INPLASY

Comparative Effectiveness of Graft Techniques With and Without Platelet Concentrates in Chronic Otitis Media Patients: A Systematic Review and Network Meta-analysis

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Tsai, CS; Su, YX; Lin, HJ.

Corresponding author:
Chun Sheng Tsai

bb64jw75c@gmail.com

Author Affiliation:
Department of Orthopedics, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan.

ADMINISTRATIVE INFORMATION

Support - Nil.

Review Stage at time of this submission - Data extraction.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 7 October 2025 and was last updated on 7 October 2025.

INTRODUCTION

Review question / Objective P: Patients with chronic otitis media receiving tympanoplasty or myringoplasty. I and C: Graft technique using temporalis fascia or cartilage grafts, with or without PRP/PRF augmentation, via microscopic or endoscopic approaches. O: Air–bone gap improvement and graft failure rates.

Rationale Chronic otitis media (COM) is a common condition characterized by tympanic membrane (TM) perforation without involvement of ossicular chain. Surgical repair—typically via type I tympanoplasty or myringoplasty—can be performed using various grafting techniques, with or without platelet concentrates, and through either microscopic or endoscopic approaches. This systematic review and network meta-analysis (NMA) aimed to compare the efficacy of these different graft techniques in terms of air–bone gap (ABG) improvement and graft failure rates in patients with COM.

Condition being studied Chronic otitis media (COM) is a prevalent condition, affecting approximately 1% to 8% of the global population and accounting for an estimated 31 million new cases annually. It is frequently characterized by tympanic membrane perforation, which commonly leads to hearing impairment.

METHODS

Search strategy A systematic literature review was performed on January 20, 2025, using the Ovid Medline, Embase, and Cochrane Library databases. We manually searched the references of the included studies, clinical practice guidelines, and related systematic reviews for further evidence. No publication period or language was limited. The keyword combinations as follows: ((tympanoplasty) OR (myringoplasty)) AND (randomized controlled trial).

Participant or population Patients with chronic otitis media and dry tympanic membrane (TM) perforations of any size or location, with normal

Eustachian tube function. Studies involving patients with discharging ears, cholesteatoma, granulation tissue, ossicular chain abnormalities, sensorineural hearing loss, or active infections of the ear, nose, or throat were excluded.

Intervention Studies were required to compare two or more interventions using type I tympanoplasty or myringoplasty, performed via endoscopic or microscopic approaches with various graft materials including temporalis fascia or cartilage.

Comparator Studies were required to compare two or more interventions using type I tympanoplasty or myringoplasty, performed via endoscopic or microscopic approaches with various graft materials including temporalis fascia or cartilage.

Study designs to be included Eligible studies included randomized controlled trials (RCTs) and prospective comparative studies.

Eligibility criteria As PICOS sections mentioned.

Information sources A systematic literature review was performed on January 20, 2025, using the Ovid Medline, Embase, and Cochrane Library databases. We manually searched the references of the included studies, clinical practice guidelines, and related systematic reviews for further evidence. No publication period or language was limited. The keyword combinations as follows: ((tympanoplasty) OR (myringoplasty)) AND (randomized controlled trial). When data were missing or reported only in graphical form, corresponding authors were contacted for clarification.

Main outcome(s) The primary outcome of interest was improvement in the ABG and graft failure rate. For dichotomous outcomes such as graft failure, odds ratios (ORs) with 95% confidence intervals (CIs) were calculated. For continuous outcomes such as ABG improvement, mean differences with 95% CIs were used.

Quality assessment / Risk of bias analysis The risk of bias assessment from included studies was assessed using the Cochrane Collaboration's risk of bias (RoB 2.0) tool for randomized controlled trials (RCTs) and were classified as having a low, high or unclear risk of bias [19]. Two reviewers independently appraised the quality of the included studies, and any disagreements were resolved through discussion to reach a consensus.

Strategy of data synthesis Network maps were constructed to visualize the number of direct comparisons between treatment arms. A random-effects network meta-analysis was conducted to integrate both direct and indirect comparisons, thereby estimating the pooled relative effect of each intervention against the control group and all other treatments for the outcomes of interest. All analyses were performed using a frequentist framework in Stata version 17.0 (StataCorp), utilizing the mvmeta, network, and network graphs packages. Ranking probabilities and surface under the cumulative ranking curve (SUCRA) values were calculated to determine the relative efficacy of each intervention. Forest plots were generated to illustrate comparisons among the intervention groups. We evaluated both global and local inconsistencies for each outcome. Global inconsistency was assessed using a design-by-treatment interaction random-effects model by comparing direct and indirect estimates. Local inconsistency was examined using the node-splitting method to identify discrepancies between direct and indirect comparisons. A p-value < 0.05 indicated significant inconsistency between the direct and indirect estimates. Publication bias was evaluated using funnel plots and Egger's test.

Subgroup analysis Subgroup analysis would be conducted based on surgical technique (type I tympanoplasty vs. myringoplasty), perforation size, and patient age to assess the consistency of treatment rankings, if data were available.

Sensitivity analysis As Subgroup analysis section mentioned.

Language restriction Nil.

Country(ies) involved Taiwan.

Keywords chronic otitis media, type I tympanoplasty, myringoplasty, temporalis fascia, cartilage graft, platelet-rich plasma, network meta-analysis.

Contributions of each author

Author 1 - Chun-Sheng Tsai.
Email: bb64jw75c@gmail.com
Author 2 - Ying-Xue Su.
Author 3 - Hung-Ju Lin.