

Secure cannula design to prevent improper infusion during vitreoretinal surgery

Unmet Need

Around 250,000 vitrectomies are performed in the U.S. every year to treat pathology ranging from retinal detachment to vitreous hemorrhage epiretinal membrane. The ophthalmic surgical supply market recently topped half a billion dollars in the U.S. alone, with a CAGR of 5.2% forecast to 2025. Critical in vitrectomy is safe and reliable intravitreal infusion. Though rare, there are several severe complications that are caused by a slipped infusion with gas or liquid. Specifically, if a cannula dislodges during the surgery, suprachoroidal infusion can lead to surgical failure, permanent vision loss, or even has resulted in death due to cardiac air embolus. To minimize the risk for these complications, there is a need for improved cannula designs with improved attachment.

Technology

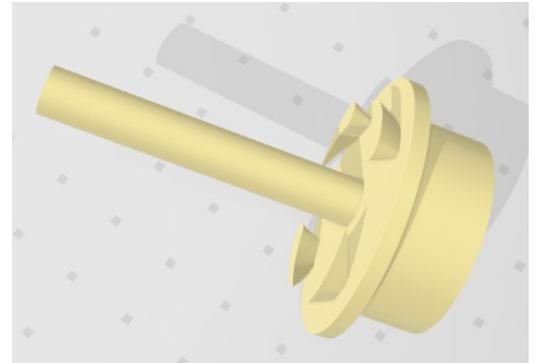
Duke inventors have developed a novel secure locking cannula that reduces the risk of complications from improper infusion in vitreoretinal surgery. This device is the familiar cannular design, with a twist: tooth-like projections are arranged on the surface of the cannula flange that engages the surface of the eye. With an easy manual rotation upon insertion, the points penetrate the sclera and keep the cannula from dislodging. This design also is resistant to being dislodged by movements by the surgeon or through pressure from the infusate. After surgery, a rotation in the opposite direction dislodges the cannula and allows for easy removal. A prototype of this device has been developed and tested on a porcine eye model, showing roughly 100% more force necessary to displace as compared to a traditional intrascleral cannula.

Other Applications

This design can also be applied to other surgeries requiring access across tissue through a secure cannula.

Advantages

- Demonstrated more stable attachment than a traditional intrascleral cannula in prototype testing



Duke File (IDF)

T-006782

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Links

- [From the lab of Dr. Eric A. Postel](#)

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- Compatible with existing trocar-cannula systems
- Installation and removal require no special instrumentation or training
- No extra foreign objects introduced inside the eye
- Suture-free removal
- Simple design should not appreciably raise manufacturing costs
- Disposable