INPLASY

The efficacy and safety of TOETVA versus open thyroidectomy for thyroid cancer

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Data analysis.

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 8 August 2025 and was last updated on 8 August 2025.

INTRODUCTION

Review question / Objective P: Thyroid cancer patients; I: Total resection via oral vestibular approach; C: Open total resection; O: Efficacy and safety; S: Non-randomized controlled trial.

Condition being studied Thyroid cancer is the most common endocrine tumor, with 821 000 newly diagnosed cases worldwide in 2022, ranking ninth in incidence. Thyroidectomy is the main treatment strategy for differentiated thyroid cancer.hyroidectomy is the main treent atmstrategy for differentiated thyroid cancer. The main problems of conventional open thyroidectomy are the large neck incision and the occurrence of surgical injury, which motivates us to seek surgical methods with good cosmetic results. Therefore, endoscopic thyroidectomy came into being.

Nonoral endoscopic thyroidectomy typically includes the subclavian approach, areola approach, transaxillary approach, breast, axillary-breast approach, and dorsal approach. However, these methods remain problematic, including extensive flap dissection, scar growth at the incision site, and difficulty in exposing central lymph nodes. At the same time, with the development of natural orifice endoscopic surgery and the continuous improvement of the requirements for cosmetic results, transoral endoscopic thyroidectomy via vestibular approach came into being. It has no skin scars and shorter tissue exposure time, which meets the higher aesthetic needs of patients.

A growing number of studies have demonstrated the safety and feasibility of TOETVA, but comparative studies are lacking. Although some studies have directly compared TOETVA and COT, due to small sample sizes and the small number of assessments at a single institution, no consensus has been reached on whether TOETVA is safe and feasible for thyroid lesions. To date, no study has systematically evaluated the difference between TOETVA and COT during total thyroidectomy. Therefore, we sought to perform a systematic review to compare the efficacy and safety of total resection patients undergoing TOETVA and COT.

METHODS

Participant or population Patients with thyroid cancer confirmed by preoperative or intraoperative pathological results who underwent total thyroidectomy and central neck lymph node dissection.

Intervention Transoral endoscopic thyroidectomy by vestibular approach.

Comparator Conventional open thyroidectomy.

Study designs to be included Non-randomized controlled trial.

Eligibility criteria 1)Inclusion Criteria
Study type: Non-randomized controlled studies reported in both Chinese and English.
Study population: Patients with preoperative or intraoperative pathological results confirming thyroid cancer who underwent total thyroidectomy and central lymph node dissection.
Experimental group: Underwent transoral vestibular approach endoscopic thyroid surgery;
Control group: Underwent traditional open surgery.
2)Exclusion Criteria
Reviews, case reports, comments, editorials, fast tracks or expert opinions;
Studies on patients with benign thyroid nodules;
Comparisons of transoral robotic total thyroidectomy and open total thyroidectomy;
Studies on children.

Information sources PubMed, Web of Science, Embase, Cochrane Library, VIP Database, Wanfang Database, CNKI.

Main outcome(s)
1) Perioperative Indicators
Intraoperative blood loss, number of lymph node dissections in the central area, etc..
2) Complications
Transient recurrent laryngeal nerve injury, transient pseudo-parathyroid hormone deficiency, choking when drinking water, mental nerve injury, etc.

Quality assessment / Risk of bias analysis Two independent reviewers assessed the quality of non-randomized studies using MINORS.

Strategy of data synthesis RevMan 5.4 software was used to calculate 95% confidence intervals (cis) with odds ratio (OR) or risk difference (RD) as the effect size for binary variables and mean difference (MD) as the effect size for continuous variables. Heterogeneity was assessed by Q test and I^2 statistic, fixed effect model ($I^2 \leq 50\%$) or random effect model ($I^2 > 50\%$).

Subgroup analysis If the heterogeneity is significant and source of heterogeneity cannot be found by sensitivity analysis, we will conduct subgroup analysis according to possible factors.

Sensitivity analysis We will conduct sensitivity analysis on the total effective rate and each factor to verify the stability of the meta - analysis results. The specific method is to delete each study one by one and merge and analyze other studies.Sensitivity analysis was performed to verify the stability of meta - analysis results.We assessed the robustness of the results by means of a feature-by-article elimination method. We found that after excluding Dong , the difference in postoperative drainage volume between the TOETVA group and the COT group was statistically significant, while the conclusion was not statistically significant when other studies were excluded. This indicates that Dong 's research has a decisive influence on the overall results. The results of the combined analysis of the other indicators after excluding individual studies were not significantly changed, indicating that the conclusion of this study is reliable.

Country(ies) involved China.

Keywords Differentiated thyroid carcinoma, Transoral endoscopic thyroidectomy, Open thyroidectomy, Efficacy, Safety.

Contributions of each author
Author 1 - Yi Yang - Author 1 is responsible for literature screening, data extraction and analysis, and manuscript writing.
Author 2 - Yuhan Jiang - Author 2 is responsible for literature screening and manuscript writing.
Author 3 - Tianyuchen Jiang - Author 3 is responsible for data extraction and analysis.
Author 4 - Anping Su - Author 4 is responsible for the correction of manuscript writing and obtaining financial support.