

# The use of the EyePrintPRO lens to decrease erosion risks on glaucoma drainage implants

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## Introduction

Many patients with advanced glaucoma require the insertion of glaucoma drainage implants to manage their IOP, often requiring patch grafts that can cause scleral irregularity. In these circumstances, the use of soft or improperly fitting scleral contact lenses can lead to an increased risk of conjunctival erosion over the graft. One of the newest technologies in the customized scleral lens industry is called the EyePrintPRO, which creates an exact copy of the contour of the entire ocular surface.

Glaucoma drainage implants involve inserting a tube shunt into the eye to assist with diverting aqueous humor from inside the eye to an external reservoir, but also creating a reservoir to prevent excessive lowering of the eye pressure.

To avoid exposure after glaucoma drainage implant surgery, the implanted tube or drainage device must be covered with a patch graft, which is then covered by the conjunctiva; this forms an elevated surface, known as a bleb. The conjunctiva above the bleb is usually treated with mitomycin or 5-Fluorouracil to prevent scarring and thus, reduce the risk of failure. However, these antimetabolites can cause the conjunctiva to thin and become more susceptible to infection.

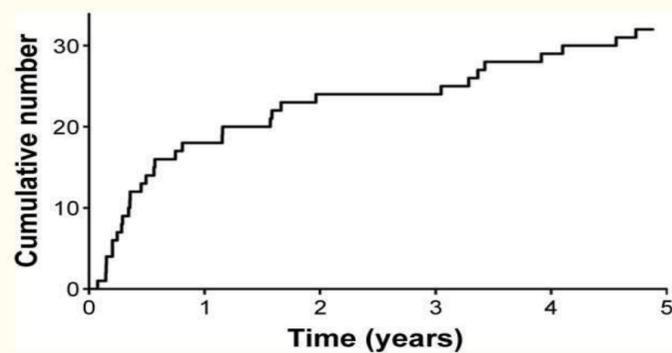
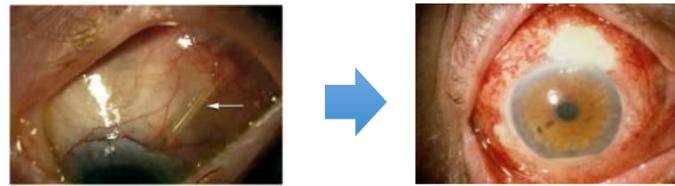


Figure 2  
Cumulative number of eyes with tube exposure over time after glaucoma drainage device implantation. After drainage implant surgery, the mean  $\pm$  SD time to tube exposure was 17.2 $\pm$ 18.0 months (median 7.9 months).  
Abbreviation: SD, standard deviation.

As early as three months, bleb-related complications could entail wound leakage and hypotony, a shallow or flat anterior chamber, and cilio-choroidal effusions. Late onset bleb complications can be as severe as endophthalmitis. The incidence of endophthalmitis associated with glaucoma surgery has been reported to range from 0.6% to 13.2%.<sup>3</sup>



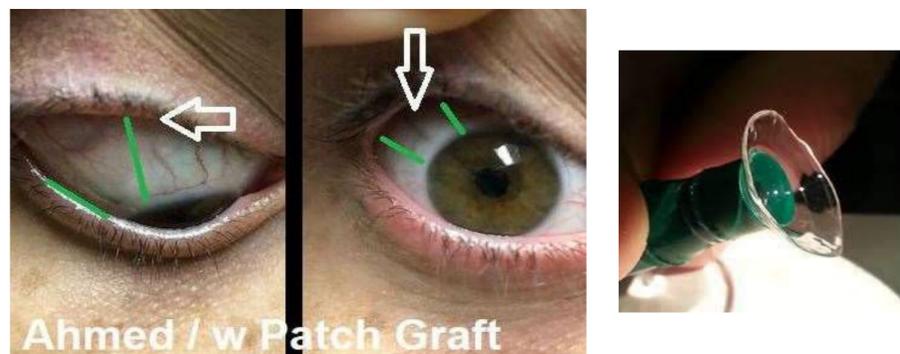
Tube erosion leading to endophthalmitis

## Case Presentation

<b>Demographics</b>	23yo Caucasian female
<b>Chief Complaint</b>	New contact lens fitting
<b>History of Present Illness</b>	Uveitic glaucoma OD
<b>Past Medical History</b>	+Rheumatoid Factor but no other evidence of Juvenile Rheumatoid Arthritis
<b>Past Ocular History</b>	Ahmed glaucoma valve inserted December 2016
<b>Medications</b>	-Humira every 14 days -Elavil QHS -Alphagan TID OD -Cosopt BID OD

<b>TMax</b>	48/30
<b>Gonioscopy</b>	Mild PAS OD, (-) PAS OS No angle closure OD/OS
<b>Pachymetry</b>	610/588
<b>HVF</b>	OD: Dense superior > inferior arcuate, MD -19.33 OS: Clear, MD -2.24
<b>OCT RNFL</b>	OD: Superior and inferior thinning, Avg. 66um OS: No quadrant thinning, Avg. 115um

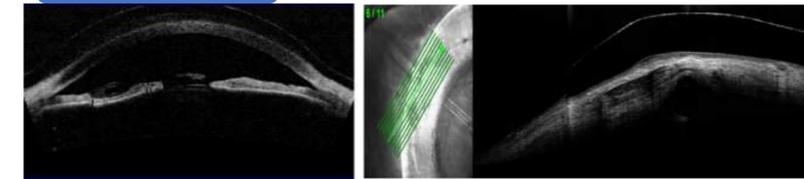
## Clinical Examination



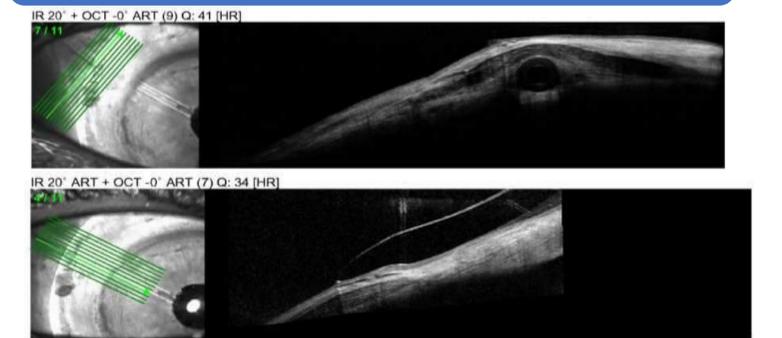
Ahmed / w Patch Graft

## Treatment and Management

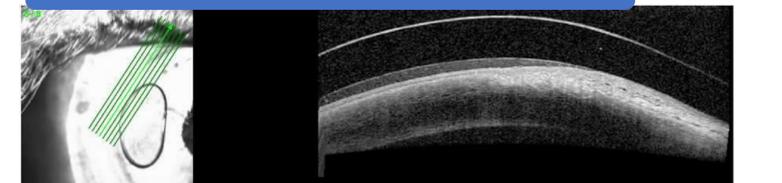
### Initial Lens



### Second Lens after increasing vault over tube by 200um and 150um over the patch



### Second Lens after 6 hours of wear



## Discussion

By fitting the patient with the EyePrintPRO scleral lens, there was not quantifiable proof that the area of tube placement was not being compressed. The vault was then increased by 200um over the tube and 150um over the patch to act as a shield for the patch graft. However, this happened to be too much clearance causing bubbles to occur. This customized scleral lens could undoubtedly be the new gold standard for fitting patients with glaucoma filtration surgeries for the future; however, there needs to be more longitudinal case studies to gain a better understanding of a perfect fit.

## References

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2. Gedde, Steven J., et al. "Treatment Outcomes in the Tube Versus Trabeculectomy (TVT) Study After Five Years of Follow-Up". *American Journal of Ophthalmology*, vol. 153, no.5, 2012.
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4. Chaku M., et al. "Risk factors for tube exposure as a late complication of glaucoma drainage implant surgery". *Clin Ophthalmol*. 2016; 10:547-553.
5. Oana S. and Vila J. "Tube Exposure Repair". *J Curr Glaucoma Pract*. 2012 Sep-Dec; 6(3): 139-142.