

Pars Plana Vitrectomy with and without Supplemental Scleral Buckle for the Repair of Rhegmatogenous Retinal Detachment: A Meta-Analysis

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Introduction

- Pars plana vitrectomy (PPV) with and without supplemental scleral buckling (PPV+SB) are commonly used to repair rhegmatogenous retinal detachments (RRD).
- It is unclear whether there are differences in the safety and efficacy of PPV vs PPV+SB for the treatment of RRD.
- Previous studies comparing these procedures have found conflicting differences in final visual or anatomic outcomes and a wide variability in the reported rates of postoperative complications.
- The purpose of this meta-analysis is to compare the efficacy and safety of PPV and SB in RRD.

Methods

- A systematic literature search was performed on Ovid MEDLINE, EMBASE and Cochrane CENTRAL from January 2000 to June 2021. Comparative studies reporting on the efficacy and/or safety of PPV and PPV+SB for the primary surgical management of RRD were included.
- The primary outcome was final best corrected visual acuity (BCVA). Secondary outcomes included reattachment rates and adverse events.

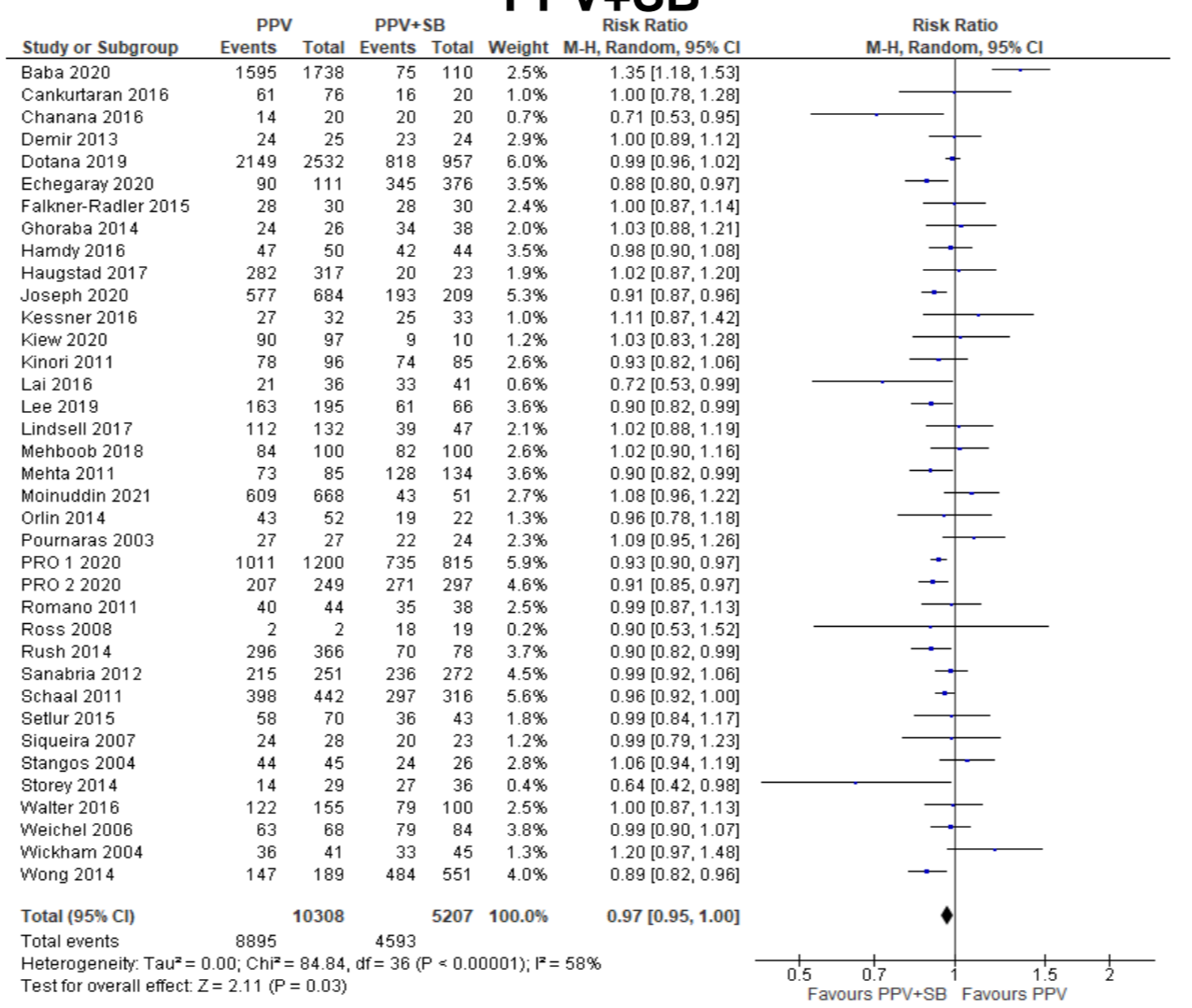
Results

- 38 studies (6 RCTs, 32 observational studies) reporting on 10,397 PPV and 5,264 PPV+SB eyes were included. Median follow-up was 6 months.
- PPV and PPV+SB had a similar final BCVA ($P=0.55$).
- PPV+SB had a significantly better primary reattachment rate compared to PPV (88.2% vs. 86.3%; risk ratio [RR]:0.97[0.95,1.00], $P=0.03$; NNT: 50). (Figure 1). There was no significant difference for final reattachment rates.

Results (continued)

- PPV required significantly more operations to achieve final retinal re-attachment compared to PPV+SB (1.3 ± 0.7 vs. 1.2 ± 0.4 ; weighted mean difference [WMD]:0.13 [0.02,0.24], $P=0.02$)
- PPV was less likely to be significantly associated with macular edema (6.0% vs. 19.0%; $P=0.02$; NNH: 20) and epiretinal membrane formation (8.1% vs. 9.5%; $P=0.02$; NNH: 50). These differences were not seen in studies after 2010.
- There were no significant differences between the two groups for other adverse outcomes, including strabismus, corneal defects, AC inflammation, hypotony, iris capture, cataract development, vitreous hemorrhage, endophthalmitis, PVR development, subretinal/choroidal hemorrhage, macular hole formation, or iatrogenic breaks.
- Subgroup analyses of PVR grade C or more, lens status, and macular attachment status did not mediate differences in effect.

Figure 1 – Primary Reattachment Rate for PPV vs PPV+SB



Discussion

- There was no statistically significant difference between PPV and PPV+SB for final BCVA. There was a slight preference for PPV alone, but this was driven by the inclusion of one study in the overall meta-analysis.
- PPV+SB was associated with a greater primary reattachment rate relative to PPV alone, although the magnitude of the effect is number needed to treat (NNT = 50).
- Future studies should be conducted to better understand individual patient and surgeon factors that lead vitreoretinal surgeons to choose PPV alone or PPV with a supplemental SB.

Conclusions

- For eyes with RRD undergoing PPV or PPV+SB, there was no significant difference in final BCVA.
- PPV+SB was associated with a greater primary reattachment rate, although the magnitude of the effect is small with a high number needed to treat.
- PPV required more operations to achieve final reattachment of the retina.
- Final reattachment rate and the rate of most adverse events were similar between procedures.

Disclosures

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