

Transscleral cyclophotocoagulation effective as early glaucoma treatment

Although typically a last line of defense, the treatment has shown to be beneficial early in the glaucoma surgical treatment paradigm.

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Glaucoma surgeons generally tend to perform transscleral cyclophotocoagulation exclusively as end-stage surgical therapy. However, many studies, as well as my own experiences, have shown it to be effective at lowering IOP and maintaining visual acuity earlier in the glaucoma treatment paradigm.

At the start of my career, I performed transscleral cyclophotocoagulation (TSCPC) in the traditional sense as an end-stage treatment after trabeculectomy and/or tube shunt surgery had failed. At that point, I would typically perform TSCPC to lower IOP, and I found the results to be positive. That is when I started to consider it in patients who had not necessarily gone through and failed the traditional treatment regimen.

Postop results

The postoperative course after a trabeculectomy or a tube shunt surgery can have problems, from postoperative complications to surgical failure. Patients do not enjoy postoperative 5-fluorouracil injections, not to mention the damage that both trabeculectomies and tubes can do to their corneas and ocular surface.

On the other hand, I had always noticed the postoperative course after TSCPC to be more benign, with fewer postoperative visits and complications. I did a quick literature search and found several studies that supported my anecdotal experience.

Supporting data

An observational case study conducted at the University of Illinois in Chicago and published in *Ophthalmology* lends support to this idea. Researchers reviewed 21 eyes with a preoperative best corrected visual acuity of 20/80 or better treated with TSCPC and recorded changes in visual acuity from pretreatment through their last examination. After a mean of 40.7 months (range: 13 to 88 months), 18 of 21 eyes were stable in terms of vision. Three eyes deteriorated by three or more lines. Researchers concluded that most eyes with 20/80 or better BCVA maintained close to that acuity after the 1-year follow-up.

In another retrospective study, British researchers followed 49 eyes that had preoperative vision better than 20/60 (median: 20/30, range: 20/16 to 20/60) that underwent TSCPC. After a mean follow-up of 5 years, 30.6% lost two or more lines of vision, but 67.3% retained visual acuity of 20/60 or better. The most common causes for vision loss were glaucoma progression in nine cases and macular edema in four cases. Visual loss was unrelated to total treatment dose, preoperative visual acuity or preoperative IOP levels.

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Of note, patients who have trabeculectomy or tube shunts also often have some vision loss. For example, in the 5-year Tube Versus Trabeculectomy Study (TVT) results, 46% of patients in the tube group and 43% in the trabeculectomy group lost two or more lines of vision. These were due to factors such as glaucoma, macular disease, corneal edema and suprachoroidal hemorrhage.



Figure. The G-Probe is placed at the limbus. Treatment usually consists of 17 to 20 laser shots for 270° to 360°.

Image: Parekh P

Although further studies will be needed, these results suggest a role for the use of TSCPC in eyes with significant visual potential. This data, along with my personal experience, gave me the confidence to step outside of tradition and use TSCPC with the G-Probe (Iridex) in patients with good vision after drops and selective laser trabeculoplasty have failed.

Personal experience

For example, I can recall the case of an elderly patient who, based on my previous experiences with her, I suspected would not be able to manage postoperative care after a trabeculectomy or tube shunt surgery. After a good risks/benefits discussion, we proceeded with TSCPC, and she maintained her vision. Her IOP dropped beautifully with only minimal postoperative visits and a smooth postoperative course.

Since then, I have used TSCPC with increasing confidence in those patients who are too frail or have significant compliance barriers for a successful trabeculectomy or tube shunt. Over time, I have found that patients who undergo TSCPC retain their vision well, and the results have given me the confidence to use TSCPC earlier in the treatment paradigm.

Patients have done well without any untoward side effects and are pleased with their postoperative care, comfort of their eyes and the minimal number of postoperative visits. They are thankful to have avoided other more invasive surgical procedures and have maintained a low IOP and stable vision.

Further research in glaucoma surgery is necessary for us to find new and better surgical techniques. I also thought the TVT study was fascinating. In recent years, the number of trabeculectomies has been falling, whereas the number of tubes has increased, and the TVT helped show it was OK to turn the traditional paradigm on its head. It forced us to think about why we as ophthalmologists do things in a certain way.

Moreover, TSCPC with the G-Probe is easy to perform. First, I bring my patients to the

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operating room so that I can administer a retrobulbar block under sedation for total patient comfort. I place my settings on 2 seconds and use a power of 2,000 mW. I perform 17 to 20 shots for about 270° to 360°. Depending on the patient's preoperative BCVA and the severity of his or her glaucoma, I may use higher settings if more effect is necessary. If I hear a "pop," I lower the power setting. Postoperatively, I administer subconjunctival steroids and then patch overnight. It is a simple procedure that takes only a few minutes to perform.

The treatment paradigm of avoiding TSCPC until everything else has been tried and failed is a tradition that has historically been passed down from professors to students. As a resident, I was taught that trabeculectomies are performed first, tube shunts are performed second, and if either of those fails, even after possibly having been repeated, then TSCPC is a last resort. However, there have been many situations where I have gone straight to TSCPC after drops and SLT have failed and have had great success. This, along with the TVT study, has caused me to step back and re-evaluate our traditional glaucoma treatment paradigm.

<http://www.healio.com/ophthalmology/glaucoma/news/print/ocular-surgery-news/%7B20C1669E-4B10-4558-A48A-F5E67C26A76D%7D/Transscleral-cyclophotocoagulation-effective-as-early-glaucoma-treatment>