

Incidence of Complications of Thyroid Surgery

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Abstract

During the period of July 2009 to June 2012 the study was conducted on 200 cases of thyroid swelling in the Department of ENT and Head- Neck surgery, Rangpur Medical College Hospital, Rangpur. The age range of the study population was from 10 years to 75 years. Female to male ratio was 3.14:1. Diagnosis of all cases was established preoperatively by clinical examination, thyroid function tests, fine needle aspiration cytology (FNAC) and ultrasonogram (USG). Most of the patients were suffering from multinodular goiter. Maximum operations were done in the form of subtotal thyroidectomy followed by hemithyroidectomy. 16.5% patients were developed complications. Postoperative haemorrhage and recurrent laryngeal nerve paralysis (5% each) were the most common complications. Among recurrent laryngeal nerve paralysis (4%) were unilateral and 1% was bilateral paralysis. In the study 1.5% deaths were reported due to massive haemorrhage and respiratory obstruction. Considering the above findings, it is mentionable that complications of thyroid surgery can be minimized by sound knowledge of normal and pathologic anatomy and an unhurried, gentle operation technique.

Key words: *Thyroidectomy, Postoperative complications.*

Introduction

The thyroid gland is located immediately below the larynx on each side of anterior to the trachea which is highly vascular and largest endocrine gland in the body. It secretes hormones which are responsible for both physical and mental growth¹. The normal gland is impalpable. The term goiter (Latin, gutter = the throat) is used to describe generalized enlargement of thyroid gland². Thyroid swelling is common clinical problem throughout the world³. These are also common clinical problem in Bangladesh. In our country the national prevalence is 10-15%, which indicates that the whole country is endemic. The endemically varies from one place to other⁴. Thyroid swelling is prevalent predominantly in females particularly in adult life. The average incidence of endemic in our country including all age and sex groups is 10.5%. The percentage in male and female are 7.21% and 12.37% respectively⁵.

Enlargement of the thyroid gland may be due to different conditions. The majority of patients with thyroid enlargement have benign thyroid diseases. Neoplastic, inflammatory and endocrine abnormalities of the thyroid gland are common, affecting approximately 11% of the general population⁶. As such, surgery of the thyroid gland abnormalities is quite common⁷. Once a decision for thyroid surgery has been made, the extent and type of the operation depends on a number of factors including; patients age, size of the nodule, the suspected preoperative diagnosis including the result of the fine needle aspiration cytology, presence or absence of involved lymph nodes in the neck⁸.

Potential complications of thyroid surgery includes haemorrhage, recurrent laryngeal nerve injury, damage to the parathyroid glands etc. Thyroidectomy is one of the commonest operations for the otolaryngologist and head-neck surgeons. Several surgical procedures have been used in the treatment of thyroid disease such as i) Lobectomy or hemithyroidectomy. ii) Subtotal thyroidectomy. iii) Near total thyroidectomy. iv) Total thyroidectomy. v) Total thyroidectomy with neck dissection⁹. The complications which is most feared is trauma to the recurrent laryngeal nerve, estimated to occur between 1 and 10% of operations^{10,11}. Hypocalcaemia is uncommon after subtotal thyroidectomy but is common in the total thyroidectomy. Hypothyroidism developing gradually over a period of months or year after operations

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is a common though acceptable complication of subtotal and total thyroidectomy and is readily treated with thyroxin¹². As in Bangladesh prevalence of thyroid disease is high and the scope of thyroid surgery is increasing day by day, the study was conducted with the aim to find out the rate of complications of thyroid surgery and to see the different modalities of thyroid surgery performed for thyroid swelling.

Materials and Methods

The study was conducted at Rangpur Medical College Hospital, Rangpur during the period of July 2009 to June 2012. The diagnosis of thyroid swelling was based on detailed history, thorough clinical examination and relevant investigations such as thyroid function tests (serum T₃, T₄, TSH level), Ultrasonogram, Isotope scanning and fine needle aspiration cytology (FNAC). All the data were compiled and tabulated in order to obtain a statistical and comprehensive results of the study.

Results

Age of the patients ranged from 10 years to 75 years. Most of the patients were 3rd and 4th decades. Out of 200 patients, 76% were female and 24% were male. Female to male ratio was 3.14:1. Most of the patients (54%) were from middle socio-economic status. (Table-I)

Table-I: Age, sex and socio-economic condition of the patients (n=200)

Parameter	Distribution	Number of patients	Percentage
Age	10- 20 years.	34	17%
	21- 30 years.	56	28%
	31- 40 years.	49	24.5%
	41- 50 years.	37	18.5%
	>50 years.	24	12%
Sex	Female	152	76%
	Male	48	24%
Socio economic status	Very poor	30	15%
	Poor	42	21%
	Middle class	108	54%
	Rich	20	10%

All the patients presented with visible or palpable swelling in front of the neck. Total 34 (17%) patients were presented with other associated symptoms.(Table-II)

Table-II: Presenting symptoms (n=200)

Symptoms	Number of patients	Percentage
Thyroid swelling	200	100%
Cervical lymph adenopathy	06	03%
Hoarseness of voice	06	03%
Pain in swelling	10	05%
Weight loss	12	06%

Clinically most of the patients, 48.5% were multinodular goitre followed by simple nodule 28%.(Table-III)

Table-III: Clinical diagnosis (n=200)

Diagnosis	Number of patients	Percentage
Simple nodule	54	28%
Toxic nodule	08	04%
Colloid goitre	21	10.5%
Multinodular goitre	97	48.5%
Thyroiditis	05	2.5%
Carcinoma of thyroid	15	7.5%

High resolution ultrasonography is a unique tool for diagnosing physical characteristics of thyroid gland. In this study most of the findings showed solid mass in the thyroid gland (44.5%). Cytological diagnosis is highly accurate, minimally invasive pre-operative diagnostic tool. In our study it was not conclusive in 10% cases. Other diagnosis was conclusive.(Table-IV)

Table-IV: Ultrasound and FNAC findings (n=200)

Type of investigations	Findings	Number of patients	Percentage
Ultrasound	Solid	89	44.5%
	Cystic	21	10.5%
	Mixed	90	45%
	Negative for malignancy	145	72.5%
FNAC	Suspicion of malignancy	20	10%
	Positive for malignancy	15	7.5%
	Unsatisfactory	20	10%

In this series subtotal thyroidectomy carried out in 40% patients and occupied the top of the list followed by hemithyroidectomy 28%.(Table-V)

Table- V: Types of operation performed (n=200)

Name of operation	Number of patients	percentage
Lobectomy	24	12%
Hemithyroidectomy	56	28%
Subtotal thyroidectomy	80	40%
Near total thyroidectomy	18	09%
Total thyroidectomy	18	09%
Total thyroidectomy with neck dissection	04	02%

In this study highest number of complications were hemorrhage and recurrent laryngeal nerve paralysis 5% each followed by wound infection 3%.(Table-VI)

Table-VI: Post operative complications (n=200)

Name of complications	Number of patient	Percentage
Haemorrhage/Haematoma	10	05%
Recurrent laryngeal nerve paralysis	Unilateral=8 Bilateral =2	04%
Hypoparathyroidism	04	02%
Wound infection	06	03%
Death	03	1.5%

Discussion

About 7% of the world population has goitre⁷. In our country, national prevalence of goitre is 17%, which indicates that the whole country is endemic, nodular goitre is more prevalent than diffuse goitre. In a report from thyroid clinic, BSMMU, Dhaka, 32.67% of all thyroid patients has solitary nodules. Carcinoma thyroid usually present as solitary cold nodule or as multinodular goitre. Age ranged in this study from 10 to 75 years. The highest number of cases (28%) belongs to the age group of 21 to 30 years followed by 24.5% in the age group of 31 to 40 years (Table-I). Lalida et al. in his study of 361 patients found that age ranged from 25- 82 years¹³ and Siddique found maximum incidence in 4th and 5th decades in our country¹⁴. In this series, 152 patients (76%) were female and 48 patients (24%) were male with female to male ratio 3.14:1 (Table-I). There was a female preponderance in this series but it was lower than the studies of Lalida and Siddique^{13,14}. Though there is no close relation between patients with thyroid diseases and socio-economic status, the average socio-economic group having higher incidence 54% followed by poor group 21% (Table-I). The cause is not exactly known, it might be related to illiteracy, superstition and fear of surgery. Regarding presenting symptoms, all the patients presented with thyroid swelling in variable durations. Here 12 patients (6%) presented with gradual weight loss and 10 patients (5%) presented with pain (Table-II). Multinodular goitre or simplenodular goitre with large swelling may be associated with difficulty in respiration or difficulty in deglutition which is mostly due to pressure on trachea or oesophagus¹⁵.

Regarding clinical diagnosis, most of the patients 48.5% suffered from multinodular goiter followed by simple nodular goitre 28%, colloid goitre 10.5%, carcinoma of thyroid 7.5%, toxic nodule 4% and thyroiditis 2.5% (Table-III). This result is close to the observation of Ashraf and Matin (1984)¹⁶.

Investigations are essential to establish pre-operative physical, functional status and cytopathological nature of the thyroid swelling¹⁷. All patients had done thyroid hormone profile and most of them showed values within normal limit. Ultrasonography was used to establish physical characteristics and to exclude clinically undetectable nodule of a dominant nodular goitre¹⁸. Ultrasonography showed 44.5% solid, 10.5%

cystic and 45% mixed echo textured goitre, (Table-IV) which was similar to operative findings. Fine needle aspiration cytology (FNAC) is very important, highly specific, most sensitive, minimally invasive preoperative diagnostic tool^{12,19}. In our study 90% were conclusive and 10% were not conclusive (Table-IV). Most of the operations were done in the form of sub-total thyroidectomy 40% followed by hemithyroidectomy 28% and lobectomy 12% (Table-V). Total thyroidectomy and near total thyroidectomy were done in 9% cases. Total thyroidectomy with modified radical neck dissection done in 2% cases of papillary carcinoma with neck node metastasis.

Out of 200 cases, 16.5% patients developed post-operative complications (Table-VI). This findings nearly consistent with the study R. Moulton et al²⁰. (14.2%) but not with the study Asaduzzaman²¹(12.5%). Among the post-operative complications 5% developed post-operative haemorrhage/haematoma, due to oozing from remaining thyroid tissue and wound surface which were managed by cauterization and ligation after exploration of the wound. In our series, 10 patients (5%) developed recurrent laryngeal nerve paralysis of which 8 were unilateral paralysis and 2 were bilateral (Table-VI). Among 8 patients of unilateral paralysis 6 patients showed gradual improvement of voice in subsequent follow-up and after 3 months, voice were almost normal by compensation of the opposite vocal cord. Other 2 patients do not show significant improvement even after an average period of 3 months follow up. Among 2 patients of bilateral recurrent laryngeal nerve paralysis, one patient was managed by emergency tracheostomy with subsequent follow up and another patient was managed by medical treatment. Transient paralysis may result from pressure on the nerve by edema in which cases recovery can be anticipated. Iqbal et al. found only one recurrent laryngeal nerve damage out of 111 cases of thyroidectomy (0.9%)²². Another Bangladeshi study by Rahman revealed a 4% incidence of recurrent laryngeal nerve injury²³. Lalida et al. found the incidence of recurrent laryngeal nerve paralysis among 361 patients was 6.09%. The incidence of hypoparathyroidism is as high as 20 percent when total thyroidectomy and neck dissection is performed and as low as 0.9% for subtotal thyroidectomy²⁴. But in this series only 4 patients (2%) developed transient parathyroid insufficiency (Table-VI) on 3rd postoperative day, which was improved later on. Out of 200 patients, 3% patients developed wound infection which were managed by exploration and removal of unabsorbed catgut followed by secondary stitch. There were 2 deaths in our series, due to massive hemorrhage on the postoperative period and respiratory obstruction.

In conclusion, a considerable number of various complications were observed during the procedure of thyroid surgery. The mentionable postoperative complications like haemorrhage, recurrent laryngeal nerve damage, hypoparathyroidism and also mortality depends on the extent of surgery. But these crucial postoperative

complications could be minimized if surgery of thyroid gland performed safely in the majority of patients. A thorough knowledge of various thyroid surgery and potential surgical complications are mandatory for the thyroid surgeon. Successful surgical management of thyroid disease is also based on a sound knowledge of normal and pathologic anatomy and an unhurried, gentle operative technique. Long-term follow up is essential to assess the recurrence and development of hypothyroidism.

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