HyAGlauc: Combatting Inflammation and Fibrosis in Post-Surgery Glaucoma Patients

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HyAGlauc is a biodegradable implant which acts to reduce post-surgical scar tissue formation following glaucoma drainage surgeries. HyAGlauc provides a mechanical support and can be loaded to deliver anti-inflammatory and anti-fibrotic molecules in a controlled manner. This biodegradable drug-delivery device inhibits inflammation and fibrosis at key stages of the wound healing process thereby eliminating patient-administered drugs and repeat surgical procedures.

BACKGROUND

Glaucoma is the leading cause of irreversible blindness and post-operative inflammation and fibrosis are determining factors in the failure of 30-50% of drainage surgeries. Current treatments for fibrosis involve the direct administration of anti-metabolite drugs which are associated with numerous complications including bleb thinning, hypotony and bleb leak. These complications are often compounded by poor compliance during patient-administered medication. There is a clear unmet need for a treatment which reduces inflammation and fibrosis during post-operative wound healing and circumvents the complications associated with anti-metabolite drug administration.

VALUE PROPOSITION

Similar to a drug-eluting stent, HyAGlauc is an implantable, biodegradable medical device which aims to improve glaucoma surgery outcomes. The device functions by physically separating the conjunctiva from the drainage site while simultaneously inhibiting inflammation through novel drug loading strategies. HyAGlauc offers an immediate benefit in ensuring unrestricted fluid flow while guaranteeing drug delivery and eliminating patient compliance issues. Thus, HyAGlauc results in a more cost-effective, successful surgery and better patient quality of life.

TECHNOLOGY

HyAGlauc consists of a microporous, modified hyaluronic acid-based hydrogel designed to sit within the bleb and maintain fluid drainage (Figure 1A). Its unique biomaterial composition demonstrates an intrinsic ability to control inflammation and fibrosis while a secondary modification allows biphasic drug release (Figure 1B). Blank devices (Figure 1C) are inert and well tolerated whereas drug-loaded devices (Figure 1D) are capable of total inhibition of blood vessels.

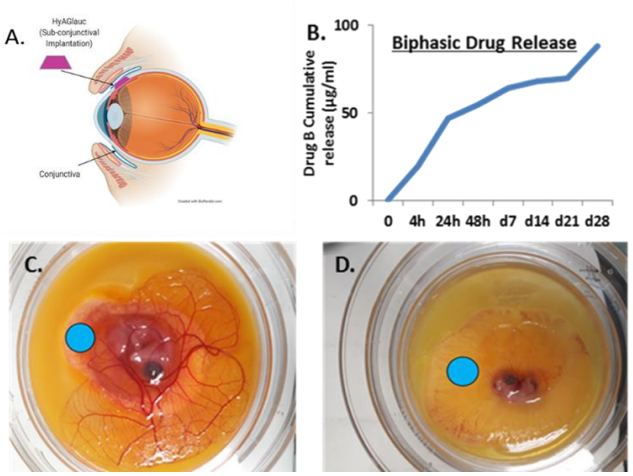

Fig 1. A) Illustration demonstrating placement of HyAGlauc device. B) Controlled release of anti-inflammatory drug. C) Drug-free and D) drug-loaded devices evaluated in a model of angiogenesis.

FEATURES	BENEFITS
Off-the-shelf product	No specialist training required for use.
Rapid and flexible fabrication	Device dimensions tailorable to patient
Controlled *in situ* drug-delivery	Eliminates patient compliance issues
Inhibits inflammation and angiogenesis	Increased rates of surgical success
Robust mechanical properties	Allows unimpeded fluid drainage
Biodegradable device	No removal surgery required

TECHNOLOGY READINESS LEVEL

- Patent application filed
- Commercialisation funding awarded
- Proof of concept achieved
- Pre-clinical evaluation on-going

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KTI Boost is co-funded by the Government of Ireland and the European Union through the ERDF Southern, Eastern & Midland Regional Programme 2021-27