Table 1. Mean absolute variability

	Eyes with cylinder power ≤ 1.5D (n = 23)	Eyes with cylinder power > 1.5D (n = 7)	Difference between groups (Kruskal–Wallis rank sum test, P value)
Change in Emmetropic Intraocular Lens power (diopter ± SE)	0.19 ± 0.03	0.17 ± 0.06	0.71
Change in Mean Keratometry (diopter ± SE)	0.18 ± 0.03	0.20 ± 0.05	0.57
Change in Cylinder Power (diopter ± SE)	0.30 ± 0.05	0.44 ± 0.10	0.11
Change in Cylinder Axis (degree ± SE)	12.1 ± 1.89	3.4 ± 0.92	**0.01**

perception than if no toric IOL had been used. In that context, our results indicate that half of t-IOL implantations may be under-optimized due to the variability in anterior astigmatism measurements as a function of the ocular surface conditions.

One limitation of the present study, due to medical records reviewed retrospectively, is the absence of analysis of intra-individual variability in the axis of astigmatism (without saline drop). However, previous studies already suggested that modern optical biometer devices such as the AL-Scan provide precise and highly reproducible biometry measurements (Kola et al. 2014).

This study strongly suggests that any diagnostic eye drop (mydriatic, fluorescein, saline…) used in every day clinical practice at the time of cataract surgery planning may influence the choice of t-IOL position, according to the delay since the last eye drop instillation.

References

Epitropoulos AT, Matossian C, Berdy GJ, Malhotra RP & Potvin R (2015): Effect of tear osmolarity on repeatability of keratometry for cataract surgery planning. J Cataract Refract Surg **41**: 1672–1677.

Holladay JT, Dudeja DR & Koch DD (1998): Evaluating and reporting astigmatism for individual and aggregate data. J Cataract Refract Surg **24**: 57–65.

Jin H, Limberger I-J, Ehmer A, Guo H & Auffarth GU (2010): Impact of axis misalignment of toric intraocular lenses on refractive outcomes after cataract surgery. J Cataract Refract Surg **36**: 2061–2072.

Kola M, Duran H, Turk A, Mollamehmetoglu S, Kalkisim A & Erdol H (2014): Evaluation of the repeatability and the reproducibility of AL-scan measurements obtained by residents. J Ophthalmol **2014**: 1–6.

Naeser K & Hjortdal JO (1999): Bivariate analysis of surgically induced regular astigmatism. Mathematical Analysis and Graphical Display. Ophthalmic Physiol Opt **19**: 50–56.

Röggla V, Leydolt C, Schartmüller D, Schwarzenbacher L, Meyer E, Abela-Formanek C & Menapace R (2021): Influence of artificial tears on keratometric measurements in cataract patients. Am J Ophthalmol **221**: 1–8.

Received on September 27th, 2020.
Accepted on February 27th, 2021.

Correspondence:
Marc Labetoulle, MD, PhD
Service d'Ophtalmologie
Hôpital Bicêtre
APHP
Université Paris Sud. 94275 Le Kremlin-Bicêtre
France
Phone : 33 1 45 21 36 90
Fax: 33 145 21 22 46
Email: marc.labetoulle@bct.aphp.fr

Reasonableness of surgical interventions in eyes with no light perception after severe ocular trauma

Wilfried Glatz, Marlene Glatz, Esther Halbwirth, Wolfgang List, Domagoj Ivastinovic and Andreas Wedrich

Department of Ophthalmology, Medical University of Graz, Graz, Austria

doi: 10.1111/aos.14879

Dear Editor,

Ocular trauma (OT) is a common cause of monocular blindness or severe visual impairment amongst the young adults in working age. Eyes with no light perception (NLP) at initial presentation after injury tend to have a poor visual prognosis, and therefore, ophthalmologists commonly advocate primary enucleation or rather refrain from further surgical interventions (Matthews et al. 1998; Salehi-Had et al.2009; Soni et al. 2013). In this case series, we present our results in patients with NLP regarding visual and anatomical outcome, as well as the necessity for further surgical interventions (Fig. 1).

This is a retrospective chart review performed at the Department of Ophthalmology, Medical University of Graz. The study was approved by the local ethics committee. We reviewed medical charts of patients who presented at our emergency department with confirmed NLP due to OT. Assessment of NLP was performed by two independent examiners using the bright illumination of an indirect ophthalmoscope. All patients received surgical primary repair within 24 hr. Continuous data were presented as mean ± standard deviation (range). To facilitate statistical analysis the visual acuity in Snellen and semiquantitative measurements were converted into logMAR. Accordingly, light perception (LP), hand motion (HM) and counting fingers (CF) were represented as 3 logMAR, 2.28 logMAR and 1.98 logMAR, respectively (Lange et al. 2009).

Overall, 19 eyes of 19 patients were enrolled. Of these, 6 were female and 13 were male. The patients´ age averaged 50.4 ± 26.7 years (9–86). All patients had NLP (>3 logMAR) at the initial presentation due to fall (n = 7), blunt injury (n = 5), sharp injury (n = 3) and fireworks (n = 4) resulting in open globe injuries. Ocular Trauma Score was 1 in 18 patients and 2 in 1 patient, predicting a final visual outcome of NLP in 74% and 27%, respectively (Kuhn et al. 2002). Overall, 2.7 ± 1.2 surgeries (1–6, in total 51),

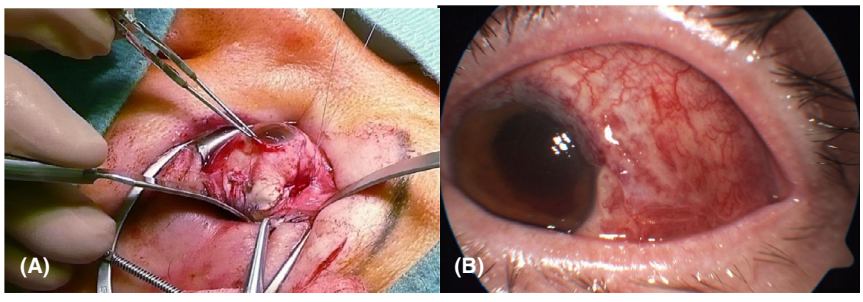

Fig. 1. (A): Intraoperative imaging of surgical repair of a bulbus rupture resulting in NLP due to blunt contusion with a piece of wood (B): postoperative image.

were necessary to establish the final outcome. All patients received detailed information about the prevalent findings and the potential prognosis, comprising multiple further surgical interventions and expressed their wish for a bulb preserving approach. In detail, apart from the primary wound closure including excision of prolapsed intraocular tissue and corneal or scleral suture 29 reconstructive surgeries of the posterior pole (24 vitrectomies including retinectomy and gas or silicone-oil tamponade, 4 retinal laser coagulations—aside within vitrectomies, and 1 intravitreal injection), and 19 surgeries of the anterior segment (7 penetrating keratoplasties, 7 anterior chamber lavages, 3 iris reconstructions and 2 lensectomies with intraocular lens implantation) were performed, one eye had to be enucleated because of a second severe trauma 3 months after primary wound repair. Follow up accounted for a median of 10 months (6–48). The final visual acuity was NLP in 5 patients including the patient who underwent enucleation, and 2.68 ± 0.45 logMAR (3–1.8) in 14 patients. In detail 9 patients achieved LP, 3 HM, 1 CF and 1 1.52 logMAR. Bulb rupture was found to accompany with better visual outcome compared to penetrating injury caused by blunt trauma. Detached or nearly completely destroyed retina due to the trauma was the cause for NLP as final visual acuity. Therefore, 74% of patients regained a visual acuity of LP or better. This finding stands in contrast to the findings of Kuhn et al. predicting a visual acuity of NLP in 74% of cases (Kuhn et al. 2002). All patients 18, comprising these with NLP, were satisfied with their decision to choose a bulb preserving approach. None had to be enucleated because of pain or cosmetic unsatisfying outcome. The intraocular pressure was hypotonic (<10 mmHg) in 13 eyes, normotonic, defined as 11–20 mmHg, in 3 and hypertonic (>20 mmHg) in 2 patients. With surgical interventions following the primary wound closure, the retina could be attached in 8 patients. In 7 eyes, the retina detached in the follow-up and in 3 eyes the retina was missing except for peripheral rests.

Our study shows that in eyes with NLP due to severe OT some visual function could generally be restored despite the primarily poor prognosis. In addition, a suitable anatomical outcome could be achieved and consequently, the psychological burden of the complete loss of the eye could be avoided. Although in some cases the individual decision of the surgeon, based on the extent of the injury or other circumstances, could favour primary enucleation, the mere absence of light perception at initial presentation should not be used as determining decision key.

References

Kuhn F, Maisiak R, Mann L, Mester V, Morris R & Witherspoon CD (2002): The ocular trauma score (OTS). Ophthalmol Clin North Am **15**: 163–165.

Lange C, Feltgen N, Junker B, Schulze-Bonsel K & Bach M (2009): Resolving the clinical acuity categories "hand motion" and "counting fingers" using the Freiburg Visual Acuity Test (FrACT). Graefes Arch Clin Exp Ophthalmol **247**: 137–142.

Matthews GP, Das A & Brown S (1998): Visual outcome and ocular survival in patients with retinal detachments secondary to open- or closed-globe injuries. Ophthalmic Surg Lasers **29**: 48–54.

Salehi-Had H, Andreoli CM, Andreoli MT, Kloek CE & Mukai S (2009): Visual outcomes of vitreoretinal surgery in eyes with severe open-globe injury presenting with no-light-perception vision. Graefes Arch Clin Exp Ophthalmol **247**: 477–483.

Soni NG, Bauza AM, Son JH, Langer PD, Zarbin MA & Bhagat N (2013): Open globe ocular trauma: functional outcome of eyes with no light perception at initial presentation. Retina **33**: 380–386.

Received on September 27th, 2020.
Accepted on February 27th, 2021.

Correspondence:
Department of Ophthalmology
Medical University of Graz
Auenbruggerplatz 4
8036, Graz
Austria
Tel.: +4331638581862
Fax: +4331613261
Email: wilfried.glatz@medunigraz.at

All authors of this manuscript followed the guidelines of the Helsinki Declaration

Prevalence of a visible supraciliary space by swept-source optical coherence tomography in a large healthy population

José Ignacio Fernández-Vigo,[1,2] Hang Shi,[1,2] Bachar Kudsieh,[2,3] Lucía De-Pablo-Gómez-de-Liaño,[2,4] José Ángel Fernández-Vigo[2,5,6] and Julián García-Feijóo[1]

[1]Department of Ophthalmology, Hospital Clínico San Carlos, Instituto de Investigación Sanitaria (IdISSC), Madrid, Spain; [2]Centro Internacional de Oftalmología Avanzada, Madrid, Spain; [3]Department of Ophthalmology, Hospital Puerta de Hierro Majadahonda, Madrid, Spain; [4]Department of Ophthalmology, Hospital 12 de Octubre, Madrid, Spain; [5]Centro Internacional de Oftalmología Avanzada, Badajoz, Spain; [6]Department of Ophthalmology, Universidad de Extremadura, Badajoz, Spain

doi: 10.1111/aos.14903

Editor,

The aim of this report is to describe the supraciliary space (SCS)