Clinical Outcomes in Bilateral Sequential Rhegmatogenous Retinal Detachment

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Summary

• **Largest series (504 eyes) of sequential, bilateral rhegmatogenous retinal detachments (RRD)** repaired with scleral buckle (SB), pars plana vitrectomy (PPV) or combined SB/PPV.

• Goal was to assess clinical outcomes by utilizing a **paired-eye comparison** rather than conglomeration of RRD from different patients.

• Single operation anatomic success (SOAS) was similar for each eye but the **second eye is more likely to present earlier and have less anatomic involvement**, but final VA outcomes were similar.

• **PPV/SB yielded significantly higher SOAS than PPV or SB alone.**
Background

• Rhegmatogenous retinal detachment (RRD)
  • Significant evolution in surgical management.
  • Single operation anatomic success (SOAS) – most ideal for visual outcome.
  • The choice of surgical technique may impact outcome: PPV, SB, PPV/SB and pneumatic retinopexy.

• Bilateral RRD occurs in about 3-31% of all cases.
  • Concomitant vitreous base/retinal pathology in both eyes – the “fellow-eye” syndrome.

• ‘Paired-eye’ comparison of bilateral RRD.
  • Fellow eye is a matched control to compare surgical management.
Methods – Subjects

• Retrospective, multi-center study over an 11 year period (2008-2019).

Inclusion Criteria
• Adults >18 years
• Primary RRD
• 6 months postoperative follow up
• RRD treated with PPV, SB or PPV/SB

Exclusion Criteria
• Hereditary vitreoretinopathy
• Viral retinitis
• Simultaneous bilateral RRD
• Prior vitrectomy or pneumatic retinopexy in either eye
Methods – Clinical Outcome Measures

• Anatomic characteristics of RRD
  • Lens status, PVD, VH, macular attachment, quadrants of detachment

• Surgical procedures
  • Type of procedure (PPV only, SB only or combined SB/PPV) and re-operation(s)

• Visual outcome
  • Baseline, 3 months, 6 months, and final follow up
Analysis

First and Second Eye RRD
- SOAS
- Anatomic characteristics
- Postoperative visual outcomes

Paired-Eye Surgical Comparison
- Different surgical procedure in each eye
## Results – First and Second Eye RRD

<table>
<thead>
<tr>
<th></th>
<th>First Eye (N=252)</th>
<th>Second Eye (N=252)</th>
<th>P value</th>
</tr>
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<tbody>
<tr>
<td>SOAS</td>
<td>208 (82.5%)</td>
<td>211 (83.7%)</td>
<td>0.80</td>
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<td>Overall SOAS</td>
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<td>419 / 504 eyes (83.1%)</td>
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<td>Total surgeries</td>
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<td>Macula off</td>
<td>141 (56.0%)</td>
<td>86 (34.1%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Quadrants of detachment</td>
<td>2.0 ± 0.9</td>
<td>1.9 ± 0.9</td>
<td>0.01</td>
</tr>
<tr>
<td>Baseline VA</td>
<td>20/149</td>
<td>20/62</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>3 month VA</td>
<td>20/58</td>
<td>20/45</td>
<td>0.002</td>
</tr>
<tr>
<td>6 month VA</td>
<td>20/49</td>
<td>20/41</td>
<td>0.03</td>
</tr>
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<td>Final VA</td>
<td>20/37</td>
<td>20/36</td>
<td>0.68</td>
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# Results – Paired-Eye Comparison of Surgical Technique

<table>
<thead>
<tr>
<th>Surgery 1</th>
<th>Surgery 2</th>
<th>N</th>
<th>SOAS</th>
<th>P value</th>
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<tr>
<td>PPV/SB</td>
<td>PPV or SB</td>
<td>75 patients</td>
<td>PPV/SB: 72/75 (96.0%) PPV or SB: 52/75 (69.3%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>PPV/SB</td>
<td>PPV only</td>
<td>58 patients</td>
<td>PPV/SB: 52/58 (89.7%) PPV: 40/58 (69.0%)</td>
<td>0.01</td>
</tr>
<tr>
<td>PPV/SB</td>
<td>SB only</td>
<td>17 patients</td>
<td>PPV/SB: 15/17 (93.8%) SB: 12/17 (70.6%)</td>
<td>0.45</td>
</tr>
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Limitations

• Retrospective cohort study design.

• Bilateral RRD patients may have more abnormal vitreous base and therefore more complex RD.

• Though paired eye comparison may serve as an ‘ideal control’ – still imperfect.
  • Contralateral eye RRD may present distinctly and varied from the initial eye RRD.
Conclusions

• Patients with bilateral, sequential RRD have similar visual and surgical outcomes between eyes.
• Largest clinical series of bilateral sequential RRDs to date.
• Macula off RRD is less common in the second eye.
• Bilateral, sequential RRD is a unique scenario to evaluate surgical outcomes between different surgical techniques.
  • PPV/SB may yield a higher SOAS than either procedure alone.
  • Placement of a supplemental SB during PPV may increase SOAS compared to PPV alone.