Marques, Mariângela Esther Alencar; Corpa, Marcus Vinicius de Nigro

Xantogranuloma is a histiocytic disease, characterized by yellowish lesions affecting the epidermis or the dermis, with or without hematological abnormalities and malignancy. The purpose of this paper is to report a 39-year-old woman with bilateral, progressive, painless swelling in both eyelids and anterior orbit, onset 6 years ago, with no systemic alterations. Histology of the excised tissue showed dermis, muscles and orbital fat with xantomatous histiocytes and «Touton» giant cells. The diagnosis was xantogranuloma of the adult. The authors call attention to other differential diagnosis and the

necessity of periodical examinations because of the possibility of associated malignancies and systemic diseases.

Keywords: Histiocytes [pathology]; Granuloma [pathology]; Eyelid neoplasms [diagnosis]; Orbital neoplasms [diagnosis]; Blepharoptosis; Female.

#### ***In vivo* confocal microscopy in cystinosis: case report**

Victor, Gustavo; Campos, Paloma Juni Godinho; Alves, Milton Ruiz; Nosé, Walton

Cystinosis is a rare recessive autosomic disease characterized by the accumulation of the cystine amino acid inside the lysosomes, and it is generally fatal in the first decade of life in the absence of renal transplant. This study has the purpose to describe the *in vivo* confocal microscopy findings in a patient with infantile cystinosis. The *in vivo* confocal microscopy examination showed differences in intensity, size and shapes of the corneal deposits in the several corneal layers.

Keywords: Microscopy, confocal; Corneal stroma; Corneal diseases; Cystinosis; Case report.

#### **Presbyopia surgery in phakic patients**

Ferraz, Caroline Amaral; Allemann, Norma

Presbyopia is characterized as a progressive age-related loss of accommodative amplitude. In recent years, attempts have been made to surgically reverse presbyopia. This article discusses different procedures proposed for treatment of presbyopia in phakic patients.

Keywords: Presbyopia [surgery]; Accommodation, ocular; Sclerostomy [methods]; Vision, binocular; Keratotomy, photorefractive, excimer laser; Lenses, intraocular.