Complication of micro-bypass stenting: the anterior chamber displacement of a Xen implant

Kursat Atalay, Senay Asik Nacaroglu, Ahmet Kirgiz
1. Ophthalmology Department, Bagcilar Training and Research Hospital, Istanbul Health Sciences University, Istanbul, Turkey.

ABSTRACT | Although minimally invasive glaucoma surgery using different types of implants is a promising strategy for treating glaucoma, potential long-term complications require further evaluation. Here, we report a case of the anterior chamber displacement of a Xen implant due to a maneuver aimed at correcting a dysfunctional and bent subconjunctival implant.

Keywords: Glaucoma; Filtering surgery; Minimally invasive surgical procedures/methods; Anterior chamber

CASE REPORT

A 68-year-old male patient diagnosed with POAG showed glaucoma progression despite three anti-glaucoma eye-drop treatments and one session of selective laser trabeculoplasty (SLT) in his left eye. Visual acuity measurements done using the Snellen chart were 0.8 in the right eye and 0.3 in the left eye. His IOP readings were 21 mmHg in the right eye and 30 mmHg in the left eye. Pseudophakia and an epiretinal membrane formation were present in the left eye. Average results of nerve fiber layer analyses of the optic discs were 99 in the right eye and 55 in the left eye. The mean deviation in the visual field examination was -9.82 in the right eye and -18.59 in the left eye.

The patient underwent a routine surgery with 0.2 mg/ml mitomycin C administered sub-conjunctivally, as described previously. An implant, the Xen gel stent (XGS) (XEN® gel stent, Allergan), is thought to work per the criteria of the Hagen-Poiseuille equation for the treatment of primary open-angle glaucoma (POAG). XGS has a 45-μm lumen size, and it is 6 mm long from one end to the other. Several reports have confirmed that XGS provides favorable outcomes in terms of intraocular pressure (IOP) control, and only a few recent reports have indicated complications. Here, we report a case of the anterior chamber (AC) displacement of an XGS and its removal during a maneuver for correction of a dysfunctional and bent implant.

INTRODUCTION

Minimally invasive surgery using micro-bypass implants is a promising strategy for treating glaucoma. An implant, the Xen gel stent (XGS) (XEN® gel stent, Allergan), is thought to work per the criteria of the Hagen-Poiseuille equation for the treatment of primary open-angle glaucoma (POAG). XGS has a 45-μm lumen size, and it is 6 mm long from one end to the other. Several reports have confirmed that XGS provides favorable outcomes in terms of intraocular pressure (IOP) control, and only a few recent reports have indicated complications. Here, we report a case of the anterior chamber (AC) displacement of an XGS and its removal during a maneuver for correction of a dysfunctional and bent implant.
to properly align it. The resistance of tissue felt during application of the cotton swab suddenly decreased. A subconjunctival bleb formed with backward movement of XGS into the AC (Figure 2). The IOP was measured to be 10 mmHg after this maneuver. However, one month after this procedure, the IOP rose to 35 mmHg and the cornea was edematous. Because of the proximity of XGS to the cornea, and the willingness of the patient to have it removed, we removed XGS. The IOP decreased to 20 mmHg with two glaucoma eye drops, and the corneal edema was resolved.

**DISCUSSION**

Manipulations of an XGS may unintentionally shift its position. Some mechanisms have been proposed to explain the relative fixation of an XGS at the implantation site; for example, Dervenis et al., suggested that the implant position is not fixed and secured, and therefore migration to the AC can occur[3]. These authors argued for a potential role of episcleritis and external forces applied by the patient to XGS as reasons for the movement of the implant. Episcleritis is an inflammatory disease that affects the anterior segment of the eye. Our patient did not mention any ocular trauma or eye rubbing during the follow-up period. We also did not detect any previous episcleritis diagnosis from the patient's history. However, the patient had a history of SLT treatment. The SLT involves aiming NdYag laser spots onto the AC angle and usually causes a transient and slight, but detectable, inflammatory reaction in the AC of the eye[5,6]. Matrix metalloproteinases, which are important enzymes in extracellular collagen breakdown, increase in activity during inflammation[7]. The implantation of biomaterials is also known to induce local reactions that affect the extracellular matrix and the implant itself[8]. If Dervenis et al. are correct regarding the causative role of episcleritis and inflammation in the mobility of XGS, the only potential source of inflammation in the AC of our patient was his history of SLT treatment[3].

In our case, the malfunctioning XGS could have been managed in a different way; for example, we could have attempted to needle around the tip of XGS rather than pushing or manipulating the implant itself. In addition, in our case, XGS was not completely displaced into the AC. However, a total movement of XGS into the AC may have inevitably complicated a preexisting condition. Therefore, an operating room may be a more appropriate site for such maneuvers, to avoid subjecting the patient to additional surgical stress.

In the present case, XGS was shown to have the potential to move from the implantation site. Manipulations over Xen material should be done cautiously, preferably in an operating room.

**REFERENCES**


