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OUTCOMES OF TRANSORAL ENDOSCOPIC THYROIDECTOMY VESTIBULAR APPROACH AT MILITARY HOSPITAL 175

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ABSTRACT

Objective: To evaluate the outcomes of the transoral endoscopic thyroidectomy vestibular approach (TOETVA) at Military Hospital 175.

Subjects and Methods: A cross-sectional descriptive study combined with a prospective clinical interventional design without a control group was conducted on 69 patients who underwent TOETVA at Military Hospital 175 from July 2022 to July 2024.

Results: The study, conducted on 69 patients, revealed an average age of 46.5 ± 10.8 years, with females accounting for the majority (79.7%). The proportion of patients without postoperative complications was 81.2%. The most common complications were neck swelling (7.3%), temporary hypocalcemia (17.4%), and surgical site infection (4.3%). Total thyroidectomy had a higher complication rate compared to lobectomy (21.7% vs. 13.0%, $p<0.05$). The average hospital stay was 2.8 ± 1.3 days, with 72.5% of patients discharged within two days.

Conclusion: TOETVA is a safe and effective surgical method with a low complication rate and rapid recovery time, meeting patients' aesthetic and therapeutic needs.

Keywords: Endoscopic thyroidectomy, transoral vestibular approach, hypocalcemia.

1. INTRODUCTION

Endoscopic thyroidectomy represents a significant advancement in the surgical management of thyroid diseases, particularly the Transoral Endoscopic Thyroidectomy Vestibular Approach (TOETVA). This novel technique offers several outstanding advantages, including the shortest access route, the absence of visible external scars, and the ability to achieve complete central neck lymph node dissection [1]. Globally, TOETVA has been demonstrated to be both safe and effective, and it has been widely adopted in many countries with favorable outcomes [2]. The thyroid gland is a critical component of the endocrine system, and among thyroid disorders, papillary thyroid carcinoma is the most common histological subtype, accounting for 80–85% of all thyroid cancers. Papillary thyroid carcinoma typically has an excellent prognosis when diagnosed early and managed appropriately. TOETVA not only facilitates the complete surgical excision of the lesion but also addresses growing cosmetic concerns among patients, which are increasingly influencing treatment choices [3]. In Vietnam, the TOETVA technique has been implemented in several major hospitals, including Military Hospital 175. Although promising, the clinical effectiveness, complication profile, and long-term benefits of this approach still require comprehensive evaluation. This study was conducted to assess the surgical outcomes of transoral endoscopic thyroidectomy via the vestibular approach at Military Hospital 175.

2. SUBJECT AND METHOD

2 .1. Subject

This study was conducted on 69 patients who underwent transoral endoscopic thyroidectomy via the vestibular approach (TOETVA) at Military Hospital 175 between July 2022 and July 2024.

- Inclusion criteria:

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Patients diagnosed with benign thyroid nodules or early-stage differentiated thyroid carcinoma (papillary or follicular type), based on ultrasound, thyroid function tests, or histopathology.

Thyroid volume ≤ 10 cm^3; maximum tumor diameter ≤ 6 cm; no evidence of extrathyroidal extension or invasion of adjacent structures; no cervical lymph node metastasis or distant metastasis (N0, M0).

- *Exclusion criteria:*

Obese patients (BMI > 30) (we selected these patients as they had increased surgical risk and technical difficulty in accessing the thyroid via the transoral vestibular route).

Patients with severe comorbidities, such as heart failure, chronic pulmonary diseases, or coagulopathies.

Uncontrolled hyperthyroidism or severe hypothyroidism; other endocrine disorders that may interfere with the surgical procedure or postoperative recovery.

Patients with complex thyroid diseases.

Patients who declined participation in the study.

2.2. Methods

- Study Design: This was a prospective descriptive study combined with clinical intervention, conducted without a control group.

- Sample Size: A convenience sampling method was used. All patients with thyroid disease who presented for consultation and were indicated for transoral endoscopic thyroidectomy via the vestibular approach (TOETVA) at Military Hospital 175, meeting the inclusion criteria from July 2022 to July 2024, were enrolled.

- Data Analysis: Data were entered and analyzed using SPSS Statistics version 22.0 and Microsoft Excel 2016. Descriptive statistics were used to calculate frequencies and percentages for qualitative variables, and mean ± standard deviation (SD) for quantitative variables. Independent t-tests were used to compare mean values, and the Chi-square test was used to assess associations between categorical variables. A p-value < 0.05 was considered statistically significant.

- Ethical Considerations

This study was conducted following the ethical approval process of the Institutional Review Board (IRB) of Military Hospital 175. The research commenced only after obtaining IRB approval, along with permission from the hospital leadership and relevant administrative departments. All research data were kept confidential and used solely for scientific purposes.

3. RESULTS

Table 1. Clinical characteristics of the patients (n = 69)

Clinical characteristics		Number (n)	Percentage (%)
Mean age (years)		46.5 ± 10.8	
Gender	Male	14	20.3
	Female	55	79.7
Type of surgery	Total thyroidectomy	46	66.7
	Thyroid lobectomy	23	33.3
Medical history	Basedow disease	33	47.8
	Thyroid cancer	27	39.1
	Other thyroid conditions	9	13.0

The mean age of patients was 46.5 ± 10.8 years. The majority of patients were female (79.7%), while males accounted for 20.3%. The most common surgical procedure was total thyroidectomy, performed in 66.7% of cases, whereas thyroid lobectomy was conducted in 33.3% of patients. Regarding medical history, Basedow disease was the most frequent underlying condition (47.8%), followed by a history of thyroid cancer (39.1%), and other thyroid disorders (13.0%).

Table 2. Incidence of postoperative hypocalcemia (n = 69)

Calcium Status	Number (n)	Percentage (%)
No hypocalcemia	54	78.3
Transient hypocalcemia	12	17.4
Permanent hypocalcemia	3	4.3

The results indicated that the majority of patients (78.3%) did not experience hypocalcemia. Transient hypocalcemia was observed in 17.4% of cases, while permanent hypocalcemia occurred in only 4.3% of patients.

Table 3. Postoperative complications (n = 69)

Complication classification		Number (n)	Percentage (%)
Complication	Yes	56	81.2
	No	13	18.8
Type of Complication	Cervical edema	5	7.3
	Surgical site infection	3	4.3
	Transient hoarseness	3	4.3
	Permanent hoarseness	0	0.0
	Transient hypocalcemia	12	17.4
	Numbness of the chin and lower lip (≤3 months)	5	7.3
	Numbness of the chin and lower lip (>3 months)	0	0.00
	Tracheal perforation	0	0.00

As shown in the table above, the majority of patients (81.2%) did not experience any complications, while 18.8% had at least one postoperative complication. Among the various complications, cervical edema and transient hypocalcemia were the most frequently observed, accounting for 7.3% and 17.4%, respectively. Surgical site infection and numbness of the chin and lower lip lasting ≤3 months were reported in 4.3% of cases. Notably, no cases of permanent hoarseness, numbness >3 months, or tracheal perforation were observed.

Table 4. Association between type of surgery and postoperative complications (n = 69)

Type of Surgery			
No Complication (n)	With Complication (n)	Complication Rate (%)	p-value
Total thyroidectomy			
36	10	21.7	< 0.05
Thyroid lobectomy			
20	3	13.0	< 0.05

The results showed that the complication rate was higher in the total thyroidectomy group, accounting for 21.7%, compared to 13.0% in the thyroid lobectomy group. The majority of patients in both groups did not experience complications, with rates of 78.3% in the total thyroidectomy group and 87.0% in the thyroid lobectomy group. Statistical analysis revealed a significant difference in complication rates between the two groups ($p < 0.05$). This finding suggested that the type of surgery had a significant impact on the risk of postoperative complications, with a higher rate observed in patients who underwent total thyroidectomy.

Table 5. Length of hospital stay after surgery (n = 69)

Length of stay (days)	Number of patients (n)	Percentage (%)
≤ 2 days	50	72.5
3–5 days	15	21.7
> 5 days	4	5.8
Mean duration	2.8 ± 1.3 days	

The majority of patients (72.5%) had a short hospital stay of two days or less. A smaller proportion (21.7%) stayed for 3 to 5 days, while only 5.8% of patients required hospitalization for more than five days. The mean length of hospital stay was 2.8 ± 1.3 days.

4. DISCUSSION

In recent years, endoscopic thyroidectomy via natural orifice has emerged as one of the most advanced surgical techniques. First described by Anuwong in 2016, this approach has been rapidly adopted in many countries, including Vietnam [4]. This method offers significant advantages over other endoscopic techniques due to its minimally invasive nature, the absence of visible scarring on the skin surface, the ability to access both thyroid lobes through a single incision, and the facilitation of central neck lymph node dissection.

4.1. Clinical characteristics of patients

The results of this study showed that the mean age of patients was 46.5 ± 10.8 years, which is consistent with other studies reporting that thyroid disorders predominantly occur in middle-aged individuals. The majority of patients were female (79.7%), aligning with the findings of Jitpratoom et al. (2016), who reported that thyroid diseases are significantly more prevalent in women due to the influence of estrogen hormones [1]. Regarding the type of surgery, total thyroidectomy was more common (66.7%) than lobectomy

(33.3%). This reflects the fact that total thyroidectomy is more frequently indicated for severe or malignant thyroid conditions. In terms of medical history, the group with Basedow disease accounted for the highest proportion (47.8%), followed by patients with thyroid cancer (39.1%). These proportions are consistent with previous reports indicating that Basedow disease and thyroid cancer are the most common indications for endoscopic thyroidectomy via the transoral vestibular approach [3].

4.2. Postoperative hypocalcemia incidence

Hypocalcemia is a common complication following thyroid surgery; however, the results of this study showed that the majority of patients (78.3%) did not experience hypocalcemia. Transient hypocalcemia was observed in 17.4% of patients, while permanent hypocalcemia occurred in only 4.3%. These findings are consistent with the study by Dinç et al. (2020), in which the incidence of transient hypocalcemia ranged from 15% to 20% [5]. The low rate of permanent hypocalcemia in this study reflects the effectiveness of preserving the parathyroid glands and the safety of the surgical technique. Compared to Anuwong's study (2018), the transient hypocalcemia rate in our study was lower, which may be attributed to the surgeon's experience and the application of advanced surgical technologies [4].

4.3. Postoperative complications

Most patients (81.2%) did not experience any postoperative complications, while 18.8% had minor complications. The most common complications included cervical edema (7.3%), transient hypocalcemia (17.4%), and surgical site infection (4.3%). These findings are comparable to those reported by Wang et al. (2020), where the overall complication rate following TOETVA ranged from 15% to 20% [6]. Numbness of the chin and lower lip lasting less than three months was noted in only 4.3% of cases, with no instances lasting longer than three months, indicating the procedure's safety and effectiveness. No cases of permanent vocal cord paralysis or tracheal perforation were recorded, demonstrating the high safety profile of the TOETVA technique performed at Military Hospital 175. According to Russell et al. (2020), in a study of 200 TOETVA patients in the United States, only 2.5% experienced numbness of the chin and lower lip lasting longer than three months [7]. Similarly, a meta-analysis by Wang et al. involving 1,151 patients reported a permanent mental nerve injury rate of less than 1% [6].

4.4. Association between the type of surgery and postoperative complications

Analysis of the relationship between the type of surgery and postoperative complications showed that the complication rate was significantly higher in the total thyroidectomy group (21.7%) compared to the thyroid lobectomy group (13.0%), with a statistically significant difference ($p < 0.05$). This result is consistent with previous studies, such as those by Anuwong (2016) and Bui An Tho (2020), which reported a higher risk of parathyroid injury-leading to transient or permanent hypocalcemia-associated with total thyroidectomy [3], [4]. The main reason lies in the more extensive dissection required for total thyroidectomy, which increases the risk of injuring or devascularizing the parathyroid glands. Similarly, the study by Ngo Quoc Duy et al. also demonstrated that complications such as hypocalcemia and cervical edema were more common in patients undergoing total thyroidectomy, especially in cases requiring central neck dissection for thyroid cancer [2]. The lower complication rate observed in the lobectomy group can be attributed not only to the narrower surgical field but also to the preservation of the contralateral thyroid lobe and remaining parathyroid glands, which reduces the risk of endocrine and metabolic dysfunction.

Nevertheless, it is essential to note that, despite the differences in complication rates between the two groups, the majority of patients in both groups did not experience any complications (78.26% in the total thyroidectomy group and 87.0% in the lobectomy group). This finding underscores that TOETVA, when performed by experienced surgeons, remains a safe and effective surgical approach. Compared to conventional open thyroidectomy, TOETVA was associated with a lower complication rate, especially in terms of infection and recurrent laryngeal nerve injury. Additionally, the complication rate following TOETVA was lower than that of other endoscopic techniques such as the transaxillary or retroauricular approaches. This may be due to the direct midline access that TOETVA provides to both thyroid lobes and the central neck compartment, without the need for large skin incisions or deep dissection, thereby minimizing trauma to surrounding tissues. International studies, such as that by Jitpratoom et al., have also supported this observation, reporting a lower complication rate for TOETVA compared to other endoscopic techniques [1].

4.5. Postoperative length of hospital stay

This study found that the majority of patients were discharged early, within ≤ 2 days, accounting for the highest proportion (72.5%). Meanwhile, 21.7% of patients had hospital stays of 3–5 days, and only 5.8% stayed more than 5 days. The mean length of hospital stay was 2.8 ± 1.3 days, consistent with international studies, such as that by Jitpratoom et

al., which reported an average length of stay after TOETVA ranging from 1.5 to 3 days [1]. Compared to other endoscopic or conventional open surgical techniques, TOETVA offers the advantage of faster postoperative recovery, owing to its minimally invasive nature. A similar average length of stay (2.7 ± 1.4 days) was reported by Ngo Quoc Duy et al. in Vietnam, confirming that TOETVA is not only feasible in developed countries but also effectively applicable in domestic medical settings [2]. A shorter hospital stay not only reduces treatment costs for patients but also alleviates the burden on the healthcare system, especially in the context of rising patient volumes. For a small subset of patients who required extended hospitalization (>5 days), the causes may have included postoperative complications, preexisting comorbidities, or individual differences in recovery capacity. Previous studies, such as that by Anuwong (2016), have also noted that complications like cervical edema or transient hypocalcemia can prolong the length of hospital stay [4]. Therefore, proper monitoring and management of postoperative complications are essential to optimizing treatment outcomes and minimizing hospital stay duration.

5. CONCLUSION

The study demonstrates that TOETVA is a safe, effective surgical technique that meets patients' aesthetic expectations, particularly in the context of Vietnamese hospitals increasingly adopting this advanced approach. However, further large-scale studies are warranted to provide a more comprehensive evaluation of its long-term efficacy and to minimize potential complications.

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