

Incidence and Characteristics of Ocular Trauma With Intra Ocular Foreign Bodies (IOFB) in a tertiary care Eye Hospital in Lahore

SIDRAH RIAZ¹, MUHAMMAD TARIQ KHAN², KHALID MEHMOOD³, QASIM LATEEF CHAUDARY⁴, ZAHEER UD DIN AQIL QAZI⁵, MUHAMMAD RASHAD QAMAR RAO⁶

¹Associate Professor (Ophthalmology), Akhtar Saeed Trust Hospital, Lahore.

²Associate Professor (Ophthalmology), Head of Vitreoretinal Department, Akhtar Saeed Trust Hospital, Lahore.

³Professor of Ophthalmology, Avicenna Medical College.

⁴Associate Professor Ophthalmology, Jinnah Hospital, Allama Iqbal Medical College, Lahore.

⁵Chief Consultant Ophthalmologist, LRBT eye & cancer hospital, Lahore.

⁶Professor of Ophthalmology, Nishtar Medical College, Multan

Correspondence to: Dr. Sidrah Riaz, Email: sidrah893@yahoo.com Cell: 03224367303,

ABSTRACT

Aim: To study the incidence and characteristics of ocular trauma with intra ocular foreign bodies (IOFB) in a tertiary care eye hospital in Lahore, Pakistan

Study design: Cross sectional survey.

Place of study: LRBT eye and cancer hospital, Lahore

Methods: one twenty nine (129) patients were selected from previous records, who full filled inclusion criteria. The patients with globe perforation, active infective keratitis, Panophthalmitis and phthisis bulbi were excluded.

Results: During one year study period 129 patients with ocular trauma with foreign bodies presented in out patient department(OPD) were included in study. 118 (92%) patients were male and 11 (9%) were females. The left eye involvement was predominant (observed in 86 patients). Mean age of patients was 24.71 + 11.6 years and age range was 4 years to 62 years. The highest incidence of ocular trauma with foreign bodies was observed in age group 21 to 25 years. Regarding size of IOFB, 83 (64%) patients were injured with foreign bodies size range 6 to 15 mm, 26 (20%) with size above 15mm and 20 (16%) with foreign bodies below 5mm. Pars plana vitrectomy (PPV) was opted as surgical procedure in majority of patients in 64 (50%), under local or general anesthesia depending upon age of patient.

Conclusion: The study shows the pattern and characteristics of patients presenting with history of trauma with foreign body in tertiary care eye hospital. These patients were managed either by mechanical removal or complicated specialized retinal surgery procedures.

Keywords: Ocular Injury, IOFB (Intra Ocular Foreign Body), Ocular trauma, PPV (Pars Plana Vitrectomy)

INTRODUCTION

One of common cause of decrease visual acuity and ocular morbidity is ocular trauma^{1,2}. According to WHO characteristics annually about 55 million people suffer from ocular injuries³⁻⁵. Ocular trauma is an important cause of unilateral blindness, responsible for visual impairment in 19 million people, which is preventable to some extent. Unlike skin abrasions most of ocular trauma cases result in permanent visual loss. It may be accompanied by injuries of central nervous system, with involvement of visual pathway, even if apparent anatomy of globe is intact. The visual loss has significant impact on person social, emotional and economical aspects. Difficulty in earning living hood due to visual loss or visual problems can add to suffering of developing countries. LRBT is leading eye hospital which is well equipped where patients are referred for management of complicated ocular diseases including injuries. An observational survey is conducted to know incidence, pattern, characteristics and surgical procedures to manage cases with IOFB.

MATERIALS AND METHODS

The study was conducted in LRBT eye hospital from 1st march 2014 to 29th February 2015. The records of all patients with history of trauma with any of foreign body were included in study and one twenty nine (129) patients were selected for study. The data was collected including name, age, gender, laterality of eye, size of foreign body (visible if corneal and noted later when extracted from globe) and procedure opted for removal of intraocular foreign bodies. In patients who had corneal or scleral perforation, primary tear repair was done at time of presentation and foreign body removal was deferred for 2 weeks. The presence of foreign body was confirmed by B scan ultrasonography. The nature of foreign bodies was also noted. Superficial corneal foreign bodies were removed under topical anesthesia on slit lamp or under microscope. Topical antibiotic cover was advised to patient for one week. Internal approach, Pars plana vitrectomy (PPV) with standard 3 ports vitrectomy (23 G or 25 G) was opted for patients with larger foreign bodies, opaque media due to cataract or vitreous hemorrhage and intraocular

Received on 25-03-2019

Accepted on 13-08-2019

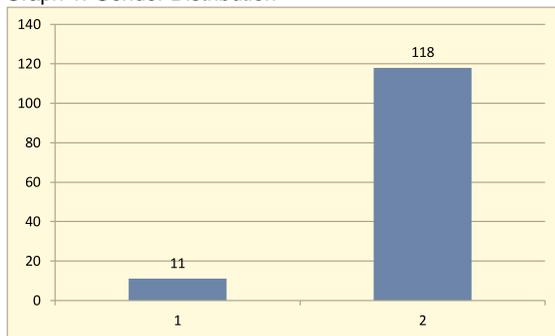
foreign bodies (IOFB) impacted on retina. Informed consent was taken before surgical procedure PPV (pars plana vitrectomy) or PPV combined with IOL. Broad spectrum antibiotics intravenous or oral were started before surgery and topical steroid antibiotic cover was advised for three weeks postoperatively to prevent post traumatic endophthalmitis. Surgical modification like enlargement of sclerotomy, use of silicon oil as tamponade if retinal detachment found, applying endolaser over detached area or around retinal break at site of impaction and use of external magnet were adopted according to size and nature of IOFB.

RESULTS

During 12 months study period 129 patients with ocular trauma with foreign bodies fulfilling inclusion criterion were included in study. Most patients were male 118(92%) and 11(9%) were females (Graph 1). The left eye of patients is involved in 86 (67%) and right in 43% (Graph 2). Mean age of patients was 24.71±11.6 years and age range was 4 years to 62 years. The highest incidence of ocular trauma with foreign bodies was observed in age group 21 to 25 years. Regarding size of IOFB, 83 (64%) patients were injured with foreign bodies size range 6 to 15mm, 26(20%) with size above 15mm and 20(16%) with foreign bodies below 5mm (Table 1).

PPV (pars plana vitrectomy) was opted as surgical procedure in majority of patients in 64(50%). PPV combined with cataract extraction was performed in 35(27%) as posterior segment view was not clear due to cataract formation after trauma and in 30(23%) patients foreign bodies were removed from superficial cornea with forceps or 1 cc syringe needle under topical anesthesia (Table 2).

Graph 1: Gender Distribution



Graph 2: Laterality of Eye

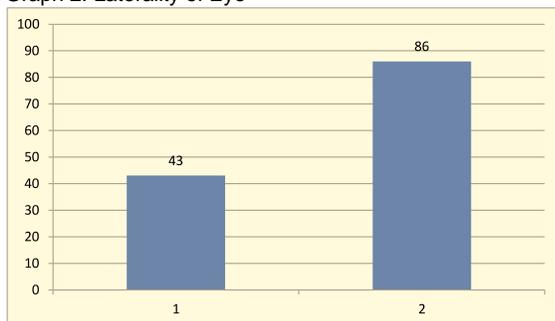


Table 1: Size of IOFB

Size of IOFB	No. of Eyes	Percentage
5mm or Below	20	15.50%
5-15 mm	83	64.30%
Above 15 mm	26	20.20%
Total	129	100%

Table 2: Procedure to remove IOFB

Procedure	No. of Eyes	Percentage
PPV	64	49.60%
PPV + IOL	35	27.10%
Mechanical Removal	30	23.30%
Total	129	100%

DISCUSSION

In 3rd world countries majority of workers are either manual workers or associated with industries. The Government sector is still unable to provide social security benefits to pink collar job workers. The skills of eye surgeon in Pakistan are comparable with good centers in world but major surgical facilities are available only in big cities. Manual eye trauma can be minor as metallic foreign body involving superficial layers of cornea or major as IOFB impacted on retina with poor view due to cataract formation and confirmed on B scan ultrasonography. The timely removal of IOFB improves visual rehabilitation before uncontrollable infection leading to endophthalmitis.

We found incidence of ocular trauma with foreign bodies is 0.86%, comparable with other studies conducted in Pakistan in Gilgit and Karachi^{6,7}.

Most of patients were males and belong to younger age group 21–25 years as they are more exposed to outdoor activities in our social set up as compare to ladies 8-12. Majority were mechanical workers so more prone to trauma. In our study 70% patients were below 35 years of age or below with highest incidence at 24 yrs¹³⁻¹⁸.

The size of IOFB was mostly in range of 5-15mm in 64.3%. The largest IOFB was 24mm in length and 3mm width, it was a glass foreign body, impacted on retina.

The most common procedure chosen for removal of IOFB was PPV (pars plana vitrectomy) in 49.6%¹⁹. The patients with poor retinal view due to cataract formation and vitritis, where IOFB presence was confirmed with B scan, PPV was combined with cataract surgery with IOL (Intra Ocular Lens) for better visual outcome. In our study PPV and PPV+IOL was opted for removal of intraocular foreign bodies in 76.7% patients.

Mechanical removal of superficial IOFB, with corneal forceps, mostly metallic, under topical anesthesia was performed as outpatient department procedure in cooperative patients above 15 years of age and under sedation in Operation Theater below 15 year²⁰⁻²³. It was rewarding in 30(23.3%) patients.

Left eye is involved in 67% of patients in our study. The Laterality of involved eye is variable in different international studies. In a study conducted in Libya right eye was involved in 53.2 % eyes whereas in another study in China left eye was involved in 48 % eyes^{15,24,25}.

The extracted foreign bodies were mostly metallic in 118(91.5%) patients either corneal or intraocular, remaining 11(8.5%) foreign bodies were either glass or plastic.

The common causes of trauma were work place based injuries, working with metallic objects like steel, wires, hammering or grinding. Less common causes were traffic accidents and house hold injuries.

The increased prevalence of metallic foreign bodies may be related to large industrial area of Kot Lakpat and motor bike repair workshops in vicinity of LRBT hospital, Lahore. These workers had also careless attitude regarding use of eye protectors, either glasses or shield at work place.

CONCLUSION

The incidence of ocular trauma was highest among younger age group 21 to 25 years, mostly males who suffered ocular injuries at work place during welding or hammer and chisel work and did not use any ocular safety measures. Children and women suffered from injuries at home or school. Patient vision and globe integrity can be achieved by early and timely management of ocular trauma by ophthalmologists. There is a need of awareness program and health education for young mechanical workers to adapt safety measures at work places because vision is blessing and visual loss can be permanent.

REFERENCES

1. A. Toride, H. Toshida, A. Matsui et al., "Visual outcome after emergency surgery for open globe eye injury in Japan," *Clinical Ophthalmology*, vol. 10, pp. 1731–1736, 2016.
2. C. A. Cheung, M. Rogers-Martel, L. Golas, A. Chepurny, J. B. Martel, and J. R. Martel, "Hospital-based ocular emergencies: epidemiology, treatment, and visual outcomes," *The American Journal of Emergency Medicine*, vol. 32, no. 3, pp. 221–224, 2014.
3. G. Y. Kong, R. H. Henderson, S. S. Sandhu, R. W. Essex, P. J. Allen, and W. G. Campbell, "Wound-related complications and clinical outcomes following open globe injury repair," *Clinical & Experimental Ophthalmology*, vol. 43, no. 6, pp. 508–513, 2015.
4. A. Gupta, H. O. Orleans, S. J. Hornby, and I. C. Bowler, "Microbiology and visual outcomes of culture-positive bacterial endophthalmitis in Oxford, UK," *Graefes's Archive for Clinical and Experimental Ophthalmology*, vol. 252, no. 11, pp. 1825–1830, 2014.
5. S. M. Teixeira, R. R. Bastos, M. S. Falcão, F. M. Falcão-Reis, and A. A. Rocha-Sousa, "Open-globe injuries at an emergency department in Porto, Portugal: clinical features and prognostic factors," *European Journal of Ophthalmology*, vol. 24, no. 6, pp. 932–939, 2014.
6. Iqbal Y, Khan QA, Zia S, Malik A. Frequency and characteristics of ocular trauma in Gilgit, Pakistan. *JIMC* 2016 vol. 11 no. 4
7. Khan A, Riaz Q, Soomro F, Qidwai U, Qazi U. Frequency and patterns of eye diseases in retina clinic of tertiary care hospital in Karachi. *Pak J Ophthalmol*. 2011;27:155-9.q
8. Rao LG, Ninan A, Rao KA, Descriptive study on ocular survival, visual outcome and prognostic factors in open globe injuries, *Indian J Ophthalmol*, 2010;58:321–3.
9. Sahraravand A, Haavisto AK, Holopainen JM, Leivo T, Ocular traumas in working age adults in Finland - Helsinki Ocular Trauma Study, *Acta Ophthalmol*, 2016 Dec 9. doi: 10.1111/aos.13313.
10. Choragiewicz T, Nowomiejska K, Wertekuk K, et al., Surgical treatment of open globe trauma complicated with the presence of an intraocular foreign body, *Klin Oczna*, 2015;117(1):5e8
11. Jonas JB, Knorr HL, Budde WM, Prognostic factors in ocular injuries caused by intraocular or retrobulbar foreign bodies, *Ophthalmology*, 2000;107(5):823e8.
12. Kinderan YV, Shrestha E, Maharjan IM, Karmacharya S, Pattern of ocular trauma in the western region of Nepal, *Nepal J Ophthalmol*, 2012;4(1):5–9.
13. Cao H, Li L, Zhang M, Epidemiology of patients hospitalized for ocular trauma in the Chaoshan region of China, 2001–2010, *PLoS One*, 2012;7:e48377.
14. Glynn RJ, seddon Jm, Berlin BM. The incidence of eye injuries in New England *LIMUJ*, Vol. 2 p 40-46, 2017.
15. Nagrale P, Kesuraju V, Madvi MR, Harsora V. Patterns of ocular trauma in tertiary care hospital in Khammam, India. *International journal of research in medical sciences*. vol 3, issue 6, p 1426 June 2015.
16. Batur M, Seven E, Esmer O, et al., Epidemiology of Adult Open Globe Injury, *J Craniofac Surg*, 2016;27:1636–41.
17. Yong GY, Pan SW, Humayun Akhter F, et al., Determinant Factors of Poor Visual Outcome After Ocular Trauma: A Retrospective Study in Central Sarawak, Malaysia, *Asia Pac J Ophthalmol (Phila)*, 2016;5:137–42.
18. Loporchio D, Mulkamala L, Gorukanti K, et al., Intraocular foreign bodies: A review, *Surv Ophthalmol*, 2016;61:582–96.
19. Wani VB, Ai-Ajmi M, Thalib L, Azad RV, Abul M, Al-Ghanim M, Sabti K. Vitrectomy for posterior segment intraocular foreign bodies : visual results and prognostic factors . *Retina* 2003;23:654-60.
20. Pandita A, Merriman M. Ocular trauma epidemiology: 10-year retrospective study. *The New Zealand Medical Journal (Online)*. 2012; 125(1348).
21. Cao H, Li L, Zhang M. Epidemiology of patients hospitalized for ocular trauma in the Chaoshan region of China, 2001–2010. *PLoS one*. 2012; 7:e48377.
22. Abdelmaboud M, Khafagy A, Eltahawy EM. Epidemiology of ocular emergencies in the Egyptian population: a five-year retrospective study. *Clinical ophthalmology*. 2011; 5:955-60.
23. Jahangir T, Butt NH, Hamza U, Tayyab H, Jahangir S. Pattern of presentation and factors leading to ocular trauma. *Pak J Ophthalmol*. 2011; 27:96-102.
24. Nicoara SD, Irimescu I, Calinici T, Cristian C. Intraocular foreign bodies extracted by Pars plana vitrectomy: Clinical characteristics, management, outcomes and prognostic factors. *BMC ophthalmol* 2015; 15: 151.
25. Ojabo CO, Adeniyi OS, Ogli SA. Farm-related ocular trauma in Makurdi, Nigeria. *Nigerian journal of medicine: journal of the National Association of Resident Doctors of Nigeria*. 2010; 20:114-19