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RESEARCH ARTICLE

A PROSPECTIVE STUDY OF CLINICAL PROFILE, PROGNOSTIC FACTORS AND VISUAL OUTCOME IN PATIENTS OF TRAUMATIC CATARACT

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ABSTRACT

Background and objectives: This study was aimed to evaluate the incidence, age and sex distribution, aetiology, prognostic indicators, various complications associated with traumatic cataract and to determine final visual outcome of various treatment modalities.

Methods:- In this prospective study 40 traumatic cataract patients were identified, then pre-operatively evaluated and had underwent surgery for cataract with or without intraocular lens implantation for a period from April 2015 to October 2016 at S.S.G. Hospital, Vadodara (India). All the patients were followed for a period of one and half months. Determinants of the visual acuity were compared between traumatic cataract due to open globe and closed globe injuries. Incidence of traumatic cataract with characteristics like age, sex, cause of injury, mode of injury, management of complications and visual outcome after management were analyzed and results interfered.

Results: From the present prospective study enrolling 40 patients the following conclusions were drawn. Majority of the patients were male (70%) compared to only 30% female patients. Majority of our patients (50%) sustained agricultural injuries and the commonest object causing injury was wooden stick (50%) patients. Nearly 77.5% of the patients had a total traumatic cataract on presentation. Cornea was most frequently involved, of which most common was corneal laceration in 52.5% followed by irregular pupil in 32.5%. The most common surgical procedure performed was cataract extraction with a posterior chamber IOL placement (82.5%). The final visual outcome in majority of patients was excellent.

Conclusions:- The most common surgical procedure performed was cataract extraction with IOL implantation. Final visual outcome was good in most cases after surgery with IOL implantation. Corneal opacity was the most common cause of decreased visual acuity.

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INTRODUCTION

Trauma is an important cause of mono-ocular blindness in the developing countries (Khatry *et al*., 2004) Ocular trauma can cause cataract. Traumatic cataract secondary to open globe and closed globe injuries is the leading cause of visual morbidity all over the world. Traumatic cataract is the leading cause of mono ocular blindness in people younger than 45 years of age. Ultimate prognosis of traumatic cataract depends upon the type of trauma, the extent of lenticular involvement, type of surgery and associated damage to the ocular structures (Abraham *et al*., 1999).

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The most common cause for dimness of vision in trauma which is capable of restoring normal to near normal vision is traumatic cataract. Various techniques have been employed for the management of traumatic cataract. Great progress in cataract surgery has been made in the recent years with the introduction of microsurgery, phacoemulsification and pars plana lensectomy and surgical treatment of traumatic cataract has become safer and the visual outcome has improved in the most severe cases also. This study concludes the final visual outcome of management of 40 patients of traumatic cataract considering various prognostic indicators and surgical management.

MATERIALS AND METHODS

This study was carried out in 40 patients of traumatic cataract attending SSG Hospital from April 2015 to October 2016 after the approval from Institutional research and ethics committee. After taking written and informed consent about enrollment in the study and maintaining adequate privacy and confidentiality, the demographic data of the patients, including age, sex, registration number, occupation and residential address were recorded. The exact duration between the injury and 1st consultation at SSG Hospital was recorded. The mode of injury whether it was domestic, agricultural, industrial, assault or sports related trauma was also noted. Traumatic cataracts were grouped according to their cause into open or closed globe injuries. A detailed history of all patients was evaluated and they were then thoroughly clinically examined. All patients underwent the standard preoperative cataract evaluation and then had undergone cataract surgery with or without IOL implantation with explained visual prognosis.

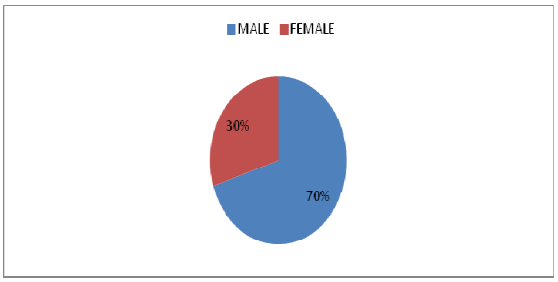
Criteria for inclusion

- All the patients with traumatic cataract irrespective of visual acuity.
- Patients with age more than five years.
- Patients with intra-ocular foreign body.

Criteria for exclusion:- Following patients were not included in the study;

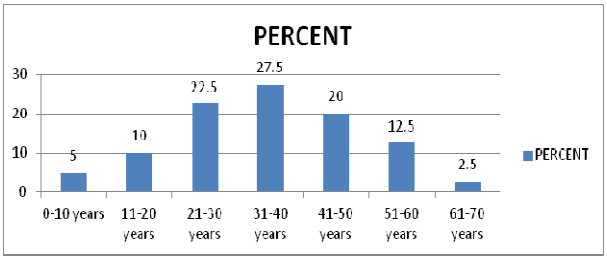
- Patients with cataract due to non mechanical injury.
- Subjects who were lost on follow up.
- Children less than 5 years of age.
- Cases with fracture of orbit.

RESULTS



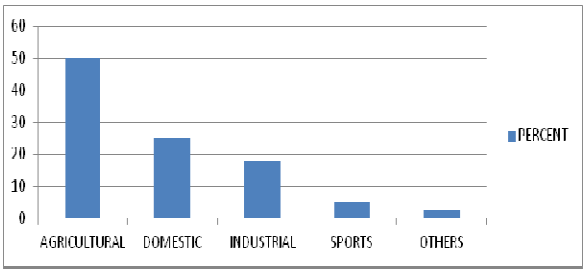
Graph 1. Correlation of sex distribution

- There were a total of 28 male patients and 12 female patients in our study.
- We can see from data that majority of the patients were males (70%).
- Female patients were only (30%).
- Male to female ratio were 2.3:1 in our study



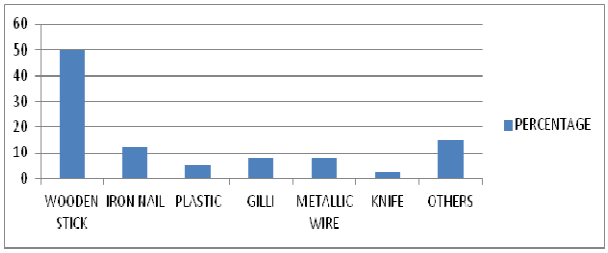
Graph 2. Agewise distribution

- The youngest patient reported was 7 years old and eldest patient was 62 years old.
- Of the total male patients (28), majority were in their 3rd decade (28.6%) of life followed by 4th decade (21.4%) and 5th decade (21.4%).
- Of the total female patients (12), majority were in the 4th decade (41.6%) followed by 3rd and 2nd decade. Two patients each (16.6%), were above 50 years of age.



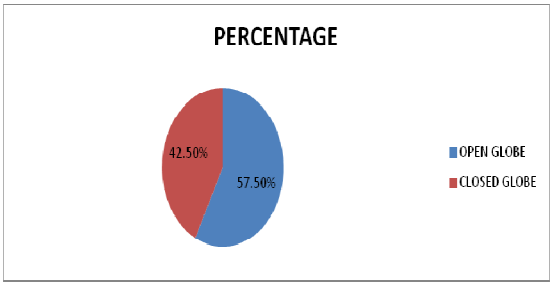
Graph 3. Mode of injury

- Majority of the patients were affected by agricultural injuries (50%) followed by domestic injuries (25%) and 17.5% cases were of industrial injuries.



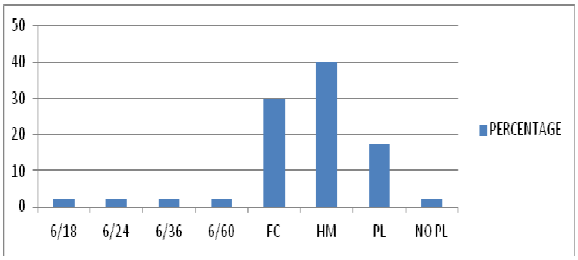
Graph 4. Objects causing injury

- Majority were caused by wooden stick injuries (50%) followed by iron nail (12.5%).
- Most of them were agricultural injuries.
- A variety of objects were causing traumatic injuries to eyes like gilli, metallic wire, knife.



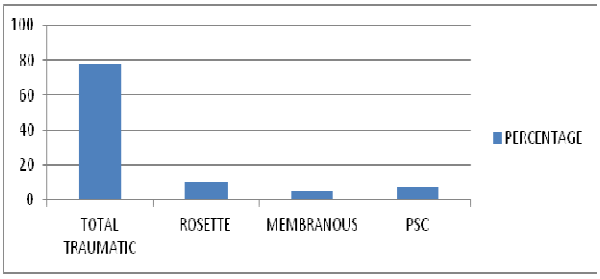
Graph 5. Type of injury

- Open globe injuries were more common (57.5%) than closed globe injuries (42.5%).



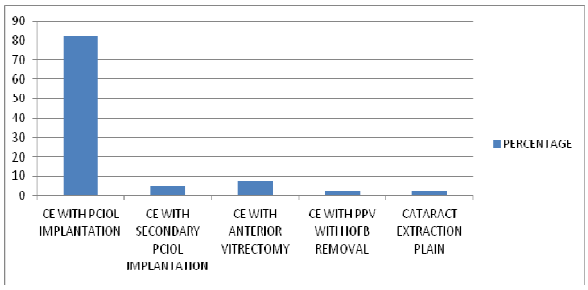
Graph 6. Pre-operative visual acuity

- The vision was markedly reduced <6/60 in almost 92.5% patients.
- Only one patient who had intraocular foreign body presented with NO PL.
- Four patients had intermediate vision (6/18-6/60).



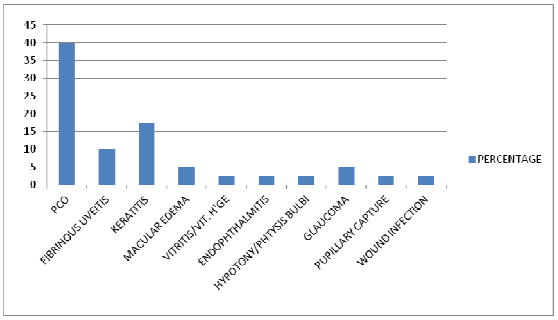
Graph 7:- Type of traumatic cataract

- 31 patients (77.5%) had total traumatic cataract.
- Followed by rosette cataract in 4 patients (10%).
- While 5 patients had either membranous or posterior subcapsular cataract (12.5%).



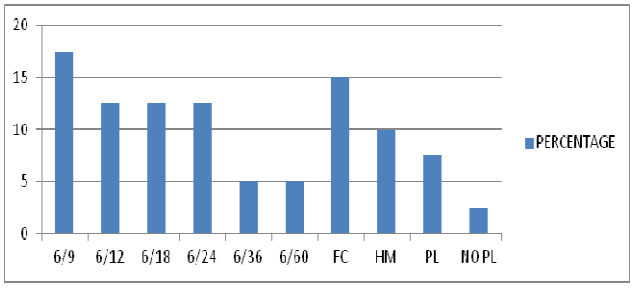
Graph 8. surgical management of traumatic cataract

- Majority of patients (82.5%) were managed with cataract extraction and primary posterior chamber IOL placement.
- 7.5% patients whith intraoperative posterior capsule tear with vitreous loss were managed by doing cataract extraction with anterior vitrectomy and were left aphakic.
- In one patient cataract extraction with pars plana vitrectomy with intraocular foreign body removal was performed.



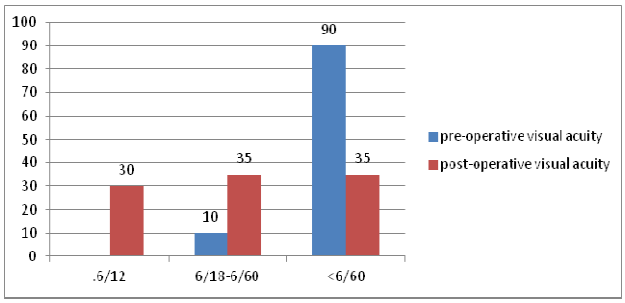
Graph 9. Post-operative complications

- Amongst the early complications posterior capsular opacification was a majority (40 %).
- Post operative keratitis was found in 17.5% followed by fibrinous uvietis in 10% patients.
- Other complications were macular edema, endophthalmitis, hypotony, glaucoma, wound infection etc.



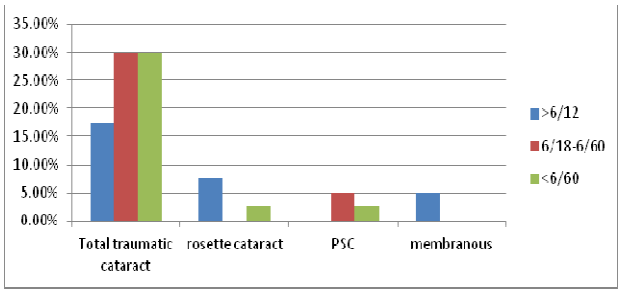
Graph 10. Final visual outcome

- 30% had an excellent visual outcome (6/12 - 6/9).
- At the other extreme we had those 35% with poor vision (<6/60).
- The subjects with the moderate vision (6/18-6/60) were 35%.



Graph 11. Comparison between pre-operative and post-operative visual acuity

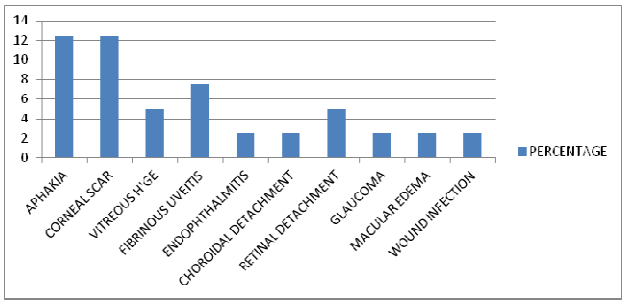
- When poor vision in patients at presentation is due to cataract per se only like mature cataract without associated injury like vitreous haemorrhage or macular edema, they recover with a good post operative vision (30%),
- Those with poor vision at presentation due to associated injuries like either anterior (corneal scar, iridocyclitis) or posterior segment have a poor outcome even post operatively.
- 35% that had cataract with minor injuries had an intermediate visual outcome ranging from 6/18-6/60.



Graph 12. Comparison of type of traumatic cataract and post- operative visual acuity

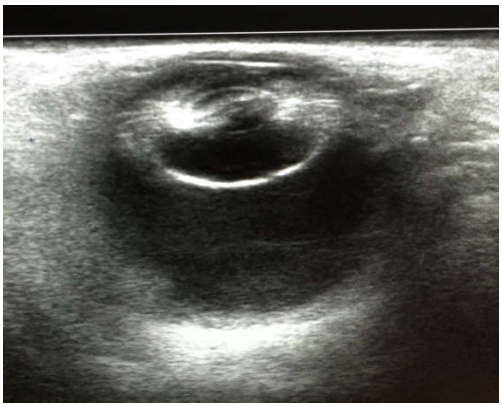
- The vision varied in total traumatic cataract from very good to poor because of the variety of the associated injuries and their severity.
- 17.5% patients of total traumatic cataract had very good vision and 30% patients had intermediate and 30% had poor vision.
- Rosette cataract had very good visual outcome. 75% patients had good visual outcome and 25% had poor visual outcome.

- 50% patients with posterior subcapsular cataract had intermediate vision and 25% had poor vision.
- Membranous cataract had over all good vision.



Graph 13. Causes for poor final visual acuity (<6/60)

- The most common causes for decreased vision were aphakia and corneal scar in 12.5% each, this was followed by fibrinous uveitis in 7.5%, vitreous haemorrhage and retinal detachment in 5% each.
- Other causes of decreased visual acuity were choroidal detachment, glaucoma, macular edema and wound infection.



DISCUSSION

Traumatic cataract commonly results from mechanical trauma and has been topic of interest since many years, number of studies have been done in the field of ocular injuries and traumatic cataract.Comparison of sex distribution between various studies and present study: Ashish Kumar Sharma *et al*. (2016) observed that 79% of male patients had ocular trauma, while study done by Abraham *et al*. (1999) showed that 69% of patients of traumatic cataract were male patients. In our study 70% males had traumatic cataract, so our study agrees with them in that there was a male preponderance. Comparison between our study and study done by Somen Misra *et al*. (2013) shown that agricultural injuries are the most common cause of traumatic cataract (43.3%) while in our study 50% of cases were due to agricultural injuries.

On comparing the frequency of injuries caused by wooden stick that is 50% in our study agrees with study conducted by Gogate *et al*. (2012) found that 28% cases of injuries were due to wooden stick injury Manjula Mangane *et al*. (2016) studied that in 78% cases injuries were caused by wooden stick. Abraham *et al*. (1999) study showed that wooden stick injury (67%) is the most common cause of traumatic cataract. Mehul Shah *et al*. (2013) showed that in 55.9% of cases wooden stick injuries were most common. Open globe injuries were more common (57.5%) than closed globe injuries (42.5%) in present study which is comparable with the study of other authers Gupta (52.77%) and (47.23%) and Rizwan *et al* (62.5% and 37.5%).

On comparing the final visual outcome of different studies with our study, Bekibele *et al*. (2008) reported 35.6% of cases with good visual acuity, 32.2% had intermediate visual acuity and 32% had poor visual acuity. Manjula Mangale *et al*. (2016) reported 82.97% patients with good postoperative vision, and 17.02% patients with moderate visual acuity. Bhandari *et al*. (2016) reported 56% patients with good vision, 40% patients with moderate visual acuity and 4% with poor visual acuity.
In our study 30% patients had good vision, 35% had intermediate vision and poor vision each.

Conclusion and Summary

From the present prospective study we concluded that:-

- Youngest patient reported was 7 years old while the eldest was 62 years old with a mean age of 35 years.
- Open globe injuries were more common than closed globe injuries.
- Most of the patients were surgically treated. The most common surgical procedure performed was cataract extraction with a posterior chamber IOL placement (82.5%). All of them except few had an IOL implanted at the time of surgery as a primary procedure. Cataract removal with anterior vitrectomy without an IOL was the 2nd most common procedure (7.5%). One patient with Intra Ocular Foreign Body required cataract extraction with pars plana vitrectomy.
- Post operatively posterior capsular opacification was the most commonly encountered complication in (40%) patients followed by keratitis in 17.5%. Fibrinous uveitis was encountered in 10% patients, macular edema and

glaucoma were reported in 5% each. Few cases of hypotony, wound infection were also reported.

- For the management of these complications, Nd:YAG laser posterior capsulotomy was the most commonly performed procedure (37.5%).
- The final visual outcome in majority of patients (30%) was excellent and a large number of patients (35%) each had an intermediate and poor visual outcome.
- All patients, except who were kept aphakic had poor vision in 20% cases, 30% had good vision and 37.5% cases had intermediate vision.

Thus to summarize, from the present prospective study, we successfully concluded that traumatic cataract was commonly associated with agricultural injury and wooden stick was the most common object of injury. Male population was almost three times more commonly affected than females, especially the younger population. A total traumatic cataract with intact lens capsule and a normal position of lens and a normal IOP was the commonest clinical presentation. Most of them required surgical intervention in the form of cataract removal with a primary posterior chamber intra-ocular lens implantation but in a few it was not possible so they were kept aphakic and in some patients secondary IOL implantation was done. Although vision on presentation was poor in majority of patients, most of them recovered to good vision post operatively unless associated with severe trauma or complications. Commonest causes for poor visual outcome were posterior capsular opacification, aphakia, corneal opacity and severe inflammation. The limitation of the study is short term follow up of 3 months only. A multicentric study with long term follow up would throw more light on future course and complications of these patients.

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