



# Comparison of Trabectome Ab Interno Trabeculectomy to Baerveldt Glaucoma Implants using Propensity Score Matching



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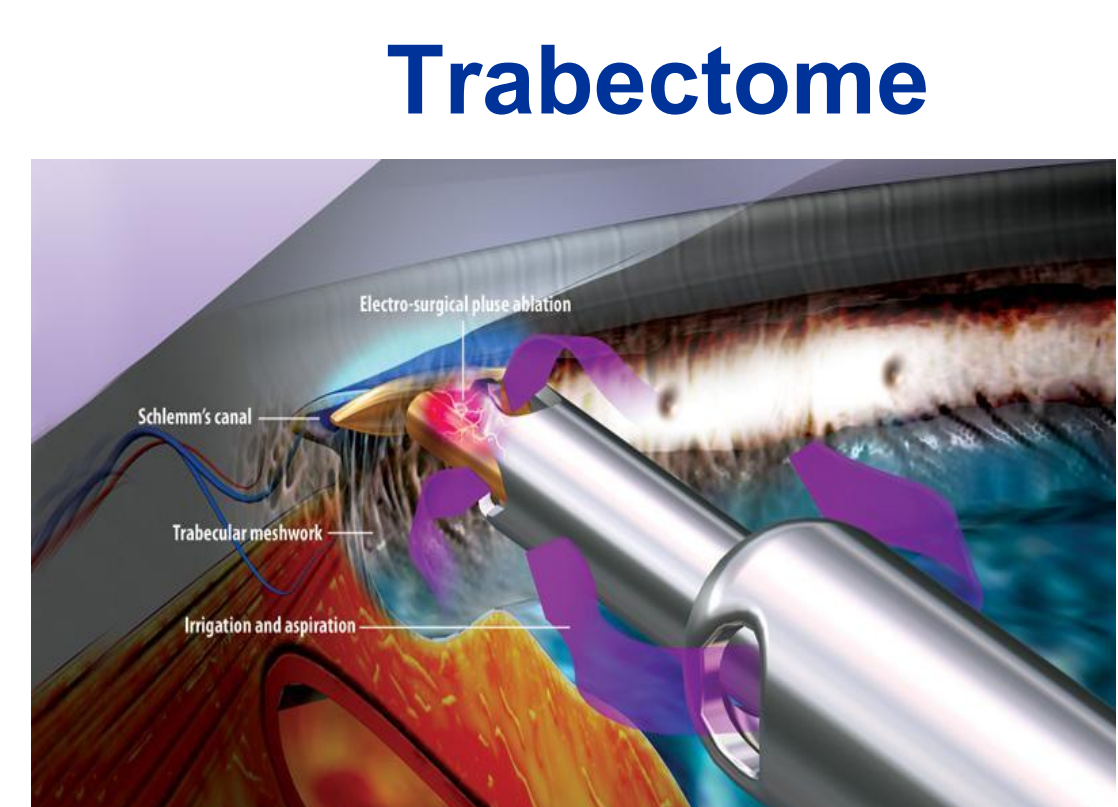
## Background

- Intraocular Pressure (IOP) outcomes for ab interno trabeculectomy with the Trabectome (T), a minimally invasive glaucoma surgery, have had relatively similar IOP results to trabeculectomy.[i,ii]
- T rarely causes serious complications and has about 10 times less non-serious complications compared to trabeculectomy or aqueous shunts and serious complications occur in <1%. [iii]
- Because of the above, we are now using T also in moderate to very advanced glaucoma for initial surgeries.
- No manuscript has yet compared IOP outcomes of T to Baerveldt Glaucoma Implants (BGI).

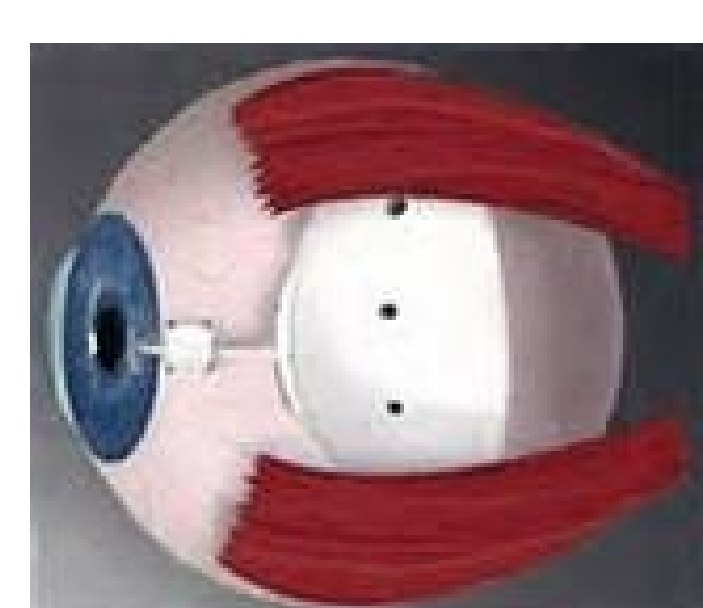
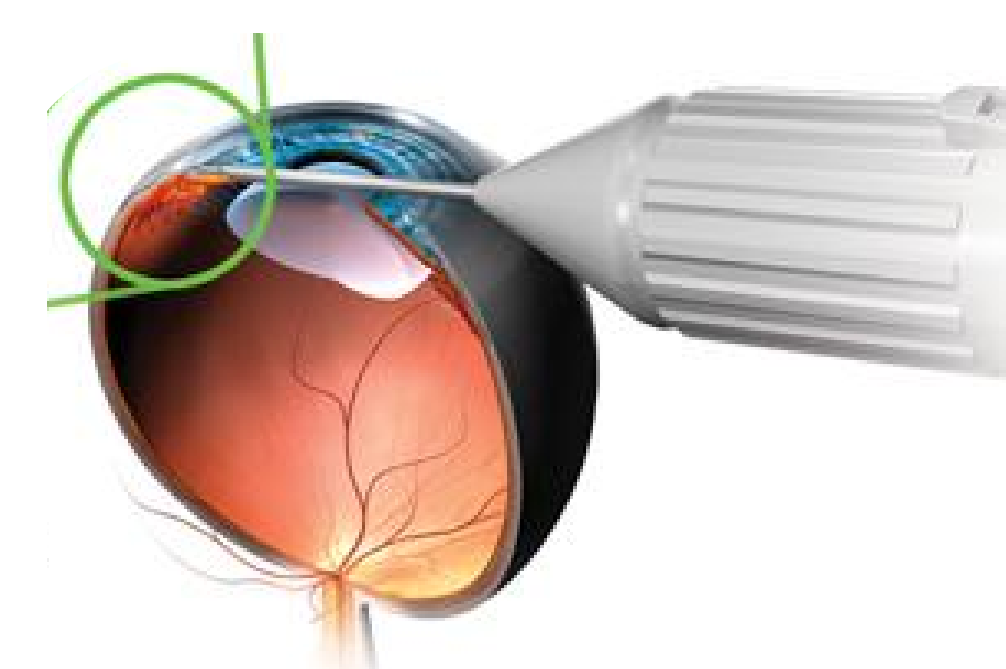
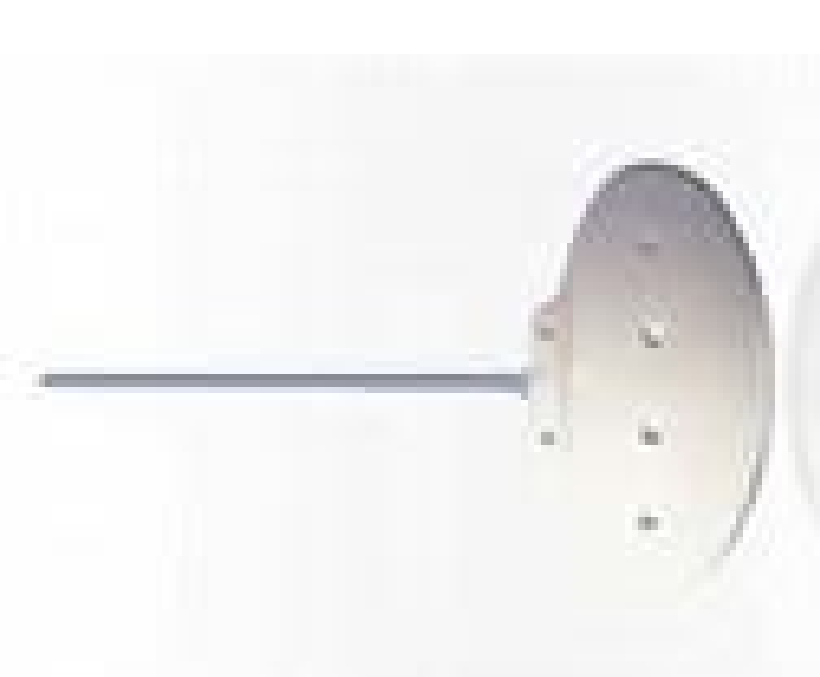
## Purpose

- To compare the IOP reduction, number of medications, and complications after trabecular meshwork ablation with T vs trabecular bypass with the BGI.

## Methods



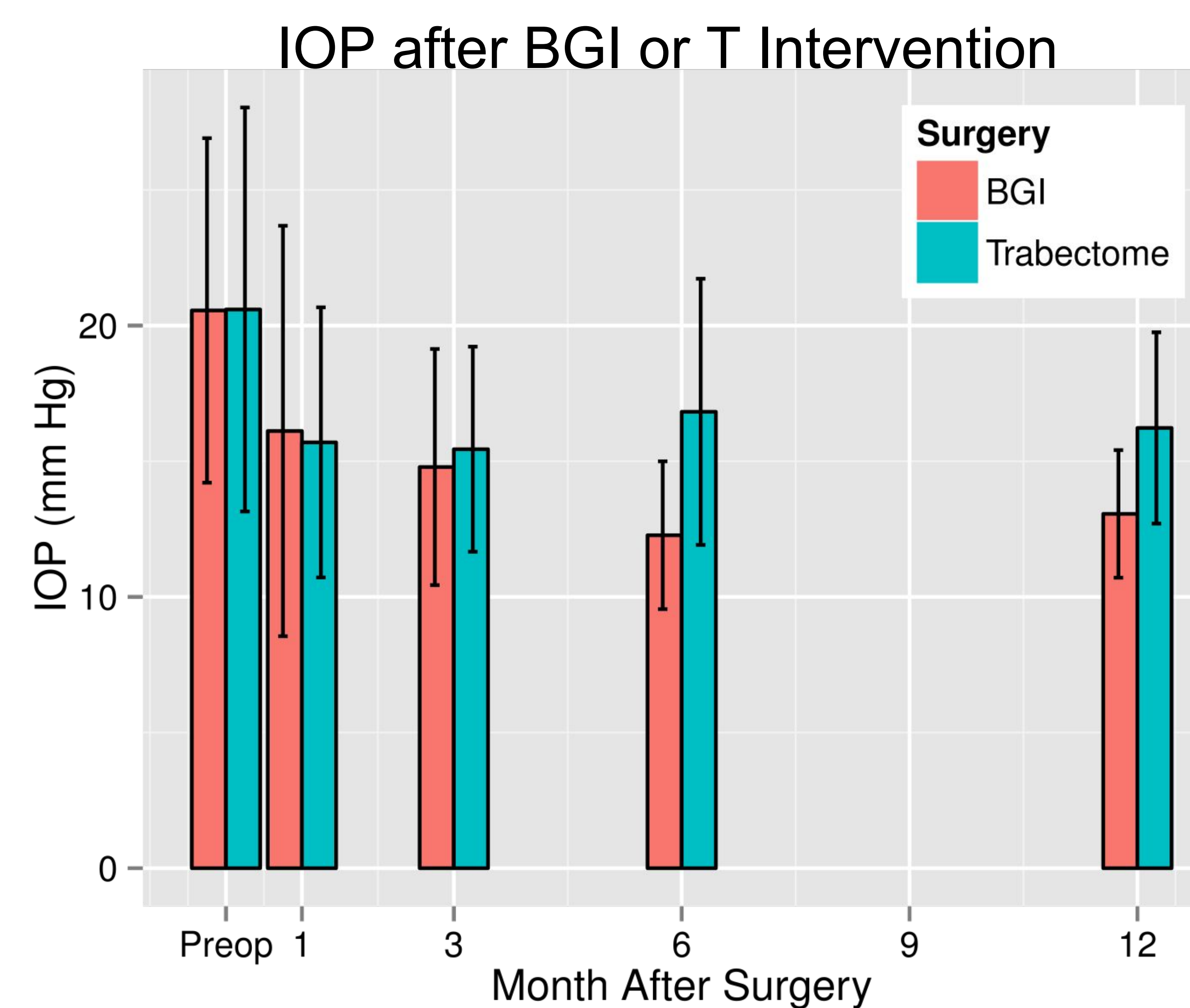
BGI



- 1 year IOP ~ 15 mmHg
- fast, safe
- no permanent hardware
- needs clear cornea
- significant learning curve
- 1 year IOP ~ 13 mmHg
- non-valved = fast IOP drop
- tube can erode
- typically used for more advanced cases
- Retrospective study of outcomes of T (n=94) to BGI (n=60) up to 1 year.
- Cases were matched with propensity-score matching using a genetic algorithm based on age, gender, type of glaucoma, concurrent phacoemulsification, and baseline IOP and number of glaucoma medications. Cases of T or BGI too different from their counterparts were excluded.
- Procedures were performed by the same group of surgeons on comparable patient populations for primary and secondary open angle glaucomas and chronic angle closure.
- Exclusion criteria consisted of neovascular glaucoma and <6 months of follow up
- IOP and number of medications were compared with a non-paired Student's t-test and considered significant if  $p < 0.05$ .

## Results

- Prior to matching, T had a preoperative IOP of  $21.2 \pm 7.8$  mmHg on  $2.6 \pm 1.8$  medications. After 1 year, the IOP had decreased to  $15.9 \pm 4.2$  and the number of medications decreased to  $1.9 \pm 1.7$ .
- Prior to matching, BGI had a preoperative IOP of  $20.4 \pm 7.3$  mmHg on  $2.7 \pm 1.2$  medications. After 1 year, the IOP decreased to  $13.7 \pm 4.1$  mmHg and the number of medications increased to  $2.0 \pm 1.4$ .
- Matching resulted in 127 cases with at least 6 months of follow-up similar enough to justifiably compare.
- At 3 months, the difference in average IOP between BGI and T was insignificant at  $0.8 \pm 1.2$  mmHg (95% CI: -1.4 to 3.0 mmHg).
- At 6 months, BGI IOP was significantly lower by  $-2.7 \pm 0.9$  mmHg compared to T (95% CI: -4.4 to -1.1 mmHg).
- At 12 months, the BGI group has a significantly lower IOP by  $-3.2 \pm 0.9$  mmHg compared to T (95% CI: -5.0 to -1.5 mmHg).



# Months Postoperative	T, n	T Postoperative IOP, mmHg	BGI, n	BGI Postoperative IOP, mmHg	p-value
Preop	42	20.6±7.4	37	20.6±6.3	p>0.5
1	36	15.7±5.0	25	16.1±7.6	p>0.5
3	25	15.4±3.8	28	14.8±4.4	p>0.5
6	13	16.8±4.9	11	12.3±2.7	p<0.01
12	9	16.3±3.5	17	13.0±2.4	p<0.01

## Discussion

- T and BGI had similar IOPs for the first 3 months.
- At 6 and 12 months, the IOP was significantly lower (2.7 and 3.2 mmHg respectively) following BGI in comparison to T.
- This further IOP decrease with BGI occurred despite a similar number of medications compared to T at 12 months (2.0 vs 1.9).
- The number of glaucoma medications dropped similarly between BGI and T at 12 months post-op (0.7 vs 0.7).

## Conclusions

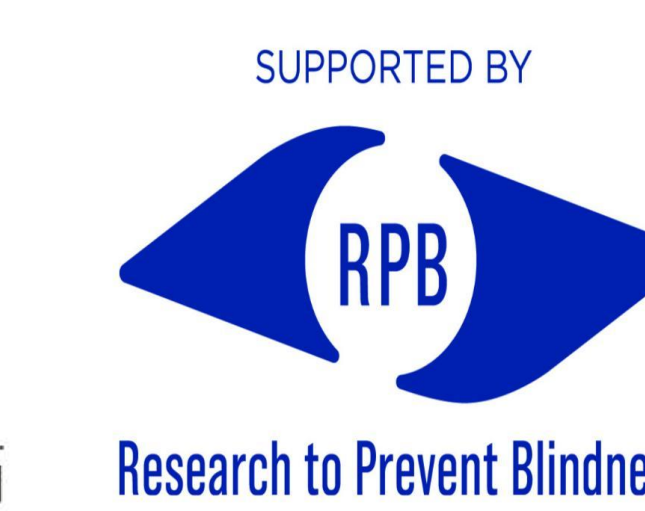
- After 6 months, BGI had a lower average IOP with a similar number of medications.
- BGI was able to maintain the significantly lower IOP through 12 months on a similar number of medications.
- Results of this study will allow informed design of RCTs or larger studies that can also match for medication strategies and justify crossover in case of failure.
- In this retrospective study of two glaucoma surgeries with well established, highly different profiles of complications, costs and length of procedure, BGI lowered IOP approximately 3.2 mmHg more than AIT in closely matched patient populations with similar a reduction of medications.

## Disclosures

Steven Wang (szw11@pitt.edu), Evan Lagouros, Kevin Kaplowitz, Eric Brown, Sushma Kola, Julia Polat, Rachel Davis, Joel S. Schuman: None.  
Nils Loewen (loewen.nils@gmail.com): Trabectome Trainer.

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## References

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