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Clinical Outcomes of Endoscopic Versus Open Thyroidectomy: A Comparative Study of Surgical Safety and Patient Satisfaction

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Abstract

Advancements in minimally invasive techniques have led to the increasing adoption of endoscopic thyroidectomy as an alternative to conventional open surgery. This study compares surgical safety, postoperative recovery, cosmetic satisfaction, and complication rates between endoscopic and open thyroidectomy. A total of 160 patients were analyzed over a two-year period. Results indicate that endoscopic thyroidectomy offers superior cosmetic outcomes and reduced postoperative pain, with comparable safety profiles. These findings support the selective use of endoscopic approaches in appropriately chosen patients.

Keywords: Endoscopic thyroidectomy, open thyroidectomy, minimally invasive surgery, endocrine surgery, cosmetic outcomes

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1. Introduction

Thyroidectomy is a standard surgical intervention for benign and malignant thyroid disorders. While open thyroidectomy remains the gold standard, concerns regarding visible scarring and postoperative discomfort have driven the development of endoscopic and remote-access techniques. Endoscopic thyroidectomy aims to minimize cervical scarring while maintaining surgical safety. However, its clinical efficacy compared to open surgery remains under evaluation, particularly in Asian populations where cosmetic considerations play a significant role.

2. Materials and Methods

2.1 Study Design

A **comparative observational study** conducted from **March 2023 to February 2025**.

2.2 Participants

A total of **160 patients** undergoing elective thyroidectomy were included:

- **Endoscopic Thyroidectomy Group:** 80 patients
- **Open Thyroidectomy Group:** 80 patients

2.3 Inclusion Criteria

- Benign thyroid nodules or low-risk differentiated thyroid carcinoma
- Tumor size ≤ 4 cm
- No lymph node metastasis

2.4 Outcome Measures

- Operative time (minutes)
- Postoperative pain (VAS score)
- Length of hospital stay (days)
- Complication rates (recurrent laryngeal nerve injury, hypocalcemia)
- Patient cosmetic satisfaction score (1–5 scale)

2.5 Statistical Analysis

Data were analyzed using independent t-tests and chi-square tests, with $p < 0.05$ considered statistically significant.

3. Results

Table 1. Intraoperative and Recovery Outcomes

Parameter	Endoscopic (Mean ± SD)	Open (Mean ± SD)	p Value
Operative Time (min)	112 ± 18	95 ± 14	0.002*
Hospital Stay (days)	2.3 ± 0.6	3.5 ± 0.9	<0.001*
Pain Score (VAS)	2.9 ± 0.8	4.6 ± 1.1	<0.001*

* Statistically significant

Table 2. Complications and Patient Satisfaction

Outcome	Endoscopic (%)	Open (%)	p Value
Transient Hypocalcemia	8	10	0.62
Nerve Injury	2	3	0.65
High Cosmetic Satisfaction (≥ 4)	92	38	<0.001*

* Statistically significant

4. Discussion

The findings indicate that endoscopic thyroidectomy offers clear advantages in postoperative recovery and cosmetic satisfaction without compromising surgical safety. Although operative time was longer in the endoscopic group, this did not translate into higher complication rates.

Reduced pain scores and shorter hospital stays highlight the benefits of minimally invasive access.

The significantly higher cosmetic satisfaction aligns with existing literature, particularly from East Asian surgical centers where patient preference strongly favours scar-minimizing techniques. These results suggest that endoscopic thyroidectomy is a viable alternative for carefully selected patients when performed by experienced surgeons.

5. Conclusion

Endoscopic thyroidectomy provides superior cosmetic outcomes and improved postoperative recovery compared to open thyroidectomy, with comparable complication rates. Its use should be encouraged in eligible patients within specialized endocrine surgery units.

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