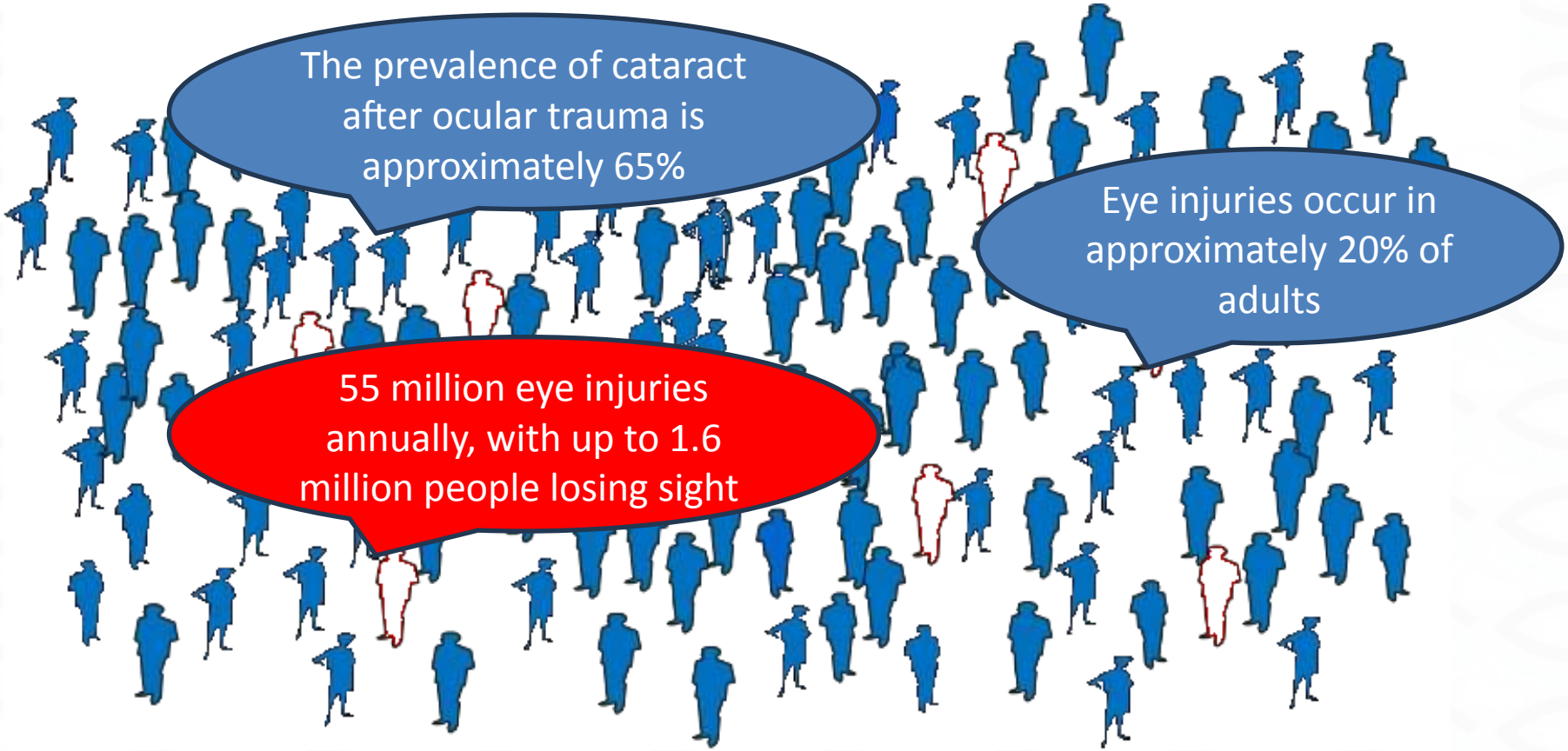
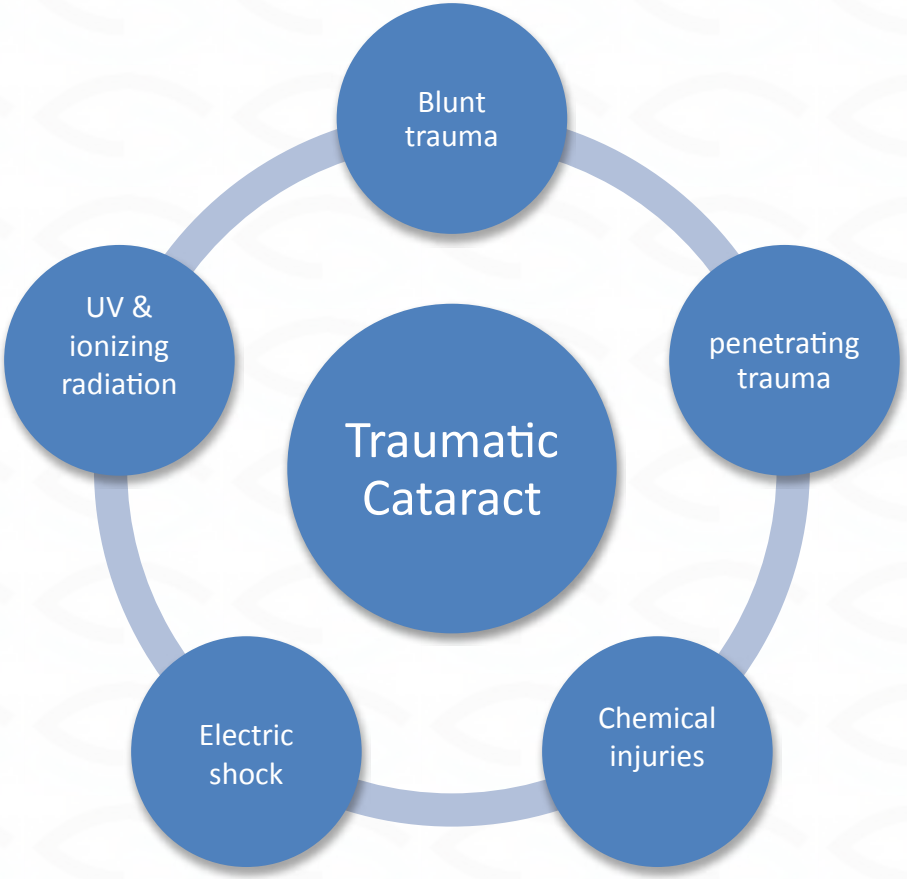
Miltos Balidis PhD, FEBOphth, ICOphth

Lessons learned in Traumatic Cataract

No financial disclosures


The prevalence of cataract after ocular trauma is approximately 65%
Eye injuries occur in approximately 20% of adults
55 million eye injuries annually, with up to 1.6 million people losing sight

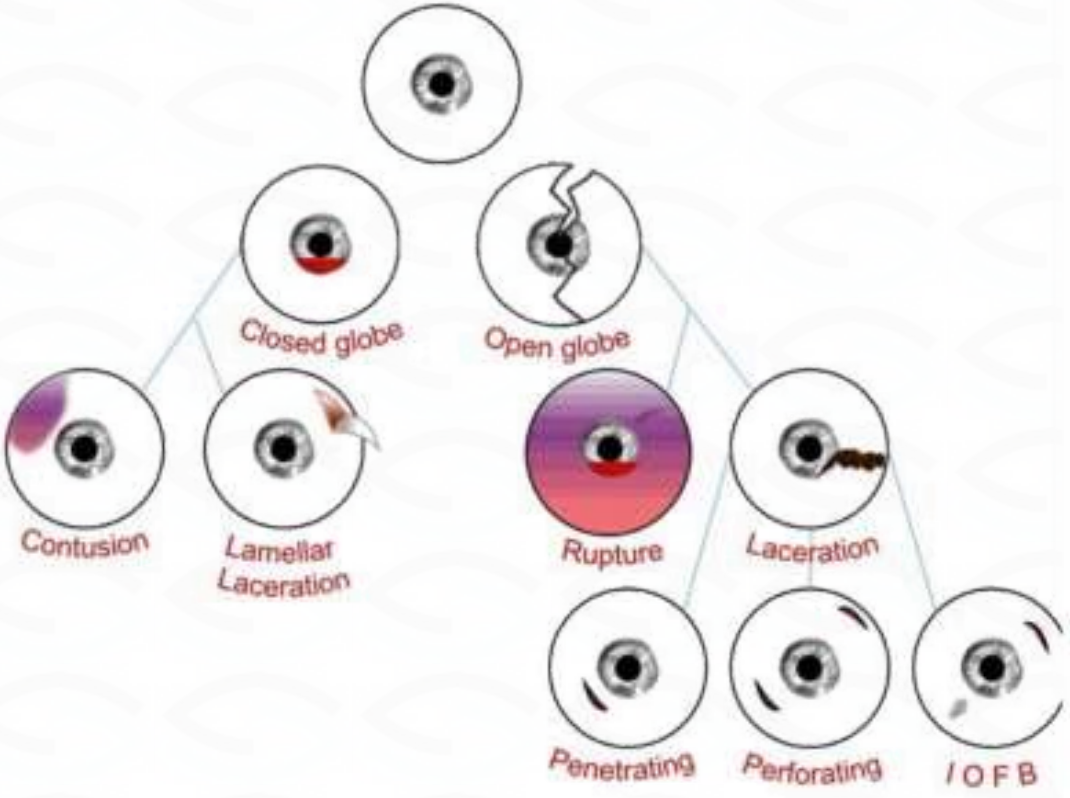
Etiology


Blunt trauma
penetrating trauma
Chemical injuries
Electric shock
UV & ionizing radiation
Traumatic Cataract

Birmingham Eye Trauma Terminology System

(BETTS)

Eye Injury Terminology



Predictive value and applicability of ocular trauma scores and pediatric ocular trauma scores in pediatric globe injuries

Predictive value of the evaluated OTS parameters

OTS parameters	n=84 (%)	P
Initial VA		<0.001[a]
NLP	2 (2.4)	
LP-HM	16 (19.0)	
1/200-19/200	7 (8.3)	
20/200-20/50	8 (9.5)	
≥20/40	29 (34.5)	
N/A	22 (26.2)	
Globe rupture	13 (15.5)	0.008[a]
Endophthalmitis	3 (3.6)	0.469
Perforating injury	0	N/A
Retinal detachment	1 (1.2)	N/A
RAPD	6 (7.1)	0.096

Traumatic 2025

Estimated probability of follow-up visual acuity category at 6 month

Raw score sum	OTS score	NPL	PL/HM	1/200–19/200	20/200 to 20/50	≥20/40
0–44	1	73%	17%	7%	2%	1%
45–65	2	28%	26%	18%	13%	15%
66–80	3	2%	11%	15%	28%	44%
81–91	4	1%	2%	2%	21%	74%
92–100	5	0%	1%	2%	5%	92%

NPL: nil perception of light; PL: perception of light; HM: hand movements

1.3 **Predicting the Severity of an Eye Injury: the Ocular Trauma Score (OTS)**

Ferenc Kuhn, Robert Morris, Viktoria Mester, C. Douglas Witherspoon, Lolletta Mann

Prognostic factor identified	Number of studies
Initial visual acuity	18 (90%)
Zone of injury	10 (50%)
Retinal detachment/ involvement	7 (35%)
RAPD	6 (30%)
Vitreous hemorrhage	6 (30%)
Vitreous prolapse	4 (25%)
Type of injury	4 (25%)
Hyphaema	4 (25%)
Lens involvement	4 (25%)
Need for additional surgeries	3 (12%)
Wound size	2 (10%)
Associated infection(s)	2 (10%)
Hypotony	1 (5%)
Visual axis involvement	1 (5%)
Proliferative vitreoretinopathy	1 (5%)

Predictors of Long-term Ophthalmic Complications after Closed Globe Injuries Using the Intelligent Research in Sight (IRIS®) Registry

AI Research System IRIS

- Vitreous hemorrhage
- Hyphaema
- Choroidal involvement
- Lens displacement

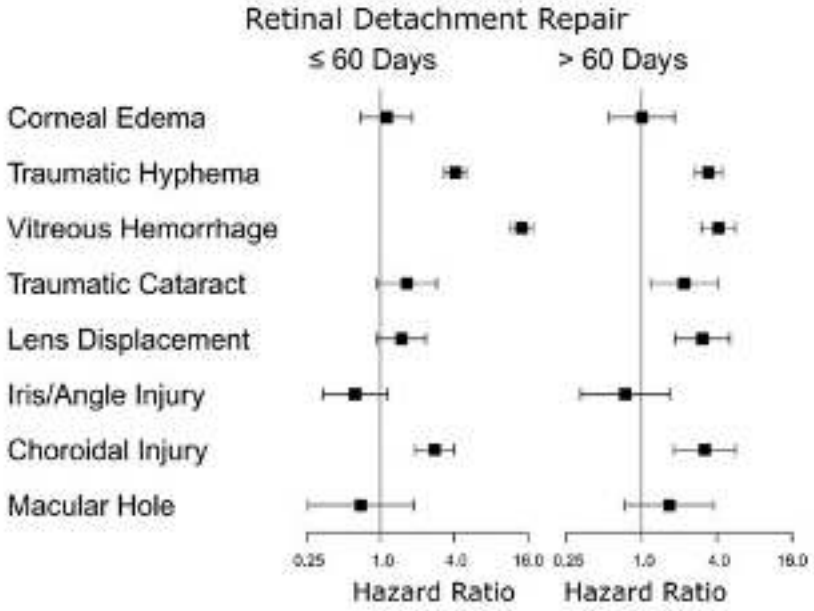
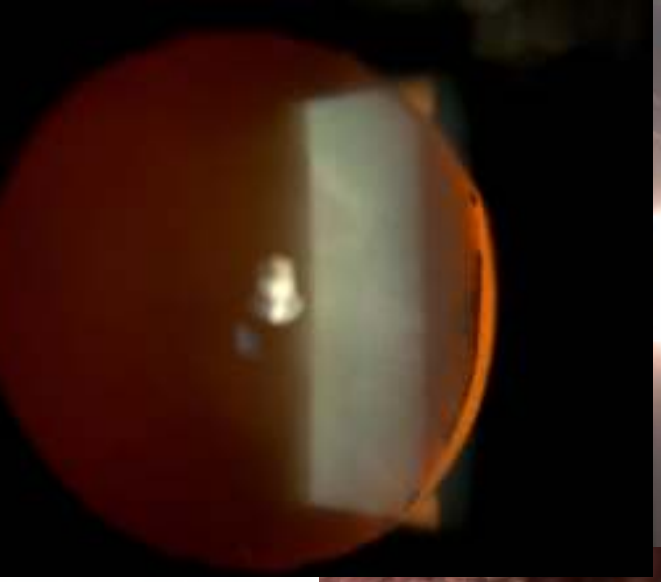
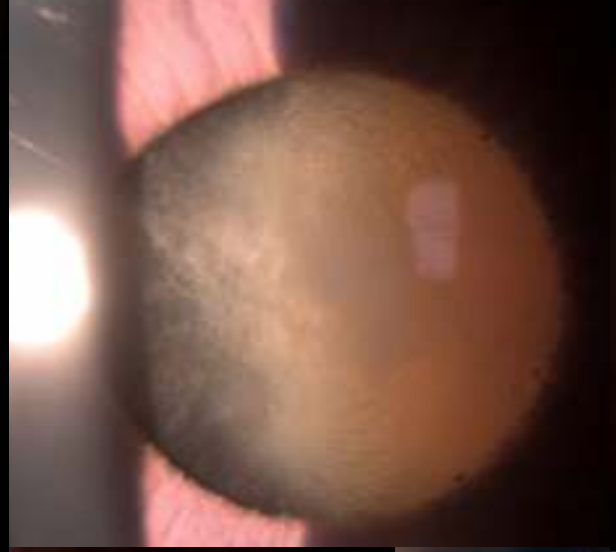
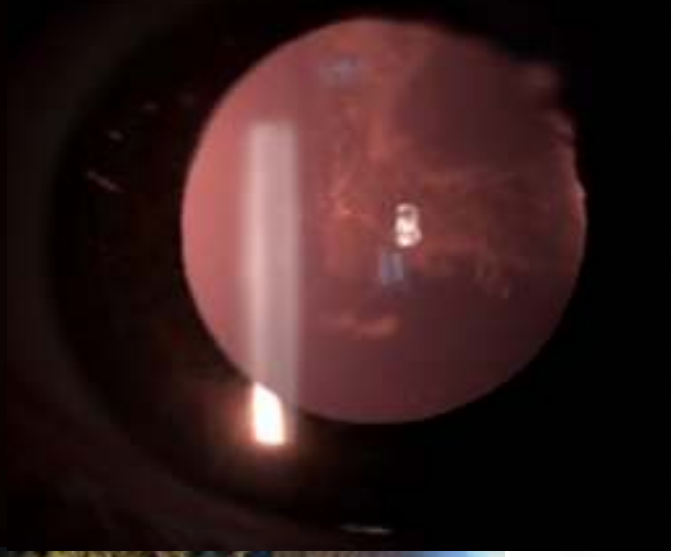
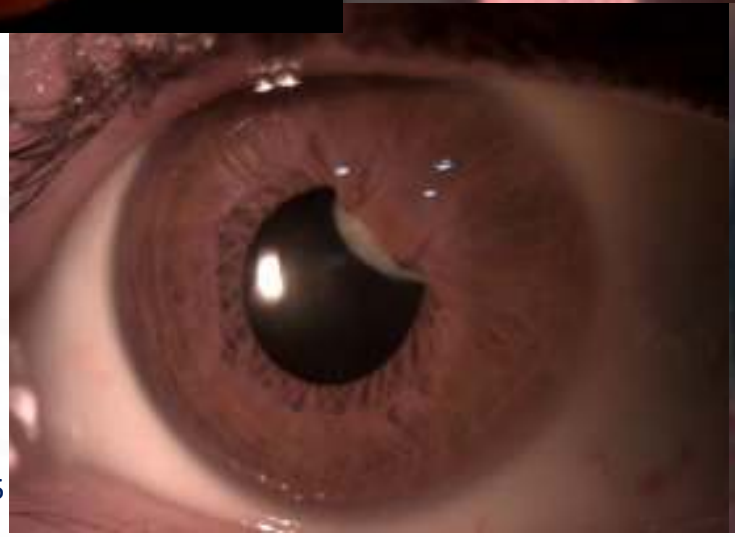


Figure 4. Hazard ratio (box) and 95% confidence intervals (whiskers) for predictors of retinal detachment repair within 60 days and after 60 days following trauma.





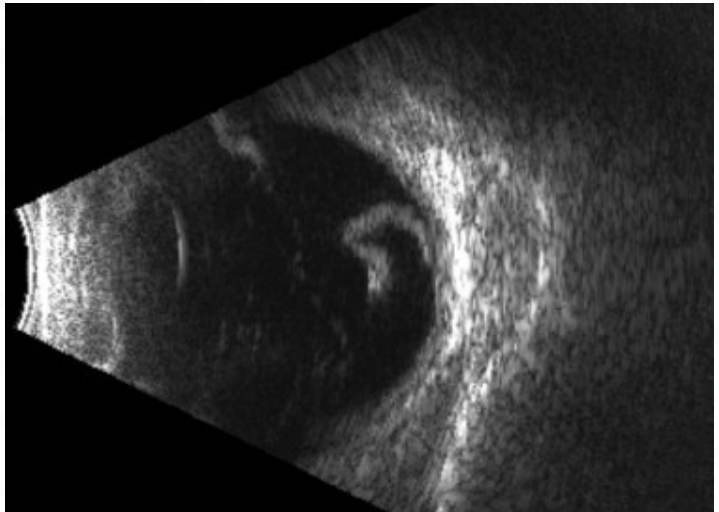


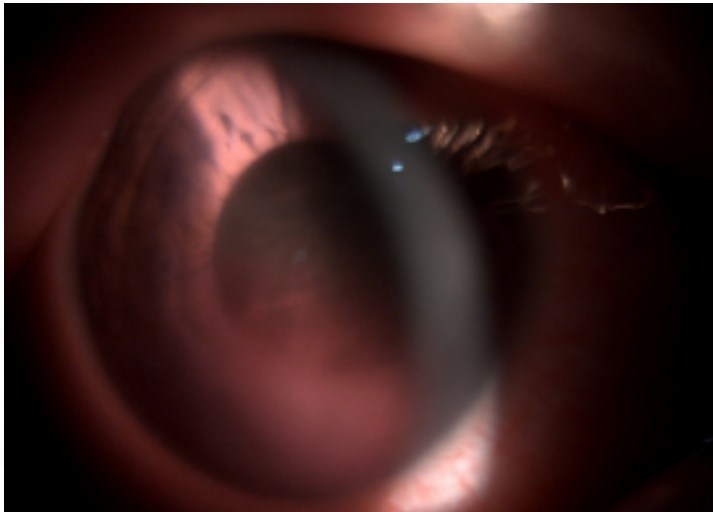


Traumatic 2025

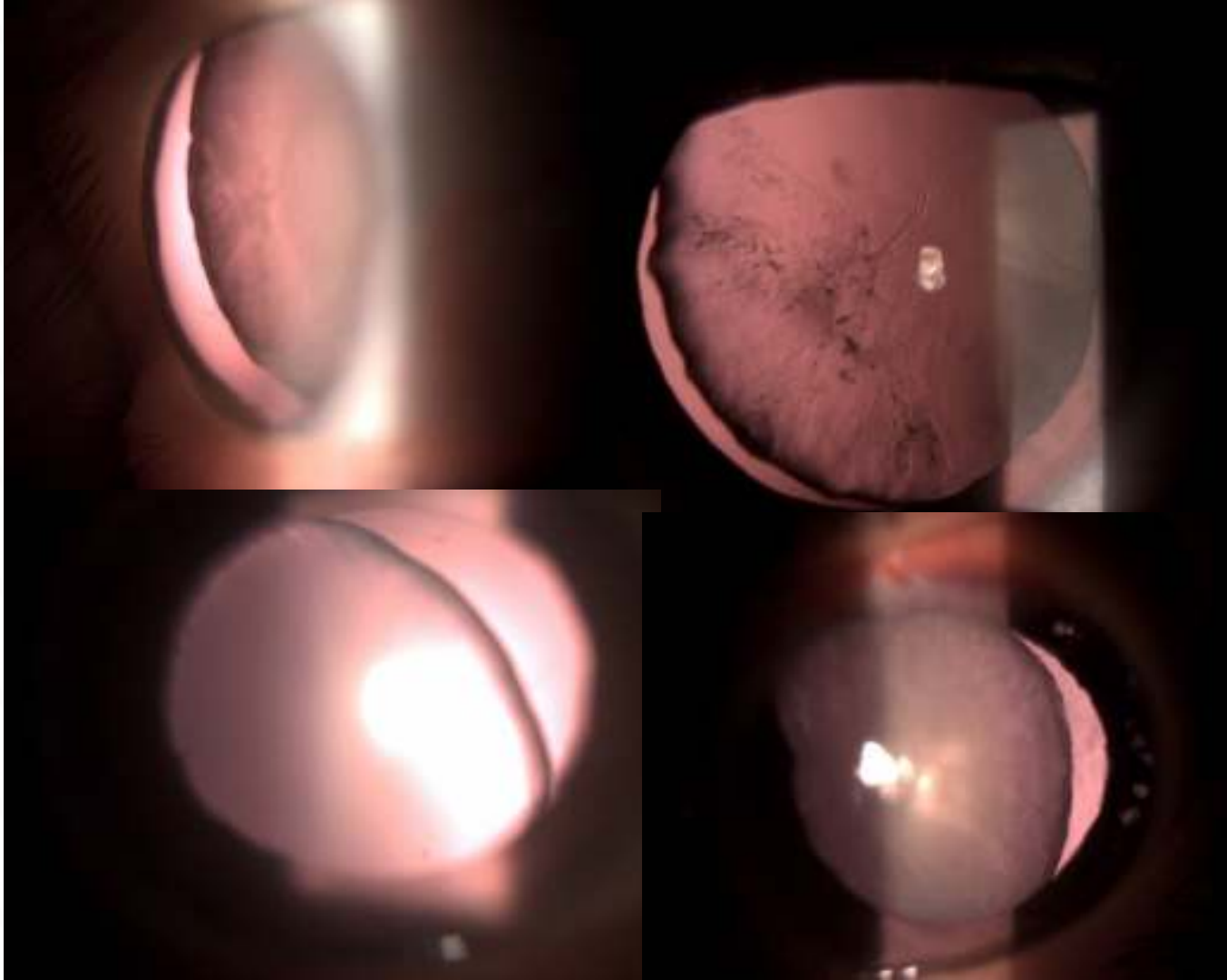
- RAPD / Sudden vision loss
- IOP
- Angle-recession / Iridodialysis
- Zone laceration assessment
- Lens Ectopia / phacodonesis

- Hyphema
- Vitreous Hemorrhage
- IOFB
- Retinal detachment
- Choroidal rupture





Injured zonules



Initial Management

- Anaesthesia
- Primary globe closure if needed
  - Simultaneous cataract operation
  - IOL placement

Corneal laceration and cataract

- Seal anterior chamber
- Corneal wounds closure with 10-0 nylon
- Suture under higher tension to withstand the phacoemulsification pressure
- Prevent infection (antifungal?)

Table. 3 Comparative study of Post surgical visual outcome amongst two groups.

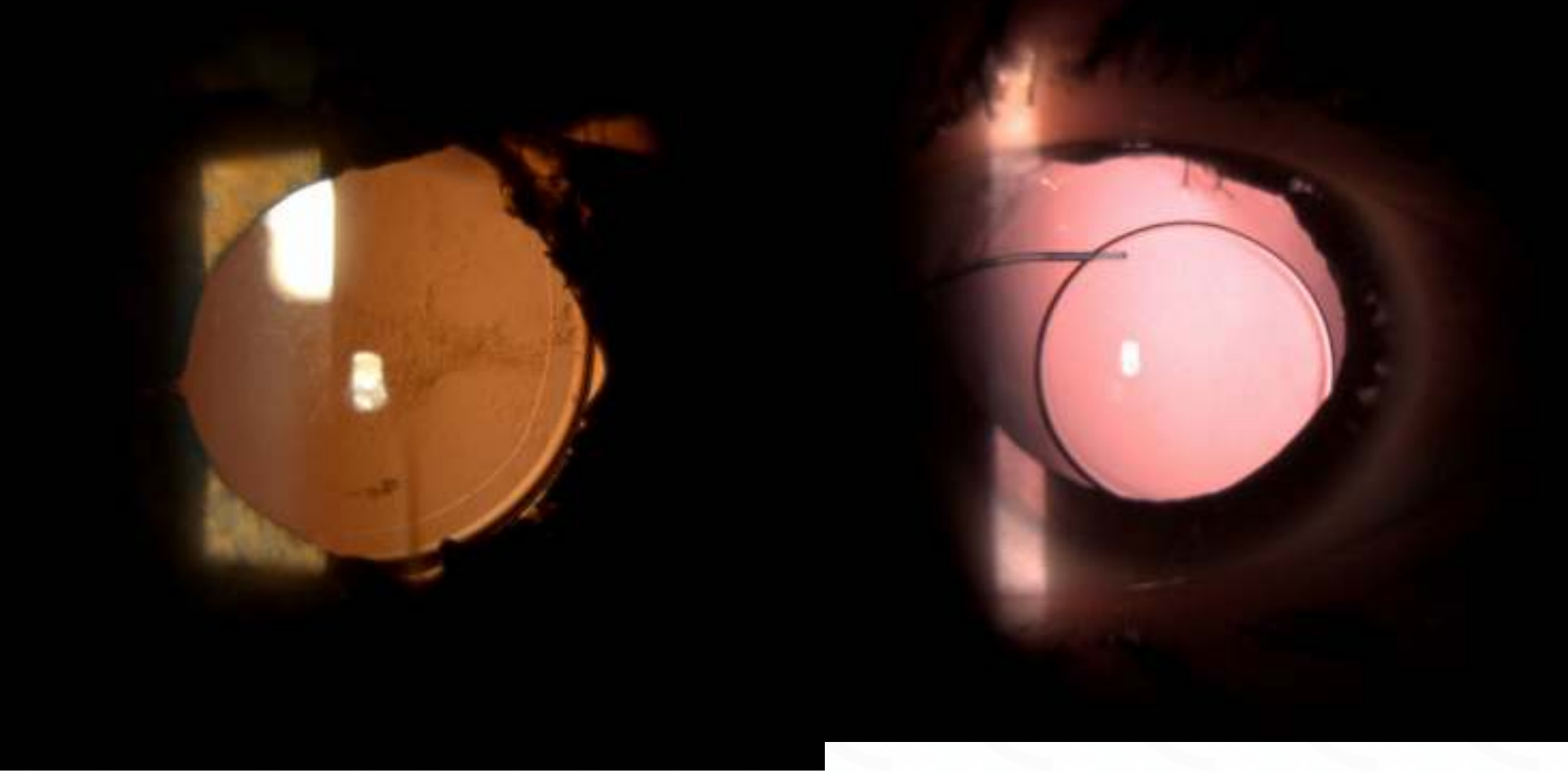
Post Operative Vision	Primary Posterior Capsulotomy		Total
	Yes	No	
<1/60	0	1	1
1/60 TO 3/60	1	10	11
20/200 TO 20/120	5	17	22
20/90 TO 20/60	12	22	34
20/40 TO 20/30	31	8	39
20/20 TO 20/15	11	2	13
Total	60	60	120

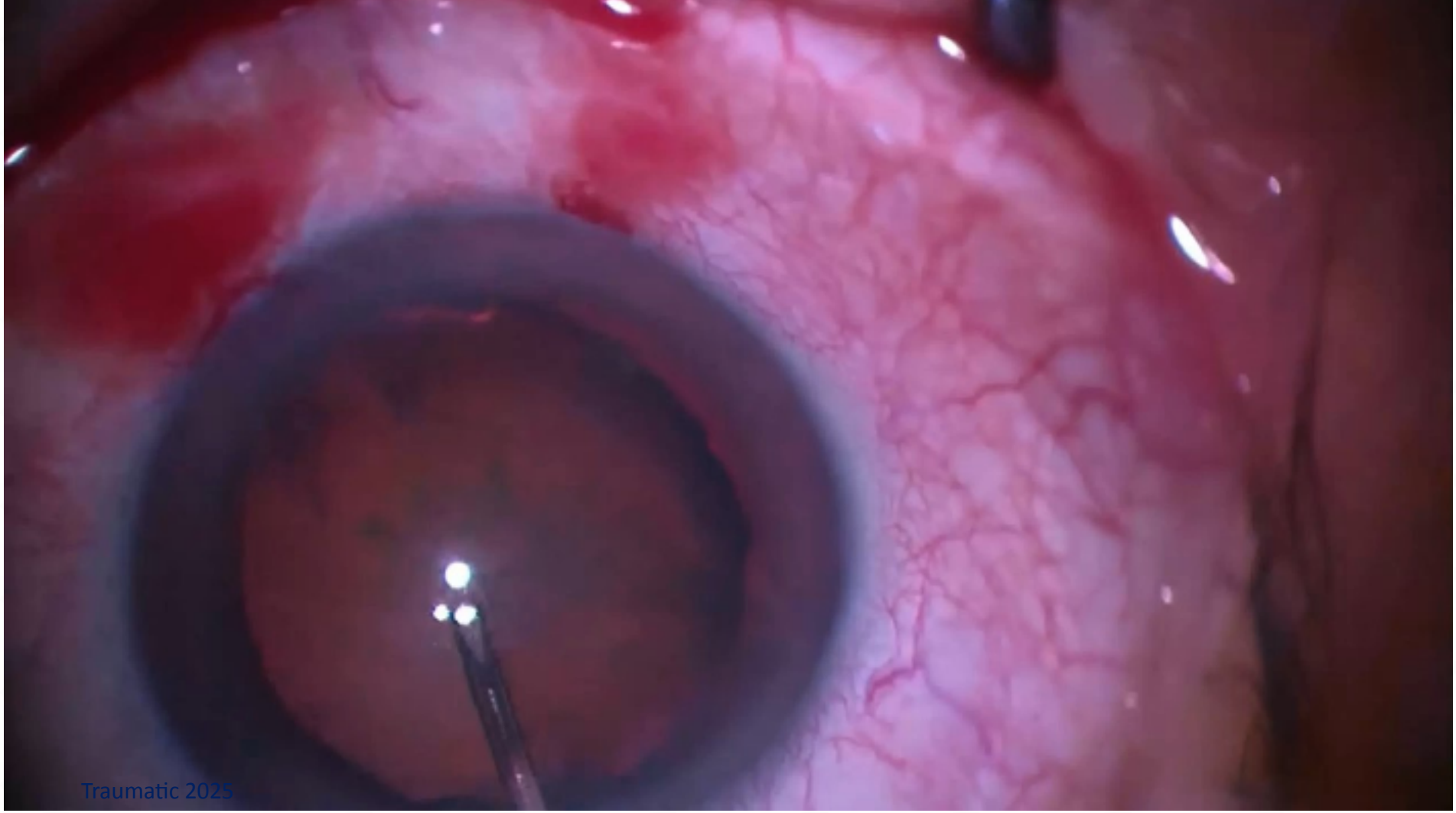
P=0.000

Title

- Trypan blue, triamcinolone, capsule hooks, CTR
- Perform posterior CCC and vitrectomy if needed
- Low irrigation and aspiration rates, and low vacuum settings
- Consider IOL placement as a secondary procedure (if possible in the bag)

Purpose: We aim to evaluate the prognostic factors influencing final VA in surgically managed traumatic cataract patients in a tertiary referral center.
Setting: Academic University Hospital
Methods: A retrospective analysis was conducted on patients who underwent surgery for traumatic cataracts in Unidade Local de Saúde de Coimbra between January 2019 and August 2024. Demographics and clinical data were recorded. A multivariate analysis was performed to identify the prognostic factors of VA. The value of OTS predicting final VA was also calculated.
Results: Fifty-one eyes (84.3% males; mean age of trauma 54.2± 18.7 years) of 51 patients were included. The most common cause of ocular trauma was blunt objects (47.1%). The initial mean VA of the patients was 1.6±0.8 (20/800) logMAR (Snellen) and the final mean best corrected visual acuity (BCVA) was 0.3±0.5 (20/63) logMAR (Snellen) ($p < 0.001$). The mean OTS was 79.3 (±12.7) corresponding to rank 3. Zonular dialysis (43.1%), raised intraocular pressure (43.1%), and capsular defects (41.2%) were the most common associated findings. Regarding surgical technique, phacoemulsification was the most performed (52.9%, n=27), followed by phaco-aspiration (21.8%, n=11), and intracapsular extraction (21.8%, n=11). Our study found a significant correlation between final VA and surgery during the first week of trauma ($r=0.352$, $p=0.019$), pupilloplasty ($r=0.434$, $p=0.003$), raised intraocular pressure ($r=0.313$, $p=0.36$), and the need for reoperation ($r=0.331$, $p=0.026$). Additionally, final VA was adversely affected by the presence of intraocular foreign body ($r=-0.342$, $p=0.021$). No correlation was found between final VA and age of trauma, initial VA, types of surgery or intraocular lens (IOL) implantation, types of injuries, and OTS. After adjusting for confounding factors, the multivariate linear regression analysis showed no significant association with the final BCVA ($p=0.172$). The OTS reliably predicted final VA in most cases, except for OTS rank 3, where a significant difference was found between our study and the OTS prediction. In the overall, 82.2% (n=37) of patients achieved a final VA of 0.2 (20/32) logMAR (Snellen) or better.
Conclusion: Functional prognosis following ocular trauma varies widely, from no light perception to good vision according to the extension and type of trauma. Although some studies considered that initial VA can predict visual outcomes, our research did not find a significant correlation between initial and final VA. We attribute this to an extended follow-up period, low frequency of complications, types of trauma, and a low rate of posterior segment trauma (selection bias in this case series). In our study, early cataract surgery with IOL implantation significantly improved post-surgical BCVA. We also observed that OTS is not a reliable predictor of final visual outcome in category 3 of lenticular trauma. The large majority of patients achieved a satisfactory visual outcome.

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