

Post Thyroidectomy Hypocalcemia at ENT Department of Dhaka Community Medical College

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Abstract

Original Research Article

Background: Post thyroidectomy hypocalcemia is one of the most common and clinically significant complications following thyroid surgery. Its occurrence is influenced by various factors, including the extent of thyroidectomy and surgical expertise. **Objective:** To assess the frequency and pattern of post-thyroidectomy hypocalcemia among patients who underwent thyroid surgery at the ENT Department of Dhaka Community Medical College Hospital (DCMCH). **Methods:** This cross-sectional observational study was conducted at the ENT and Head-Neck Surgery Department of DCMCH over a two-year period from July 2023 to June 2024. A total of 107 patients of all age groups and both sexes who underwent different types of thyroidectomies were included. Data regarding age, sex, occupation, type of thyroidectomy, and development of hypocalcemia were collected and analyzed descriptively. **Results:** Out of 107 patients, 70 (65.4%) were female and 37 (34.6%) were male. The majority were between 21-40 years of age. Hemithyroidectomy was the most commonly performed procedure (38 cases), followed by total thyroidectomy (31 cases), subtotal (27), and near-total (11). Postoperative hypocalcemia was observed in 21 patients (19.6%). Among these, 19 cases (90.5%) were transient, while 2 (9.5%) were permanent. The incidence of hypocalcemia was highest in patients who underwent total thyroidectomy (41.9%). **Conclusion:** Post thyroidectomy hypocalcemia remains a significant concern, especially after extensive thyroid surgeries such as total and near-total thyroidectomy. Most cases are transient, but careful surgical technique and postoperative monitoring are essential to minimize the risk of permanent complications and ensure patient safety.

Keywords: Hypocalcemia, complications, post-thyroidectomy.

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INTRODUCTION

Thyroidectomy is a widely performed surgical procedure indicated for various thyroid pathologies such as benign nodular disease, thyroid malignancies, and hyperthyroidism [1,2]. Despite improvements in surgical techniques, postoperative complications remain a significant concern, with hypocalcemia being among the most common and serious adverse outcomes [3,4]. Post-thyroidectomy hypocalcemia primarily results from inadvertent injury or removal of the parathyroid glands, leading to hypoparathyroidism and disruption of calcium metabolism [5].

The reported incidence of hypocalcemia following thyroidectomy varies widely, ranging from 1% to 50%, influenced by factors such as the extent of thyroidectomy, surgeon experience, and patient characteristics [6,7]. Hypocalcemia can be transient, resolving within weeks to months, or permanent, necessitating lifelong calcium and vitamin D supplementation [8]. If untreated, hypocalcemia may cause symptoms ranging from mild paresthesia to severe tetany, seizures, and cardiac complications, which significantly impact patient morbidity and healthcare resources [9,10].

In Bangladesh, there is a paucity of data on the frequency and clinical profile of post-thyroidectomy hypocalcemia, particularly from tertiary care centers such as Dhaka Community Medical College Hospital (DCMCH). This study aims to evaluate the occurrence and pattern of post-thyroidectomy hypocalcemia among patients undergoing thyroid surgery at the ENT Department of DCMCH.

METHODS

This hospital-based cross-sectional observational study was conducted at the Department of Otolaryngology – Head and Neck Surgery (ENT and HNS), Dhaka Community Medical College Hospital (DCMCH) over a two-year period from July 2023 to June 2024, aiming to assess the frequency and pattern of post-thyroidectomy hypocalcemia. A total of 107 patients of all age groups who underwent various

thyroidectomy procedures hemithyroidectomy, subtotal, near-total, and total thyroidectomy were included. Data were retrospectively collected from patient records using a structured checklist, including demographic information, type of surgery performed, and the presence or absence of clinically documented hypocalcemia as noted by treating physicians. Hypocalcemia cases were further categorized into transient and permanent based on clinical follow-up, with transient cases resolving within 6 months and permanent cases requiring ongoing calcium and/or vitamin D supplementation. Patients with pre-existing calcium disorders, parathyroid disease, renal dysfunction, or incomplete records were excluded. Data were analyzed using SPSS version 26, and findings were presented using descriptive statistics in tables and figures. Ethical clearance was obtained from the Institutional Review Board (IRB) of DCMCH, and written informed consent was obtained from all participants.

RESULTS

Table 1: Demographic Profile of Patients Undergoing Thyroidectomy (n=107)

Variable	Category	Frequency (n)	Percentage (%)
Age Group (years)	0–20	2	1.9%
	21–40	68	63.6%
	41–60	27	25.2%
	≥61	10	9.3%
Sex	Male	37	34.6%
	Female	70	65.4%
Occupation	Housewife	57	53.3%
	Service Holder	18	16.8%
	Businessman	8	7.5%
	Driver	7	6.5%
	Others*	17	15.9%

*Others include students, retired individuals, daily laborers, etc.

Table -1 presents the demographic profile of patients undergoing thyroidectomy at the ENT Department, DCMCH. The majority of patients undergoing thyroidectomy in this study were within the 21–40 years age group (63.6%), followed by the 41–60 years group (25.2%). There was a female predominance

(65.4%) among the study participants. In terms of occupation, housewives constituted the largest group (53.3%), indicating that a significant proportion of thyroidectomy cases involved non-working or home-based individuals.

Table 2: Type of Thyroidectomy with Corresponding Frequency and Hypocalcemia Incidence (n = 107)

Type of Thyroidectomy	Total Patients (%)	Hypocalcemia Present (%)
Hemithyroidectomy	38 (35.5%)	1 (0.9%)
Subtotal Thyroidectomy	27 (25.2%)	4 (3.7%)
Near Total Thyroidectomy	11 (10.3%)	3 (2.8%)
Total Thyroidectomy	31 (29.0%)	13 (12.1%)
Total	107 (100%)	21 (19.6%)

Table 2 shows that out of 107 thyroidectomy patients, the highest frequency of hypocalcemia was observed following total thyroidectomy (12.1%), followed by near total and subtotal thyroidectomy. In contrast, hemithyroidectomy, despite being the most

commonly performed procedure (35.5%), had the lowest rate of hypocalcemia (0.9%). This suggests a strong correlation between the extent of surgery and risk of postoperative hypocalcemia.

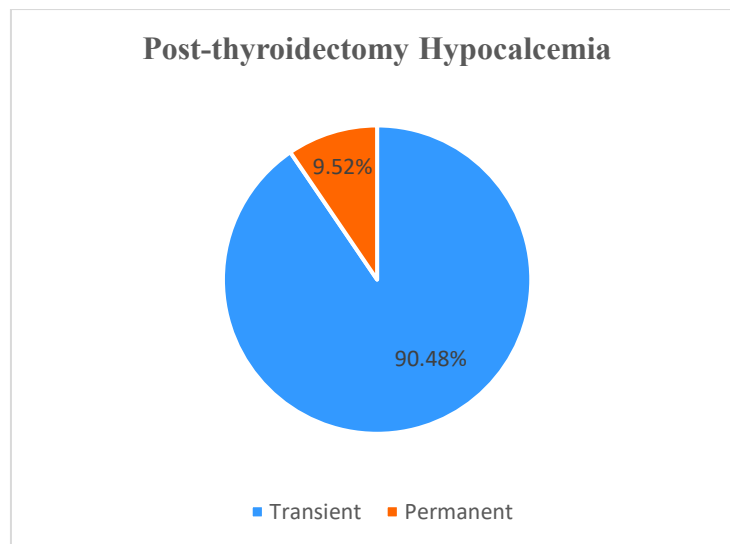


Figure-I Post thyroidectomy hypocalcemia in patients (n=21)

Figure I presents that out of the 107 patients who underwent thyroidectomy, 21 patients (19.6%) developed postoperative hypocalcemia. Among these, 19 cases (90.5%) were transient hypocalcemia, which resolved within a few weeks to months with appropriate calcium and vitamin D supplementation. Only 2 patients (9.5%) experienced permanent hypocalcemia, requiring long-term management.

DISCUSSION

In this study conducted at the ENT Department of Dhaka Community Medical College Hospital, the incidence of post-thyroidectomy hypocalcemia was found to be 19.6%, with 90.5% of these cases being transient and only 9.5% permanent. This result is consistent with a wide range of reported hypocalcemia rates in the literature, which vary from 1% to 50% depending on the type of surgery, experience of the surgeon, and perioperative management protocols [3,6]. The relatively moderate incidence found in this study likely reflects adherence to careful surgical techniques and postoperative monitoring.

The study showed that total thyroidectomy was associated with the highest rate of hypocalcemia (12.1%) compared to near-total (2.8%), subtotal (3.7%), and hemithyroidectomy (0.9%). These findings are aligned with those of Lang *et al.*, who reported that the incidence of hypocalcemia increases proportionally with the extent of thyroid tissue removed, with total thyroidectomy being the highest risk factor [11]. A similar observation was made by Chen *et al.*, who found that patients undergoing total thyroidectomy had a fivefold greater risk of developing hypocalcemia than those undergoing lobectomy [12].

In our study, transient hypocalcemia resolved in most patients within six months with calcium and vitamin D supplementation. This outcome aligns with findings from another regional study by Alam *et al.*,

which reported a transient hypocalcemia rate of 17.5%, with most cases resolving within weeks [13]. In contrast, permanent hypocalcemia, which occurred in only 2 patients (1.9%) in this study, is considered a serious but relatively rare complication. A meta-analysis by Edafe *et al.* estimated the average permanent hypocalcemia rate to be around 2.1%, closely matching our results [14].

Interestingly, the lowest rate of hypocalcemia in our study was seen in patients undergoing hemithyroidectomy, a finding echoed by studies in both Western and Asian contexts [15,16]. This is likely due to the preservation of the contralateral thyroid and parathyroid glands, reducing the risk of parathyroid injury or devascularization.

The study also identified a predominance of female patients (65.4%), which is consistent with the global epidemiology of thyroid diseases, as thyroid disorders are more prevalent among women [17]. However, no significant gender-based difference in hypocalcemia incidence was observed in our dataset.

One of the limitations of our study is the lack of biochemical measurement of serum calcium or parathyroid hormone levels. Instead, hypocalcemia was determined based on clinical records, which may lead to underreporting of asymptomatic or subclinical cases. Future studies with prospective designs and serial biochemical monitoring would be beneficial for a more accurate assessment of hypocalcemia incidence and severity.

CONCLUSION

This study highlights that post-thyroidectomy hypocalcemia is a relatively common complication, with an overall incidence of 19.6% among patients undergoing thyroid surgery at the ENT Department of Dhaka Community Medical College Hospital. The occurrence of hypocalcemia was notably higher in

patients who underwent total and near-total thyroidectomy, reinforcing the association between the extent of surgery and risk of postoperative complications. Most cases were transient and resolved with appropriate management, while a small proportion progressed to permanent hypocalcemia. These findings emphasize the importance of meticulous surgical technique, careful identification and preservation of parathyroid glands, and close postoperative monitoring to minimize the risk of hypocalcemia and ensure better patient outcomes.

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