



Epidemiology of Sports-related Ophthalmic Trauma Based on Multicenter Registries – The International Globe and Adnexal Trauma Epidemiology Study (IGATES)



Yunia Irawati^{1,2*}, Annette K Hoskin^{3,4}, Sean Ming Sheng Ng⁵, Lily Silva Ardiani²,
Rupesh Agrawal^{5,6,7,8,9} for IGATES Study Group -an Asia Pacific Ophthalmic Trauma Society

¹Division of Plastic and Reconstructive Surgery, Department of Ophthalmology, Faculty of Medicine, University of Indonesia, dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia, ²JEC Eye Hospitals and Clinics, Jakarta, Indonesia,

³Save Sight Institute, The University of Sydney, Sydney Eye Hospital, Sydney, NSW, Australia, ⁴Lions Eye Institute, Department of Ophthalmology, University of Western Australian, Nedlands, WA, Australia, ⁵Lee Kong Chian School of Medicine, Singapore, Singapore, ⁶Department of Ophthalmology, National Healthcare Group Eye Institute, Tan Tock Seng Hospital, Novena, Singapore, ⁷Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Singapore,

⁸Singapore Eye Research Institute, Singapore, Singapore, ⁹Ophthalmology & Visual Sciences Academic Clinical Programme, Duke-NUS Medical School, Singapore, Singapore.

INTRODUCTION

Ophthalmic trauma remains the leading cause of monocular visual loss and blindness.^{1,2} Sports-related activities contribute to a varied spectrum of ophthalmic trauma resulting in mild to severe presentation, which can result in long-term sequelae and affect the quality of life, especially in young patients.³ Almost 90% of these traumas are preventable by using appropriate protective eyewear.⁴ This study aims to identify the epidemiology, clinical findings, and final visual outcomes of sports-related ophthalmic trauma reported in the IGATES registry.

METHODS

A retrospective analysis of patients with sports-related ophthalmic trauma from the International Globe and Adnexal Trauma Epidemiology Study (IGATES) registry was conducted.⁵ Of 3200 cases inputted into the registry to March 2022, 223 patients/224 eyes (6.9%) presented with sports-related ophthalmic trauma.

RESULTS

Males (194/223, 87.0%) accounted for the majority of patients. Patients aged 19-40-year-old (105, 47.1%) were the most vulnerable group, with the mean age was 25.9±15.4 years old. Closed globe injury (167, 74.6%) was the most common trauma, followed by open globe injury (52, 23.2%). Blunt trauma (183, 81.7%) accounted for the most common mechanism, followed by sharp trauma (33, 14.7%). Overall, badminton (40, 17.9%) was the leading cause of injury, and the majority injury among females (10/40); followed by cricket (39, 17.4%) which was occurred majority in males (36/39) (**Table 1, Fig 1**). Injuries to the anterior chamber (AC) (117, 52.2%), iris (94, 36.2%), and corneal (81, 36.2%) were the dominant clinical finding. Badminton was noted to cause a high incidence of AC (25, 11.2%) and iris (19, 8.5%) injuries (**Table 2**). No eye protection use was reported. Mean initial visual acuity (VA) was 1.12±0.93 LogMAR and final VA was 0.80±0.96 LogMAR (P<0.001), with 35/110 (31.8%) patients being blind (**Fig 2**). Of 77 (34.4%) patients who underwent surgery, 36/77 (46.7%) had primary globe repair. Using multivariate analysis, initial VA (P=0.002), corneal injury (P=0.010), lens injury (P=0.019), and IOP increasing (P=0.030) were statistically significant to predict final VA (**Fig 3**).

Table 1. Risk classification in sports-related activities

Eye-safe	n (%)	Low-risk	n (%)	Medium-risk	n (%)	High-risk	n (%)
Gym	1 (0.4%)	Bicycle	9 (4.0%)	Badminton	40 (17.9%)	Cricket	39 (17.4%)
		Kite	1 (0.4%)	Ball	25 (11.2%)	Fishing	7 (3.1%)
		Motorcycle	1 (0.4%)	Tennis ball	19 (8.5%)	Basketball	5 (2.2%)
				Football	14 (6.3%)	Airsoft gun	3 (1.3%)
				Futsal	2 (0.9%)	Baseball	3 (1.3%)
				Archery	2 (0.9%)		
				Hockey	2 (0.9%)		
				Hunting	1 (0.4%)		
				Paint ball	1 (0.4%)		

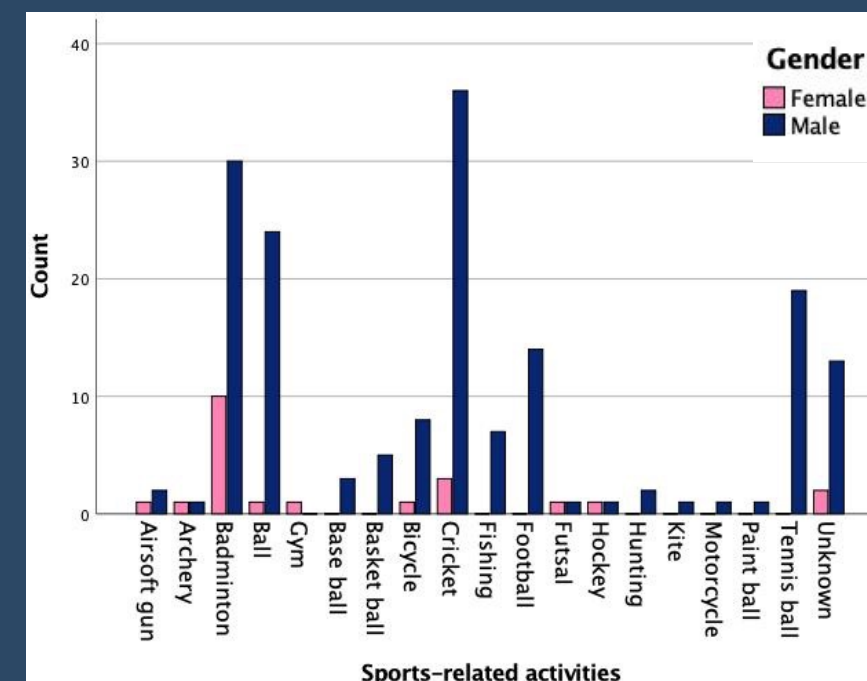


Fig 1. Sports-related activities based on gender

Table 2. Clinical characteristics and the highest percentage of sports activities

Description	Total	Sports activities with the highest percentage
Anterior chamber	117 (52.2%)	Badminton (25, 11.2%)
Iris injury	94 (42.0%)	Badminton (19, 8.5%)
Corneal	81 (36.2%)	Badminton and cricket (13, 5.8%)
Lens injury	40 (17.9%)	Badminton and cricket (5, 2.2%)
Posterior segment	39 (17.4%)	Cricket (9, 4.0%)
Palpebral injury	39 (17.4%)	Cricket (8, 3.6%)
Scleral injury	23 (10.3%)	Cricket (3, 1.3%)
High IOP	20 (8.9%)	Badminton and cricket (6, 2.7%)
Retinal detachment	19 (8.5%)	Ball (2.7%)
Choroidal involvement	15 (6.7%)	Cricket (7, 3.1%)
RAPD (+)	14 (6.3%)	Badminton (3, 1.3%)
Orbital	12 (5.4%)	Cricket (5, 2.2%)
IOFB	7 (3.1%)	Cricket (4, 1.8%)
Optic nerve	5 (2.2%)	Badminton, ball, cricket, hockey (1, 0.4%)
Nasolacrimal	5 (2.2%)	Cricket and bicycle (2, 0.9%)
Cranial nerve	3 (1.3%)	Cricket (3, 1.3%)
Endophthalmitis	2 (0.9%)	Cricket and fishing (1, 0.4%)

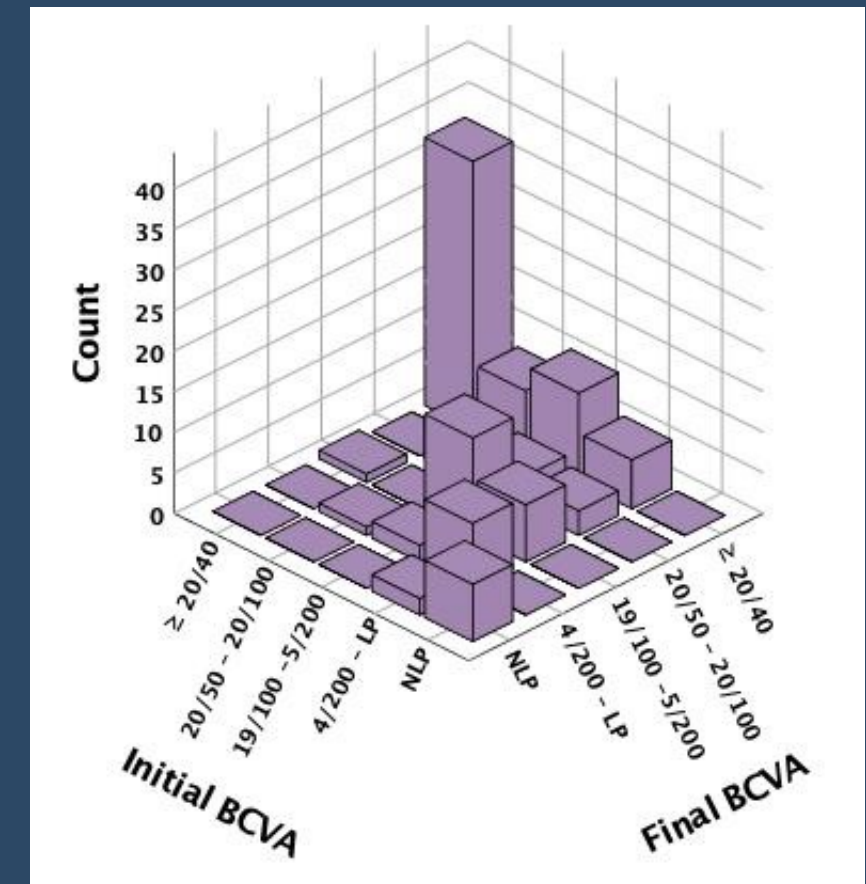


Fig 2. Initial and final BCVA related to sports injury

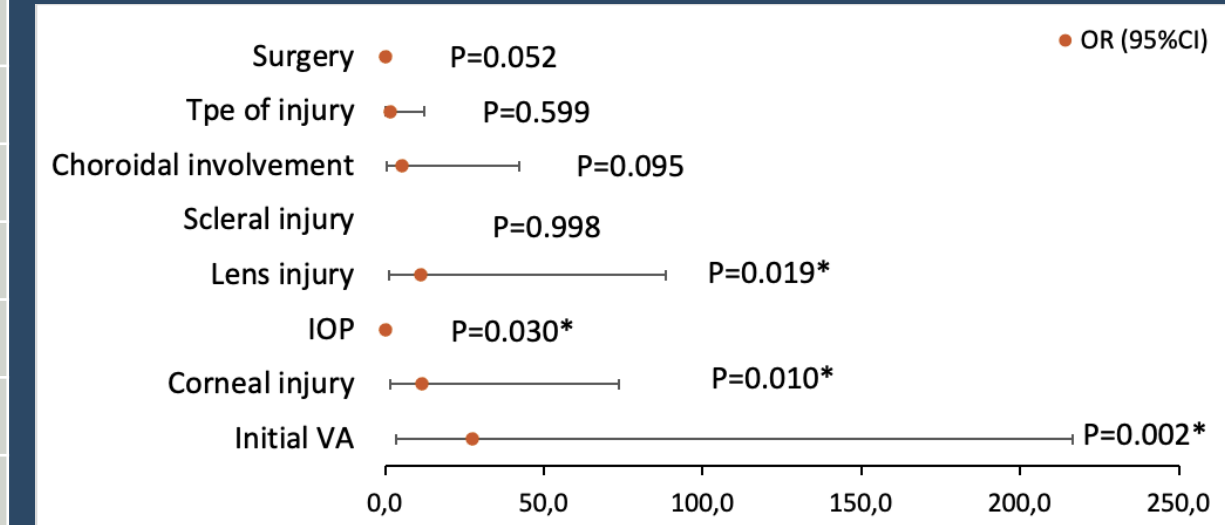


Fig 3. Multivariate analysis of prognostic factors (OR, 95%CI)

CONCLUSIONS

Badminton and cricket were the most common sports associated with ophthalmic trauma. Male and young adults were more susceptible to the injuries. Closed globe injury represented the majority of injuries. Using adequate eye protective gear is strongly recommended to prevent injury. Initial VA, corneal and lens injury, and high IOP were statistically significant to predict visual outcomes.

Keywords: Ocular trauma, sports-related ophthalmic trauma, eye injury, IGATES.

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