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Trans-scleral Cyclophotocoagulation: A Tale of Two Probes

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Purpose

To compare the structural and histological effects of trans-scleral cyclophotocoagulation (TCP) performed by two different probes; the G-probe (Iridex, Mountain View, CA) and the Ciliprobe (Katalyst Surgical, Chesterfield, MO).

Methods

TCP was performed on two human eyes from the same patient obtained through the Rocky Mountain Lion's Eye Bank. The 12 o'clock meridian was marked and either side was treated using the G-probe and Ciliprobe respectively. The two clock hours spanning this meridian were spared to ensure no cross over of treatment zones. The first eye was treated by each probe at 2000mS/2000mW and the second eye at 3000mS/1500mW. Eyes were fixed overnight and processed for histology. Paraffin sections (3.5 µm) were stained with hematoxylin and eosin and photographed.

Results

On histological examination, vacuolization, loss and separation of the non-pigmented ciliary epithelium were noted in all sections for both probes and settings. Changes to the non-pigmented ciliary epithelium treated at 3000mS/1500mW were similar between the two probes. A slightly more complete separation of the non-pigmented epithelium was noted on the Ciliprobe treated sections as compared to the G-probe in the eye treated at 2000mS/2000mW.

Conclusions

TCP is known to cause localized tissue destruction, including separation of the non-pigmented and pigmented ciliary epithelium, pigment clumping and coagulative necrosis. This damage to the non-pigmented epithelium subsequently leads to decreased aqueous production and lower intraocular pressure. Our findings show that in cadaver eyes, both the G-probe and Ciliprobe are capable of producing at least equivalent histological changes in the non-pigmented ciliary epithelium. While at a higher power setting the Ciliprobe produced a more complete separation of the non-pigmented epithelium when compared to the G-probe, it is unclear if this difference is clinically significant. These findings suggest similar TCP outcomes with either probe, although further clinical study is indicated to confirm this.

Layman Abstract (optional): Provide a 50-200 word description of your work that non-scientists can understand. Describe the big picture and the implications of your findings, not the study itself and the associated details.

