A case series examining postoperative outcomes in ab-interno Xen GEL implants for glaucoma

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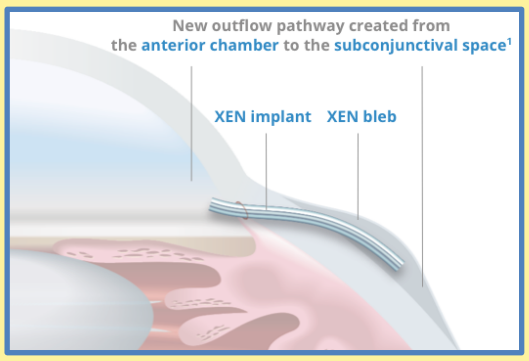
Introduction:

Minimally Invasive Glaucoma Surgery (MIGS) aims to reduce intraocular pressure (IOP) with less surgical risk than more established techniques such as trabeculectomy.[1-2]

One such MIGs device that is indicated for the management of open-angle glaucoma is the the Xen gel implant. It utilises the ab-interno approach to create a flow pathway from the anterior chamber to the subconjunctival space, bypassing the resistance of the trabecular meshwork and collector channels.[3]

Figure 1 - Diagram illustrating the XEN implant.



Aims:

This project aimed assess the safety and the efficacy of Xen GEL implant in real-life glaucoma practice in reducing IOP in primary open angle glaucoma over a 24-month period. It also aimed to determine the frequency of postoperative complications as well as assessing how often further bleb management was necessary.

Methods:

This was a retrospective case series for cases of Xen implantation undertaken by an individual surgeon from May 2016 to August 2019. Patients were identified through surgery codes assigned by clinical coding.

Data was recorded on Microsoft Excel 2016 and Statistical Analysis was performed using GraphPad Prism 9. Means with standard deviations were calculated for IOPs and number of medications used at all time points. The ANOVA single factor test was used to compare sequential time intervals. A $P<0.05$ was considered significant.

Results:

In total, 32 consecutive surgeries in 20 patients were carried out. IOP reduced from 15.3 (SD ± 6.5) mmHg preoperatively to 6.3 (SD ± 3.3) mmHg at 1 week postoperatively ($p<0.0001$); 10.0 (SD ± 3.9) at 1 Month postoperatively, ($p = 0.0027$); 9.9 (SD ± 3.9) at 3 months postoperatively ($p=0.0013$); 9.5 (SD ± 3.2) at 6 months postoperatively ($p<0.0001$); 9.6 (SD ± 2.7) at 9 months postoperatively ($p<0.0001$); 9.6 (SD ± 1.9) at 12 months postoperatively ($p<0.0001$); 9.5 (SD ± 2.2) at 18 months postoperatively ($p<0.0001$). 11 (SD ± 2.3) at 24 months postoperatively ($p=0.3101$). Medication usage reduced from 1.9 (95% CI (1.4 – 2.4) preoperatively to 0.0 medications (95% CI 0 – 0.1) at month 12 ($p < 0.0001$) and 0.3 (95% CI 0 – 0.6) medications at month 24 ($p =0.0326$).

Adverse events included 2 cases of persistent choroidal effusions lasting > 1 month (6.3%), 2 cases where there was a spike of IOP requiring laser intervention (6.3%) and 2 cases where a previous Xen implant was removed and another Xen procedure was carried out (6.3%). In all, 18 out of 32 cases (56%) of cases required postoperative bleb needling and/or antimetabolite injection. In 2 cases a failed bleb was injected with subconjunctival dexamethasone.

Conclusions:

This case series illustrated a reduction in IOP and the number of medications that were used at 12 and 24 months postoperatively. Adverse events are relatively uncommon however more than half of the procedures required postoperative bleb needling to rectify failed blebs. Xen should be reserved for those surgeons who are comfortable with early and late bleb management.

This study is limited by its retrospective nature as well as the relatively short period of follow up. Regular postoperative surveillance and a low threshold for bleb management is recommended. Using the Xen implant is safe and effective in mild to moderate glaucoma.

References:

(1) Vijaya L, Manish P, Ronnie G, Shantha B. Management of complications in glaucoma surgery. Indian Journal of Ophthalmology. 2011;59:131.
(2) DeBry P. Incidence of late-onset bleb-related complications following trabeculectomy with mitomycin. Archives of Ophthalmology. 2002;120:297.
(3) Lewis R. Ab interno approach to the subconjunctival space using a collagen glaucoma stent. Journal of Cataract & Refractive Surgery. 2014;40:1301– 6.