reaching up to 60% of the cases. We report 2 cases with amblyogenic orbital hemangioma that has been treated with oral propranolol with remarkable response.

Methods: We reviewed 7 patients with orbital capillary hemangioma that presented to our clinic between 2012-2018, Of these, 2 cases displayed amblyogenic astigmatism, with refraction +0.50 −7.00 ×170 of the right eye and +0.5 −7.50 ×160 of the right eye of an 11-month-old girl and a 2-month-old boy, respectively. Oral propranolol was started with dose of 0.3mg/kg/day TID then gradually increased. Refraction was recorded after initiating propranolol.

Results: The first case showed refraction of +2.00 −2.50 ×180 7 months after starting treatment, while the second case showed refraction of +4.00 −4.50 ×70 after 9 days of starting treatment, and 1-month follow-up displayed +3.00 −2.50 D ×135. Adverse events were not encountered.

Discussion: Oral propranolol has decreased the cylindric power in both cases with 64.29% decrease in the first case in the course of 7 months, and 66.67% for the second case, in 1 month, however propranolol demonstrated a rapid improvement in after only 9 days of starting the treatment reaching to −4.50 DC down from −7.50 DC with over 35% drop in cylindric power.

Conclusions: Oral propranolol decreases cylindric power significantly to nonamblyogenic levels in orbital hemangioma in a short duration varying from 1 to 7 months.

045 The relationship between optic canal size and severity of papilledema in children with intracranial hypertension. Anastasia A. Alex, Hilliary E. Inger, Hersh Varma, Catherine O. Jordan, Shawn C. Aylward, Jeremy Jones, David L. Rogers

Introduction: Bony optic canal size has been proposed to affect the dynamics of cerebrospinal fluid pressure from the cranium to the subarachnoid space within the optic nerve sheath. This may contribute to variations in clinically observed optic nerve edema (ONE) in patients with intracranial hypertension (IH). The purpose of this study was to determine if a relationship exists between optic canal size and the grade of clinically observed ONE in pediatric IH patients.

Methods: Presenting ophthalmologic exam information and the results of intracranial imaging were collected retrospectively for 35 pediatric IH patients (70 eyes). Volumetric T1 magnetic resonance imaging (MRI) brain scans were reviewed by a neuroradiologist who was masked to the ONE grades. Cross-sectional area (CSA) of the narrowest region of the optic canal was measured using OSIRIX software. Spearman correlation and ANOVA testing was performed to study the relationship between CSA and ONE grade.

Results: Optic canal CSA and ONE were not significantly correlated ($r = 0.02$; $P = 0.84$). There were no significant differences among average optic canal CSA when compared according to ONE grade ($F [5,62] = 1.22$, $P = 0.31$).

Discussion: Although an association of the optic canal CSA and ONE grade has been reported previously in adults with IH, there was no significant relationship found in our study of pediatric IH patients.

Conclusions: Our study suggests that the optic canal size in children with IH may not be associated with the severity of papilledema observed on physical exam.

046 Quality of life and visual perception in children and young adults with anophthalmia and microphthalmia treated with ocular prosthesis. Marita Andersson Gronlund, Beatrice Casslén, Ylva Jugard, Rezhna Taha Najim, Marie Odersjo, Alexandra Topa

Introduction: The aim was to evaluate health-related quality of life (HRQoL), vision-related (VR)QoL and visual perceptual problems (VPPs) among anophthalmia (A) and microphthalmia (M) patients treated with ocular prosthesis.

Methods: Seveneteen individuals (mean age, 9.0 years; range, 1.7-32.8) with unilateral A/M participated. Four validated instruments measuring HR- and VR-QoL were used: (1) PedsQL, consisting of physical and psychosocial (emotional, social and school functioning) self-report (≥5years) and parent-proxy (2-18 years); (2) CVFQ (≤7 years); (3) EYEQ (≥8 years); 4) VFQ-25 (≥21 years). VPPs were assessed by history taking.

Results: A/M patients and their parents scored low in HR-QoL compared with controls (PedsQL total score: 60.9; 69.6 vs 83.0; 87.61; $P < 0.0001$). No difference between children and parents were found, however, parents trended to underestimate their children's emotional state. A/M children having subnormal visual acuity (VA; ft ≤20/32; logMAR ≥0.20), scored lower in school functioning compared with normal sighted A/M children ($P = 0.026$). CVFQ and EYEQ showed no difference in VR-QoL regarding A/M children compared with controls or children having subnormal VA or not. 8/12 A/M children exhibited VPPs in one or more areas compared with 4/118 controls ($P < 0.0001$).

Discussion: A/M individuals have poor HR-QoL and increased VPPs. No difference in QoL was found between children and parents even though the children trended to score lower in emotional well-being. Individuals with A/M having subnormal vision rated significant less capability in school functioning.

Conclusions: These neglected problems elucidate the necessity of thorough examination, individual assessment followed by appropriate treatment and support concerning children diagnosed with A/M treated with ocular prosthesis.

047 Structural changes of the ciliary body and ciliary processes measured by ultrasound biomicroscopy of primary congenital glaucoma in comparison to glaucoma following congenital cataract surgery. Laura Andrews, Laura Kueny, Camilo Martinez, Joy Li, Adrianna Lee, Osamah Saeedi, Moran Roni Levin, Mona Kaleem, Bethany Karwoski, Marlet Bazemore, Marijean Miller, Mohamad Jaafar, Janet Leath Alexander, William P. Madigan

Introduction: Glaucoma is an important cause of pediatric blindness. Our study aims to better understand ciliary body structural parameters and differences in patients with Primary Congenital Glaucoma (PCG) and Glaucoma Following Congenital Cataract Surgery (GFCCS).

Methods: This is an ongoing prospective comparative study conducted at Children's National Medical Center and University of Maryland comparing patients with PCG and GFCCS undergoing exam under anesthesia. Eyes without any ocular pathology are used for comparison. Longitudinal ultrasound biomicroscopy (UBM) was performed for all patients. Image analysis was performed using ImageJ software to measure 6 structural parameters of the ciliary body (CB) and ciliary processes (CP).

Results: Nine PCG eyes and 6 GFCCS eyes were compared with 25 control eyes. CP integrated density and CP area were significantly lower in patients with glaucoma compared to controls ($P = 0.0428$ and 00485, resp.). PCG CP thickness and CP integrated density were also significantly lower in comparison to GFCCS ($P = 0.0041$ and 0.000024 resp.). However, CB thickness was significantly lower in patients with GFCCS compared to PCG ($P = 0.01129$).

Discussion: Our study demonstrates quantifiable differences between the CB and CP in patients with PCG in comparison to both

normal eyes and GFCCS. Quantifying the anatomical variance of the CB and CP in patients with pediatric glaucoma opens opportunity to better understand these disease processes.
Conclusions: UBM can be used to better understand the anatomy of patients with pediatric glaucoma. A better understanding of anatomical and structural changes may help guide therapeutic surgical approaches to these diseases.

048 Combined unilateral recession/resection surgery in the management of esotropia with near-distance disparity. Panagiota Antonopoulou, Mohammad W. Ghaffari, Adam Budd, Anna P. Maino
Introduction: To study the effect of unilateral combined recession/resection surgery in patients with near–distance disparity.
Methods: All children with esotropia and near–distance disparity of at least 14^{Δ} were recruited prospectively. Patients suitable for adjustable surgery or with previous strabismus surgery were excluded from the study. A satisfactory outcome was defined as esotropia of $<10^{\Delta}$ at near and distance, with full cycloplegic referactive correction, and reduction of near-distance disparity to $< 10^{\Delta}$.
Results: 22 patients were enrolled;17 with constant esotropia with accommodative element and 5 with convergence excess, of which 3 had normal AC/A ratio and 1 low. Median age was 7 years (range, 3-16). Mean preoperative angle was $35.4^{\Delta} \pm 11^{\Delta}$ for near and $18.2^{\Delta} \pm 10^{\Delta}$ for distance. Mean near–distance disparity preoperatively was $17.1^{\Delta} \pm 4^{\Delta}$. Two weeks after surgery, near-distance disparity had reduced to $5.8^{\Delta} \pm 5^{\Delta}$. At the final postoperative check (range, 6 – 24 months), mean angle for near was $10 \pm 5^{\Delta}$ and $5.5^{\Delta} \pm 3^{\Delta}$ for distance. Near–distance disparity was $4.5 \pm 4^{\Delta}$. 12 patients (55%) had $<10^{\Delta}$ esotropia at near and the remaining 10 measured between 12^{Δ} and 20^{Δ}.
Discussion: All patients had a satisfactory result for distance and 20 (90%) measured $<10^{\Delta}$ near–distance disparity. Stereopsis was demonstrated in 7 patients. No patients developed distance exotropia or convergence insufficiency.
Conclusions: Unilateral combined recession/resection surgery is a promising technique that addresses the challenge of near–distance disparity without the risk of overcorrection.

049 Pediatric ocular injuries: a 3-year follow-up study of patients presenting to a tertiary care clinic in Canada. Cyril Archambault, Assia Mekliche, Jordan Isenberg, Patrick Hamel, Rosanne Superstein
Introduction: Ocular traumas represent the most common cause of non-congenital blindness in children. Sports or sports equipment related injuries represent a major cause in children over the age of 10. However, activities differ depending on country and climate, suggesting that the mechanisms of trauma may vary according to region.
Methods: A retrospective review of all trauma cases presenting to the eye clinic at CHU Ste Justine, Montreal, Quebec between 2013 and 2015 was conducted.
Results: A total of 409 patients with a mean age of 7.74 years were included. Boys were injured more frequently than girls (60.4%). Most ocular injuries occurred between the ages of 2 and 9 years old (51.8%). The most common sport was soccer, followed by ball/ice hockey. Injuries occurred at home in 23.2% of cases. Final visual acuity was 20/40 or better in 77.0% of patients.
Discussion: This is the second epidemiological study examining causes and outcomes of pediatric ocular traumas in the province of Quebec. In our current sample, soccer was responsible for 33% of sports injuries, while nonorganized hockey for only 20%. This trend is similar to studies done in the UK and could indicate that soccer is increasing in popularity in Canada.
Conclusions: Our demographic findings are comparable with those of the only other Canadian study done on this subject. We are hoping that by identifying high-risk activities, health authorities will be able to plan better prevention strategies thus reducing vision loss and morbidity in the pediatric population.

050 Estimating cycloplegic retinoscopy by school bus accommodation-relaxing skiascopy (SBA-RS). Andrew W. Arnold, Stephanie L. Arnold, Jacob H. Sprano, Robert W. Arnold
Introduction: Accurate estimation of hyperopia as well as astigmatism axis and magnitude are challenging in delayed children. Conventional skiascopy holds rows of increasing power +/− lenses vertically in front of one eye. The SBA-RS child-friendly design holds convex lenses horizontally with a higher plus power fogging over the non-tested eye to relax accommodation.
Methods: In a prospective IRB study, patients had Retinomax autorefraction and SBA-RS refraction as a part of comprehensive pediatric eye examination with cycloplegia using cyclopentolate 1%.
Results: We examined 504 patients (0.3-66 years, mean 7.9 ± 9, median 6 years) of which 124 had delays. For astigmatism >1 D, cylinder power within 1 D of exam was achieved by 93% with SBA-RS and 85% with Retinomax, and axis within 10° in 90% with the bus versus 75% with Retinomax. Hyperopia of >1 D was found in 141; cyclo refraction was $+3.03 \pm 1.8$ D and cyclo-Retinomax 2.85 ± 2.0 D. SBA-RS without cycloplegia was 2.47 ± 1.7 D with neuro-delayed patients 0.36 D less than normals. Spherical equivalent actual refraction (Y) was predicted by SBA-RS (x): $y = 0.98x + 0.12$, $R2 = 0.95$ right eye and $y = 0.99x + 0.17$, $R2 = 0.94$ left eye.
Discussion: Accommodation-relaxing binocular horizontal skiascopy very precisely estimates astigmatism power and axis and only lags cycloplegic refraction by about 0.5 D in hyperopic patients fairly independent of neurodevelopmental delay.
Conclusions: Child-friendly, convex skiascopy can quickly estimate refraction even in many delayed patients reducing the need for cycloplegia.

051 Performance of a photoscreener with novel CR infrared wand strabismus estimation compared to another screening device and comprehensive examination. Stephanie L. Arnold, Andrew W. Arnold, Jacob H. Sprano, Robert W. Arnold
Introduction: The 2WIN photoscreener (Adaptica, Padua, Italy) has a new function, *Corneal Reflex* (CR), utilizing a visible-light occluder transmitting infrared flash so phorias and intermittent tropias can be estimated.
Methods: In a prospective IRB study, pediatric eye patients had pre-cycloplegia 2WIN photoscreening compared with Retinomax and cycloplegic refraction. The (CR) infrared occlusion wand was compared to prism cover test.
Results: Of 436 patients age 0.3 to 66 years: 172 were preschool, 245 school-age and 19 adults. 25% had developmental delays. For astigmatism patients ($>$ 1 D), axis was within 10° of exam in 74% with 2WIN and 78% with Retinomax. In astigmatism patients, 2WIN was within 1 D cylinder power in 81% of 2WIN refractions compared to 85% with Retinomax. For hyperopic ($>$ 1D) patients the 2WIN gave spherical equivalent 1.17 ± 1.02 D and Retinomax 2.21 ± 2.46 D compared to cycloplegic refractions $+3.55 \pm 1.88$ D. The CR strabismus horizontal deviation (y) was related to prism cover (x) with a strong correlation $y = 0.73x - 1.5$, $R2 = 0.65$ ($P < 0.01$). For 182