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## BACKGROUND

Eye injuries are an important cause of ocular morbidity in children. Children with eye injuries who present to the pediatric emergency department (ED) are initially examined by the ED physicians. Due to the potential for complications and permanent vision loss, it is crucial to discriminate between low and high-risk ocular injuries as early as possible. There is lack of data regarding predictors for high-risk injuries that will result in ophthalmic complications.

## AIM

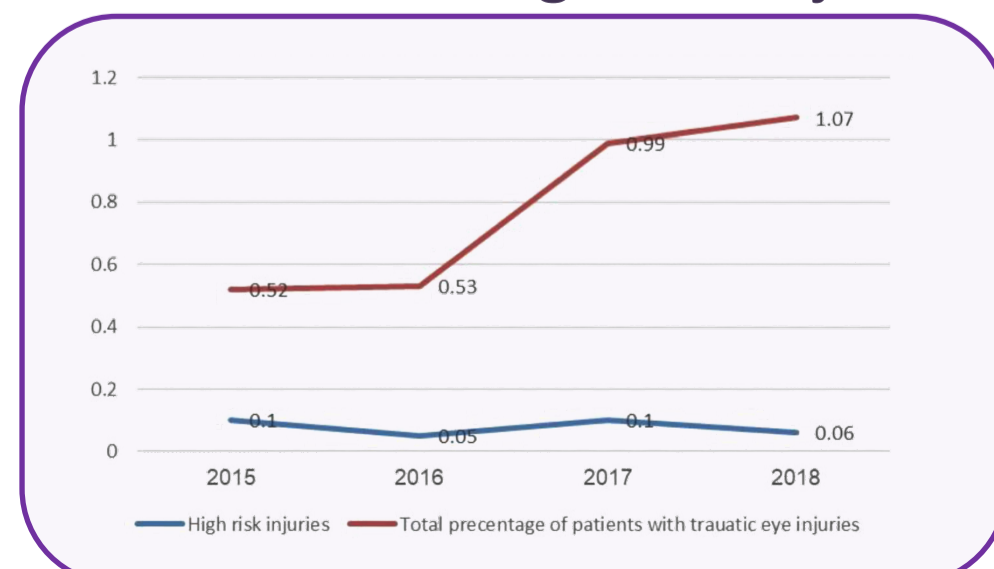
We aimed to identify predictors for ophthalmological complications following traumatic eye injuries in children, and to imply indications for early ophthalmologic consultation in the emergency department.

## METHODS

A retrospective chart review of 834 patients, aged 0–18 years, who presented to the emergency department at Tel Aviv Medical Center between 2015 and 2018 following traumatic eye injuries was performed. The retrieved data were reviewed by a pediatric emergency medicine physician and a senior ophthalmologist, to ensure its accuracy. According to the results of the ophthalmologist's examination, we divided our cohort into two groups: low- and high-risk for ophthalmic complications. The high-risk group included injuries that can lead to ocular or orbital complications.

## RESULTS

Eight hundred and thirty four children, 62% males, presented with an acute eye injury during the study period. There was a trend toward increased acute eye injury, without a comparable increase in high-risk injuries.



## BACKGROUND

Epidemiologic characteristics, injury mechanism, and clinical data of Pediatric traumatic eye injury

	Low risk (n = 728)	High risk (n = 106)	P
Male gender	437 (60)	80 (75)	0.009
Age in years (mean ±SD)	7.9±4.8	7.7±4.9	0.79
Age in years by groups			
0-4	216 (29.7)	35 (33.0)	0.27
5-10	292 (40.1)	38 (35.9)	0.23
11-18	220 (30.2)	33 (31.1)	0.46
Mechanism of injury			
Foreign body without residual injury	230 (31.5)	18 (16.9)	0.002
Sharp			
Penetrating	0	4 (3.7)	<0.001
Blunt	128 (17.5)	40 (37.7)	0.002
Chemical injury	102 (14)	11 (10.4)	0.19
High velocity mechanism	132 (17.4)	52 (48.1)	<0.001
Setting of injury			
Domestic activities	209 (28.7)	30 (28.3)	0.52
Fall (unspecified)	94 (12.4)	10 (9.3)	0.22
School	89 (11.7)	9 (8.3)	0.19
Outdoor activities	77 (10.5)	15 (14)	0.41
Sport injuries	68 (9.3)	23 (21.6)	<0.001
Violence	50 (6.8)	9 (8.4)	0.3
Animal care	15 (2.1)	1 (0.9)	0.37
MVA	2 (0.3)	2 (1.9)	0.07
Ocular structure involvement			
Cornea	382 (52.4)	60 (56.6)	0.64
Eyelid	187 (25.7)	12 (11.3)	<0.001
Conjunctiva	182 (25)	5 (4.7)	<0.001
Anterior chamber	6 (0.8)	26 (24.5)	<0.001
Orbit	7 (1)	14 (13.2)	<0.001
Retina	6 (0.8)	14 (13.2)	<0.001

## RESULTS

### Mechanism of injury

Foreign body without any residual injury was the most common injury. **High-velocity mechanisms**, defined as, projectile object, motor vehicle accidents (MVAs), water jet, sport-related injuries, and falling from height above 1 m, or while running were diagnosed in 22% of the patients. The main setting of the injuries was domestic.

### Ophthalmological assessment

Most of the patients (53%) had corneal injury. Anterior chamber, orbit, and retinal involvement were rare. Surgical intervention was required in 14 patients (1.7%). Decreased VA was diagnosed in 13% of the patients on initial presentation and the rates dropped to 1.5% on the last follow-up examination.

### A comparison of the patients according to their ophthalmological complication risk assessment

High-risk injuries were more frequently associated with male gender, blunt and penetrating trauma and a **high-velocity mechanism**. The anterior chamber, orbit, and retina were the ocular structures involved significantly more in the high-risk group. A multi-regression analysis revealed that a **high-velocity mechanism** and involvement of the anterior chamber, orbit, and retina are significant high-risk factors.

## CONCLUSIONS

The majority of children who present to the pediatric ED with eye injuries do not require urgent ophthalmologist consultations and can be safely managed by the ED physician.

An early ophthalmologist consultation should be considered in eye injuries based both on the eye examination performed by ED physician and the mechanism of injury even if visual acuity (VA) is normal. **High-velocity mechanism** by itself, even with normal visual acuity and eye examination by the ED physician, should prompt an urgent ophthalmologist consult.

The approach to the child following eye injury in the ED

