

Systematic Review of Choice of Management and Outcomes in Morning Glory Disc Syndrome

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Background

Morning Glory Disc Syndrome (MGDS) is a rare congenital anomaly of the optic disc associated with severe visual impairment and a high risk of retinal detachment.

Management strategies vary widely, with no established standard of care, and reported outcomes remain inconsistent across the literature.

- Management is challenging due to:
- Rarity of the condition
 - Heterogeneity of presentations
 - Absence of standardised treatment guidelines

Aims

- Review reported management strategies for MGDS-associated retinal detachment
- Evaluate anatomical and visual outcomes
- Identify common complications and recurrence patterns
- Assess emerging therapeutic approaches
- Highlight gaps in current evidence and future research needs

Methods

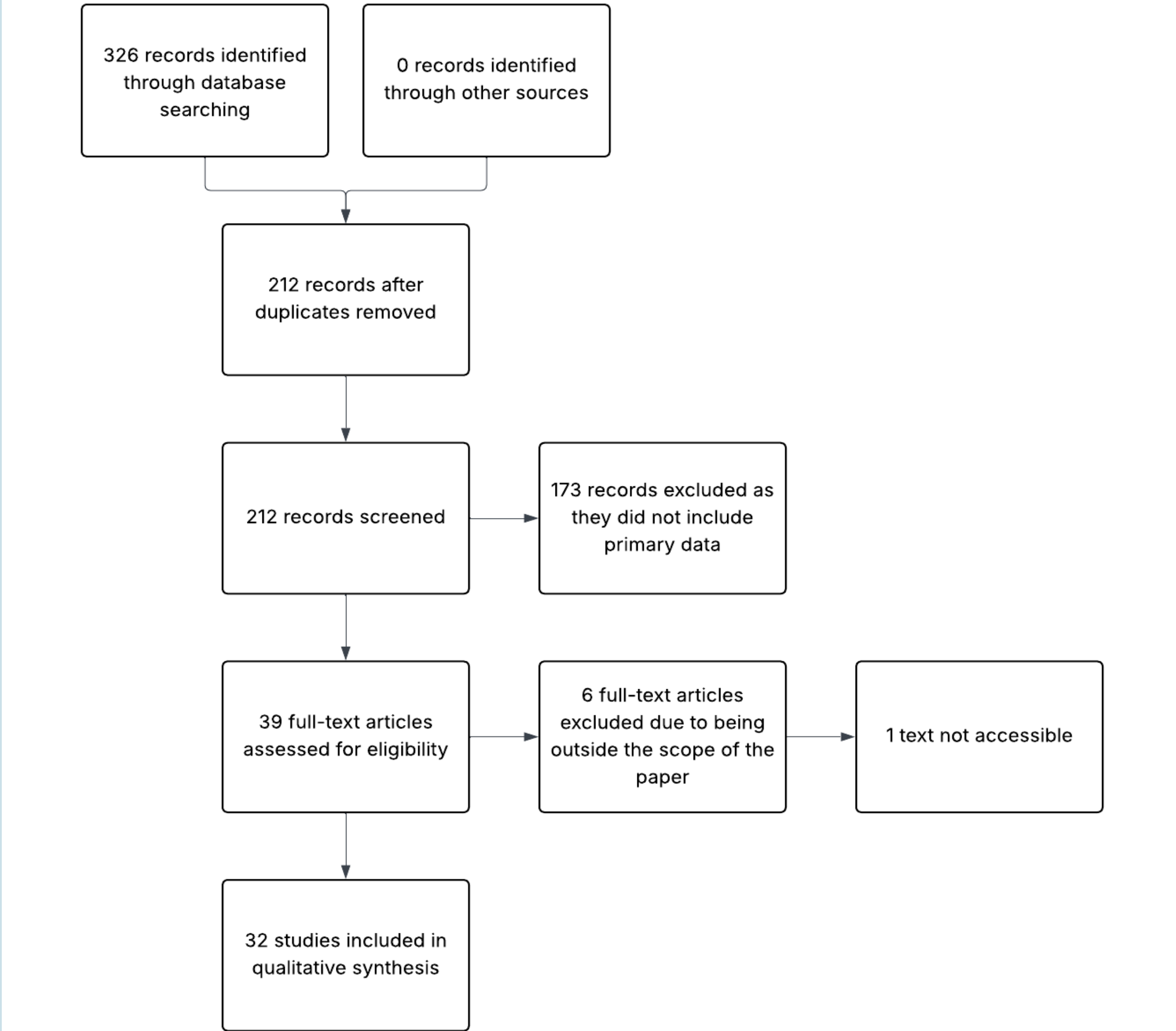
Study Design & Registration
Conducted according to PRISMA 2020 guidelines, prospectively registered on PROSPERO (CRD420251151504).

Search Strategy
Comprehensive search of PubMed, Web of Science, Ovid, Cochrane and Scopus with no date restrictions.

Eligibility Criteria
Included: Case reports, case series, cohort and interventional studies reporting outcomes of surgical, medical or rehabilitative management of MGDS.
Excluded: Studies not reporting outcomes; non-English; non-human studies.

Outcomes Assessed
Primary: Visual acuity; anatomical success (retinal reattachment).
Secondary: Complication rates, functional vision, long-term stability.

Risk of Bias
Assessed using Joanna Briggs Institute (JBI) critical appraisal checklists adapted for case reports and case series.

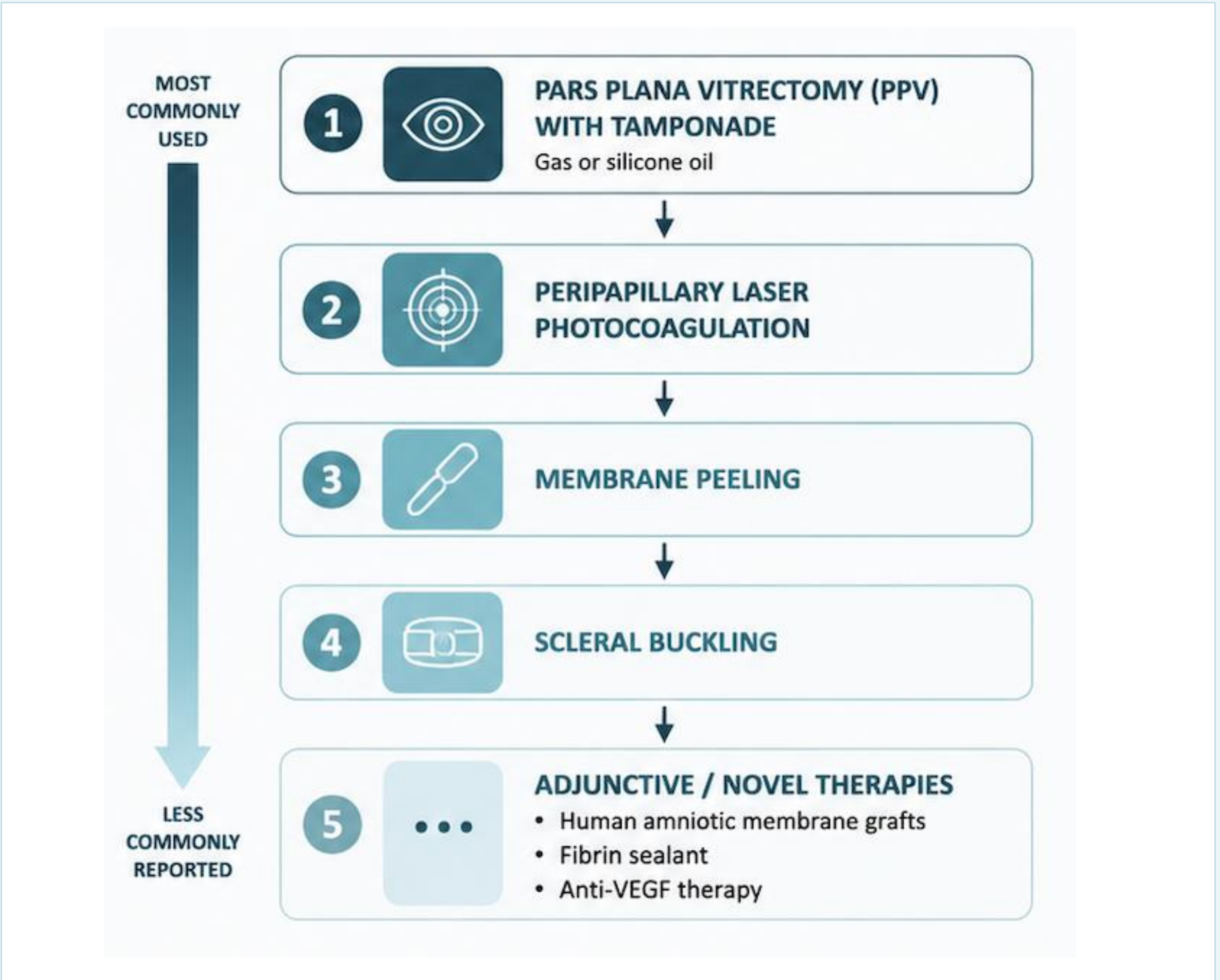


Results

32 Studies Included	118 Eyes Analysed	5 Databases Searched
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- Surgical Management**
Most reported:
- Pars plana vitrectomy (PPV) with gas/silicone oil tamponade
 - Frequently combined with:
 - Peripapillary laser photocoagulation
 - Membrane peeling
 - Scleral buckling
- Anatomical Outcomes**
Retinal reattachment frequently achieved
Several studies reported high or complete final anatomical success
- Functional Outcomes**
Visual outcomes highly variable
Some studies showed marked improvement (e.g. 20/80 → 20/20)
Others stabilised at poor acuity despite anatomical success
- Common Complications**
- Proliferative vitreoretinopathy (PVR)
 - Silicone oil emulsification
 - Secondary glaucoma
 - Recurrence of retinal detachment
- Emerging Therapies**
- Human amniotic membrane grafts
 - Fibrin sealant
 - Anti-VEGF therapy

Summary of Management Strategies



Conclusion

PPV with long-acting tamponade and adjunctive laser remains the mainstay management intervention for MGDS, achieving anatomical reattachment in many cases — although functional recovery is limited and recurrence rates are high.

Preventive juxtapapillary laser and novel techniques may offer benefit but require further investigation. Larger multicentre studies with standardised reporting and longer follow-up are urgently needed to establish clearer guidance for clinical practice.

- Key References**
- Kindler P. Am J Ophthalmol. 1970;69(3):376–384.
 - Chang S et al. Arch Ophthalmol. 1984;102(10):1435–1438.
 - Page MJ et al. BMJ. 2021;372:n71.
 - JBI Critical Appraisal Tools. 2020. jbi.global.