

The Curious Case of an “Unorthodox” Xen45 Implant

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Abstract

The new MIGS alternatives available on the market today, are continuously proving to be a very reliable tools to managing many cases throughout the spectrum of the many manifestations of glaucoma.

Furthermore, when combining old technology with new, one can further grow the therapeutic reach of both technologies, than the original spectrum of disease that they are originally meant to treat.

We present the case of a 32 years old lady with Harboyan syndrome, with an uncontrolled ocular hypertension and previous failed trabeculectomy and Ahmed valve, corneal scarring with low visibility of the structures in the anterior chamber, with anterior synchiae on superior angle.

We decided to combine new and old technology to evaluate the anterior chamber structures and modify the classic approach to an unconventional XEN45 implant, which ended in a successful therapy for the patient, with an implant in place and intraocular pressure on target.

Keywords: *Glaucoma; Xen45; Minimally Invasive Glaucoma Surgery; Endocyclophotocoagulation; Harboyan Syndrome*

Abbreviations: MIGS: Minimally Invasive Glaucoma Surgery; RE: Right eye; LE: Left eye; CD: Cup to disc; AGV: Ahmed Glaucoma Valve; VA: Visual acuity; PK: Penetrating Keratoplasty

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Case Description

The new MIGS alternatives available on the market today, are continuously proving to be a very reliable tools to managing many cases throughout the spectrum of the many manifestations of glaucoma.

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We present the case of a 32 year old female, with previous diagnosis of Harboyan syndrome, a variation of congenital hereditary endothelial dysfunction with the clinical aggregate of hearing loss and nystagmus [1]. In her case the disease manifested as unilateral corneal degeneration, constant nystagmus and decreased visual acuity in both eyes; when received in our clinic, she had already undergone a previous PK and a superior trabeculectomy on her right eye; left eye had no other significant pathological findings.

Her glaucoma stage was mild, with a CD ratio of 0.35. Her target IOP was set to high teens. Due to a steroid response, manifested the chronic use of steroids after her PK, and after her previous trabeculectomy failed, she underwent inferonasal AGV in our hospital.

After the procedure, her IOP remained stable on target for a year and a half approximately, under 2 drops.

IOP's began gradually to increase, but her glaucoma stage did not advance so we decided to keep her on the same treatment and observation.

During this period of on year and a half, she developed a stromal scar on the PK graft, centrally on a band pattern horizontally, which decreased her VA and made virtually impossible to assess her angle on gonio view, and an anterior synechia at 1-230 o'clock.

On further follow up, approximately 18 months after the AGV procedure, her IOP raised to mid 20's, so we decided to add per os treatment of Acetazolamide 250 mg x3, but she couldn't stand the secondary effects of treatment. In addition to this, she mentioned her wish to become pregnant, and she was planning to start treatment soon with that purpose, so it complicated her topical treatment.

After discussing the surgical options available for her, she preferred to consider some other procedure instead of a second AGV superonasal, because of the possible aesthetic results on her eye, plus she had lost faith in a secondary AGV after the first had failed. On further examination, her conjunctiva was already scarred superotemporally, and inferonasally, around the areas of previous procedures, luckily, superonasally there was almost a full quadrant with a very lax conjunctiva and, although her young age, tenon was thin.

Perfect area for a Xen45 implant, with a catch: there was an anterior synechia going from 1 – 230 o'clock. After evaluating with an anterior chamber OCT (which solved our problem of low visibility on slit lamp exam) we confirmed that the synechia was attached very centrally, closer to the PK wound edge, and the angle behind it peripherally was open.

Last resource needed was a way to evaluate angle immediately before implanting the XEN45 in place. We decided to perform an endoscope guided evaluation of the angle right after the synechiolysis, to decide where to place the implant (it should be somewhere from 1-3 according to the AC OCT).

Everything was set, in theory. We discussed the possible outcome and scenarios with the patient, previous to the surgery, and signed her for both procedures, endoscope guided synechiolysis + XEN45 implant and, for a Superonasal AGV implant in case the XEN45 implant was not possible.

During the procedure, we dissected the tenon with an injection of MMC (0.03%) 0.2 ml superiorly at 1 o'clock. A 2.4mm wound was performed perilymbally at 7 o'clock, AC was filled with viscoelastic material, and the synechiolysis was very easily performed with the aid of the viscoelastic canula.

The endoscope was introduced through the 2.4 mm wound and confirmed the open angle. With the aid of trans illumination of the endoscope light source through the perilymbal area, we marked the place to implant with a sterile marker over the limbus at 130 o'clock, and proceeded to implant the Xen45.

Immediately after washing out the AC, closing the wound with hydration and purging the implant, there was a wide, deep and diffuse bleb going from 11 to 3 O'clock.

The procedure was terminated after a subconjunctival injection of celestone 0.2 ml and Vigamox 600 mcg 0.1 ml applied to the AC.

Sadly, not any member of the surgical team mentioned during the surgical day that all our filming was down that day due to technical issues, and the opportunity to film a very interesting case was missed.

She was released the same day with indications of stopping completely her glaucoma treatment, and topical treatment with Vigamox x4 + Maxidex x6 (Dexamethasone).

On follow up one week after the procedure, the patient was feeling great, under no secondary effects of her previous glaucoma drops, the bleb looked still diffuse and mid deep, XEN45 implant was in place and her IOP was 10 mmHg in the post op eye under no glaucoma drops, and showed a crossover steroid response in left eye, which was controlled with drops (lumigan x1). Three weeks post op her IOP's were RE 18 and LE 21. Right on target.

Results and Discussion

This case is a very good example of the advantages that MIGS offer in a variety of cases that so far are managed in a more tissue aggressive techniques. In this specific case the more usual recommendation would be to perform a secondary AGV implant. Although there is evidence of moderate outcome on a secondary AGV implant (surgical success of 45% at 42 months) [2] we know of the greater risk of endothelial cell loss that AGV presents [3] and we wanted to avoid risks for her future second PK in the future. As mentioned in the beginning of this article, the new surgical tools available as treatment for glaucoma give us a wide range of options to treat at any stage of the disease and to deal with a variety of factors that can complicate the “classic” approach to any technique. On top of this, the new techniques tend to be less invasive to the ocular tissues which give us the advantage to approach the same pathologies with less damage to the tissue, as was the case we presented. Instead of performing a more invasive ahmed valve implant which is a more invasive and longer procedure, with less aesthetic results, more risk for future corneal grafts and not necessarily with better results in terms of intraocular pressure, we performed a less invasive procedure with optimal eye pressure in the immediate post op.

Conclusion

Old technologies are not necessarily useless, they can still prove to be very helpful in achieving best approaches and results for our patients, many times the “classical way” is not the only way to approach cases and perform surgeries, surgeons must always consider every possible tool available and “think out of the box” for the sake of our patients.

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