INPLASY

The Role of Thymectomy During Parathyroidectomy in Multiple Endocrine Neoplasia Type 1-Associated Hyperparathyroidism: A Systematic Review and Meta-Analysis

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Corresponding author:
Eman Toraih

etoraih@tulane.edu

Author Affiliation:
Tulane University - USA.

Toraih, EA; AbdAlnaeem, MA; Bobba, T; Elshazli, RM; Abdelmaksoud, A; Bashumeel, YY; Ghaleb, AN; Hussein, MH; Jishu, JA; Noureldine, SI; Kandil, E.

ADMINISTRATIVE INFORMATION

Support - NA.

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 11 March 2025 and was last updated on 11 March 2025.

INTRODUCTION

Review question / Objective Current guidelines recommend transcervical thymectomy (TCT) during parathyroidectomy (PTX) for Multiple Endocrine Neoplasia Type 1 (MEN1)-associated primary hyperparathyroidism (PHPT) despite limited evidence substantiating efficacy. We aimed to determine the role of TCT in disease control and safety outcomes.

Condition being studied Current guidelines recommend transcervical thymectomy (TCT) during parathyroidectomy (PTX) for Multiple Endocrine Neoplasia Type 1 (MEN1)-associated primary hyperparathyroidism (PHPT) despite limited evidence substantiating efficacy.

METHODS

Participant or population Multiple Endocrine Neoplasia Type 1 (MEN1)-associated primary hyperparathyroidism (PHPT).

Intervention Transcervical thymectomy (TCT) during parathyroidectomy (PTX).

Comparator Parathyroidectomy (PTX) alone.

Study designs to be included We included observational studies and randomized trials.

Eligibility criteria We included observational studies and randomized trials comparing outcomes of PTX with or without concomitant TCT in patients with PHPT due to MEN syndrome. All studies investigating surgical outcomes in the treatment of MEN1-related PHPT, regardless of the specific surgery performed, were included. Included studies were required to have sample sizes of at least 10 patients per group and to report at least one of the following outcomes: cure rates, persistent/recurrent disease, or postoperative complications.

Information sources We systematically searched PubMed, Web of Science, Scopus, and Science

Direct databases from inception through February 8, 2024, using terms related to “multiple endocrine neoplasia”, “parathyroidectomy”, “thymectomy”, and other relevant keywords. Reference lists of included studies were hand-searched for additional citations. No language restrictions were applied.

Main outcome(s) Concomitant TCT may improve the safety and efficacy of PTX in MEN1-associated PHPT by synergistically clearing all cervical disease and minimizing adverse sequelae. Our findings provide further evidence to support existing recommendations for TCT and can guide surgical decision-making.

Quality assessment / Risk of bias analysis The Newcastle-Ottawa scale was used to appraise the quality of included studies. This scale evaluates studies based on three criteria: selection of study groups, comparability of cohorts, and ascertainment of outcomes, using a star rating system.

Strategy of data synthesis Two groups comprised of some of the authors (A.A/M.A.A. and T.B/R.M.E/J.A.J.) independently reviewed titles, abstracts and full texts applying the eligibility criteria. Discrepancies were resolved by consensus after discussion by a senior author (E.T). The following data was extracted into standardized tables: first author, year, country, study design, sample sizes, patient characteristics, surgical details, and rates of outcomes in each group including cure, persistent disease, recurrent disease, reoperation, transient and permanent hypoparathyroidism. Cure was defined as normal serum calcium or PTH levels without supplementation. Persistent disease was defined as elevated serum calcium or PTH levels within six months of surgery. Recurrent disease was defined as elevated serum calcium or PTH levels after six months of surgery.

Subgroup analysis A subgroup analysis stratified by geographical location found largely comparable outcomes between European (4 studies) and North American (2 studies) cohorts, without statistically significant evidence of regional differences across endpoints.

Sensitivity analysis NA.

Country(ies) involved USA/Egypt.

Keywords Hyperparathyroidism; transcervical thymectomy; MEN1; morbidity; endocrine surgery; relapse; hypercalcemia.

Contributions of each author

Author 1 - Eman A. Toraih.
Author 2 - Mahmoud A. AbdAlnaeem.
Author 3 - Tanvi Bobba.
Author 4 - Rami M. Elshazli.
Author 5 - Ahmed Abdelmaksoud.
Author 6 - Yaser Y. Bashumeel.
Author 7 - Abdulrahman N. Ghaleb.
Author 8 - Mohammad H Hussein.
Author 9 - Jessan A. Jishu.
Author 10 - Salem I. Noureldine.
Author 11 - Emad Kandil.