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).

Methods

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

Results

- Prior to matching, T had a preoperative IOP of 21.2±7.8 mmHg on 2.6±1.8 medications. After 1 year, the IOP had decreased to 15.9±4.2 and the number of medications decreased to 1.9±1.7.
- Prior to matching, BGI had a preoperative IOP of 20.4±7.3 mmHg on 2.7±1.2 medications. After 1 year, the IOP decreased to 13.7±4.1 mmHg and the number of medications increased to 2.8±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±1.2 mmHg (95% CI: -1.4 to 3.0 mmHg).
- At 6 months, BGI IOP was significantly lower by -2.7±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±0.9 mmHg compared to T (95% CI: -5.0 to -1.5 mmHg).

IOP after BGI or T Intervention

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

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

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References