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## Fortuitous corneal stromal staining during wound exploration and repair with cataract extraction

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### Abstract

The use of trypan blue in staining of the anterior capsule during cataract surgery plays a very important role in per operative visualization of the anterior capsule for anterior capsulorhexis and phacoemulsification. It is used in staining the anterior capsule during cataract surgeries, internal limiting membrane during vitreo-retinal surgeries or can be used as part of Siedel's test to detect a leak in cornea. This dye is non-toxic and is incorporated in intra ocular surgeries for many years. We report a case of Traumatic corneal perforation with traumatic cataract in which the corneal stroma was accidentally stained by trypan blue. The corneal staining in our case was result of improper port construction as it was difficult on account of hypotony, the anterior chamber being shallow and continuous leaking of air from the corneal wound. In our opinion the complication can be prevented by proper visualization and use of sharp instruments in construction of the port.

**Keywords:** Cataract, dye, trypan blue, stain, anterior capsule, cornea, stroma

### Introduction

The use of trypan blue in staining of the anterior capsule during cataract surgery plays a very important role in per operative visualization of the anterior capsule for anterior capsulorhexis and phacoemulsification. It plays a very important role in visualization of the anterior capsule thus preventing any complications that may occur if the capsule is injured during cataract surgery. This dye is non-toxic and is incorporated in intra ocular surgeries for many years<sup>[1]</sup>. We report a case of Traumatic corneal perforation with traumatic cataract in which the corneal stroma was accidentally stained by trypan blue.

### Case History

A 40 years old male presented in the emergency department with complaint of injury to right eye with some object nature unknown. On further evaluation it was found that the injury was 2 days old and the patient took some treatment from elsewhere but was not satisfied. The general condition of the patient was stable and he was alert and cooperative for the examination. General examination was within normal limits. On examination of the injured eye, the vision was perception of light positive and projection of rays accurate in all quadrants; Bandage contact lens was placed over the cornea; Conjunctiva was mildly congested, there was a 7mmx1mm linear corneal laceration with well opposed margins in the center of the cornea starting 3mm below superior limbus and ending 1mm above the inferior limbus and involving the pupillary axis extending from 11'o clock hour to 5'o clock hour; Siedel's test was positive for the laceration; Anterior chamber was shallow; pupil was non reacting mid dilated; lens was cataractous with cortical matter in the anterior chamber. On transcutaneous B-scan the patient's posterior capsule was intact along with a normal posterior segment. Examination of other eye was within normal limits. The patient was then planned for a wound exploration and repair along with cataract extraction.

Per operatively the dye was accidentally injected in the stroma while the anterior capsule was being stained. Corneal wound repair was completed but the cataract extraction was not done as the dye hampered the visualization.

Post-operative day 1; Visual status was same as before; examination of the eye showed a repaired corneal perforation with intact sutures; Siedel's negative; Blue stained corneal stroma; Anterior chamber was formed and deep with air bubble insitu; dilated non reacting pupil with cataractous lens (figure 1,2). Other eye examination was within normal limits.

The patient was advised topical antibiotic and steroid 2 hourly along with cycloplegic three times a day. He was then followed up. The blue discoloration began to clear out after 2 days (figure 3) and 12 days later the eye was completely clear of the discoloration (figure 4, 5).

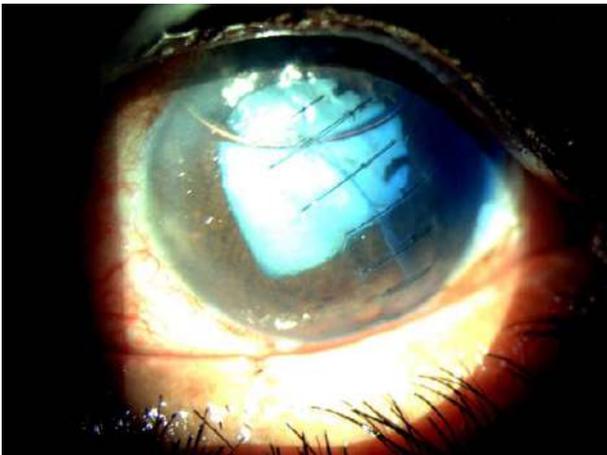
The blue discoloration began to clear out after 2 days (figure 3) and 12 days later the eye was completely clear of the discoloration (figure 4, 5).

Wound was healthy; Anterior chamber well-formed and quiet with traumatic cataract. The patient was advised cataract extraction with intra ocular lens after 6 weeks.

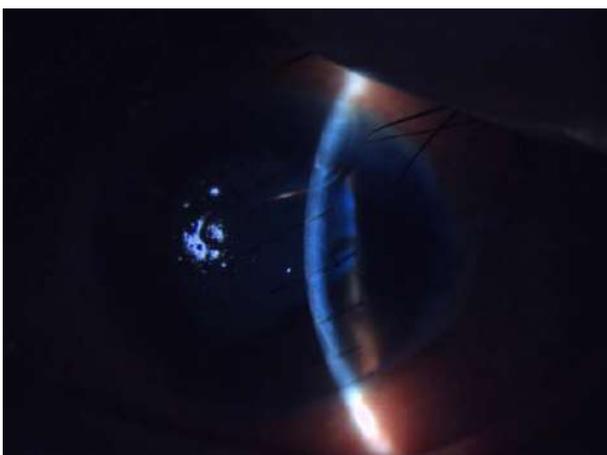
### Discussion

Trypan blue is nontoxic to the eye and thus the most common dye used in ophthalmic surgeries [1]. It is used in staining the anterior capsule during cataract surgeries, internal limiting membrane during vitreo-retinal surgeries or can be used as part of Siedel's test to detect a leak in cornea [1-3]. Though, the safety profile of the dye is good but accidental injection has been reported in the corneal stroma, posterior capsule, intra ocular lens and vitreous [2-3].

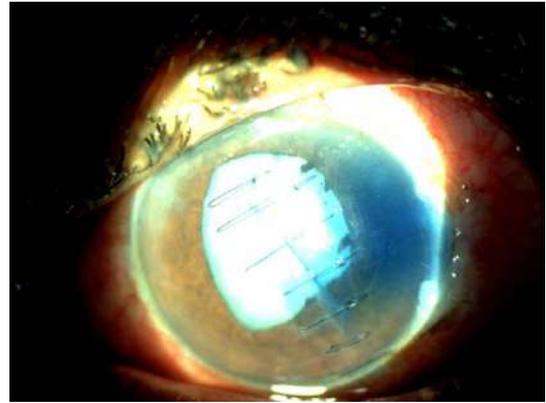
In this case the corneal stroma was accidentally injected with the dye leading to bluish discoloration of cornea causing hindrance in visualization of the structures beneath. Though, the blue discoloration got cleared with conservative management. The corneal staining in our case was result of improper port construction as it was difficult on account of hypotony, the anterior chamber being shallow and continuous leaking of air from the corneal wound. Other causes may include a use of blunt instrument for construction of port, improper identification of direction of the port, improper visualization due to corneal opacities. In our opinion the complication can be prevented by proper visualization and use of sharp instruments in construction of the port. Though, the dye does not cause any harm to the patient but it temporarily obscures the surgeons operating field and delay the patient's visual recovery.



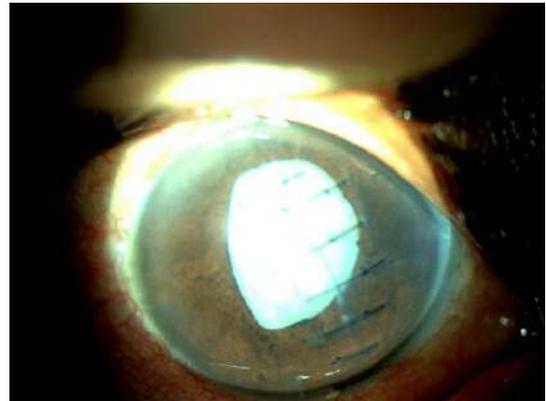
**Fig 1:** Anterior chamber was formed and deep with air bubble in situ



**Fig 2:** Dilated non reacting pupil with cataractous lens



**Fig 3:** The blue discoloration



**Fig 4:** The eye discoloration



**Fig 5:** The eye of complete discoloration

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