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Complications Of Thyroidectomy: Study In A Tertiary Care Hospital In Bangladesh

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Abstract
Background: *Thyroidectomy is a common surgical procedure performed for various thyroid disorders, ranging from benign nodules to malignant tumors. While thyroidectomy is generally considered safe and effective, it is not without potential complications. Understanding these complications is crucial for both healthcare providers and patients.This study aimed to comprehensively explore the complications associated with thyroidectomy.*
Methods: *This prospective observational study was conducted at the Department of ENT and Head-Neck Surgery, Combined Military Hospital, Barishal, Bangladesh from January 2021 to December 2021. As study subjects, a total of 89 patients who underwent thyroidectomy were enrolled using a purposive sampling technique. MS Office tools were utilized for data analysis.*
Results: *As the postoperative complication, on the operation day, 67.4% of cases experienced symptomatic hypocalcemia. Additionally, hoarseness of voice, hematoma collection, difficulty swallowing, and airway obstruction were associated with 28.1%, 20.2%, 5.6%, and 3.4% of cases, respectively. Within 1 to 2 weeks, 11.2% of patients developed hypothyroidism, followed by 10.1% with symptomatic hypocalcemia and 5.6% with hoarseness of voice. At the 6-month mark, 17.3% developed hypothyroidism, and 7.1%, 4.5%, and 1.3% were associated with hypocalcemia, recurrent laryngeal nerve palsy, and dysphonia, respectively.*
Conclusion: *At the primary stage, hoarseness of voice, hematoma collection, and difficulty swallowing are the most prevalent postoperative complications found among patients of thyroidectomy, while hypothyroidism becomes more common in the mid-period. Hypocalcemia, however, remains prevalent across all postoperative stages.*

Keywords: *Thyroidectomy, Hypothyroidism, Hemi-thyroidectomy, Anterior neck swelling, Chronic thyrotoxic myopathy*

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I. INTRODUCTION

Thyroid surgery stands as one of the most frequently performed procedures globally, addressing both benign and malignant conditions of the thyroid gland [1]. The prevalence of total goiter in the world's general population is estimated at 15.8%, reaching 28.3% in Africa [2]. The global burden of thyroid disease is substantial, leading a significant number of patients to seek surgical intervention for various thyroid gland pathologies annually [3]. Thyroid surgery becomes necessary in cases of swelling or enlargement of the thyroid, manifesting as nodular or colloid goiter, which, when enlarged, can pose challenges in breathing, voice production, and swallowing. Additionally, thyroidectomy is indicated when an enlarged thyroid gland presents toxic symptoms or when there is a high suspicion of malignancy, with cosmetic concerns being a common motivation [4]. The choice of thyroidectomy type depends on the benign or malignant nature of the lesion, its size, and the degree of impairment [5]. In the eighteenth century, thyroid surgery carried a high mortality rate, reaching 40% due to complications such as hemorrhage and sepsis [6]. However, in contemporary times, thyroidectomy has evolved into a common and generally safe procedure, with an exceptionally low mortality rate [7]. The occurrence of specific morbidities is often linked to the surgeon's experience [8], and specialized centers report very low surgical morbidity rates for thyroidectomy. Thyroid nodules are prevalent, and many patients seek surgery due to palpable enlargement of the thyroid gland. Despite the overall safety of the procedure, complications can still arise, often stemming from factors like surgical technique, aberrant anatomy,

or infections. While the incidence of complications in thyroid surgery is generally low, certain issues are more commonly encountered than others [9]. Thyroid surgery was infrequently performed until the late nineteenth century, and total thyroidectomies were rare, particularly for indications other than cancer, until the last quarter of the twentieth century [10]. The utilization of total thyroidectomy remains a subject of debate, especially for small differentiated thyroid carcinomas. Even more contentious is its application in treating benign diseases, with many surgeons opting against it due to potential complications such as permanent recurrent laryngeal nerve palsy and permanent hypoparathyroidism. Subtotal thyroidectomy has been the preferred operation for benign thyroid diseases [11]. The objective of this study was to comprehensively explore the complications associated with thyroidectomy.

II. METHODOLOGY

This was a prospective observational study that was conducted at the Department of ENT and Head-Neck Surgery, Combined Military Hospital, Barishal, Bangladesh from January-2021 to December 2021. A purposive sampling technique was employed to enroll a total of 89 patients who had undergone thyroidectomy as study subjects. For all selected patients, a comprehensive history was obtained, followed by a thorough physical examination. Basic biochemical and hematological investigations were conducted for all patients. Specialized investigations, such as thyroid hormone profiling and serum calcium estimation, were reserved for selected cases. The study received approval from the hospital's ethical committee, and written consent was obtained from all participants before data collection. Inclusion criteria encompassed patients with thyroid swelling who had undergone thyroidectomy and those who provided consent for the study. Conversely, patients with other chronic diseases like coronary artery disease (CAD) and those who did not consent to the study were excluded according to the exclusion criteria. All demographic and clinical information of the participants was meticulously recorded. Data processing, analysis, and dissemination were carried out using the MS Office program.

III. RESULT

In this study, examining the demographic profile of participants revealed that the majority of patients (87.6%) were female, while the remaining patients (12.4%) were male. Additionally, a significant proportion of participants (55%) belonged to the 20–40 years age group. Analyzing the clinical profile of participants, it was observed that the majority of patients (98.9%) exhibited anterior neck swelling. Additionally, 39.3%, 20.2%, 2.2%, and 3.4% of cases presented with toxic symptoms, compressive symptoms, changes in voice, and weight loss, respectively. Upon analyzing the surgical procedures performed on patients, it was observed that more than half of the cases (62.9%) underwent hemithyroidectomy. Additionally, 18.0%, 10.1%, and 9.0% of cases underwent subtotal thyroidectomy, near-total thyroidectomy, and total thyroidectomy, respectively. In analyzing the preoperative diagnostic findings of patients, it was observed that the highest proportion of cases (43.8%) exhibited chronic thyrotoxic myopathy. Additionally, 28.1%, 11.2%, and 9.0% of cases were associated with nodular colloid goiter, malignancy, and follicular neoplasm, respectively. According to the post-operative complications on the operation day in patients, it was observed that the majority of cases (67.4%) experienced symptomatic hypocalcemia. Additionally, 28.1%, 20.2%, 5.6%, and 3.4% of cases were associated with hoarseness of voice, hematoma collection, difficulty swallowing, and airway obstruction, respectively. In analyzing the complications within 1 to 2 weeks of postoperative follow-up, it was observed that the highest number of patients (11.2%) developed hypothyroidism. Additionally, in 10.1%, 5.6%, 4.5%, 2.2%, and 1.1% of cases, symptomatic hypocalcemia, hoarseness of voice, seroma collection, dysphonia, and surgical site infection were observed, respectively. As per the complications at the 6-month postoperative follow-up of participants, it was observed that the highest number of patients (17.30%) developed hypothyroidism. Additionally, 7.10%, 4.5%, and 1.30% of cases were associated with hypocalcemia, recurrent laryngeal nerve (RLN) palsy, and dysphonia, respectively.

Table 1: Demographic profile of participants (N=89)

Variable	n	%
Gender		
Male	11	12.4%
Female	78	87.6%
Age (Years)		
<20	3	3%
20–40	49	55%
41–60	32	36%

>60	5	6%

Table 2: Clinical profile of participants

Clinical profile	n	%
Anterior neck swelling	88	98.9%
Compressive symptoms	18	20.2%
Toxic symptoms	35	39.3%
Change of voice	2	2.2%
Weight loss	3	3.4%

Table 3: Surgical procedure of patients

Types of surgery	n	%
Hemi-thyroidectomy	56	62.9%
Subtotal thyroidectomy	16	18.0%
Near-total thyroidectomy	9	10.1%
Total thyroidectomy	8	9.0%

Table 4: Preoperative diagnosis of patients

Complications	n	%
Chronic thyrotoxic myopathy	39	43.8%
Nodular colloid goiter (NCG)	25	28.1%
Malignancy	10	11.2%
Follicular neoplasm	8	9.0%
Cystic thyroid mass and abscess	3	3.4%
Toxic nodular goiter (TNG)	2	2.2%
Grave's disease	1	1.1%
Hashimoto's thyroiditis	1	1.1%

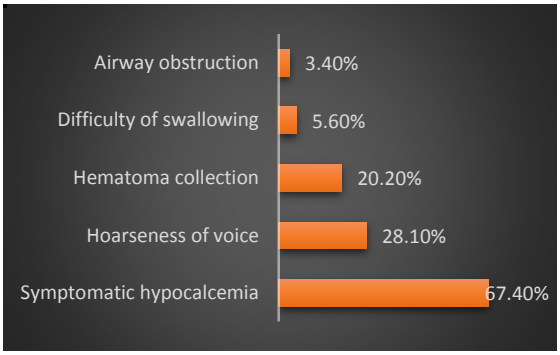

Figure 1: Post-operative complications on operation day

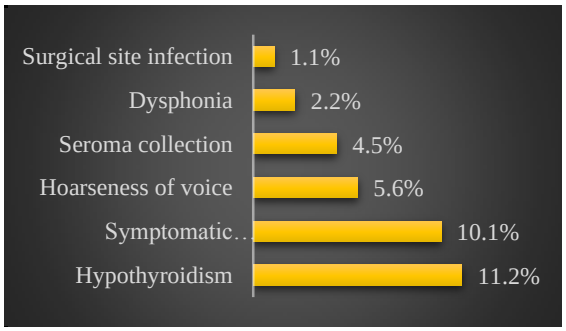

Figure 2: Complications within 1 to 2 weeks postoperative follow-up

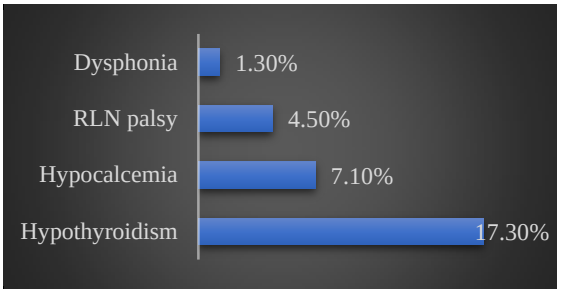

Figure 3: Complications at 6-month postoperative follow-up

IV. DISCUSSION

In this study, an examination of the demographic profile of participants revealed that the majority of patients (87.6%) were female, with the remaining patients (12.4%) being male. A significant proportion of participants (55%) belonged to the 20–40 years age group. A comparison with another study [12] showed that the majority of their patients (56.9%) were from the 20–40 years age group, and the second most common group (34.7%) comprised individuals aged 41–60 years. Furthermore, they reported that 89.3% were female, and 10.7% were male. Regarding the surgical procedures, among our participants, more than half (62.9%) underwent hemithyroidectomy. Additionally, 18.0%, 10.1%, and 9.0% of cases underwent subtotal thyroidectomy, near-total thyroidectomy, and total thyroidectomy, respectively. In another study [13], similar findings were reported, indicating that 64.7% of cases underwent hemithyroidectomy, 17% underwent subtotal thyroidectomy, 0% underwent near-total thyroidectomy, and 9.3% underwent total thyroidectomy. When analyzing the preoperative diagnostic findings of our patients, the highest proportion of cases (43.8%) exhibited chronic thyrotoxic myopathy. A previous study [12] demonstrated similar results, and our findings were also comparable to those of some other studies [14,15]. As for postoperative complications on the operation day, 67.4% of cases experienced symptomatic hypocalcemia. Additionally, hoarseness of voice, hematoma collection, difficulty swallowing, and airway obstruction were associated with 28.1%, 20.2%, 5.6%, and 3.4% of cases, respectively. Within 1 to 2 weeks, 11.2% of patients developed hypothyroidism, followed by 10.1% with symptomatic hypocalcemia and 5.6% with hoarseness of voice. At the 6-month mark, 17.3% of participants in our study developed hypothyroidism, and 7.1%, 4.5%, and 1.3% were associated with hypocalcemia, recurrent laryngeal nerve palsy, and dysphonia, respectively. In a separate study [16], persistent hypoparathyroidism occurred after 1.7% of all operations, and temporary hypoparathyroidism was observed in 8.3%. Permanent palsy of the laryngeal recurrent nerve (LRN) occurred in 1.0% of patients, transient palsy in 2.0%, and diplegia in 0.4%. In another study [17], the overall complication rate was 11.3%, with 1.9% experiencing recurrent laryngeal nerve palsy, 7.5% having temporary hypoparathyroidism, 0.5% encountering paralysis of the external branch of the superior laryngeal nerve, and 1.4% developing wound hematoma.

Limitation of the study:

It's important to note that this study has some limitations. Firstly, it is a single-centered study with a relatively small sample size. Additionally, the study was conducted over a short period, and as such, the findings may not precisely represent the broader scenario across the entire country. Future research with larger and more diverse samples, conducted over an extended duration, would contribute to a more comprehensive understanding of the subject matter.

V. CONCLUSION & RECOMMENDATION

The postoperative complications following thyroidectomy exhibit a distinct pattern across different stages of recovery. At the primary stage, hoarseness of voice, hematoma collection, and difficulty swallowing are the most prevalent issues. As patients progress into the mid-period, hypothyroidism becomes more common, emphasizing the importance of ongoing monitoring and management of thyroid function. Notably, hypocalcemia stands out as a prevalent complication persisting across all postoperative stages. These findings underscore the need for comprehensive postoperative care strategies, including close monitoring of vocal and swallowing function, thyroid hormone levels, and calcium status, to ensure optimal outcomes and minimize complications throughout the recovery phases for patients undergoing thyroidectomy.

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