Muller's Muscle Conjunctival Resection versus External Levator Advancement for Ptosis Repair: Systematic Review and Meta-Analysis

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Introduction:

- Eyelid ptosis can be surgically corrected by external levator advancement (ELA) and Muller's muscle conjunctival resection (MMCR).
- The most important factors of determining the type of surgery include the degree of the levator function, amount and type of ptosis, response to phenylephrine test, and the surgeon's experience and comfort level with the procedure. [1]
- While both techniques are commonly utilized by oculoplastic surgeons, there have been few studies which compared the outcome of both interventions with no meta-analysis. [2-8]
- This is the first systematic review and meta-analysis in the literature to compare the outcomes of both techniques.

Methods and Aims:

A systematic review and meta-analysis were conducted in accordance with the PRISMA guidelines[9]. An electronic search was performed to identify all comparative studies comparing adjuvant Ologen implant and MMC during trabeculectomy.

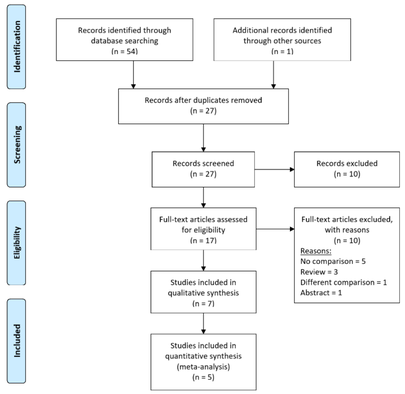


Figure 1: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Flow Diagram. The PRISMA diagram details the search and selection processes applied during the overview.

Results:

- Seven studies that enrolled 1038 eyelids were identified in the literature.
- Primary Outcomes:
  - There was no statistically significant difference between the MMCR and ELA groups in post-operative MRD1 (Mean Difference [MD] = 0.13, P = 0.28) and the rate of under-correction odds ratio [OR] = 0.49, P = 0.14). However, ELA had a significantly higher rate of over-correction (OR = 0.17, P = 0.04) and re-operations (OR = 0.26, P = 0.0001) compared to MMCR.
- Secondary Outcomes:
  - MMCR had an improved cosmetic appearance, lower total number of complications and shorter operation time (MD = - 10.96, P < 0.00001). Finally, the two techniques had no significant difference in the learning curves.

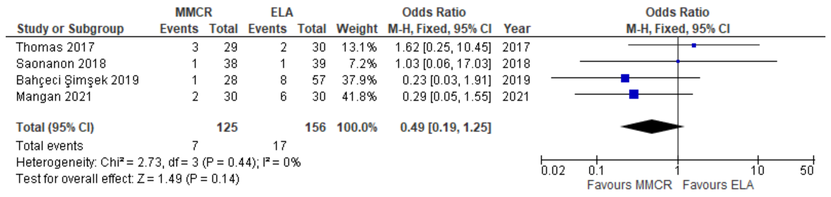


Figure 2: Forest plot for the odds ratio of Muller's muscle conjunctival resection (MMCR) versus external levator advancement (ELA) – under-correction.

Discussion and Conclusion

- The outcomes of this metanalysis revealed that MMCR is a more predictable technique if used in the appropriate setting (mild-to-moderate ptosis and positive phenylephrine test).
- In addition, it is more time-efficient technique with lower rates of over-correction and is less likely to require revision surgery.
- Other studies in the literature also demonstrated that MMCR is a great revision surgery for patients with residual ptosis following ELA with a positive phenylephrine test. [10-11]
- In conclusion, both MMCR and ELA are effective techniques for the surgical correction of ptosis; however, MMCR surgery is a more predictable and robust technique compared to, ELA with lower rates of over-correction and re-operation.

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