Docket #: S19-109

Orbital Compartment Pressure Sensing Retractor

Stanford doctors have developed a retractor that easily and accurately measures orbital compartment pressure without requiring precise orientation to the central cornea. The inner claw of the handheld device (figure 1) holds open the patient's eyelid while the outer claw retractor senses the eye's orbital compartment pressure. During canthotomy/cantholysis, the retractor provides continuous, reliable, and actionable information to guide the procedure. Unlike applanation tonometry, the pressure sensing retractor requires very little training - making it ideal for diagnosing and treating orbital compartment syndrome and retrobulbar hemorrhage (RBH) especially in environments without immediate access to ophthalmic consultation. This reliable, easy to use device is ideal for emergency and field situations where a quick and accurate response can prevent permanent vision damage or loss.

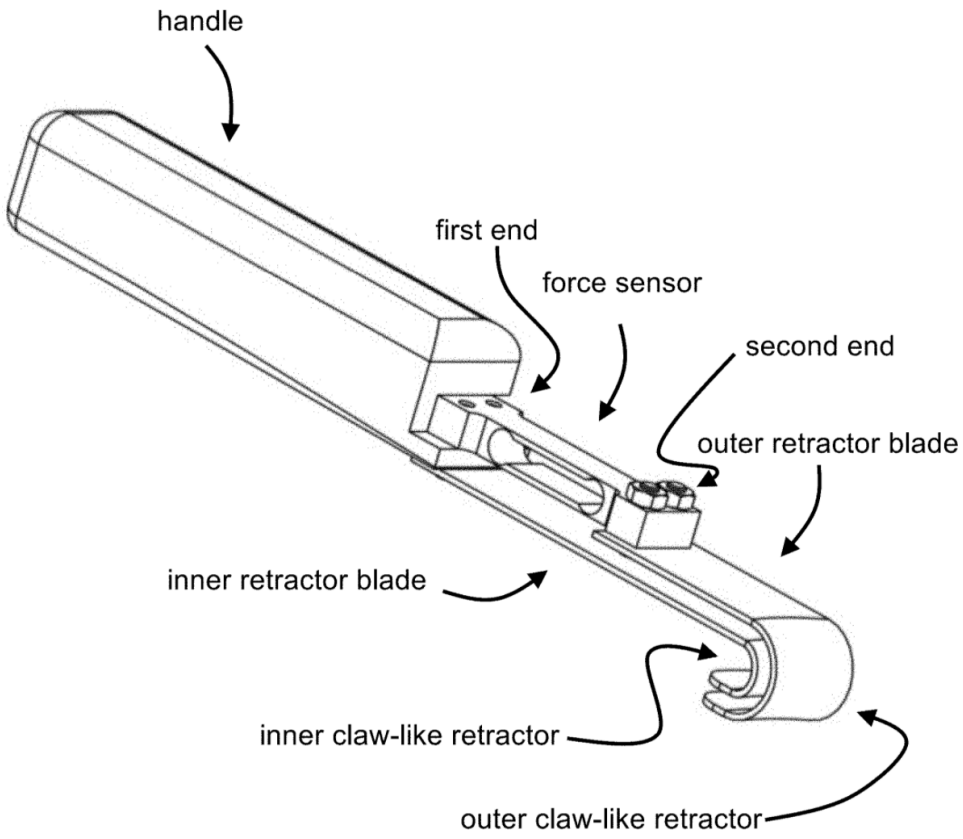

Figure 1 - Prototype Schematic

Stage of Development – Prototype
Researchers have successfully developed and tested the device in cadavers, and partnered with Army surgeons for live prototype testing.

Applications

- Emergency ocular and orbital pressure diagnosis and treatment - especially of orbital compartment syndrome and retrobulbar hemorrhage
- Canthotomy/Cantholysis

Advantages

- Portable, reliable, accurate, and easy to use
- Continuous pressure information for as long as the retractor tip remains in place – reduces sampling bias
- Reduces the risk of inadvertent corneal abrasion

Publications

- Erickson, B. P., & Bair, H. (2020). *U.S. Patent Application No. 16/900,431*.

Patents

- Published Application: 20200390332
- Issued: 11,627,876 (USA)

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