

Early and Late Complications after Thyroid Surgery: A Retrospective Study

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Abstract:

Background: Thyroid surgery is a common procedure performed for various thyroid disorders. Despite advancements in surgical techniques, patients may still experience early and late complications. This study aims to evaluate the prevalence and types of complications following thyroid surgery in patients aged 50-65 at Netaji Subhash Medical College, Bihta, Patna, over a period from November 2023 to April 2024.

Materials and Methods: A retrospective analysis was conducted on 50 patients who underwent thyroid surgery. Patient records were reviewed to identify early complications (within 30 days post-surgery) and late complications (beyond 30 days). Data collected included patient demographics, type of thyroid disorder, surgical procedure performed, and postoperative complications. Statistical analysis was performed using SPSS software.

Results: Out of 50 patients, 30 were female and 20 were male. The most common indication for surgery was multinodular goiter (46%), followed by papillary thyroid carcinoma (30%), and toxic goiter (24%). Early complications were observed in 16% of patients, with the most frequent being hypocalcemia (10%) and wound infection (6%). Late complications occurred in 10% of patients, with recurrent laryngeal nerve palsy (6%) and hypothyroidism (4%) being the most common. There was no significant difference in complication rates between age groups within the sample.

Conclusion: Thyroid surgery, while generally safe, is associated with a notable incidence of early and late complications. Hypocalcemia and wound infections are the most common early complications, whereas recurrent laryngeal nerve palsy and hypothyroidism are predominant late complications. Continuous monitoring and timely intervention are crucial to mitigate these complications and improve patient outcomes.

Keywords: Thyroid Surgery, Early Complications, Late Complications, Hypocalcemia, Recurrent Laryngeal Nerve Palsy, Hypothyroidism.

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Introduction

Thyroid surgery is a critical intervention for various thyroid pathologies, including benign conditions like multinodular goiter and Graves' disease, as well as malignant diseases such as thyroid carcinoma. Despite the advances in surgical techniques and postoperative care, complications remain a significant concern.

These complications can be broadly categorized into early complications, occurring within the first 30 days post-surgery and late complications, which manifest after this period.

Early complications primarily include hypocalcemia, hemorrhage, and wound infections. Hypocalcemia is particularly common and can result from inadvertent damage to the parathyroid glands during surgery [1]. Hemorrhage, though less

frequent, is a severe complication that can lead to airway obstruction and necessitates immediate intervention [2]. Wound infections, while generally manageable, can prolong hospital stays and delay recovery [3].

Late complications include recurrent laryngeal nerve palsy, which can significantly impact the patient's quality of life by affecting voice and swallowing functions [4]. Hypothyroidism is another prevalent late complication, often necessitating lifelong thyroid hormone replacement therapy [5].

This retrospective study aims to evaluate the incidence and nature of early and late complications following thyroid surgery in a cohort of patients aged 50-65 at Netaji Subhash Medical

College, Bihta, Patna, over an eight month period from November 2023 to June 2024. Understanding these complications' prevalence and characteristics can inform surgical practices and postoperative care protocols, ultimately improving patient outcomes.

Materials and Methods

Study Design and Setting: This retrospective study was conducted at Netaji Subhash Medical College, Bihta, Patna, and included patients who underwent thyroid surgery between November 2023 and April 2024.

Study Population: The study population comprised 50 patients aged 50-65 years who underwent thyroid surgery. Inclusion criteria were patients who had complete medical records and consented to the use of their data for research purposes. Patients with incomplete records or those who did not consent were excluded from the study.

Data Collection: Data were collected from the hospital's medical records department. The collected data included patient demographics (age, gender), type of thyroid disorder (multinodular goiter, papillary thyroid carcinoma, toxic goiter), type of surgical procedure performed (total thyroidectomy, hemithyroidectomy, subtotal thyroidectomy), and postoperative complications.

Complications: Complications were classified into early (within 30 days post-surgery) and late (beyond 30 days post-surgery) complications. Early complications included hypocalcemia, hemorrhage, and wound infections. Late complications included recurrent laryngeal nerve palsy and hypothyroidism.

Statistical Analysis: The data were analyzed using SPSS software version 26.0. Descriptive statistics were used to summarize the data. The frequency and percentage of each complication were calculated. Comparative analysis was performed to determine any significant differences in complication rates between different patient demographics and types of surgical procedures. A p-value of <0.05 was considered statistically significant.

Results

Patient Demographics: Out of the 50 patients included in the study, 30 were female and 20 were male. The mean age of the patients was 57.4 years.

Indications for Surgery: The most common indication for thyroid surgery was multinodular goiter, followed by papillary thyroid carcinoma and toxic goiter.

The distribution of indications is shown in Table 1.

Table 1: Indications for Thyroid Surgery

Indication	Number of Patients	Percentage
Multinodular Goiter	23	46%
Papillary Thyroid Carcinoma	15	30%
Toxic Goiter	12	24%

Surgical Procedures: The types of surgical procedures performed included total thyroidectomy, hemithyroidectomy, and subtotal thyroidectomy. The distribution is shown in Table 2.

Table 2: Types of Surgical Procedures

Surgical Procedure	Number of Patients	Percentage
Total Thyroidectomy	25	50%
Hemithyroidectomy	15	30%
Subtotal Thyroidectomy	10	20%

Early Complications: Early complications were observed in 16% of patients. The most common early complication was hypocalcemia, followed by wound infections. The distribution of early complications is shown in Table 3.

Table 3: Early Complications (within 30 days post-surgery)

Complication	Number of Patients	Percentage
Hypocalcemia	5	10%
Wound Infection	3	6%
Hemorrhage	0	0%

Late Complications: Late complications occurred in 10% of patients. The most common late complication was recurrent laryngeal nerve palsy, followed by hypothyroidism. The distribution of late complications is shown in Table 4.

Table 4: Late Complications (beyond 30 days post-surgery)

Complication	Number of Patients	Percentage
Recurrent Laryngeal Nerve Palsy	3	6%
Hypothyroidism	2	4%

Comparative Analysis: No significant differences were observed in the complication rates between different age groups or between males and females ($p > 0.05$). These results indicate that while thyroid surgery is generally safe, there is a notable incidence of both early and late complications, highlighting the need for careful postoperative monitoring and management.

Discussion

Thyroid surgery is an effective treatment for various thyroid disorders, including benign and malignant conditions. However, it is associated with potential complications that can impact patient outcomes. This study aimed to evaluate the prevalence and types of complications following thyroid surgery in patients aged 50-65 at Netaji Subhash Medical College, Bihta, Patna.

Early Complications: The study found that early complications occurred in 16% of patients, with hypocalcemia being the most common, affecting 10% of patients. This finding is consistent with previous studies that have reported hypocalcemia as a frequent early complication due to inadvertent damage or devascularization of the parathyroid glands during surgery [1]. The incidence of wound infections was 6%, which aligns with other studies highlighting that meticulous surgical technique and aseptic measures are crucial to minimize this risk [2].

Late Complications: Late complications were observed in 10% of patients, with recurrent laryngeal nerve palsy being the most prevalent, affecting 6% of patients. This complication can have significant implications for voice and swallowing functions, emphasizing the importance of careful dissection and nerve monitoring during surgery [3].

Hypothyroidism was noted in 4% of patients, necessitating lifelong thyroid hormone replacement therapy. This rate is lower than some reported rates, possibly due to differences in follow-up duration and patient management [4].

Comparison with Other Studies: The overall complication rates in this study are comparable to those reported in the literature. For instance, Rosato et al. [5] reported a 9.7% rate of transient hypocalcemia and a 2.6% rate of permanent hypocalcemia in a large multicenter study. Similarly, Bhattacharyya [6] found that the risk of recurrent laryngeal nerve palsy was approximately 3.5% in a cohort of patients undergoing thyroid surgery.

Implications for Clinical Practice: The findings underscore the need for thorough preoperative assessment and patient counseling regarding

potential complications. Intraoperative nerve monitoring and techniques to preserve parathyroid gland function can mitigate some risks. Additionally, prompt recognition and management of complications such as hypocalcemia and recurrent laryngeal nerve palsy are essential to improve patient outcomes [7].

Limitations: This study has several limitations, including its retrospective nature and the potential for incomplete or inaccurate medical records. Additionally, being a single-center study, the results may not be generalizable to other settings. Future prospective studies with larger sample sizes and longer follow-up periods are needed to confirm these findings and further elucidate the factors associated with postoperative complications.

Conclusion

Thyroid surgery in patients aged 50-65 is generally safe, but it carries a risk of early and late complications. Hypocalcemia and wound infections are the most common early complications, while recurrent laryngeal nerve palsy and hypothyroidism are significant late complications. Continuous monitoring and appropriate management strategies are crucial to improving patient outcomes.

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