Light-modified cryoprobe for eye surgery

This new cryoprobe technology integrates a built-in light source, facilitating one-handed operation for retinal repair and enabling use outside the operating room.

Background

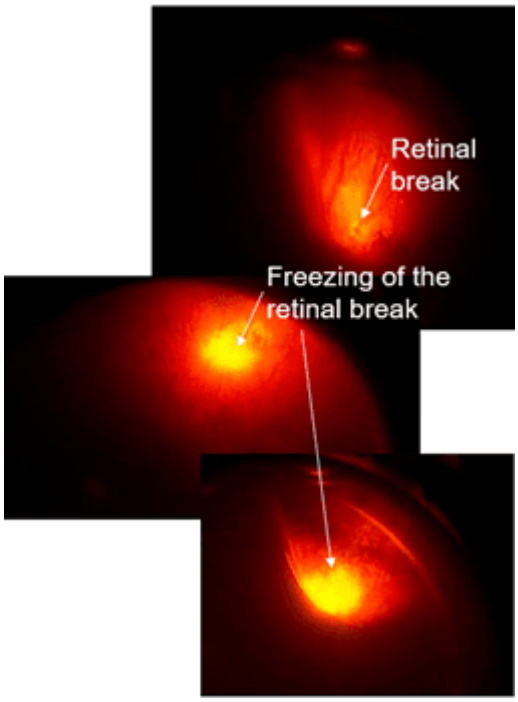

Figure 1. Clinical proof of concept of cryoprobe modified with a light source.

Retinal detachment generally occurs when fluid travels through a retinal tear and causes the retina to detach from the other tissues in the back of the eye – cutting off its blood supply and ability to function properly. Retinal detachment affects 5 in 100,000 people annually, and more than 60% of people over age 70 [1]. Freezing of eye tissue is currently used to seal minor tears and ruptures, as well as treating retinal detachment. Freezing probes are used externally, by manoeuvering along the side of the eye (into the ocular cavity). During the freezing procedure, a light source is needed for guiding the probe and assessing the progress of repairing damaged tissue on the eye. Monitoring happens through the pupillae of the eye and requires equipment presently only available in the operation room (OR). The light source is then maneuvered with one hand, while holding the cryoprobe with the other. With the present invention, only one hand is used to operate both cryoprobe and light, and the other hand is free to do other work. The invention also allows use outside of the OR, since an external light source is no longer needed. This would free up valuable resources, and freezing could replace the use of laser (also in OR) for uncomplicated tears.

Category

Medical Devices

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Further information

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Business Opportunity

Total addressable market: The global cryotherapy market was $2.3bn in 2023, including therapies for skin conditions and cancer [2]. The worldwide retinal surgery device market size was valued at $1.59bn in 2020 [3].

Technology

The concept of a cryoprobe with built-in light has already been proven clinically, see Figure 1. We are now in the process of developing a prototype cryoprobe suitable for commercial development.

Intellectual Property

We have filed an international patent application under the Patent Cooperation Treaty (PCT), securing broad protection for our core technology across major global markets (WO2025190993A1).

References

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2. Market Data Forecast, 2023. https://www.marketdataforecast.com/market-reports/cryotherapy-and-cryosurgery-market
3. Research and Markets, 2021. https://www.researchandmarkets.com/reports/5447682/retinal-surgery-device-market-global-forecast