Glaucoma Surgery in 2020

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Inspirational quotes

- “Everything should be made as simple as possible, but not simpler.”
  - Attributed to Albert Einstein
- “If you vary your technique from case to case, it means you haven’t found the best technique. For anything we do in life, there are a million inefficient ways to do it and only one truly efficient way.”
  - F. Don Parsa, MD, Honolulu Plastic Surgeon
- “Every additional step of a surgery brings with it its own associated complications.”
  - J Liebmann, Columbia University
Traditional Ahmed Valve Technique

1. Conjunctival peritomy (at Limbus)
2. Place Plate 8-10 mm back from limbus
   - Suture plate islets to sclera (nylon)
3. Place tube tip bevel up into AC
   - Suture tube to sclera (with nylon)
4. Suture patch graft to the sclera
   - Vicryl or nylon
5. Close conjunctiva
   - Usually with vicryl
Less invasive (suture-less) Ahmed Technique

- Technically, the ahmed valve only involves a 23 g needle tract into the eye
- Most MIGS have 1.8mm corneal incisions
- Typical valve surgery: about 9-11 separate sutures
  - Tube plate: 2 sutures 8-0 nylon
  - Tube to sclera: 1-2 sutures 8-0 nylon
  - Patch graft: up to 4 sutures!
  - Conj closure: running or interrupted
MIGSy Ahmed – proposed changes

- Don’t suture if safe to avoid it– let the limited tissue dissection hold the valve in place
  - Patch grafts have nowhere to go (unless cornea tissue is used)
- Retrobulbar ahmed plate placement will keep valve posterior
- Long tube track (4-5mm) holds tube in place
- Use tisseal glue or resure to close the conj
  - Make conj incision more posterior to lessen wound tension
Sutureless Ahmed
Surgical outcomes associated with a sutureless drainage valve implantation procedure in patients with refractory glaucoma

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Purpose: To evaluate the safety and efficacy profile of a sutureless procedure for drainage valve implantation with combined cataract removal and/or endoscopic cyclophotocoagulation (ECP).

Materials and methods: A retrospective case series study of consecutive surgeries for Ahmed glaucoma valve (AGV; New World Medical) implantation in a 1-year period was analyzed. The surgery was performed using a Tisseel fibrin sealant (Baxter Healthcare Corporation) in place of sutures. Some subsets within the case series also included a cataract extraction with intraocular lens (CEIOL) insertion and/or ECP (Endo Optiks) within the same procedure. Primary outcomes for this study including efficacy (IOP change, reduction in medications) and safety (complications, retreatment, device failure) were recorded.
Purpose

To evaluate the safety and efficacy profile of a sutureless procedure for drainage valve implantation with combined cataract removal and/or endoscopic cyclophotocoagulation.
Methods

- Retrospective case series analysis of 122 sutureless Ahmed glaucoma valve (AGV; New World Medical, Rancho Cucamonga, CA) surgeries over a 1 year period
- Fibrin sealant, Tisseel (Baxter Healthcare Corp., Deerfield, IL), used in place of sutures
- Subset analysis compared efficacy of combined AGV implantation with cataract surgery and ECP (ACE procedure)
- Primary Outcomes: IOP change, # of meds, # of complications, # of re-operations
- Mean Follow-up Time: 25.8 ± 14.7 months
Mean IOP at baseline and post-operative follow-up visits

IOP

Baseline N=122
1 month N=107
3 months N=83
6 months N=75
1 year N=61
2 years N=45
3 years N=35

A
CA
AE
ACE
Mean # of meds at baseline and post-operative follow-up visits

<table>
<thead>
<tr>
<th>Time</th>
<th>Number of Meds</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>3.4</td>
<td>121</td>
</tr>
<tr>
<td>1 month</td>
<td>2.6</td>
<td>107</td>
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<tr>
<td>3 months</td>
<td>2.2</td>
<td>83</td>
</tr>
<tr>
<td>6 months</td>
<td>1.9</td>
<td>75</td>
</tr>
<tr>
<td>1 year</td>
<td>1.8</td>
<td>60</td>
</tr>
<tr>
<td>2 years</td>
<td>1.6</td>
<td>45</td>
</tr>
<tr>
<td>3 years</td>
<td>1.5</td>
<td>35</td>
</tr>
</tbody>
</table>

Number of Meds at baseline and post-operative follow-up visits.
## Re-operations following initial surgery for uncontrolled glaucoma

<table>
<thead>
<tr>
<th>Procedure</th>
<th>0-12 months</th>
<th>13-24 months</th>
<th>25-36 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transscleral cyclophotocoagulation</td>
<td>4</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Cataract Extraction with ECP</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Revision of AGV for bleb needling and ECP</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Trab360 trabeculotomy with other procedure</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Revision of first AGV for bleb needling and insertion of second AGV</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Insertion of a second AGV</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Insertion of a BVT</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Insertion of a Xen gel stent</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total number of re-operations due to uncontrolled glaucoma (%)</strong></td>
<td>-</td>
<td>-</td>
<td>18 (14.8%)</td>
</tr>
<tr>
<td>Procedure</td>
<td>0-12 months</td>
<td>13-24 months</td>
<td>25-36 months</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>-------------</td>
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<td>--------------</td>
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<tr>
<td>Revision for conjunctival erosion</td>
<td>1</td>
<td>-</td>
<td>1</td>
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<tr>
<td>Tube Trimming for anterior migration</td>
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<tr>
<td>Prophylactic tube trimming with other procedure</td>
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<td>Revision for extrusion</td>
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<tr>
<td>Revision for iris obstruction</td>
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<td>Revision for heme in tube</td>
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<td>Revision for synechiae after uveitis</td>
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<td>AC Washout for hyphema</td>
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<tr>
<td>AGV Removed for Dysesthesia</td>
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<tr>
<td>DSEK for corneal decompensation</td>
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<td>-</td>
<td>-</td>
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<tr>
<td>Total number of re-operations due to complication (%)</td>
<td>-</td>
<td>-</td>
<td>13 (10.7%)</td>
</tr>
</tbody>
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My ClearPath Surgery

- Requires slightly more suturing than Ahmed
- ClearPath will likely use the same sutures as Baerveldt
  - In my opinion, easier to place ClearPath 250 and 350, has a nice low profile
- ClearPath 250 fits nicely into ST quadrant, can be placed “retrobulbar”
- Tube seems easier to tie off and test
- Outcomes anecdotally excellent/similar to Baerveldt
The Ahmed valve is the workhorse of the busy glaucoma practice for immediate IOP reduction.
- It can be made easier.
- The ClearPath offers a new non-valved option for glaucomas requiring a lower target IOP.