ORIGINAL RESEARCH PAPER

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A NOVEL LATERAL SURGICAL APPROACH TO THYROIDECTOMY

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ABSTRACT

Background: Thyroidectomy is traditionally performed through a midline cervical incision; however, this approach may involve extensive tissue dissection and visible scarring. Recently, alternative techniques have been explored to improve surgical outcomes and reduce postoperative morbidity. Objectives: This study aimed to evaluate the feasibility, safety, and clinical outcomes of a novel lateral surgical approach to thyroidectomy. Methods: A prospective observational study was conducted at MGM Hospital, Sambhaji Nagar, over a period of 1.5 years. Forty patients undergoing thyroidectomy through the lateral approach were included. Demographic characteristics, operative parameters, intraoperative and postoperative complications, duration of hospital stay, and recovery outcomes were analyzed. Results: The majority of patients were female (65%) with a mean age of 42.6 ± 10.8 years. Benign nodular goiter was the most common indication (65%). The mean operative time was 78.4 ± 12.6 minutes and mean blood loss was 52.3 ± 15.1 ml. Transient hypocalcemia occurred in 7.5% and temporary recurrent laryngeal nerve palsy in 5% of patients. Conclusion: The lateral approach appears to be a safe and effective alternative to the conventional midline approach . It offers acceptable complication rates, rapid postoperative recovery, and favorable outcomes, making it a promising technique in thyroid surgery.

INTRODUCTION

Thyroid surgery has undergone considerable evolution over the last century with the primary goals of improving surgical safety, minimizing complications, and achieving better cosmetic outcomes. Conventional thyroidectomy, performed through a transverse cervical incision with a midline approach, remains the standard procedure for the management of various benign and malignant thyroid disorders. Although this approach provides excellent exposure of the thyroid gland and surrounding structures, it often involves extensive tissue dissection and may lead to postoperative pain, visible cervical scarring, and the risk of complications such as injury to the recurrent laryngeal nerve (RLN) and parathyroid glands.[1,2]

The thyroid gland lies centrally in the anterior neck and is closely associated with several vital neurovascular and endocrine structures. Traditional access requires separation of the strap muscles along the midline to expose the gland adequately. While effective, this technique may not always be ideal, particularly in patients with unilateral thyroid disease, small nodules, or those concerned about cosmetic outcomes. In recent years, minimally invasive and remote-access techniques—including endoscopic, robotic, and transoral thyroidectomy—have been introduced to improve cosmetic results and reduce surgical trauma. However, these methods often require specialized equipment, increased operative time, and a significant learning curve, which may limit their widespread use in many healthcare settings.[3,4]

The lateral surgical approach to thyroidectomy has been proposed as a potential alternative that combines adequate surgical exposure with reduced tissue disruption. By accessing the thyroid gland through the natural anatomical plane between the sternocleidomastoid muscle and the strap muscles, the lateral approach may avoid extensive midline dissection and preserve the integrity of important muscular structures. This approach may also allow earlier identification of the recurrent laryngeal nerve and parathyroid glands, thereby potentially reducing the risk of nerve injury and postoperative hypocalcemia.[5]

Despite these theoretical advantages, limited clinical evidence is available regarding the feasibility and safety of the lateral approach to thyroidectomy. Most available literature consists of technical descriptions or small case series. Therefore, systematic clinical evaluation is necessary to determine its effectiveness and surgical outcomes. In developing countries such as India, where thyroid disorders are highly prevalent and healthcare resources may be limited, surgical techniques that improve patient outcomes without increasing procedural costs are particularly valuable.[6]

The present study was conducted to evaluate the feasibility, safety, and clinical outcomes of a novel lateral surgical approach to thyroidectomy in patients undergoing surgery at a tertiary care center. By assessing operative parameters, complications, and postoperative recovery, this study aims to contribute evidence regarding the potential role of this technique in modern thyroid surgery.

MATERIALS AND METHODS

Study Design

This was a prospective observational study conducted to assess the clinical outcomes of a novel lateral surgical approach to thyroidectomy.

Study Setting

The study was carried out in the Department of General Surgery at MGM Hospital, Sambhaji Nagar, a tertiary care referral center.

Study Duration

The study was conducted over a period of 1.5 years.

Sample Size

A total of 40 patients who underwent thyroidectomy using the lateral surgical approach were included in the study.

Inclusion Criteria
- Patients aged 18–65 years
- Benign thyroid nodules and selected differentiated thyroid cancers
- Unilateral thyroid disease

Exclusion Criteria
- Retrosternal goiter
- Locally advanced thyroid malignancy
- Previous neck surgery

Surgical Technique
The patient was placed in a supine position with slight neck extension. Along the anterior border of the sternocleidomastoid muscle, a lateral cervical incision was made. The thyroid gland's lateral surface was accessed by dissection using natural tissue planes. The parathyroid glands and recurrent laryngeal nerve were located and maintained. The wound was closed in layers when haemostasis was reached using conventional methods.

Data Collection
Data collected included demographic variables, operative time, blood loss, complications, hospital stay, and postoperative outcomes.

Statistical Analysis
Data were analyzed using SPSS software. Continuous variables were expressed as mean ± SD. Categorical variables were expressed as percentages. Chi-square test and Student's t-test were used where applicable. A p-value <0.05 was considered statistically significant.

RESULTS

Table 1: Demographic Profile of Study Participants (N = 40)

Variable	Number (%)
Male	14 (35%)
Female	26 (65%)
Mean age (years)	42.6 ± 10.8

Table 1 summarizes the demographic profile of the 40 study participants. Females constituted the majority of the cohort, accounting for 26 patients (65%), while males comprised 14 patients (35%).The mean age of the study population was 42.6 ± 10.8 years, indicating that most patients were middle-aged adults, which is consistent with the typical age distribution of individuals undergoing thyroid surgery.

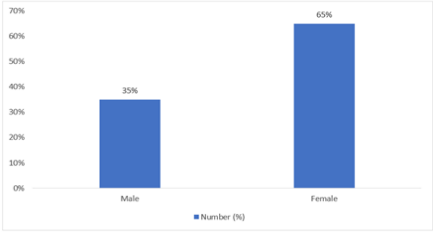


Figure 1A: Gender Distribution

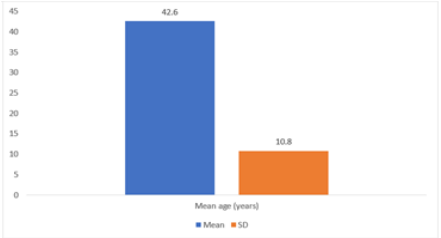


Figure 1B: Age Distribution

Table 2: Indications for Surgery

Indication	Number (%)
Benign nodular goiter	26 (65%)
Follicular neoplasm	8 (20%)
Papillary carcinoma (early)	6 (15%)

Table 2 depicts the indications for surgery among the study participants. Benign nodular goiter was the most common indication, observed in 26 patients (65%). This was followed by follicular neoplasm in 8 patients (20%). Early-stage papillary thyroid carcinoma accounted for 6 cases (15%), reflecting the inclusion of selected malignant conditions managed surgically in this cohort.

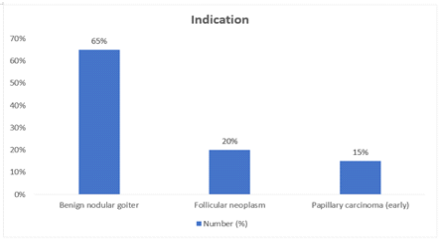


Figure 2: Indications for surgery

Table 3: Intraoperative Parameters

Parameter	Mean ± SD
Operative time (minutes)	78.4 ± 12.6
Blood loss (ml)	52.3 ± 15.1

Table 3 presents the intraoperative parameters. The mean operative time was 78.4 ± 12.6 minutes, suggesting efficient surgical performance. Intraoperative blood loss was minimal, with a mean of 52.3 ± 15.1 ml, indicating good intraoperative hemostasis and limited tissue trauma during the procedure.

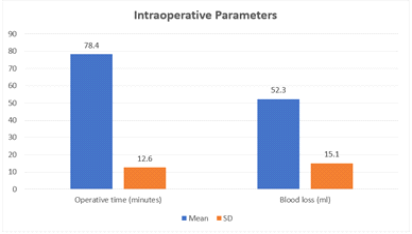


Figure 3: Intraoperative Parameters

Table 4: Postoperative Complications

Complication	Number (%)	p-value
Transient hypocalcemia	3 (7.5%)	0.04*
Temporary RLN palsy	2 (5%)	0.03*
Wound infection	1 (2.5%)	0.21

Table 4 outlines the postoperative complications observed in the study. Transient hypocalcemia occurred in 3 patients (7.5%) and temporary recurrent laryngeal nerve palsy was noted in 2 patients (5%), both of which were statistically significant. Wound infection was observed in only one patient (2.5%) and was not statistically significant. Importantly, all complications were transient and managed conservatively, with no permanent adverse outcomes reported.

Table 5: Postoperative Outcomes

Outcome	Mean ± SD
Hospital stay (days)	3.2 ± 0.9
Return to normal activity (days)	7.6 ± 2.1

Table 5 describes postoperative recovery outcomes. The mean duration of hospital stay was 3.2 ± 0.9 days, indicating relatively early discharge. Patients returned to normal daily activities within a mean duration of 7.6 ± 2.1 days, reflecting favorable postoperative recovery and functional outcomes following surgery.

Figure 5: Postoperative Outcomes

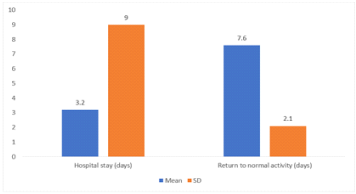


Figure 1

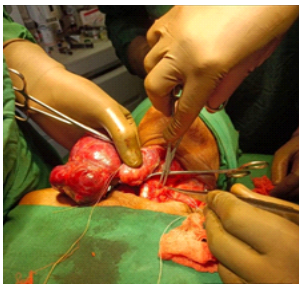
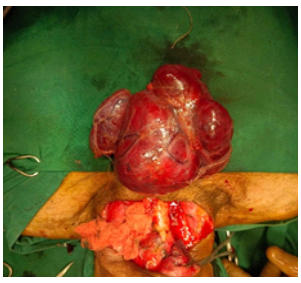


Figure 2



DISCUSSION

Thyroidectomy remains one of the most frequently performed procedures in endocrine surgery. Although the conventional midline cervical approach is widely accepted, continuous efforts are being made to refine surgical techniques in order to minimize tissue trauma, reduce complications, and improve postoperative recovery and cosmetic outcomes. The present study assessed the feasibility and safety of a novel lateral surgical approach to thyroidectomy in 40 patients. The findings suggest that the technique is both feasible and safe in appropriately selected patients, with acceptable operative parameters and low complication rates.[2]

The demographic profile of the study population showed a female predominance (65%) with a mean age of 42.6 ± 10.8 years. This observation is consistent with the well-established epidemiology of thyroid disorders, which occur more frequently in women, particularly during the middle decades of life. Hormonal influences, autoimmune predisposition, and variations in iodine metabolism have been suggested as contributing factors to this gender distribution.[1]

Benign nodular goiter was the most common indication for surgery (65%), followed by follicular neoplasm and early-stage papillary thyroid carcinoma. Similar patterns have been reported in tertiary care centers where benign thyroid diseases constitute the majority of surgical cases. Careful patient selection is essential when introducing newer surgical approaches, particularly in malignant conditions where oncological adequacy must be maintained.[7]

Operative parameters in the present study were comparable to those reported for conventional thyroidectomy. The mean operative time was 78.4 ± 12.6 minutes, indicating that the lateral approach allows efficient surgical access through natural anatomical planes. Previous studies have suggested that approaches utilizing natural tissue planes may facilitate dissection and reduce operative complexity compared with technically demanding remote-access techniques.[3]

Intraoperative blood loss in this study was minimal (52.3 ± 15.1 ml), likely due to limited tissue disruption and avoidance of extensive midline strap muscle dissection. Reduced bleeding not only improves operative visualization but also lowers the risk of postoperative hematoma, a potentially serious complication following thyroid surgery.[8]

Postoperative complications were within acceptable limits. Transient hypocalcemia occurred in 7.5% of patients and temporary recurrent laryngeal nerve palsy in 5%, with no permanent complications observed. These rates are comparable with those reported in conventional thyroidectomy, where transient hypocalcemia ranges between 10–30% and temporary nerve palsy between 3–8%.9 Early identification of the recurrent laryngeal nerve and improved visualization of the parathyroid glands through the lateral approach may contribute to these favorable outcomes.

Postoperative recovery was satisfactory, with a mean hospital stay of 3.2 ± 0.9 days and early return to routine activities. Reduced muscle dissection and preservation of midline structures may contribute to faster recovery and potentially improved cosmetic outcomes. However, the present study has certain limitations including a relatively small sample size, lack of a control group, and short follow-up duration. Larger comparative studies are required to further validate the effectiveness of this approach and define its role in modern thyroid surgery.[10]

CONCLUSION

The present study demonstrates that the novel lateral surgical approach to thyroidectomy is a feasible, safe, and effective alternative to the conventional midline technique in carefully selected patients. The procedure showed acceptable operative time, minimal intraoperative blood loss, and low rates of transient complications without any permanent morbidity. Early postoperative recovery and shorter hospital stay were notable advantages. By utilizing natural anatomical planes and preserving midline structures, the lateral approach may offer improved surgical outcomes and potential cosmetic benefits. Larger comparative studies are required to confirm its long-term safety and effectiveness.

LIMITATIONS OF THE STUDY

Sample Size: The relatively small sample size of 40 patients limits the statistical power of the study and restricts the generalizability of the findings.

Study Design: The lack of a control group having traditional midline thyroidectomy makes it impossible to compare results directly and restricts the ability to draw firm conclusions about superiority.

Short Follow-up Duration: Long-term outcomes, particularly oncological safety and late complications in malignant cases, could not be evaluated.

Cosmetic Assessment: Cosmetic outcomes and patient satisfaction were not objectively assessed using validated scoring systems.

REFERENCES

1. Hegedüs, L. (2004). The thyroid nodule. The New England Journal of Medicine, 351(17), 1764–1771. https://doi.org/10.1056/NEJMcp031436
2. Dionigi, G., Wu, C. W., Kim, H. Y., Rausei, S., Boni, L., & Chiang, F. Y. (2013). Safety of thyroid surgery. International Journal of Surgery, 11(Suppl 1), S120–S126. https://doi.org/10.1016/S1743-9191(13)60033-0
3. Miccoli, P., Berti, P., Raffaelli, M., Conte, M., Materazzi, G., & Galleri, D. (2001). Minimally invasive video-assisted thyroidectomy. The American Journal of Surgery, 181(6), 567–570. https://doi.org/10.1016/S0002-9610(01)00626-0
4. Anuwong, A. (2016). Transoral endoscopic thyroidectomy vestibular approach: A series of the first 60 human cases. Surgical Endoscopy, 30(11), 4913–4920. https://doi.org/10.1007/s00464-016-4765-1
5. Henry, J. F., & Sebag, F. (2008). Lateral approach for thyroid surgery. World Journal of Surgery, 32(7), 1344–1348. https://doi.org/10.1007/s00268-008-9515-2
6. La Vecchia, C., Malvezzi, M., Bosetti, C., Garavello, W., Bertuccio, P., Levi, F., & Negri, E. (2015). Thyroid cancer incidence and mortality trends. Annals of

Oncology, 26(Suppl 1), i48–i52. https://doi.org/10.1093/annonc/mdv001
7. Randolph, G. W. (2013). Surgery of the thyroid and parathyroid glands (2nd ed.). Elsevier. https://www.elsevier.com/books/surgery-of-the-thyroid-and-parathyroid-glands/randolph/978-1-4377-2227-3
8. Jain, M., Gupta, N., & Gupta, S. (2020). Surgical outcomes in thyroidectomy: A clinical analysis. Indian Journal of Surgery, 82(4), 624–629. https://doi.org/10.1007/s12262-019-02058-3
9. Phookan, J., Gogoi, D., & Baruah, A. (2021). Complications following thyroid surgery: A clinical study. Indian Journal of Otolaryngology and Head & Neck Surgery, 73(3), 354–359. https://doi.org/10.1007/s12070-020-01953-7
10. Rao, S. S., Kumar, S., & Sharma, N. (2023). Advances in thyroid surgery and postoperative outcomes. World Journal of Endocrine Surgery, 15(2), 89–95. https://www.wjoes.com