# Ex-PRESS Mini Glaucoma Shunt for the surgical management of complex glaucoma

**Ejaz Ansari, FRCOpht MD**

Eye Ear and Mouth Unit, Maidstone and Tunbridge Wells NHS Trust  
Dept of Physical Sciences, University of Kent at Canterbury, U.K.

## Purpose:
To assess the safety and efficacy of Ex-PRESS Mini glaucoma (EMG) shunt for the surgical treatment of complex glaucoma.

## Methods:
EMG shunt was inserted in the following cases of complex glaucoma:

1. Failed glaucoma drainage surgery
2. Multiple co-morbidity/high risk (proliferative diabetic retinopathy, neovascular glaucoma, vitreо-retinal surgery, OSD).

Surgical procedure was in accordance with published methods. 10 cases of complex glaucoma were reviewed retrospectively over a period at least 6 months following surgery.

The end-points were:

- intraocular pressure (IOP)
- number of glaucoma drops used
- visual acuity

Unqualified success was defined as IOP < 19 mmHg without glaucoma drops, and qualified success was IOP < 19 mmHg with the use of drops. Complications were noted.

## Results:
7 cases (70%) were successful at a mean of 6 months post-operatively without drops with a mean IOP of 11.6mmHg (sd 1.6mmHg).

3 cases required drops to achieve the target IOP, the mean IOP being 18.7mmHg (sd 0.8 mmHg) with a mean of 1.3 glaucoma medications required at 6 months post-operatively. (3.7 pre-op 1.3 post-op, p<0.05)

All cases requiring additional topical treatment had ocular co-morbidity, e.g. diabetic retinopathy/retinal detachment or both.

Visual acuity was preserved in all cases,

There was one case of vitreous haemorrhage in the immediate post-operative period that took 2 months to resolve in a patient with type 1 diabetes mellitus (DM).

One patient with type 1 DM needed post-operative intravitreal Bevacizumab injection for neovascular changes in the anterior segment. This was not followed by a deterioration of IOP control.

The cases that were unqualified success were of previous failed trabeculectomy without systemic co-morbidity.

## Conclusion:

- EMG shunt was safe and effective in controlling IOP in complex cases of glaucoma
- EMG shunt was relatively easy to insert with a minimum of post-operative manipulations
- The IOP was stable and predictable at 6 months; the IOP was reduced significantly at 6 months (p<0.05) with a significant reduction in medications (p<0.05)
- Multiple co-morbidities were associated with less chance of unqualified success
- Although a small cohort, the experience so far in treating complex cases with EMG shunt has been very encouraging and the study is continuing with more data being collected

## Table showing case types, pre and post IOP and VA, and complications

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age (years)/Sex</th>
<th>Diagnosis/complexities</th>
<th>Pre-op IOP drops</th>
<th>Post-op IOP (6 months)</th>
<th>V.A. pre-op</th>
<th>V.A. post-op</th>
<th>Complications/post-op treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20/F</td>
<td>Type I DM; neovascular glaucoma; PRP laser</td>
<td>38/4</td>
<td>20/2</td>
<td>6/18</td>
<td>6/18</td>
<td>Vitreous haemorrhage</td>
</tr>
<tr>
<td>2</td>
<td>38/M</td>
<td>Type I DM; neovascular glaucoma; PRP laser + IVT Bevacizumab; TRD-RO surgery</td>
<td>39/3</td>
<td>17/1</td>
<td>6/12</td>
<td>6/12</td>
<td>Bevacizumab</td>
</tr>
<tr>
<td>3</td>
<td>40/M</td>
<td>Type 2 DM; neovascular glaucoma; PRP</td>
<td>44/4</td>
<td>19/1</td>
<td>6/12</td>
<td>6/12</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>40/M</td>
<td>Failed trabeculectomy; pseudophakic; Asian-Caribbean</td>
<td>28/3</td>
<td>12/0</td>
<td>6/36</td>
<td>6/36</td>
<td>10mg 5FU</td>
</tr>
<tr>
<td>5</td>
<td>65/F</td>
<td>Failed trabeculectomy; pseudophakic; African</td>
<td>22/4</td>
<td>10/0</td>
<td>6/9</td>
<td>6/9</td>
<td>10mg 5FU</td>
</tr>
<tr>
<td>6</td>
<td>77/M</td>
<td>Failed trabeculectomy; pseudophakic; OSD</td>
<td>25/3</td>
<td>14/0</td>
<td>6/12</td>
<td>6/12</td>
<td>10mg 5FU</td>
</tr>
<tr>
<td>7</td>
<td>69/F</td>
<td>Failed trabeculectomy; pseudophakic; OSD</td>
<td>23/4</td>
<td>12/0</td>
<td>6/9</td>
<td>6/9</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>69/M</td>
<td>Failed trabeculectomy; pseudophakic; OSD</td>
<td>22/4</td>
<td>10/0</td>
<td>6/9</td>
<td>6/9</td>
<td>10mg 5FU</td>
</tr>
<tr>
<td>9</td>
<td>64/F</td>
<td>Failed trabeculectomy; pseudophakic; OSD</td>
<td>30/3</td>
<td>12/0</td>
<td>6/24</td>
<td>6/24</td>
<td>10mg 5FU</td>
</tr>
<tr>
<td>10</td>
<td>69/M</td>
<td>Failed trabeculectomy; pseudophakic; OSD</td>
<td>23/4</td>
<td>11/0</td>
<td>6/18</td>
<td>6/18</td>
<td></td>
</tr>
</tbody>
</table>

## Reference:

1. Implantation of a miniature glaucoma device under a scleral flap.  
   Dahan E, Carmichael TR. J Glaucoma 2005 Apr;14(2):98-102

Figure 1: Ex-Press Shunt in situ