

Exploration of Thyroid Surgeries in a Tertiary Care Hospital: A Cross-Sectional Study

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Abstract

Background: Thyroid disorders are common surgical pathology in part of world. Most commonly encountered complication after thyroid surgery are hypocalcaemia, hoarseness of voice, wound infection, seroma formation and thoracic duct injuries secondary to modified neck dissections.

Objective: To evaluate the experience of thyroid surgery at a tertiary care hospital.

Methodology: The cross-sectional descriptive study was conducted in Delta Medical College & hospital, Mirpur, Dhaka from January 2016 to December 2023. The indications of surgery were pressure symptoms and huge neck swelling. Data were collected pre-designed data collection sheet. Statistical analysis was done using SPSS version 25.

Results: This study shows the majority of patients within the age range of 31-40 years, constituting 52.2% and mean age of 38.80 ± 8.14 years. The study population consisted of 64% female and 36% male. Benign cases were predominant, comprising 79.4% of the total cases, while malignant cases accounted for 20.6%, with papillary carcinoma being the most common malignant type (74.5%). Noteworthy complications included temporary hypothyroidism (19.1%), metastatic lymph node recurrence (6.5%), and a low incidence of death (0.8%). Permanent hypothyroidism and unilateral recurrent laryngeal nerve (RLN) paralysis were observed in 1.2% and 2.1% of cases, respectively.

Conclusion: This study shows that most cases involve benign thyroid conditions. Complications primarily include tempo-

rary hypothyroidism in benign cases and metastatic lymph node recurrence, with rare instances of permanent hypothyroidism and unilateral RLN increased malignancy. Papillary carcinoma dominates among malignant cases. Ongoing research and careful monitoring are essential for refining surgical approaches and enhancing patient outcomes in thyroid disorder management.

Keywords: Thyroid Surgery; Complications; Hypoparathyroidism; Recurrent Laryngeal Nerve Palsy

Introduction

Thyroid surgery is one of the common procedures in surgical unit in a teaching hospital. Selections of cases for surgery of goitre both benign and malignant are done by the members of organized thyroid clinic consisting of Endocrinologist, physicians, radio-nuclear specialists and surgeons. The experience of the surgeon plays an important role in specific complications (morbidity) related to thyroidectomy. The operation of the thyroid gland has followed all the steps of progression to reach the time of endoscopic surgery [1]. Thyroid surgery is associated with fewer complications and no fatality [2]. Postoperative hemorrhage may occur as a devastating complication from thyroid surgery as an unrecognized or rapidly expanding hematoma that can cause airway compromise and asphyxiation. The incidence of postoperative bleeding varied from 0.4% to 1.1% [3-6].

Temporary and permanent vocal fold paralysis rates were analyzed in several reports and the overall incidences of temporary and permanent vocal paralyses were 5.1% and 0.9%, respectively. When irreversible damage occurred at the recurrent laryngeal nerve (RLN), patients were usually presented with marked voice dysfunction changes [6]. Many authors investigated these complications and found that they range from 0.5% to 5% following total thyroidectomy with increased incidence in both recurrent goiter and thyroid cancer [6,7].

Hypoparathyroidism is a dangerous complication of thyroidectomy that occur due to direct trauma to the parathyroid glands, devascularisation of glands or removal of all four glands during total thyroidectomy. Hoarseness of voice can be transient or permanent due to damage to recurrent laryngeal nerve or external branch of superior laryngeal nerve. When irreversible damage occurs at recurrent laryngeal nerve, marked voice dysfunction occurs [6]. Transient hoarseness of voice can occur due to temporary recurrent laryngeal nerve paralysis secondary to neural stretch [8]. There is increased risk of nerve damage in recurrent goiter surgery and malignant goiter surgery [7]. Although thyroid surgery is a clean surgery and surgical site infection is quite low, it can be a result of longer hospital stays and higher readmission rates in post-operative patients [9]. Due to close proximity to critical structures and major vessels a neck infection cannot be treated with simple incision and drainage and open packing [10]. It is more common in total thyroidectomy than lobectomy and the most likely organism identified is *Staphylococcus aureus* [6]. The aim of this study is to the thyroid surgery patients.

Materials and Methods

A prospective study was conducted in Delta Medical College & Hospital, Mirpur Dhaka. A total of 247 patients who were diagnosed with thyroid disease were included in this study. The indications of surgery were pressure symptoms and huge neck swelling. The patients with previous neck surgery, previous radiation therapy, or having incomplete data were excluded from this study. Detailed history, diagnosis, type of surgery, laboratory investigation, complete blood count, serum calcium thyroid function test, pus culture and sensitivity test in wound infections, Indirect laryngoscopy. Data were collected pre-designed data collection sheet. Statistical analysis was done using SPSS version – 25. Mean and standard deviation were calculated for quantitative variables. Frequencies and percentages were calculated for qualitative variables. Descriptive statistics were used to present the data.

Results

This study shows the majority of subjects fall within the age range of 31-40 years, constituting 52.2% of the total sample. The mean age of 38.80 years with a standard deviation of 8.14 (Table 1). Higher representation of females (64%) compared to males (36%) (Table 2). Majority of cases in the study are benign (79.4%) (Table 3). Papillary carcinoma is the most prevalent, accounting for 68.6% of cases, followed by follicular, medullary, lymphoma and anaplastic carcinoma (Table 4). Temporary hypothyroidism, though relatively common (19.1%), contrasts sharply with the low incidence of permanent hypothyroidism (1.2%) (Table 5).

Table 1: Age distribution of the study subject (n=247)

Age (years)	Number of patients	Percentage	Mean±SD
20-Dec	6	2.4	
21-30	25	10.1	
31-40	129	52.2	38.80±8.14
41-50	65	26.3	
51-60	22	8.9	

Table 2: Sex distribution of the study subject (n=247)

Sex	Frequency	Percentage (%)
Male	89	36.0
Female	158	64.0

Table 3: Benign and malignant of the study subject (n=247)

	Frequency	Percentage (%)
Benign	196	79.4
Malignant	51	20.6

Table 4: Type malignant of the study subject (n=51)

	Frequency	Percentage (%)
Papillary carcinoma	35	68.6
Follicular	7	13.7
Medullary	4	7.8
Lymphoma	3	5.9
Anaplastic carcinoma	2	3.9

Table 5: Complications of the study subject (n=247)

Complications	Frequency	Percentage (%)
Temporary hypothyroidism	47	19.1
Permanent hypothyroidism	3	1.2
Unilateral RLN paralysis	5	2.1

Recurrence of disease		
Metastatic lymph node	16	6.5
Death	2	0.8

Discussion

Thyroid surgery in recent years is generally considered quite safe, owing to a better preoperative preparation and improved surgical techniques that kept complications at a minimum level to less than 2%–3% [11].

In this study, mean age was 38.80 ± 8.14 years, which is comparable to that reported by Nagamuneiah et al., Indian [12] (mean age 42.92 years) while in contrast Altaf et al. observed mean age to be 34.5 years [6] and Ozbas (Turkey) 42.2 yrs [11]. The difference in mean age in other parts of the world may be due to better health facilities, more awareness, education, and life expectancy as compared to our region.

This study shows majority (64%) were male and 36% were female. Male to female ratio in this study was 1:7.2. These findings are well agreement with other studies [7, 9, 12,13].

In this study papillary carcinoma was diagnosed in 68.6%, follicular carcinoma in 13.7%, while medullary papillary carcinoma in 7.8%, lymphoma in 5.9% and anaplastic carcinoma in 3.9% which is similar to the previous studies making it the most common variant of thyroid carcinoma [6]. Thyroid carcinoma is found to be the most common endocrine tumor accounting for > 90% of endocrine tumors. Papillary carcinoma is most common variant of thyroid malignancy, comprising 60-65% of all thyroid cancers [14]. Follicular carcinoma is the second most common malignancy accounting for 15 of the cases [15]. A difference in trend is noted in our study with papillary carcinoma being the most common variant with a frequency of 83.1% followed by medullary carcinoma being the second most common with the rate of 9.9% followed by follicular carcinoma with frequency of 6.9%. In Pakistan thyroid cancer is responsible for 1.2% cases of all malignant tumors [16]. Previous reports from this region show papillary thyroid cancer to constitute 57 to 89% of all thyroid malignancies [15-18].

This study shows common complication were temporary hypothyroidism (19.1%) then unilateral RLN paralysis and permanent hypothyroidism (1.2%). This findings consistent with previous studies [12]. Recurrent laryngeal nerve injury is another common complication encountered during thyroid surgeries and can jeopardize the quality of life. In addition to the hoarseness that occurs with unilateral RLNI, bilateral RLNI leads to dyspnoea and often life-threatening glottal obstruction [19,20]. The incidence of RLN injury has been found to be higher during re-explorations, graves disease and thyroid carcinoma procedures [21, 22]. The incidence of Injuries to the recurrent laryngeal nerve has been reported between 1% to 2% from different endocrine surgery centres when performed by experienced neck surgeons. This incidence is higher when thyroidectomy is performed by a less experienced surgeon or when thyroidectomy is done for a malignant disease [23, 24]. At times the nerve is sacrificed if it runs into an aggressive thyroid Cancer [25]. Another study showed the rate of permanent RLN paralysis and the incidence of transient RLN palsy after thyroidectomy as 0.3%–3% and 5%–8%, respectively [26]. A similar pattern of incidence has been noted in our study with frequency of recurrent nerve paralysis and hoarseness of 1.27% for total thyroidectomy in multinodular goiters, 1.83% in malignant goiters, 0.42% in open lobectomies and 1.38% in recurrent goiters. However permanent paralysis of about 0.2% has been reported in thyroid surgeries of malignant goiters due to involvement of nerve by tumor itself. The incidence is quite higher in endoscopic lobectomies with the frequency of 13.3%.

Conclusion

This study shows the majority of cases involve benign thyroid disease. Regarding complications associated with thyroid surgery, temporary hypothyroidism is the most prevalent followed by metastatic lymph node recurrence. Permanent hypothyroidism, unilateral recurrent laryngeal nerve (RLN) paralysis, and death was relatively rare. Within the malignant category, papillary carcinoma is the most common, representing of malignant cases, followed by follicular carcinoma, medullary carcinoma and anaplastic carcinoma. Further research and continuous monitoring are essential to refine surgical approaches and improve patient outcomes in the management of thyroid disease.

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