Comparison of Trabectome Ab Interno Trabeculectomy to Baerveldt and Ahmed Glaucoma Implants

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Purpose

● To compare reduction of intraocular pressure (IOP) and number of medications after trabecular meshwork ablation with the Trabectome (T) to Ahmed (AGI) or Baerveldt (BGI) aqueous shunts which bypass the conventional drainage system.
● Surprisingly, IOP outcomes for T, a minimally invasive glaucoma surgery, versus trabeculectomy have shown similar IOP results [i] but the success rates were lower.[ii]
● T rarely causes serious complications and has about 10 times less non-serious complications compared to trabeculectomy or aqueous shunts.[iii]
● Because of the above, we are now using T also in moderate to very advanced glaucoma for initial surgeries.
● T has not been compared to AGI or BGI.

Methods

Trabectome

Baerveldt

Ahmed

1 year IOP ~ 15 mmHg
fast, safe
no permanent hardware
needs clear cornea
significant learning curve

1 year IOP ~ 14 mmHg
nonvalved = no obstruction
works well in uveitis
tube can erode

1 year IOP ~ 17 mmHg
valved = fast IOP lowering
works well in uveitis
valve can obstruct
tube can erode

Eyes with 1 Year Follow Up Only

Results

All Eyes

● T had a preoperative IOP of 22.0±7.7 mmHg that decreased to 14.7±3.4 mmHg at 6 months and 14.9±3.9 mmHg at 12 months (32% decrease). The number of medications dropped from 1.8 to 0.7.
● BGI had a preoperative IOP of 22.8±7.8 mmHg that decreased to 14.1±12.5 mmHg at 6 months and 14.5±12.5 mmHg at 12 months (45% decrease). The number of medications dropped from 3.0 to 2.1.
● AGI had a preoperative IOP of 31.2±8.9 mmHg that decreased to 17.2±5.1 mmHg at 6 months and 16.7±6.2 mmHg at 12 months (46% decrease). The number of medications dropped from 2.7 to 2.2.
● IOPs at 6 and 12 months were not significantly different between T and BGI (p>0.05) or T and AGI (p>0.05).
● Drop rates were reduced in T by 0.9, in BGI by 0.9 and in AGI by 0.5.
● In T, transient cystoid macular edema (CME) occurred in 0.8% and 4.8% required further surgery. In AGI, there was hypotony in 6%, wound leaks in 4%, and cystoid macular edema in 4% while 5% required further surgery. In AGI, there were choroidal effusions in 7% and 7% required further surgery.

Eyes with 1 Year Follow Up

T

BGI

AGI

Discussion

● T, BGI and AGI had similar final IOPs and reduction of glaucoma medications at 6 and 12 months.
● Reoperation rate for IOP control was similar in all 3 groups.
● In contrast to BGI and AGI, patients who underwent T had no serious complications.
● Percent reduction of IOP was highest in AGI due to a higher preoperative IOP. Baseline and postoperative IOP of T and BGI were very similar while both were higher in AGI possibly reflecting the use of valved AGIs to lower IOP acutely.
● Reduction of medications was the same in T and BGI but less in AGI.
● Use of one more medication at baseline in AGI and BGI suggest that IOP might have been more difficult to control in these groups. Data will benefit from stratification or matching by glaucoma stage and medications.

Comparison of Trabectome Ab Interno Trabeculectomy versus trabeculectomy and cataract surgery in open-angle glaucoma. Clinical and Surgical Ophthalmology, 29, 2.

Conclusion

● T and BGI were similar although the mechanism of IOP reduction in T requires a patent natural drainage system while BGI bypasses it.
● Results of this study will allow informed design of RCTs or matching strategies and justify crossover in case of failure.

Disclosures

Sushma Kola (suk55@pitt.edu), Evan Lagouros, Kevin Kaplowitz, Rachel Davis, Joel Schuman: None.
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References