

## Target sign: An applanation epitheliopathy

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**Key words:** Applanation tonometry, fluorescein staining, toxic epithelialopathy

A 55-year-old diabetic male at 1-week visit post uneventful cataract surgery had routine eye examination done. The intraocular pressures (IOPs) were recorded using Goldmann applanation tonometry (GAT, Haag-Streit, Köniz, Switzerland). Subsequent slit lamp evaluation showed a characteristic circular mark on the cornea [Fig. 1], which became more evident on fluorescein staining under cobalt blue filter, as a well-circumscribed circular mark similar to “Target sign” [Fig. 2]. On probing the plausible cause of mark, it was noted that the applanation bi-prism was cleaned with 20% isopropyl alcohol swab immediately before use. This picture perspective emphasizes the importance of drying bi-prism after cleaning with an alcohol swab. Copious preservative-free topical lubricating eye drops had resulted in complete resolution of the clinical sign within 24 h.

Goldmann applanation tonometry is the gold standard for IOP assessment.<sup>[1]</sup> Goldmann bi-prism tip applanates the central cornea according to Imbert-Fick “law.” In a regular

clinic, we disinfect the tonometer head using the alcohol swab. Ideally, the tonometer disinfection process should act rapidly; should not damage the tonometer tip; and should be non-toxic to the user. Three groups of commonly used disinfectants in eye care include alcohols, chlorine, and hydrogen peroxide. Cleaning the footplate with ether or alcohol swab was previously reported in the literature.<sup>[2]</sup> Epithelial disruption may occur during applanation, causing a circle of positive fluorescein staining as seen in this photograph [Fig. 2]. Corneal epitheliopathy is characterized by a damage of the epithelium of the cornea in various patterns. Patients may present with non-specific symptoms such as red eye, foreign body sensation, photophobia, and burning. To the best of our knowledge, there was only one report of corneal epitheliopathy owing to applanation pressure in the literature.<sup>[3]</sup> Previously reported case of corneal applanation mark after use of tonometer was different from the present case in terms of patient’s symptoms. The patient in our case had immediate symptoms of pain, redness, and burning sensation. In our case, some of isopropyl alcohol residue in the bi-prism might have contributed to epithelial disruption due loosening up of hemidesmosomes. Ophthalmologists, Optometrist, Vision technicians should give paramount importance in cleaning the probe as well as drying them before it is being used in patients.

The target sign epitheliopathy characteristically presents as a circular area of corneal epithelial disruption corresponds to the bi-prisms with a chemical residue. Hence, a prompt drying after alcohol cleaning of the bi-prism head not only offer effective disinfection but eliminate the risk of epithelial toxicity. Copious preservative-free topical lubricating eye drops and surface protection are the mainstays of the treatment.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published

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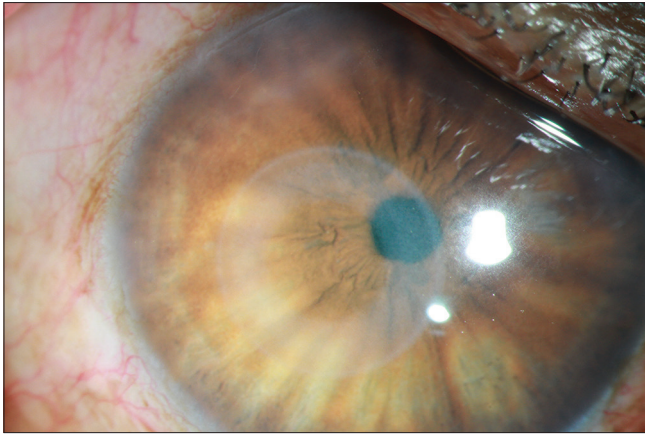
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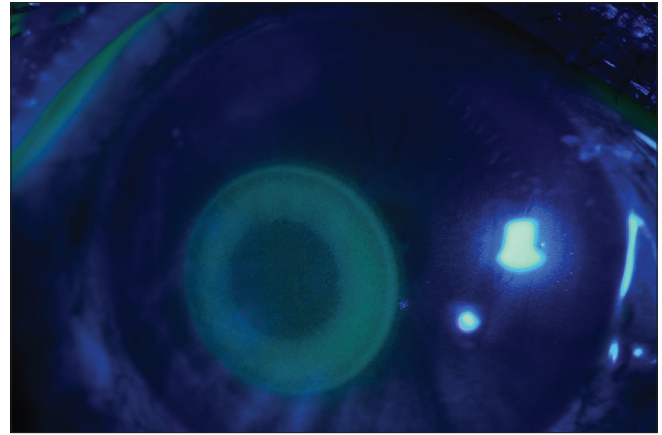
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**Figure 1:** Whitish circular pattern in the central and paracentral area of the cornea



**Figure 2:** On fluorescein staining, epithelial disruption leading to a circle of positive fluorescein staining

and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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#### **Conflicts of interest**

There are no conflicts of interest.

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