

Original Research Article

Sustaining ocular emergency and trauma services in corona crisis during the era of pan lockdown

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ABSTRACT

Background: The impact of covid pandemic and pan lockdown on the ocular trauma and emergency department has proved the importance of ocular trauma services deliverance on national vision statics. The un-availability of ophthalmic services in remote areas and limited resources have large impact on prognostic outcomes of ocular emergencies. The presentation of ocular emergency cases and their demographic pattern is important in planning and programming of national strategy to cope up with and sustain the ocular emergency services during such pandemics.

Methods: Retrospective cohort study at tertiary care center.

Results: The incidence of ocular trauma was increased in male pediatric age group with most common mode of injury was wooden objects. The prognosis of visual outcome was ill- affected due to late presentation and un-availability of ocular emergency services in remote areas.

Conclusions: The strategy of “Reassess-Reinforce-Resume” was proved successful in sustaining the emerging trend of ocular trauma during COVID pan- lockdown.

Keywords: Emergency surgery, Lock down, Ocular trauma

INTRODUCTION

It's time to change and get used to the “new normal”, in the fragile times when the un- precedent circumstances loom over us, let's, start the rejuvenation process. With sunlight fresh air and green outdoors we are blessed with new world. Roads are cleaner air is fresher skies are more blue and devoid of smoke and fauna are reclaiming their domain. The earth seems to be heaving a sigh of relief while we are leading a mind full, ethical and sustainable living. While we have become more resilient unintended gains in terms of marked reduction in crime and accident rates have been observed. The COVID era does have a silver lining.

COVID lockdown had paralyzed most public services and economies. Among infectivity, health hazards, physically

exhausting and psychologically depressing time of COVID crisis, the Indian ophthalmologists have sustained the ocular emergency and trauma services as an ideal and inspiring vision to the world health horizon.

The stringent national effort to stem the COVID pandemic and enormous medical, social and economic impacts implemented in this era of conflict have readdressed our daily lives and made work atmosphere challenging and tough. The 4 months of the lockdown national data quoted some unintended gains of reduction in road traffic accident fatalities and fall in crime rates to around 60%.¹

People have been stuck indoors and furloughed from jobs and schools because of pan lockdown with the enforced time at home. This had in turn resulted in increased

incidence of ocular trauma and emergencies, while widespread use of chemicals and electronic devices during COVID lockdown have led to additive ocular health hazards. Also people were either unable or fearful of visiting emergency medical facilities during the pandemic that have worsened the prognosis and outcomes of the ocular trauma cases. With 15 million yearly cases worldwide, ocular trauma is the third most common ophthalmic indication for hospitalization and most common cause of mono ocular blindness in India.² A significant number of these patients sustain a severe injury and require hospital admission for either emergency medical and/or surgical management. Blindness resulting from trauma has prevalence rate of 0.6%-0.8%.³ A need for hospitalization along with a subsequent severe visual disability increased the burden to both the family and the economic health care system. Therefore, eye injury prevention programs are important public health concerns that should be put forward. Thus delivering ocular emergency services are vast essential and of utmost importance in spectrum of national vision statistics. Despite the apparent enormity of the ocular trauma, educational and preventive efforts have been hampered by the lack of availability, awareness and understanding of people that have worsened by COVID epidemic and lockdown.

The primary aim of the study was to assess and evaluate the changing patterns of ocular emergencies and trauma profiles during COVID lockdown. The secondary aim was to evaluate the availability of the emergency eye care facility in remote areas. Assessment of the efficiency of the strategy applied during COVID crisis to provide emergency services using limited health care resources under pandemic protocols was also done.

METHODS

This retrospective cohort study was conducted on the data from all the ocular injury patients arriving at the ophthalmic department of tertiary eye care center in Rajasthan from March 2020 and June 2020. Approval was taken from hospital administration and research committee to conduct the study.

For enrolled patients the Proforma was drawn up and a comprehensive present and past history of injury, information of treatment and surgery performed and follow up records were analyzed. Other demographic details included distance of residence from the hospital, activity at the time of injury, object causing the injury, anatomical site of the injury and associated ocular conditions. Results were drawn as significant percentage outcome. No statistically driven software was used.

Patients were operated after getting tested for covid and investigations like blood profile, coagulation profile, renal function tests and Random blood glucose estimation. All the admitted patients were attended by the same team both in Outdoor, indoor and emergency OT so as to minimize the contact with others staff on standby for further management on rotation basis in the next few weeks.

Exclusion criteria

The patients presented before and after the COVID lockdown period were excluded from the study.

RESULTS

A total number of 465 patients of ocular trauma and emergency presented at the eye OPD in the time frame of March 2020 till June 2020 in COVID pan lockdown period. Out of which 52 patients got hospitalized for emergency surgical repair which constitutes 10.75%. With a male female ratio of 3:2 the most common age group admitted for emergency surgical repair of ocular trauma was less than 15 years with the percentage of 48% of total patients (Table 1).

Even during lack of transportation services during lockdown 59.52% of total hospitalized patients visited nearby hospital and reported unavailability of emergency eye care facility around their area. These patients travelled >50 km distance from rural areas to the hospital out of which 21.15% patients travelled more than 200 km distance for emergency consultation (Table 2).

Table 1: Demography of patients.

Hospitalized patients	Most common age group	Male	Female	Urban	Rural
52	<15	32	20	17	33

Table 2: Geographical distribution of the patients hospitalized and emergency surgically repaired.

Distance in Km	No. of patients	Percentage
0-20 km	17	32.6
20-50 km	04	7.69
>50 km	12	23.07
More than 100km	08	15.3
Over 200 km	11	21.15

Only 15% patients presented for emergency repair on same day while 34.06% patients presented with a delay of more than one week. 23.07% patients consulted for surgical repair after more than 2 weeks of the day of injury incident (Table 3).

The most common mode of injury associated was wooden object (28%) followed by metallic object in the age group of less than 30 years (Table 4).

Table 3: Distribution of the patients according to the day of presentation after ocular trauma.

Time of presentation	No. of patients	Percentage
1 day	08	15.3
2 day	12	23.07
3 day	07	13.46
5 day	08	15.38
Over week	05	11.53
More than 2 weeks	12	23.07

Table 4: Mode of injury in the hospitalized and surgical repair patient.

Activities/objects	Less than 30 years	30-60 years	More than 30 years
Wooden object	09	03	02
Metallic object	05	03	
Stone	02		
Hit by nail self-injured	01		05
Fall	01	02	02
Animal horn others	01		01
Associated eye disease		01	05
Others	06		01

Table 7: Month wise patient distribution.

	February	March	April	May	June
Total no. of OPD	9422	6401	2040	2728	3816
No. of ocular trauma IPD visits	23	39	50	23	44
Total no. of ocular emergencies hospitalization and surgical repair	10	14	09	11	16
Total no. of minor OT	312	211	150	108	193

A total number of 259 patients presented to Minor OT for the emergency minor procedures like corneal foreign body removal, lid and adnexal injuries minor management, chemical and irritant injuries and infectious eye manifestations. The incidence of open globe injury was around twice of the closed globe injuries (Table 6).

The total OPD patient load during this period was 13,945. The percentage of ocular injury patients in the eye OPD was 3.95% during lockdown compared to the injury OPD load of previous month was 1.40% showing an increment of 1.55% in emergency load.

Despite decrement in the number of total OPD patients from 9,422 (February 2020) to 6,401 (March 2020), 1,520 (April 2020) and 2728 (May 2020) the percentage of emergency hospitalization and surgical repair load increased by 10-20% on an average during covid lockdown months (Table 7).

DISCUSSION

While the normal OPD was at halt the true numbers of emergencies revealed the importance and availability of

The patients operated for ocular trauma involving both anterior and posterior segment were 57.6% while 23.07% being operated for trauma involving only anterior segment which implicated accordingly as prognostic outcomes (Table 5).

Table 5: Distribution of hospitalized eye injury by the ocular involvement.

Ocular involvement	No.	Percentage
Adnexal lid injury	03	5.7
Anterior segment	12	23.07
Posterior segment	06	11.5
AS + PS	30	57.6
Others	01	
Total		100%

Table 6: Types of injuries.

Types of injuries	Number
Open globe	34
Closed globe	16
Corneal foreign body	259(minor OT)
Chemical injuries	05

ocular trauma management services. Despite significant decrease in the OPD patient load the ocular trauma patients undergoing surgery increased during lockdown in which the major fraction was of age group of less than 15 years. No patient of road traffic accident (RTA) with ocular trauma was hospitalized or surgically repaired during covid lockdown period in contrast to 7 patients hospitalized for the same in previous months. Out of total 465 patients, 50 patients were categorized for hospitalization and emergency surgical management constituting 10.75% (Table 1).

Among hospitalized patients with 30 M / 20F showed the most common age group was less than 15 years (pediatric patients) with a percentage of 48% (24/50) followed by age group of more than 60 years (30%). Same demographic pattern was observed in a study done by Mishra et al in India stating that, ocular injuries are far more commonly seen in males (the male to female ratio being 4:1) and in them it occurs at a much younger age (average age, 36).⁵

Pellegrini., et al also reported most common mode of trauma in paediatric age group was playing with sharp

common household objects. It may be attributed to closure of schools, public parks and playgrounds which forced the children to play inside the house. Increase in eye injuries from violence and home activities during the lockdown due to this pandemic. So, it is important to educate the parents to safely engage the children at home during this pandemic.⁴ In addition to this the minor OT procedures took 4.42% of total OPD load of 13,945 patients of this time frame (Table 7).

The most common mode of injury to the group was from wooden and metallic objects while the self-induced nail injury was most common mode in patients group of >60 years. (Table 4). It shows that associated ocular conditions and infections due to poor hygiene causes irritation to the eye leading to nail eye trauma in this group. The same results were observed in the Marco Pallegri study done in Bologna stated that, regarding the mechanisms of injury, the percentage of falls and sport injuries had the highest decrease (respectively, from 6.5% to 0.9% and from 5.9% to 2.7%), while injuries during home activities and injuries with plants had the highest increase (respectively, from 12.4% to 17.0% and from 8.5% to 10.7%).⁴

Early visit to hospital and immediate management was associated with good prognosis. Around 60 % patients travelled for more than 50 km and with a time lapse of more than two days for emergency consultation and hospitalization due to non-availability of public transport and primary eye care facility at the periphery. (Table 2)

Similar results were found in a study conducted in Hawassa university stating that 19.40% of patients crossed 20-100 kilometers for Hawassa also 71.64% of patients travelled > 100 kilometers to get eye care service in Hawassa University, Referral Hospital. 95.52% of them reported availability of health facilities around their area showing the unavailability of ocular treatment resources in rural areas implicating in reverse visual outcomes.⁷

Study done by Alem et al at Hawassa university stated Delayed presentation due to the distance from eye care center, lack of awareness and shortage of money were the common reasons for delayed intervention (76.12%).

They inferred only 1.49% of the total patients were treated immediately/ within 6 hours. Around 95.52% who presented for ocular trauma were intervened after 12 hours from the time of trauma.⁷

According to the study conducted in Andman, it was inferred that early detection and management holds the key to trauma management and prevention of further complications. Over 2.4 million eye injuries occur each year and 90% of all eye injuries are preventable. The World Health Organization (WHO) estimated that 55 million eye injuries occur yearly, of which 0.75 million people require hospitalization.⁶

A unique strategy was used at our center in which minimum exposure to Resident doctors and consultants was ensured by rotation using minimum staff to avoid exposure to the COVID virus. Triage was done at the time of admission taking care to avoid accidental exposure to the entire staff using minimum members required. At the same time taking all possible precautions using all the available gears and protective equipment. Staff was delegated on rotation basis so as to reduce the exposure and risk of infection. Only 1/3 staff was working at any given point of time, the rest serving as reserve.

Specific protocols and categorization systems for evaluation of the status and grading of the lapse during injury to door time may effectively reduce visual impairment from eye injuries and surgical load in the pandemics like covid. Time lapse between trauma incidents and distance travelled for emergency consultation after injury was a significant prognostic factor in terms of visual outcome which was affected adversely.

The availability awareness and education of trauma and emergency eye care should be emphasized by public health care system and society for early presentation with better primary care before arriving at higher centers for better visual outcomes and prognosis. Ocular trauma and emergency census constitute a significant fraction of outpatient and casualty patient load especially with an increased incidence during pandemic and curfew conditions like covid lockdown. Specific national programs and strategies should be developed to ensure sufficient resources and proper stratification for the availability of ophthalmic care in remote areas for better visual prognosis. Surgical intervention was required with greater frequency in the pediatric age group.

CONCLUSION

The total number of patients attending OPD decreased significantly during lockdown and routine OPD consultation came to a grinding halt and mainly those patients with physical or chemical trauma visited the hospital during lockdown. RTA incidence was nil. A unique strategy for maximum resource use and minimum exposure for emergencies OPD and OT was applied with strict adherence to protocols. Our motto was to "Reassess-Reinforce-Resume". The imperative decision of cautious and calculated timely beginning to reopen and meet the "new normal" helped us in slowly inching towards routine work without compromising on the health of workers.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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