Adjunctive Use of Mitomycin C (MMC) for Revision Dacryocystorhinostomy (DCR): A Systematic Review and Meta-Analysis

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Introduction:

Epiphora resulting from nasolacrimal obstruction (NLDO) is a prevalent condition that can be managed through dacryocystorhinostomy (DCR) surgery[1]. The success rates of revision DCR are comparatively lower than primary DCR, primarily attributed to the formation of scar tissue around the sac[2]. Mitomycin C (MMC) is a well-established cytotoxic agent that has shown promise as an adjunct in various ocular and lacrimal procedures by effectively inhibiting fibrous tissue growth and enhancing surgical outcomes. Several studies have explored the benefits of MMC as an adjunctive modality in DCR[3-8], however there remains a lack of comprehensive evidence concerning its application in revision DCR cases.

Aim:

To compare the outcome of adjunctive use of mitomycin C (MMC) for revision of dacryocystorhinostomy (DCR).

Methods:

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 MMC versus non-MMC in revision DCR. The primary outcome was success rate. Secondary outcome measures included complications and operative time. Fixed-effect modelling was used for the analysis.

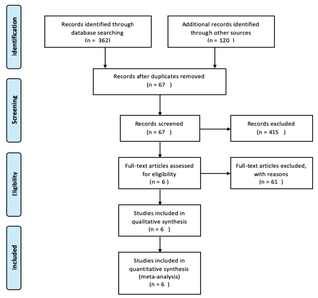


Figure 1: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Flow Diagram. The PRISMA diagram details the search and selection processes applied during the overview.

Results:

- Study Sample: Six studies that enrolled 239 procedures were identified in the literature
- Primary Outcomes:
  - Success rate: Statistically significant difference between the MMC and non-MMC groups favouring the adjuvant use of MMC for revision external DCR (odds ratio [OR] = 3.00, P = 0.001).
- Secondary Outcomes:
  - Complications: Only two reported cases of epithelial corneal defects in the MMC group were reported. No significant complications relating to MMC were reported by the other studies.
  - Operative time: According to one study, there was significant longer operative time in the MMC group of 34.8 minutes compared to 24.7 minutes in the non-MMC group (P = 0.01).

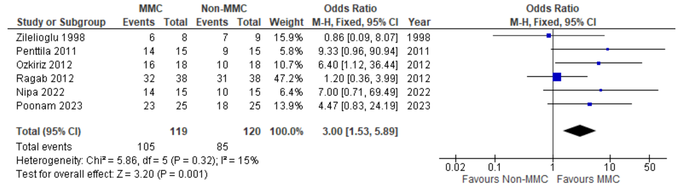


Figure 2: Forest plot for the odds ratio of Mitomycin C (MMC) adjunctive use for revision external dacryocystorhinostomy (DCR) – success rate. The adjuvant MMC group had a statistically significant higher odds ratio of success compared to the non-MMC group.

Conclusion:

The findings of this systematic review and meta-analysis, including six studies with 239 procedures, suggest that MMC is an excellent adjuvant therapy for the revision DCR as it provides a beneficial effect in preventing the reclosure of the DCR stoma. Randomized studies with larger sample sizes are recommended to further support the effectiveness of MMC in this procedure.

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