Inadvertent application of silicone foam elastomer catalyst to the eye

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Abstract
Silicone foam elastomer is used extensively to treat granulating wounds. A case is presented in which the catalyst to the polymer was inadvertently applied to the eye. This produced conjunctival and corneal injury, which was slow to heal and resistant to conventional treatment. This form of injury has not previously been described.

A silicone foam sponge was being prepared by a nurse for pouring into the wound cavity of a pilonidal sinus by mixing 1 ml of the clear viscous catalyst (stannous di-2-ethylhexoate) with 10 ml of silicone. The nurse inadvertently touched the catalyst and brought it into contact with her right eye. The eye was immediately irrigated with water on the ward, followed by further irrigation with 500 ml normal saline in the Eye Casualty Department.

Visual acuity was 6/9 unaided (6/5 with −1.0 dioptrre sphere) right, and 6/6 unaided left. No injury to the lids was sustained. Mild inferior tarsal and bulbar conjunctival injection was noted, without fluorescein staining or conjunctival shutdown. The cornea appeared normal, and there was no anterior chamber activity. Chloramphenicol ointment was prescribed.

The following day the right eye remained very irritable, with tearing and photophobia. The inferior tarsal and bulbar conjunctival injection was now marked, and there was an associated inferonasal superficial punctate keratopathy. Topical betamethasone four hourly was added to treatment.

One week later the inferonasal bulbar conjunctiva was still markedly injected and had become very chemotic. The epitheliopathy remained unchanged. Firm double padding, after instillation of betamethasone ointment and homatropine 2%, was carried out for three days. No objective or subjective improvement was noted.

Three weeks after injury the conjunctival injection had diminished, but the corneal epitheliopathy persisted, and the patient still complained of symptoms. Topical chloramphenicol and betamethasone were discontinued, and topical lubricants were prescribed twice daily.

After three months the superficial punctate keratopathy had only marginally improved, though the conjunctiva had fully recovered. Figure 1 shows the corneal appearance at three months, illuminated with a 495 nm fluorescein excitor filter. The epitheliopathy did not entirely resolve until six months after the initial injury. The corneal epithelium and stroma were normal, though the patient was still complaining of photophobia.

Discussion
Silastic foam sponges were first described for use in dressing pilonidal sinuses to 1975. Since then their use in wound dressing has expanded to encompass abdominal, perianal, and perineal wounds, bed sores, and epispadias. Warnings accompanying this product advise against prolonged contact with the skin, mouth, or eyes and suggest irrigation with water should they come into contact with the substance.

The catalyst, stannous di-2-ethylhexoate, is an extremely water-insoluble (<0.01% w/w, 10°C) thick viscous substance. It sticks to biological material and is not easily removed by water. This case highlights the difficulty in removing water insoluble substances from the ocular surface. A more suitable solvent, known to be innocuous to the ocular surface, such as liquid paraffin or polyvinyl alcohol, might be applied to the tip of a cotton bud and used to clear such ocular contaminants.

In view of the widespread use of this product and the potential hazard of its coming into contact with the eye, it is suggested that great care is required in its use and that irrigation with water of the affected area is insufficient as a first aid measure.

Figure 1  Superficial punctate keratopathy at three months, demonstrated by fluorescein staining.