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**Effectiveness and Safety of Different Surgical
Approaches for Nasal Vestibular Cysts: A Systematic
Review and Network Meta-Analysis**

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Completed but not published.

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 23 October 2025 and was last updated on 23 October 2025.

INTRODUCTION

Review question / Objective P (Population): Patients with a clear diagnosis of nasal vestibular cysts (via clinical manifestations/imaging).
I (Intervention): Four surgical approaches: lip groove excision surgery, endoscopic removal of vestibular cysts, low-temperature plasma radiofrequency ablation under nasal endoscopy, nasal endoscopic nasal pathway surgery.
C (Comparison): Direct/indirect comparisons among the four surgical approaches.
O (Outcomes): Primary outcomes: surgery duration, intraoperative blood loss, hospital stay, postoperative recovery time, postoperative recurrence rate.

S (Study design): Systematic review and network meta-analysis.
Objective: To systematically compare the safety and efficacy of the four surgical approaches for nasal vestibular cysts, providing evidence-based guidance for clinical selection.
Condition being studied Nasal vestibular cysts originate from residual/ectopic epithelial cells at the embryonic globular-maxillary process fusion site. They mainly affect 40–50-year-old females, mostly unilaterally. Early stages are asymptomatic; enlargement causes nasal alar swelling, and secondary infection causes pain. Conservative treatment is ineffective, so surgical approach directly impacts treatment experience and prognosis.

METHODS

Participant or population Patients with a clear diagnosis of nasal vestibular cysts (no age/gender restrictions). Studies must clearly distinguish the four surgical approaches and report total sample size.

Intervention Lip groove excision surgery: Transverse incision in gingivolabial sulcus, separation of mucosa/subcutaneous tissue, complete cyst excision, layered suturing. Endoscopic removal of vestibular cysts: Nasal endoscopy-guided incision of cyst wall to create a "drainage window" (no complete excision). Low-temperature plasma radiofrequency ablation under nasal endoscopy: Plasma electrode ablates cyst wall (coagulative necrosis), sealing small blood vessels. Nasal endoscopic nasal pathway surgery: Nasal vestibule entry, small incision on cyst surface mucosa, partial excision (for large cysts).

Comparator Direct or indirect comparisons among the four surgical approaches (lip groove excision, endoscopic vestibular cyst removal, low-temperature plasma radiofrequency ablation under nasal endoscopy, nasal endoscopic nasal pathway surgery) to meet network meta-analysis requirements.

Study designs to be included Randomized controlled trials, cohort studies, other observational/interventional studies (full-text published, scientifically sound design, high methodological quality).

Eligibility criteria Inclusion: As defined in PICOS (Section 8); studies provide data for comparative analysis.

Exclusion: ① Studies with unextractable/incomplete original data (missing outcomes, logical errors, improper statistics); ② Duplicate publications.

Information sources Electronic databases (CNKI, VIP, Wanfang, PubMed, EMBASE, Cochrane Library).

Main outcome(s) Surgery duration (start to end of procedure): Effect measure: Mean Difference (MD), 95% CI.

Intraoperative blood loss (defined units): Effect measure: MD, 95% CI.

Hospital stay (days): Effect measure: MD, 95% CI.

Postoperative recovery time (return to normal activities): Effect measure: MD, 95% CI.

Postoperative recurrence rate (follow-up-defined recurrence): Effect measure: Odds Ratio (OR), 95% CI.

Quality assessment / Risk of bias analysis Study quality: Newcastle-Ottawa Scale (NOS) for cohort/observational studies (max 9 points: ≥ 7 = low bias, 4–6 = moderate bias, < 4 = high bias).

Evidence certainty: Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) framework (rated as high/moderate/low certainty); two trained authors independently assess.

Strategy of data synthesis Software: R software. Consistency test: Node-splitting analysis and design-by-treatment interaction ($p > 0.05$ = no inconsistency, use consistency model).

Effect measures: Continuous outcomes (MD, 95% CI); dichotomous outcomes (OR, 95% CI).

Presentation: League tables (pairwise comparisons), forest plots, SUCRA (Surface Under the Cumulative Ranking Curve) for ranking interventions.

Subgroup analysis None planned.

Sensitivity analysis None planned.

Language restriction No language restrictions will be imposed.

Country(ies) involved China.

Other relevant information This review has limitations: ① Uneven sample size across surgical groups may affect result stability; ② Most studies lack allocation concealment/blinding, with selective reporting bias; ③ No inclusion of patient-reported outcomes (e.g., satisfaction). Future research should focus on multi-center RCTs and technical improvements for endoscopic approaches to reduce recurrence.

Keywords Nasal vestibular cyst; Network meta-analysis; Lip groove excision surgery; Endoscopic removal of vestibular cyst; Low-temperature plasma radiofrequency ablation under nasal.

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