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### RESEARCH ARTICLE

#### CLINICAL PROFILE OF PATIENTS PRESENTING WITH CORNEAL FOREIGN BODIES: A HOSPITAL BASED STUDY

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#### Abstract

**Introduction:** Corneal foreign bodies are one of the commonest forms of ocular trauma, the majority of which occur due to occupational exposure. The aim of this study was to study the profile of patients with corneal foreign bodies.

**Materials and Methods:** A hospital based prospective study was conducted among 50 patients presenting to the ophthalmology outpatient department of Maharani Laxmi Bai Medical college Jhansi over a time span of 3 months. Demographic data of patients and clinical characteristics of foreign bodies was noted.

**Results:** Most of the patients were males 90%, belonging to the 21-30 age group. Majority of them were workers in metal industries 40%. Welding and cutting metal were implicated as the most common mode of injury 28%

**Conclusion:** We identified the high risks associated with this form of ocular trauma. The incidence and hence the prevalence of corneal foreign body can be decreased if we aware the people about the associated complications and advise them to use protective eye wears (PEW).

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#### Introduction:-

A corneal foreign body (FB) is an object that is superficially adherent or embedded in the cornea. The cornea is the most anterior portion of the globe and so is the part of the eye that is most frequently exposed to foreign bodies.

Corneal foreign bodies may cause visual impairment ranging from mild visual obscuration to vision threatening corneal ulcers<sup>[1][2]</sup>. Corneal foreign body can cause severe pain, discomfort and vision loss if not attended on time<sup>[3]</sup>. Most corneal foreign bodies are metallic, which results from occupational accidents seen in metal industry construction workers<sup>[4][5]</sup>.

Patients present with symptoms like foreign body sensation, pain, redness, watering of the eyes and blurred vision. History of the inciting event is almost always present<sup>[6]</sup>. It reduces visual acuity if scars form on the visual axis and secondary infection ranging from keratitis to endophthalmitis. Metal foreign bodies usually leave rust in the cornea causing scarring<sup>[7,8]</sup>. The appearance of a rust ring indicates embedment in the cornea for more than 24 hours<sup>[9]</sup>.

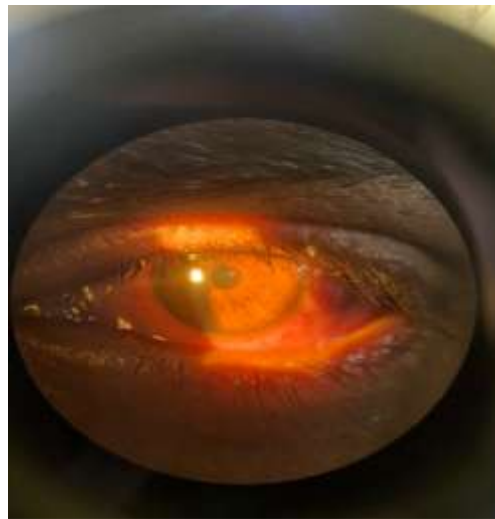
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**Picture showing left eye with metallic corneal foreign body at para-central position**

Corneal foreign bodies are one of the common occupational health hazards causing ocular morbidity<sup>[10][11]</sup>. The removal of a corneal foreign body is typically performed in an office or emergency room setting.



**Slit lamp examination images showing superficial corneal foreign body (metallic foreign body)**



**Slit lamp examination image showing insect wing on cornea**

Education regarding occupational hazard in general population is a must to address this problem.

### Materials and Methods:-

A hospital-based cross-sectional study was conducted at the Ophthalmology Outpatient department in Maharani Laxmi Bai Medical college, Jhansi during the period of Jan23 - mar23 (3 months period). All cases of corneal foreign bodies attending the ophthalmology department were included in the study after obtaining a written consent. Detailed history regarding demographics including age, gender, profession and education were recorded. Records regarding activity at the time of incident. Patient's visual acuity was taken with Snellen's chart. Slit lamp biomicroscopy with fluorescent staining (Fluorostrip) was performed in all cases. Topical anaesthesia (proparacaine 0.5% eye drop) was instilled in the affected eye and the corneal foreign body was removed with the help of a 26 gauge needle. Rust ring, if present, was also removed. Type of foreign body and their location, was also noted.

After removal of foreign body, eye patching was done with eye ointment moxifloxacin and eye ointment panthegel in the affected eye and asked for follow up the following day.

Statistical analysis was performed with the statistical package for social sciences (SPSS version 25).

### Results:-

1. Among the patients, 90 % (n=55) were male and 10% (n=10) were female (Table 1)
2. The affected patient mostly belonged to the age group of 21- 30 years i.e. 30% (n=15), followed by age group of 30-40 years i.e. 24% (n=12). (Table 2)

**Table 1:-** Gender distribution.

Gender	number of patients (n)	Percentage (%)
Male	45	90
Female	5	10

**Table 2:-** Age distribution.

Age	Number of patients (n)	Percentage (%)
1-10	2	4
11-20	4	8
21-30	15	30
31-40	12	24
41-50	7	14
51-60	6	12
61-70	4	10

3. About 40% (n=20) of the patients were found to be working in metal industries, followed by agriculture workers accounting for 16 (n=16) (Table 3)

4. Most common foreign body was metallic iron particle accounting for 28% (n=14) (Table 4)

5. Most common site of foreign body was found to be at the periphery. (Table 5)

**Table 3:-** Occupation distribution.

Occupation	number of patients	percentage %
Metal industry	20	40
Agriculture	16	32
Construction	5	10
Automobile worker	3	6
Others	6	12

**Table 4:-** Type of corneal foreign body.

Foreign body material	number of patients	percentage %
Metal	14	28
Dust	10	20
Insect	7	14
Glue	6	12
Wood	8	16
Thorn	2	4
Color	2	4
Stone	1	2

**Table 5:-** Location of corneal foreign body.

Location	number of patients	percentage %
Para- central	20	40
Central	6	12
Peripheral	24	48

**Discussion:-**

Corneal foreign body falls under the category of minor ocular trauma. If removed on time, may not lead to any complications, but if delayed or ignored, may lead to keratitis and endophthalmitis. In our study, 90% of the affected patients were male. Similar findings were found in a study conducted by Ozkurt et al<sup>[12]</sup> and Macedo et al<sup>[8]</sup>. Males, being the active income generators of the family are more likely to seek jobs in metal industries than females which explains the male predominance in the study. Most of the affected patients (30%, n=15) belonged to the age group of 21-30 years. Similar findings were found in the study performed by Bruce-Chwatt et al<sup>[13]</sup>, where the most common affected age group was after the second decade and before the fourth decade i.e. 21-40 year. Similarly, according to the study conducted by Reddy et al, 50.16% of those affected, belonged to the 31-40 years age group<sup>[14]</sup>. We found that the majority (28%) of the cases worked in metal industries. This is supported by the study conducted by Gumus et al<sup>[15]</sup> where 59% of the patients worked in metal industries. Also, in the study conducted by Nepp et al<sup>[16]</sup>, 70% of the corneal foreign body injury was seen in patients working in metal cutting industries. In the study conducted by Reddy et al, 53.27% of the total study population were industry workers<sup>[14]</sup>. In our study, 28% of the corneal foreign bodies were metals, followed by dust (20%). In the study by Reddy et al, 51.04% of the cases had metallic corneal foreign bodies, followed by dust in 18.7% and wooden particles in 11.21%. (Gumus et al., 2007) Also, in the study conducted by MH et al, "physiological healing power of corneal foreign body", 32 patients had metallic foreign bodies, followed by sand particles in 2 patients<sup>[17]</sup>. The most common mechanism of injury was due to welding (46.66%) and then by metal cutting (36.66%) of the cases. Our findings were similar to the findings seen in the study conducted by Reesal et al<sup>[18]</sup> in which 40% of the injuries were sustained due to metal cutting. The most common location of the corneal foreign body in our study was peripheral i.e. 48%, followed by paracentral i.e. 40% and then central i.e. 12%. However, in the study conducted by Reddy et al<sup>[14]</sup> they found the paracentral location to be the most common i.e. 61% followed by peripheral i.e. 23% and then central i.e. 26%.

**Conclusion:-**

Corneal foreign body occurs most commonly in male belonging to the middle age group, who also are the active income generators in the community. Although easily treatable, delay can cause various degrees of ocular morbidity ranging from simple epithelial defect to vision threatening corneal ulcer. We recommend the use of protective eyewear for all working in the vicinity of metal industry work or construction sites.

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