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**Anterior staphyloma following an intravitreal injection of triamcinolone for the treatment of diabetic macular edema**

Although intravitreal triamcinolone injections are extensively used for various intraocular conditions,<sup>1</sup> they are also associated with potentially sight-threatening complications.<sup>2</sup> We recently managed a case of anterior staphyloma following 1 injection of 4 mg (0.1 mL) triamcinolone acetonide (Kenacort, Bristol-Meyers-Squibb, New York, N.Y.). A 65-year-old female received the injection, given with a 26-gauge needle, to her left eye for diabetic macular edema.

The intravitreal presence of triamcinolone was confirmed with fundoscopy immediately after the injection. The patient reported reduced vision 10 days later.

Systemic history was significant for diabetes mellitus of several years' duration, treated with oral medications. No collagen or vascular diseases were reported. Ophthalmic history was significant for uncomplicated cataract surgery 3 years before for both eyes. The preoperative refraction was  $-2.0$  D (spherical) for both eyes. Upon presentation, best corrected visual acuity (BCVA) was 20/32 in the right eye (unchanged compared with the preinjection BCVA) and "finger count at 3 m" in the left eye (the preinjection BCVA

was 20/40). The intraocular pressure (IOP) was 15 mm Hg (right eye) and 2 mm Hg (left eye). Slit-lamp biomicroscopy of the left eye was significant for an elevated conjunctival area over the injection site (superior and superior-nasal bulbar quadrant). No leakage of fluorescein was detected (negative Seidel test). Furthermore, no subconjunctival crystals were noted at the injection site. Fundoscopy of the left eye was significant for chorioretinal folds at the posterior pole without areas of choroidal detachment. Ultrasound biomicroscopy confirmed the presence of local subconjunctival fluid and revealed local iris root distortion and ciliary

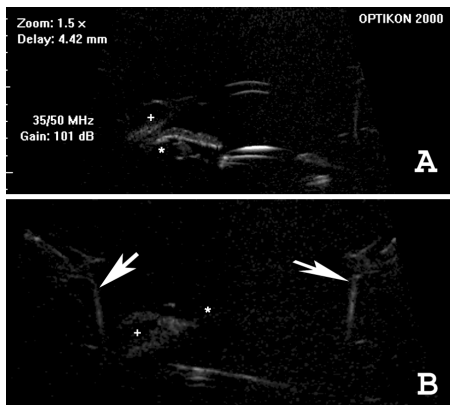


Fig. 1—UBM scan of the area with conjunctival elevation, corresponding to the injection site (A). There is evidence of subconjunctival fluid (\*) and local distortion of iris root, as well as ciliary body detachment (+). UBM scan of the anterior staphyloma (+), which developed at the injection site at the 4-week postinjection interval (B). The visible portion of the peripheral cornea (+), as well as the water bath device used (white arrows), are shown. (UBM, ultrasound biomicroscopy.)

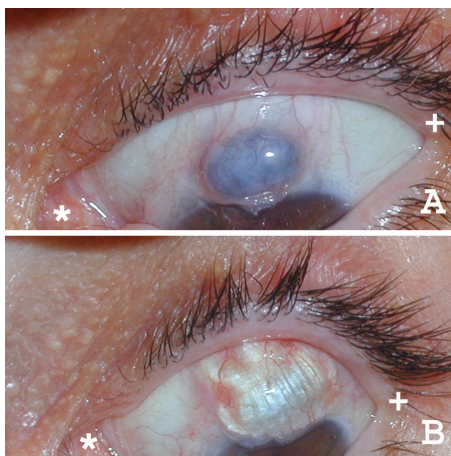


Fig 2—Development of an anterior staphyloma at the injection site, corresponding to the superior and superior-nasal bulbar conjunctiva (A). The caruncle (\*) and lateral canthus (+) are also shown. Postoperative (6-month interval) biomicroscopic appearance of the same area after effective covering of the staphyloma with a fascia lata patch (B).

body detachment (Fig. 1A). A diagnosis of persistent subconjunctival aqueous leak from the injection site was made.

The patient was initially treated conservatively with a prolonged pressure patch and acetazolamide per os, and was hospitalized for 3 days. Thereafter, she was examined at weekly intervals. However, the condition did not improve but instead progressively evolved to extensive local scleral thinning and eventually to an anterior staphyloma (Figs. 1B and 2A) at the 4-week postinjection interval, requiring surgical repair with a fascia lata patch (Fig. 2B). Two weeks postoperatively, the BCVA (left eye) was restored to 20/40, and the IOP was 12 mm Hg. Both BCVA and IOP remained stable during a further 6-month follow-up.

The fact that leakage from the injection site did not respond to conservative measures but rapidly evolved into a staphyloma implies that healing might have been delayed in this patient. Although steroids are known to delay healing,<sup>3</sup> events of persistent leakage or staphyloma formation following intravitreal or periocular steroid injections have not, to our knowledge, been reported so far. On the other hand, anterior staphylomas following corneoscleral surgical incisions in eyes with predisposing factors, such as homocystinuria or trauma, have previously been reported.<sup>4,5</sup> Such factors were not present in this patient, although the long history of diabetes might have played a role. The relatively large needle bore (26 G), as opposed to the more frequently used 27 G (or even 30 G), might offer another explanation for the development of staphyloma, i.e., through excessive scleral trauma. The findings imply that the development of anterior staphyloma is possible following 1 intravitreal triamcinolone injection and should be kept in mind in the management of such patients.

## REFERENCES

1. Jonas JB. Intravitreal triamcinolone acetonide for treatment of intraocular oedematous and neovascular diseases. *Acta Ophthalmol Scand* 2005;83:645–63.
2. Ozkiri A, Erkiliç K. Complications of intravitreal injection of triamcinolone acetonide. *Can J Ophthalmol* 2005;40:63–8.
3. Reish RG, Eriksson E. Scar treatments: preclinical and clinical studies. *J Am Coll Surg* 2008;206:719–30.
4. Mason GI, Peyman GA, Jampol LM, Lesser RL. Staphyloma: a complication of surgery for hyphema. *J Pediatr Ophthalmol Strabismus* 1978;15:386–91.
5. Ozdek S, Bahçeci UA, Onol M, Ezgü FS, Hasanreisoglu B. Postoperative secondary glaucoma and anterior staphyloma in a patient with homocystinuria. *J Pediatr Ophthalmol Strabismus* 2005;42:243–6.

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