

Reducing Intraocular Pressure in Glaucoma Patients Without Drugs or Surgery via a Simple Hydrogel Injection

Drug-free and surgery-free management of intraocular pressure (IOP) may lower risks and increase patient adherence

Elevated IOP in glaucoma and ocular hypertension patients is traditionally managed with pharmaceuticals or surgery. Drug treatments, such as eye drops or pills, must be taken daily, which is burdensome over the lifetime of the patient and leads to poor compliance. Surgical options, either incisional or laser-based, can be complex and costly, and often lose efficacy with time.

As a new therapeutic approach, hyaluronic acid hydrogel injection to expand the suprachoroidal space (SCS) may allow patients to avoid daily eyedrop delivery or remove the necessity of surgery, even in emergent cases. When neither approach can be avoided, this injection to lower IOP could work as a combination therapy to boost the impact of the required therapeutic or surgical route.

In-office hydrogel injections to decrease IOP for many months

Hydrogel injections to alleviate elevated IOP would require one simple office visit every 4 - 6 months with fast results, and extended impact. This drug-free approach was shown effective in animal models for 120 days, with an initial drop in IOP measured within hours of treatment. Additionally, the injection is rapid and can be performed as an in-office procedure and does not require the pinpoint accuracy of lasers while limiting the risk of complications that can result with incisions. There are significant cost-savings anticipated for the patient and/or revenue generation for the clinician with a simplified procedure that does not require daily pharmaceutical care or surgical costs. This technology could also be applied in veterinary sciences thus broadening the market potential.

Summary Bullets

- Hydrogel injections alleviate elevated intraocular pressure (IOP) with fast results and extended impact.
- Surgery-free approach eliminates the risk of tissue damage caused by a surgical incision or laser application.

- Simplified and effective treatment process from standard daily drug intake to a brief office visit only once every 4-6 months.

Solution Advantages

- **Increased patient adherence:** Patients do not need to remember to take their eye drops one or more times per day. Further, the treatment provider knows definitively that the therapy has been delivered.
- **Safe:** With a singular hydrogel injection via a microneedle, the risk of tissue damage caused by a surgical incision or laser application is eliminated.
- **Simpler:** Simplifying the treatment process from standard daily drug intake to a brief office visit only once every 4-6 months is easier for patient compliance.
- **Fast:** The hydrogel injection does not require pre- or post-operative care unlike surgical standard of care and effective IOP lowering can be measured within hours.
- **Long-lasting:** Expansion of the SCS with measurable IOP reduction for 120 days has been shown in animal studies.

Potential Commercial Applications

- Glaucoma
- Ocular Hypertension (glaucoma suspects)
- Veterinary Medicine

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Publications

[Drug-Free, Nonsurgical Reduction of Intraocular Pressure for Four Months after Suprachoroidal Injection of Hyaluronic Acid Hydrogel](#), Advanced Science - December 7, 2020

Images

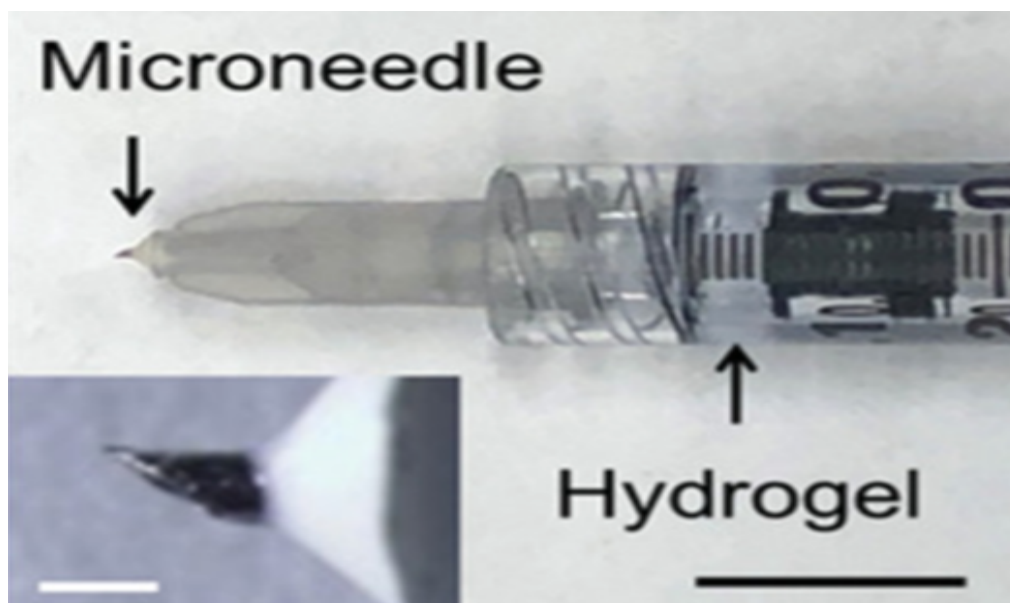


Figure 1. Microneedle filled with Hydrogel

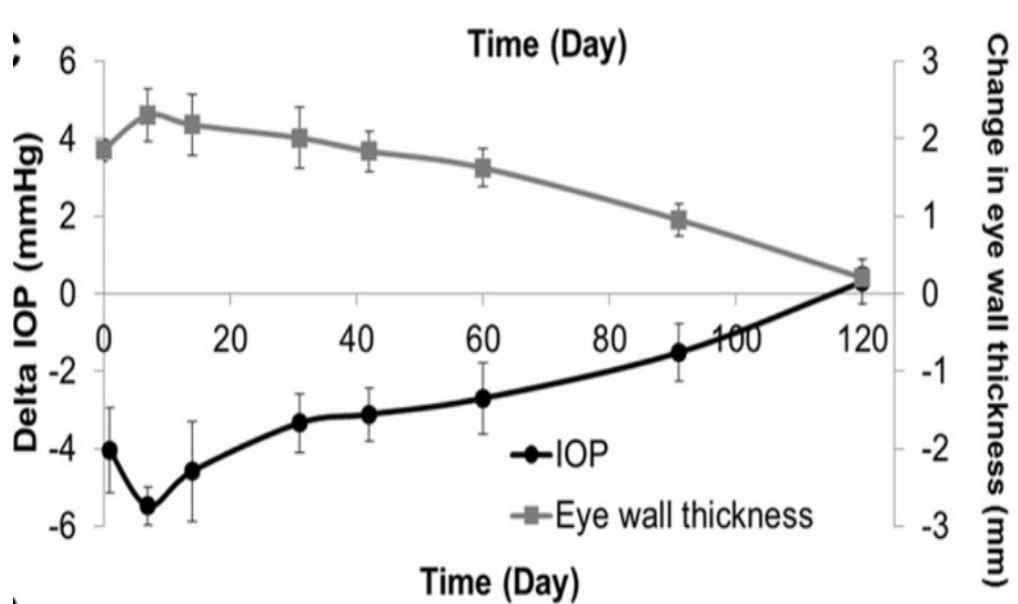


Figure 2. Impact of IOP and eye wall thickness post-hydrogel injection

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