

# Mercedes-Benz Sign Shaped Glasswool Tripod Foreign Body Impaction in the Eye: A Rare Clinical Case Series

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## ABSTRACT

Superficial ocular foreign body is the commonest form of ocular trauma and one of the leading causes of ocular morbidity. A foreign body that lands on the anterior part of the eye may cause abrasions on the cornea. We present ten cases of very rare ocular Foreign Bodies (FB) that were missed on routine eye examination. Patients presented with complaints of foreign body sensation and diminution of vision in some cases due to corneal abrasion in the affected eyes. Some patients were diagnosed with conjunctivitis initially as conjunctival congestion was a prominent sign. However, symptoms particularly foreign body sensation did not improve after giving ocular antibiotic drops, hence suspicion of a foreign body in palpebral conjunctiva or in the cornea was strong. Slit-lamp biomicroscopy examination was done in all 10 cases and fluorescein staining of the affected eye was done in five cases. The cornea showed large epithelial defect in one case under slit-lamp and linear corneal abrasions in two cases under fluorescein dye staining. After eyelid eversion, meticulous examination indicated tripod-shaped glassy FB embedded within conjunctiva or in cornea. We present these cases of such unusual glassy type of tripod FB which mimics the Mercedes-Benz sign. This type of foreign body may go undetected even on slit lamp examination and fluorescein staining may aid in the early diagnosis which can prevent corneal ulcer.

**Keywords:** Corneal abrasion, Corneal epithelial defect, Fluorescein stain, Palpebral conjunctiva, Slit-lamp examination

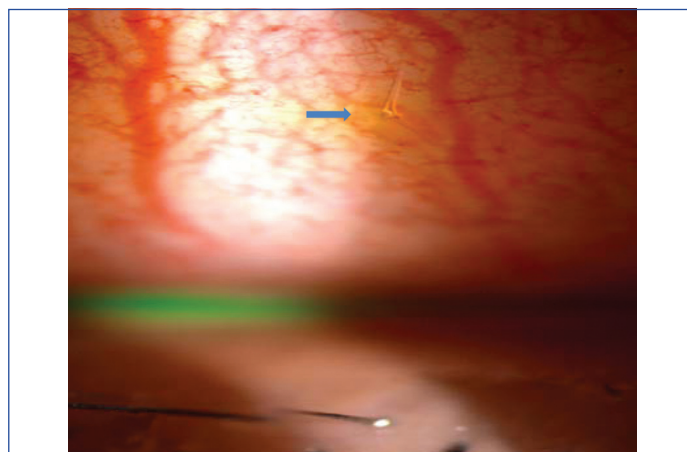
## INTRODUCTION

Foreign body in the eye is very common in day to day practice which may be a small piece of dust or a thin fibre to any bigger object such as piece of glass, a metal object or a small piece of wood [1]. Superficial ocular foreign body is the commonest form of ocular trauma and one of the leading causes of ocular morbidity in young population [2]. A foreign body that falls on the anterior part of the eye may impact on the conjunctiva or can cause abrasion on the cornea [3]. Depending on object, the foreign body may penetrate the globe causing serious injury or it may simply resolve without any long-term sequel [4]. Many of such FB are missed during initial examination. The present case series reports ten cases of very unusual glasswool tripod foreign body in eye that mimics the sign of Mercedes-Benz. The reported cases were from a single ophthalmic institute within a two-year period (from April 2022 to March 2024). There are many case reports, review reports and original articles about foreign body in eye, however there is rarely any large case series about such unusual transparent glasswool tripod foreign body which could be easily missed on initial examination.

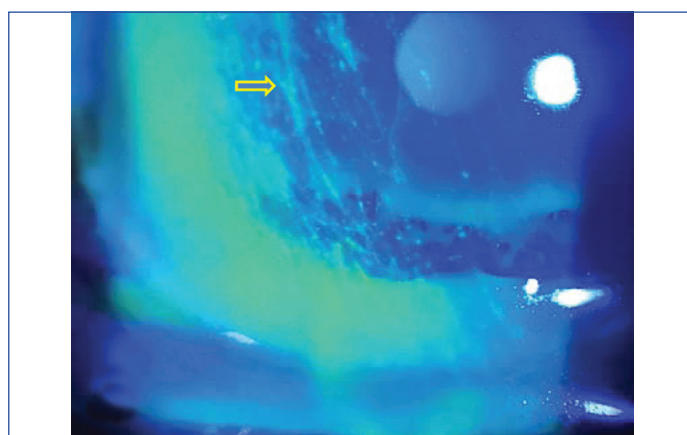
## CASE SERIES

### Case 1

The first patient was a 39-year-old newspaper vendor presented to the ophthalmology Outpatient Department (OPD) with pain, redness and foreign body sensation in left eye for three days with history of sudden occurrence of symptoms while travelling by train. He had no significant past medical history. His Best Corrected Visual Acuity (BCVA) was 6/6 in Both Eye (BE) and was instilling 0.5% moxifloxacin antibiotic eye drops as his provisional diagnosis was conjunctivitis. Ocular adnexa and bulbar conjunctiva appears normal. When slit-lamp biomicroscopic examination was done a glassy transparent tripod shaped foreign body was identified that was lodged in the Upper Palpebral Conjunctiva (UPC) of left eye [Table/Fig-1]. Under fluorescein stain linear corneal abrasions were noted [Table/Fig-2]. Diagnosis of ocular foreign body was confirmed.



[Table/Fig-1]: Tripod glasswool foreign body in Upper Palpebral Conjunctiva (UPC) under slit-lamp examination (blue arrow).

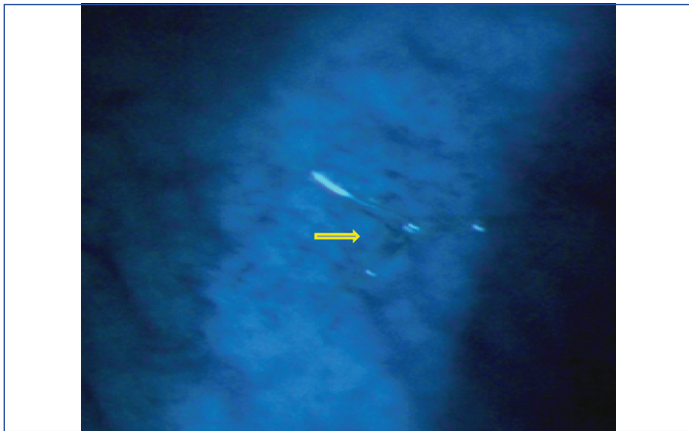


[Table/Fig-2]: Fluorescein stain shows linear corneal abrasions (yellow arrow).

### Case 2

Second case was a 31-year-old female patient presented to the ophthalmology OPD with watering from left eye for two days.

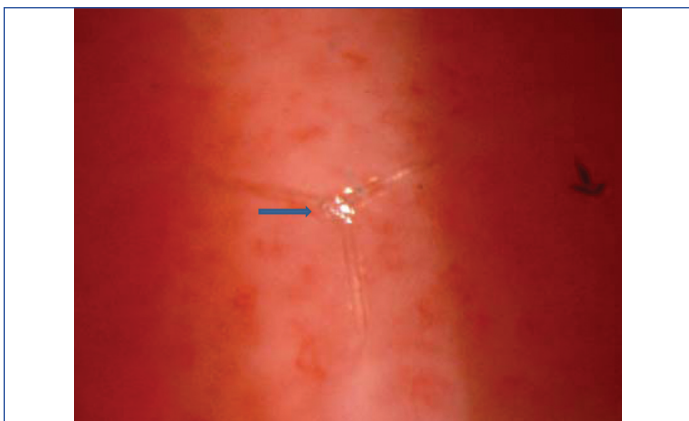
Her BCVA was 6/6 BE. She was a homemaker and had no past medical history of Diabetes Mellitus (DM) or any ocular disease. On ophthalmic examination, the bulbar conjunctiva was within normal limits, the UPC was congested. Slit-lamp examination after eversion of upper eyelid showed conjunctival congestion and fluorescein dye stain highlighted a tripod-shaped glassy foreign body at UPC [Table/Fig-3].



[Table/Fig-3]: Tripod foreign body under fluorescein stain in UPC (yellow arrow).

**Case 3**

Next patient was a 36-year-old healthy male presented with sudden foreign body sensation in right eye while driving motorbike on that same day. He had no significant past medical history. His BCVA was 6/9 BE. Ocular adnexa and bulbar conjunctiva was normal. On slit-lamp examination, there was palpebral conjunctival congestion and meticulous examination revealed the presence of translucent tripod foreign body lodged in the UPC [Table/Fig-4].



[Table/Fig-4]: Tripod glasswool foreign body in Upper Palpebral Conjunctiva (UPC) under slit-lamp examination (blue arrow).

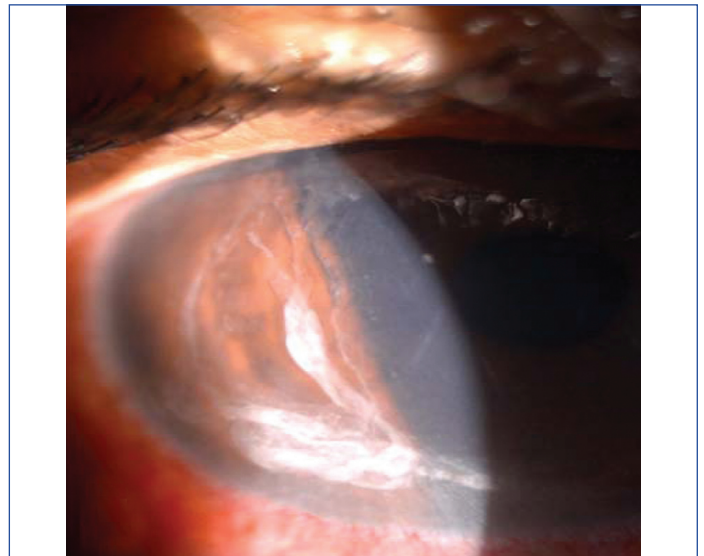
**Case 4**

A 45-year-old male presented to the ophthalmology OPD with redness, watering, foreign body sensation and blurring of vision of right eye. He was a known case of insulin dependent DM and had undergone ophthalmic examination for screening of diabetic retinopathy regularly. His BCVA was 6/60 right eye and 6/12 left eye. He was initially diagnosed with large corneal epithelial defect right eye by an ophthalmologist and was treated with eye patching and 0.5% moxifloxacin antibiotic eye ointment. As the corneal defect failed to heal after 24 hours observation, the patient was referred to us. On slit-lamp examination, there was bulbar and palpebral conjunctival congestion, tripod glasswool foreign body in UPC and a large epithelial defect on cornea [Table/Fig-5]. [Table/Fig-6] shows the slit-lamp photograph of the removed foreign body held with a forceps.

**Case 5**

Another 40-year-old male presented to us with sudden foreign body sensation in the left eye since that morning while he was dusting a

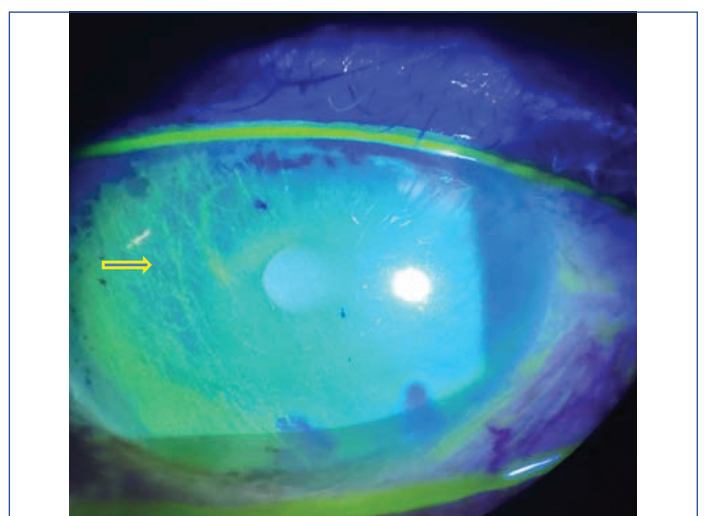
motor garage. He had a history of eyelid trauma two years back. His ocular examination revealed palpebral conjunctival congestion, watering from the eye and his BCVA was 6/6 in BEs. Fluorescein stain showed linear corneal abrasions [Table/Fig-7] and under slit-lamp examination there was presence of a translucent tripod foreign body lodged in the left UPC [Table/Fig-8].



[Table/Fig-5]: A large corneal epithelial defect under slit-lamp biomicroscopy.



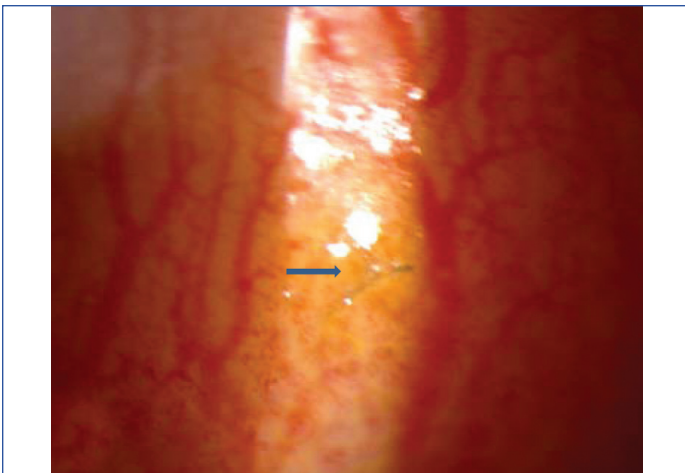
[Table/Fig-6]: Slit-lamp photograph of the removed foreign body held with a forceps.



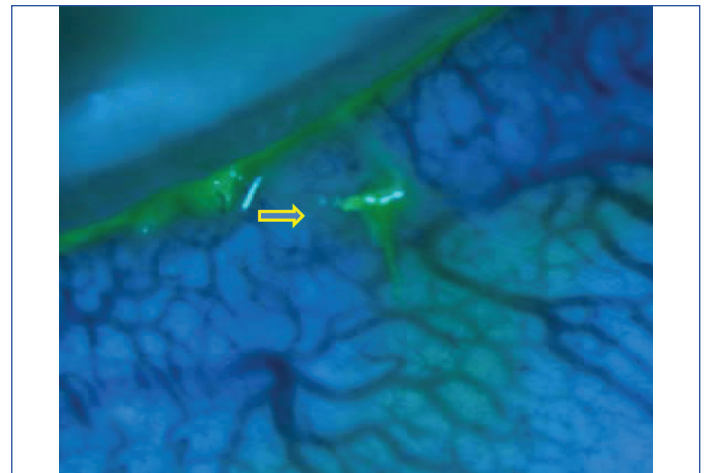
[Table/Fig-7]: Fluorescein stain shows linear corneal abrasions (yellow arrow).

**Case 6**

A 33-year-old delivery boy presented to the ophthalmology OPD with similar symptoms as the above patient in left eye for one day. He had no significant past medical history. His BCVA was 6/6 in BE

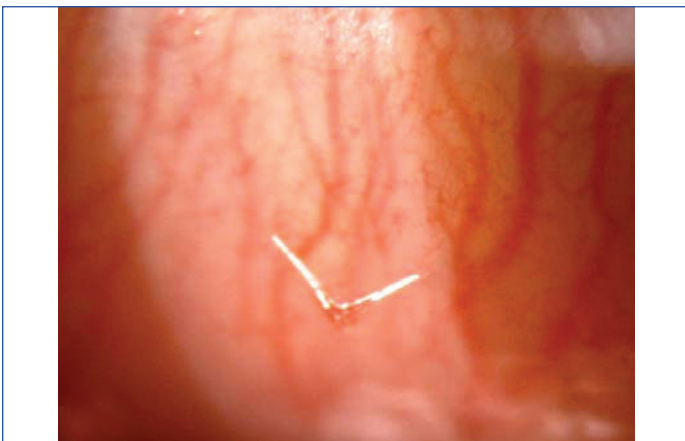


**[Table/Fig-8]:** Tripod glasswool foreign body in UPC under slit-lamp examination (blue arrow).

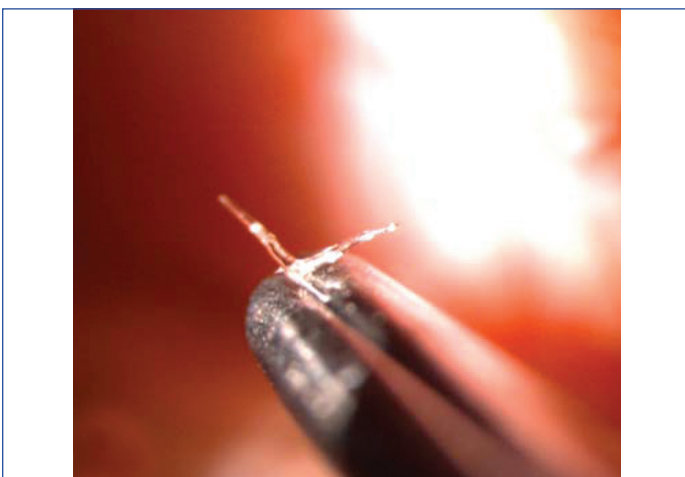


**[Table/Fig-11]:** Fluorescein stains shows pooling of dye in Lower Palpebral Conjunctiva (LPC) around the foreign body (yellow arrow).

was suspected for an ocular foreign body impaction. On slit-lamp examination, translucent tripod foreign body at UPC was noted [Table/Fig-9]. [Table/Fig-10] shows the slit-lamp photograph of the foreign body held with a forceps.



**[Table/Fig-9]:** Tripod glasswool foreign body in UPC under slit-lamp examination.



**[Table/Fig-10]:** Slit-lamp photograph of the foreign body held with a forceps.

### Case 7

A 30-year-old female daily wage earner presented to us with redness, watering in right eye for four days and she was previously treated with topical antibiotic eye drops as a provisional diagnosis of conjunctivitis was made. She was non-diabetic and has no past medical history. Her BCVA was 6/9 in left eye and 6/12 in right eye. On slit-lamp examination, there was congestion of bulbar and Lower Palpebral Conjunctiva (LPC). No foreign body was detected on upper lid eversion. However, after fluorescein staining there was pooling of dye around a tripod foreign body in the LPC and diagnosis of ocular foreign body was made [Table/Fig-11].

### Case 8

Our next case was a 29-year-old woman who came to us with redness, watering, foreign body sensation in right eye since two days. She first noticed the symptoms while travelling by bus. She was otherwise healthy till then and her BCVA was 6/9 in BE. Slit-lamp examination showed both bulbar and palpebral conjunctival congestion and a tripod foreign body was noted at 7 o'clock near the limbus of cornea of the right eye [Table/Fig-12].



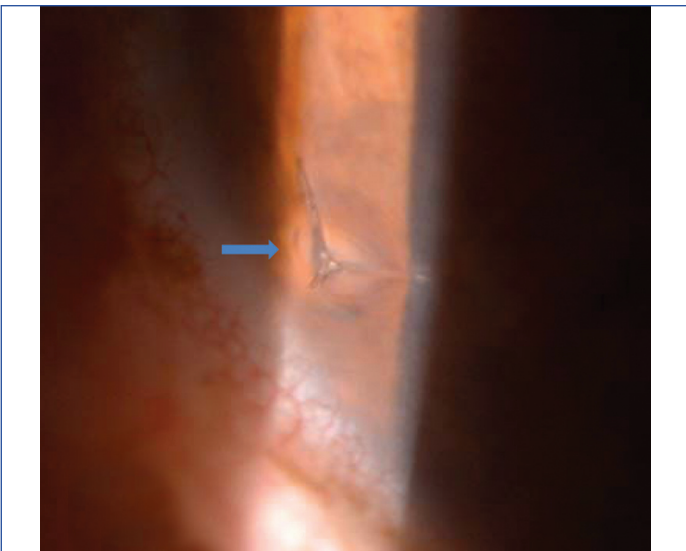
**[Table/Fig-12]:** Tripod foreign body under slit-lamp biomicroscopy over cornea at 7 o'clock position (yellow arrow).

### Case 9

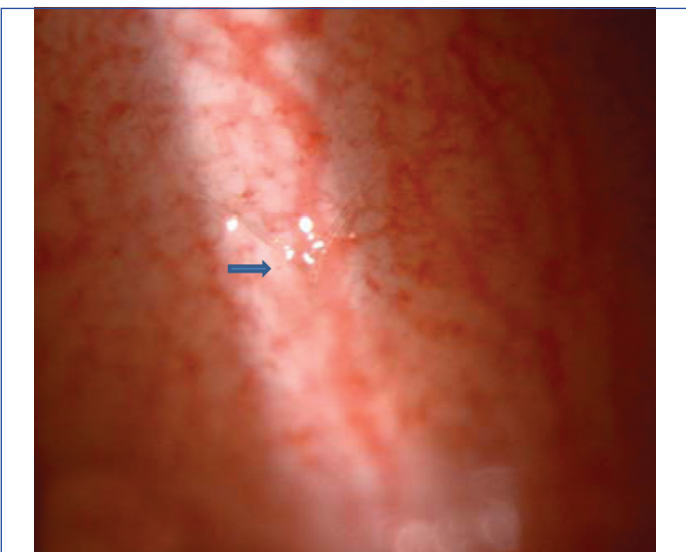
A 46-year-old male non-diabetic factory worker presented to the ophthalmology OPD with pain, burning sensation, redness, watering from right eye for four days. He was provisionally diagnosed as conjunctivitis by a nearby optometrist. As symptoms persisted even after instilling topical 0.3% tobramycin antibiotic drop for three days and he could not go back to his job, he was referred to us. His BCVA was 6/24 right eye, 6/9 left eye and there was conjunctival congestion. Slit-lamp examination established the presence of translucent tripod foreign body lodged on the cornea at 8 o'clock position near limbus [Table/Fig-13].

### Case 10

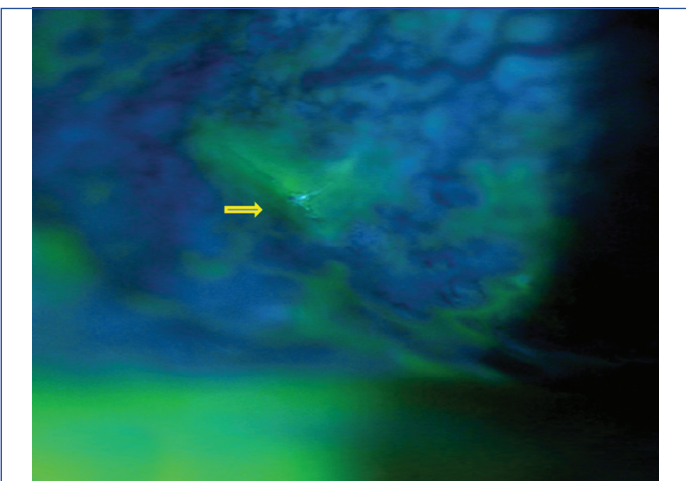
A 37-year-old carpenter who presented with sudden onset redness, watering, foreign body sensation in right eye since two days. He was non-diabetic and had no significant past illness. Ocular examination revealed both bulbar and palpebral conjunctival congestion. His BCVA was 6/9 right eye and 6/6 left eye. Provisional diagnosis of conjunctivitis was made and 0.5% moxifloxacin antibiotic eye drops was instilled. Slit-lamp examination [Table/Fig-14] and fluorescein stain established the presence of translucent tripod foreign body in right UPC [Table/Fig-15].



**[Table/Fig-13]:** Tripod foreign body under slit-lamp biomicroscopy on cornea at 8o'clock position near limbus (blue arrow).



**[Table/Fig-14]:** Tripod glasswool foreign body in Upper Palpebral Conjunctiva (UPC) under slit-lamp examination (blue arrow).



**[Table/Fig-15]:** Fluorescein stains shows pooling of dye in Lower Palpebral Conjunctiva (LPC) around the foreign body (yellow arrow).

**Treatment and follow-up of the cases**

Meticulous clinical examination using slit lamp biomicroscopy revealed the underlying glistening Mercedes-Benz sign shaped foreign body which was missed on initial ophthalmic examination in these patients. In all the cases FB were removed after instillation of topical 0.5% proparacaine topical anaesthetic eye drop under the slit lamp microscope with the help of a sterile McPherson forceps. After removal, 0.5% moxifloxacin eye ointment and a 2% homatropine hydrobromide cycloplegic drop were prescribed for 24 hours to all patients.

The cornea and conjunctiva was clear within 3-4 days after removal of FB in all cases except one. The fourth patient who showed a large corneal defect; eye patching with 0.5% moxifloxacin eye ointment was done for 24 hours. There was complete healing of the corneal epithelial defect after one week in that patient. In rest of the cases affected eye were normal at two weeks follow-up. [Table/Fig-16] shows a summary of findings of all the 10 cases.

**DISCUSSION**

The FB are traditionally described as intraocular or extra ocular depending on their position, whether they are within the eyeball or outside [5,6]. They may involve more than one part of globe, e.g., cornea and sclera or cornea and lens. Depending upon the site of impaction ocular FB can be global, adnexal or mixed [7]. Small FB may be washed along the tear film into the lacrimal drainage system or adhere to the superior tarsal conjunctiva and abrade the cornea with each blink. In such cases the pathognomonic pattern of linear corneal abrasions may be seen [8]. In this case series there were also corneal abrasions in two cases. After examination of FB under high magnifications and from literature search on the shape and type of material of these FB we identified them as glass wool [4,9]. This kind of glass wool FB was first reported by Baile RB et al., [4]. They described first three cases of such kind of insulating material FB made from fibers of glass which has an arrangement of texture similar to wool. Under fluorescein staining they found corneal epithelial defect in two cases and linear corneal abrasions in one case. UPC showed pooling of dye around a tripod shaped glassy foreign body in all the three cases [4].

Glasswool material commonly used as insulator for air conditioning ducts in homes and buildings. Hence, it is very common in the surrounding environment and can enter into the eye [9]. However, we found all the cases in a specific locality from where patients used to visit our ophthalmic institute. After enquiring about local industries we found that there were many jute mills in recent past some of which are now replaced with blankets and woolen cloth factories who used this kind of insulating material.

Normally, a conjunctival foreign body initially causes an acute inflammatory response with formation of exudates which later dislodges the foreign body. However, in cases of a foreign body with a sharp edges (as the tripod glasswool FBs presented here), this mechanism may be insufficient and the foreign body remains embedded upon the conjunctiva or cornea. This is followed by a chronic inflammatory response resulting in the formation of a granuloma containing epithelioid and foreign body giant cells [10]. Glass wool is inert in nature; hence it did not cause an inflammatory response [5]. Apart from eye involvement glass wool may also irritate the skin, respiratory system and can cause asbestosis

Case no.	Age	Gender (Male/Female)	Presenting complaint	Affected eye	Duration (days)	Past medical history	BCVA Right eye	BCVA Left eye	Provisional diagnosis	Slit-lamp findings	Fluorescein stain finding
1	39	Male	Pain, redness, FB sensation	Left	3	None	6/6	6/6	Conjunctivitis	FB in UPC	Linear corneal abrasions
2	31	Female	Watering	Left	2	None	6/6	6/6	Ocular FB	Conjunctival congestion	A tripod-shaped glassy foreign body at UPC
3	36	Male	FB sensation	Right	1	None	6/9	6/9	Ocular FB	FB in UPC	-

4	45	Male	Redness, watering, FB sensation, blurring of vision	Right	3	Insulin dependant Diabetes Mellitus (DM)	6/60	6/12	Corneal epithelial defect	FB in UPC and large corneal epithelial defect	-
5	40	Male	Sudden FB sensation	Left	1	Lid trauma	6/6	6/6	Ocular FB	FB in UPC	Linear corneal abrasions
6	33	Male	Sudden FB sensation	Left	1	None	6/6	6/6	Ocular FB	FB in UPC	-
7	30	Female	Redness, watering	Right	4	None	6/12	6/9	Conjunctivitis	Conjunctival congestion	Pooling of dye around FB in LPC
8	29	Female	Redness, watering, foreign body sensation	Right	2	None	6/9	6/9	Ocular FB	Corneal FB	-
9	46	Male	Pain, burning sensation, redness, watering	Right	4	None	6/24	6/9	Conjunctivitis	Conjunctival congestion, corneal FB	-
10	37	Male	Redness, watering, FB sensation	Right	2	None	6/9	6/6	Conjunctivitis	FB in UPC	Pooling of dye around FB in UPC

**[Table/Fig-16]:** Summary of findings of all the 10 cases.

like respiratory disease [9]. It is necessary to understand the source and nature of the foreign body in patients with corneal and conjunctival foreign body injuries. Corneal optical coherence tomography imaging is also very important tool for determining the depth of embedding and the location of the corneal foreign body [11]. As corneal FB may cause major eye casualties; a proper preoperative history, examination and investigations will help in deciding the management. Superficial epithelial FB can be removed with the help of a hypodermic needle. Follow-up of the patients and strict adherence to the postoperative medications is required. As prevention is always better, counselling regarding the use of protective eyewear can decrease the incidence of such ocular morbidity [12].

## CONCLUSION(S)

In the presented case series FBs were lodged in the UPC in seven cases, LPC in one case and on the cornea in two cases. There was a large corneal defect in one case due to repeated rubbing of cornea by the FB lodged in the UPC. Most of the FBs were detected under slit-lamp biomicroscopy examination. Five of them required fluorescein staining which had shown pooling of dye or filling defect around FBs. These cases of such unusual glassy type of tripod FB mimic the Mercedes-Benz sign and may undergo undetected even on slit lamp examination. Fluorescein staining may aid in the early diagnosis. As they cause discomfort or corneal abrasions, delayed detection may progress to corneal ulceration. A thorough slit-lamp examination and fluorescein staining is helpful to detect these ocular inert objects and early removal leads to prompt improvement of symptoms.

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