



DAVINDER S. GROVER MD, MPH

Dr. Grover practices at the Glaucoma Associates of Texas, where he specializes in complex glaucoma and cataract surgery and leads the clinical research team. In this interview, he comments on the ups and downs of developing a new surgical technique and describes the key influencers in his life and career.

INTERVIEWED BY CALLAN NAVITSKY, EDITOR-IN-CHIEF, *GLAUCOMA TODAY* AND *MILLENNIALEYE*



*Nominated by the Chief Medical Editor
and Associate Medical Editor of*

GT
Glaucoma Today

BMC: Who or what drew you to ophthalmology?

DAVINDER S. GROVER, MD, MPH: I have always been passionate about international health and international health policy. Between my third and fourth year of medical school, I earned a master's degree in public health. During that time, I spent a month studying health care in southern India. I visited one of the largest eye care delivery systems in the world, the Aravind Eye Hospital. I saw the kind of work being done there and the cost-effective way in which care was provided.

I also witnessed the impact of blindness in developing countries. In a small village in a developing country, a 50-year-old who is blind from cataracts cannot be a productive member of society. There are no service dogs to help guide the blind. Instead, the son or grandson of a blind patriarch will lead him around with a stick. One cost-effective surgery that takes 5 to 10 minutes could give two people their lives back—the 50-year-old could return to being a productive member of society and the boy could reclaim his childhood.

BMC: What was the rest of your training like?

GROVER: After finishing my public health degree, I returned to medical school at Johns Hopkins University and was lucky that my next rotation was in ophthalmology. Although I had done my research and was set on specializing in internal medicine, on Monday of that weeklong ophthalmology rotation, I remember thinking, "Wow, this is pretty cool." On Tuesday, I was like, "Wow, this is really cool." By Wednesday, I was in a panic, thinking, "I need to do this."

At 11:30 that night, I emailed the medical student director, Susan Bressler, MD. I introduced myself and said, "I just got back from public health school. I'm on ophthalmology rotation right now, and I really think I want to be in ophthalmology." A few minutes later, she emailed me and said, "Tomorrow, all of the medical students applying to ophthalmology are getting together to talk. You should join us." I showed up to the meeting where I knew no one and all the other med students knew one another. We were all obviously nervous about matching in such a competitive field. Sensing this, Dr.

Bressler said, "I want you to know, you're all going to be ophthalmologists. It will all work out. If you think you're nervous, imagine how this guy feels [pointing at me]: He just decided last night that he wants to go into ophthalmology."

From that point on, I basically turned my fourth year on its head and changed all my rotations. I knocked on the doors of David Friedman, MD, and Nathan Congdon, MD, both of whom were active in international health and glaucoma. Luckily, they welcomed me with open arms, offered me invaluable advice, and helped me get involved in research.

BMC: How did you know glaucoma was the right fit for you?

GROVER: Glaucoma is kind of like the internal medicine of ophthalmology because it is a chronic disease. It was also the first subspecialty I was exposed to in medical school. I went into residency thinking I needed to force myself *not* to do glaucoma. I felt like I didn't know anything about ophthalmology outside of glaucoma, and it felt silly to go in decided on one specific field. So, I considered all other subspecialties.

Eventually, I narrowed my choices down to retina and glaucoma. Looking for guidance, I met with one of my mentors, Morton Goldberg, MD, who was the former chair at the Wilmer Eye Institute and a retina specialist. I told him that I liked both fields but felt that retina had come a long way with bevacizumab and vitrectomy (this was 2008). I explained that I felt like glaucoma surgeries were very outdated and that there hadn't been any big advances in surgical glaucoma that had revolutionized the subspecialty like phacoemulsification or vitrectomy had done for other subspecialties. Dr. Goldberg said, "I think you'd do well in either field, but it seems like your passion would be best served in glaucoma. That's where you need to go." Despite being a retina specialist and having a vested interest in me going into retina, he helped confirm my conviction that glaucoma was my calling.

BMC: You've been instrumental in the development of gonioscopy-assisted transluminal trabeculectomy (GATT). How did that idea come about?

GROVER: When I joined the Glaucoma Associates of Texas, my senior partner, Ronald L. Fellman, MD, and I immediately clicked. Ron and I are both geeks, and we feed off each other. From my first day, we would stay in clinic from 5 to 7 pm to read and talk about glaucoma, and it helped create this amazing synergy. Ron is a great thinker and has done so much for the field.

One day, Ron had a patient who had a failed Trabectome (NeoMedix) surgery, and he was examining the patient with a gonioscope. He was staring at the nasal angle where the Trabectome had been done, and he said, "I wonder if I can feed the suture in there." That was a totally revolutionary idea, but he hadn't communicated it to all of us yet. He went to the OR and tried it with a 6-0 prolene suture because that is what was used for the ab externo trabeculectomy. However, he couldn't get it to work.

Eventually, he explained to us what he had tried to do. I remember saying,

"Ron, that's amazing. That's insane. We're going to make this happen." So, he and I sat down and planned out every step on paper. We thought about his approach, what he did right, and what we could do to make it work. He concluded that the 6-0 prolene probably wasn't strong enough, so we decided to try a catheter instead. We also took the time to find the right candidate, who turned out to be a 21-year-old man who had immigrated from Afghanistan and was being seen in a free clinic. His eyelashes had grown long from all the medication, and his eyes were beet red. His pressures were around 37 mm Hg in both eyes—he needed a circumferential trabeculectomy.

We told the patient he needed a 360° trabeculectomy and we could do it externally, which would take up to 90 minutes and involve a big flap and conjunctival dissection. Or, we explained, we could try to do the procedure through two 1-mm paracenteses in the cornea. We were honest and communicated that, although we felt GATT was both safe and effective, if it did not work, we would need to use an external approach. He agreed to undergo GATT.

After planning out every step, I performed GATT on the patient's first eye with Ron assisting. Fortuitously, the procedure went exactly how we thought it should. I looked at Ron, he looked at me, my heart was racing, and we gave each other a sterile fist bump. The patient said, "Did you guys get it?" He was right there with us, included in the whole process. Two months later, we performed GATT on his second eye. The patient is now 7 years out and on no medication. His eyes look perfectly normal, and his pressures are around 11 mm Hg.

BMC: What has it been like educating other surgeons about the technique?

GROVER: In 2011, I submitted an abstract to the AGS describing our first 80 GATT cases—and it was rejected. The reviewers simply didn't know what GATT was. It wasn't until 5 years later that our paper was published,¹ and it wasn't until 2017 that a course on GATT

was accepted by the AAO. However, we always did our best to educate anyone who wanted to learn, and to this day I have an open-door policy for anyone who wants to come to my OR. Today, GATT, a term coined by Dr. Fellman, has become more common lingo. That's pretty damn cool. It's beyond anything that I thought in my wildest dreams I'd ever be involved in, let alone in the first couple years of my career.

BMC: What's next for GATT? And for other glaucoma innovations?

GROVER: I'm most excited about the cost-effective nature of GATT. This technique can be performed all over the world for just \$2 or \$3, and my dream is for it to have worldwide implications. I have traveled to Saudi Arabia and India to perform GATT, and patients there have done very well. I think the next chapter in GATT is worldwide training. It would be great to have a prospective trial in the United States and a prospective international trial.

In reality, I imagine that the future of innovation in glaucoma will still be in disposable devices, given the potential for profit and industry sponsorships. I think we have made the most of the trabecular outflow pathways, be it with iStent (Glaukos), Hydrus (Ivantis), the Kahook Dual Blade (New World Medical), Trabectome, or GATT. The next frontier will likely be understanding the suprachoroidal space and wound healing in that space. We will also probably explore why trabecular outflow pathways or angle surgeries fail and what happens postoperatively with wound healing.

BMC: If you had to nominate one person to be a creative mind, whom would it be and why?

GROVER: Can I give two? If so, the first would be the late Francisco Fantes, MD. Dr. Fantes was a glaucoma and cornea specialist at Bascom Palmer, one of my most favorite people and closest mentors, and an innovator himself. He was one of the first surgeons to use a

“Fortuitously, the procedure went exactly how we thought it should. I looked at Ron, he looked at me, my heart was racing, and we gave each other a sterile fist bump.”

corneal patch graft over a glaucoma drainage tube and one of the creative minds behind the InnFocus MicroShunt.

Dr. Fantes always encouraged me to think outside the box. For instance, after a drainage tube is placed in the eye, sometimes the tube is too close to the cornea. To fix this, we usually have to take the patient back to the OR, pull the tube out of the eye, and redirect it. I once asked Dr. Fantes, “Why can’t we use an argon laser to melt and bend the tube?” Dr. Fantes looked at me and said, “It won’t work. The tube won’t take

up the energy from argon.” I was like, “Are you sure? How do you know?” He smiled, opened his drawer, cut a piece of tubing and handed it to me. Instead of simply telling me why, he encouraged me to find out for myself. Dr. Fantes also assisted me in developing several instruments, including a spatula for bleb revision and a double muscle hook. He was happy to see someone think differently.

The second person I’d nominate is Dr. Fellman, my senior partner. He has been practicing for more than 35 years and is still asking questions, still learning, still

unafraid to fail, and still curious. In the beginning of his career, he and John Lynn, MD, performed the first external trabeculotomy under a flap in the United States. Then, together we did the first ab interno circumferential trabeculotomy (GATT) in the world. He is the creative genius behind GATT. In his career, Dr. Fellman has been integral in both aspects of these techniques and he also coined the term *canaloplasty*. He has a gift for words, an unparalleled level of enthusiasm for creation, and a relentless intellectual curiosity. ■

1. Grover DS, Godfrey DG, Smith O, Feuer WJ, Montes de Oca I, Fellman RL. Gonioscopy-assisted transluminal trabeculotomy, ab interno trabeculotomy: technique report and preliminary results. *Ophthalmology*. 2014;121(4):855-861.

Editor's Note: This is an abridged version of Dr. Grover's interview. To read the entire interview, log onto www.glaucomatoday.com/issues/ and click on the May/June issue.

DAVINDER S. GROVER, MD, MPH

- Glaucoma Associates of Texas
- Member, *Glaucoma Today* Editorial Board
- davindergrover@gmail.com
- Financial disclosure: None