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THYROID NODULE : ITS SURGICAL MODALITIES

General Surgery

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ABSTRACT

INTRODUCTION: The thyroid gland derives its name from the Greek thyreos or shield,whereas enlargement or goiter is derived from gutter,the latin term for throat. Its management of disease forms a major share of head and neck surgery. FNAC and USG are being used in association with clinical features for diagnosis with surgery being the mainstay of treatment. An attempt has been made in the present study to evaluate the various surgical modalities applied to treat thyroid nodules

METHODS AND MATERIALS: Total of 60 patients (>12years) were selected, who had attended Outpatient Department in Assam Medical College with thyroid nodule, examined ,investigated, treated surgically and complications if any were managed accordingly.

RESULTS: In this study, most common surgery performed was Right Hemithyroidectomy , 25 cases (41.66%),followed by Near Total Thyroidectomy , 18 cases (30%), Left Thyroidectomy ,7 cases (11.67%),Right Lobectomy ,4 cases (6.67%), Left Lobectomy ,4 cases (6.67%) and Total Thyroidectomy , 2 cases (3.33%) only. Injury to recurrent laryngeal nerve in 4 cases (6.67%) was the most common immediate complication followed by Hypothyroidism in 2 cases (3.33%), Hypo parathyroidism in 1 case (1.67%) and scar formation in 3 cases (5%) occurring lately. No case of recurrence was seen in the study period.

CONCLUSION: Hemithyroidectomy was the most commonly performed surgery, mainly performed for the benign disorders. Injury to the recurrent laryngeal nerve was the most common complication following surgery.

KEYWORDS:

Thyroid Nodule ,Hemithyroidectomy

INTRODUCTION

The thyroid gland derives its name from the Greek thyreos or shield, whereas enlargement or goiter is derived from gutter, the Latin term for throat[1]. Management of its disease forms a major share of head and neck surgery

Solitary nodule structurally and morphologically can be divided as benign (Colloid ,Hyperfuctioning nodule) and malignant (Papillary ,Follicular, Medullary and Anaplastic)[2].The question of malignancy in a nodular goitre is controversial. It has been claimed that malignant change is prone to occur frequently in a solitary nodule than in a multinodular goitre.

Clinical examination although very accurate in most cases, is inadequate in some areas especially in staging of thyroid malignancies and in detecting the multinodularity of the gland. FNAC and USG are used in association with clinical features but there are drawbacks of each technique.

Surgery remains the mainstay of treatment for thyroid nodule .Total thyroidectomy is the complete removal of thyroid gland. Subtotal thyroidectomy involves partial resection of each lobe, removing the bulk of the gland, leaving upto 8 gm of normal tissue in each remnant. Near total thyroidectomy involves total lobectomy, isthmusectomy and subtotal lobectomy whereas lobectomy involves removal of the lobe along with isthmus.[3]

The vast majority of operations for the solitary nodules are therefore performed for benign nodule as well as malignant. The thyroid nodule is frequently met in our practice in Assam Medical College and Hospital, Dibrugarh, an attempt has been made in the present study to evaluate the various surgical modalities applied to treat thyroid nodules .

METHODS AND MATERIALS

The present study was carried out to study thyroid nodule and to evaluate the various surgical modalities applied to treat thyroid nodules in Assam Medical College and Hospital, Dibrugarh, for a period of 18 months. Total of 60 patients were selected, who had attended Outpatient Department in Assam Medical College with thyroid nodule and underwent treatment.

After taking ethical clearance and informed consent, all the patients were taken in the study who attended the Outpatient Department with the complaints of swelling in front of neck which moves on deglutition. All the cases were carefully examined and investigated to find out the pathologies. There were 60 cases who had nodular thyroid disease and were included in the study. Criteria for selection of cases were:

Inclusion criteria: All patients >12 years age having thyroid nodule on clinical examination

Exclusion criteria:
All patients < 12years of age

Names and address of the patients were recorded for the identity of the patient. Age and sex of the patient with complete history were taken for swelling in front of neck with duration and rate of growth and other associated complaints.

Local examination of the swelling along with a thorough systemic and ear, nose and throat examinations were done. All patients were subjected to complete blood count, renal and blood sugar test. Electrocardiography was done in every case. Evaluation of thyroid function was done in all cases to find out whether the patient was thyrotoxic. Fine needle aspiration cytology (FNAC) was done in all cases to know the underlying thyroid disease.

Radiological investigations: like X ray of chest (PA view) were done for assessment of lung function and possibility of retrosternal goitre. X ray of soft tissue of neck (AP and Lateral view) was also done in cases of the large multinodular goitre and where there were possibility of tracheal involvement. Ultrasonography with or without colour Doppler was also done to assess the thyroid pathology.

Laryngoscopic examination: was also done preoperatively, intraoperatively and postoperatively in all cases to examine the vocal cord. There was no impairment of vocal cord movement detected in any case pre operatively. The patients were then treated surgically accordingly. Complications arising there upon were managed .

STATISTICAL ANALYSIS

The percentage of all the type of surgeries done and the complications occurring there upon were calculated.

RESULTS

The present study shows maximum of 24 (40%) patients in age group of 31 to 40 years, followed by 14 cases (23.33%)in the group of 41 to 50 years. The mean age in this study was 40.54years. In our study the female to male ratio was 3:1which is comparative to other study reports.

Only swelling in front of neck was present in 43(71.66%)patients. There were 7 patients(11.67%), who presented with pain over thyroid swelling, 5 patients(8.33%) complained of respiratory difficulty , 3 patients (5%)had difficulty in swallowing and 2 patient(3.33%) had change in voice.

The swelling varied in consistency from cystic to solid. On clinical examination, 7 (11.67%) cases were cystic, 24 (40%)cases were solid and 29 (48.33%) cases were mixed.

In the study, thyroid swellings involved the right lobe in 34 (56.67%) cases ,bilateral in 12 (20%)cases. **2** cases (3.33%) presented with hypothyroidism and these cases were taken up for the study after treatment of the condition with thyroxine and others were in euthyroid state. 1 case (1.67%) presented with hyperthyroidism. Pulse rate was measured during day time and during sleep time, having only one patient with hyperthyroidism showing tachycardia.

The study showed 49 cases to be benign and 11 cases to be malignant, thus giving a high malignancy rate of 18.33%.Histopathological report was taken as final.

In this study, most common surgery performed was Right Hemithyroidectomy , 25 cases (41.66%),followed by Near Total Thyroidectomy , 18 cases (30%), Left Hemithyroidectomy ,7 cases (11.67%),Right Lobectomy ,4 cases (6.67%), Left Lobectomy ,4 cases (6.67%) and Total Thyroidectomy , 2 cases (3.33%) only.(Table 1)

DIFFERENT SURGICAL PROCEDURES

Types Of Operation	Number of cases	Percentage
Right Lobectomy	4	6.67
Left Lobectomy	4	6.67
Right Hemithyroidectomy	25	41.66
Left Hemithyroidectomy	7	11.67
Subtotal Thyroidectomy	0	
Near Total Thyroidectomy	18	30
Total Thyroidectomy	2	3.33
	60	

TABLE 1

Following surgery, injury to recurrent laryngeal nerve , 4 cases (6.67%) was the most common immediate complication. It occurred after total and near total thyroidectomy.(Table 2)

Immediate Complications	No of cases	Percentage
Haematoma Formation	0	
Infection of the Wound	0	
Seroma	0	
Injury to recurrent laryngeal nerve	4	6.67

TABLE 2

In Late Complications,Hypothyroidism in 2 cases (3.33%), Hypo parathyroidism in 1 case (1.67%) and scar formation in 3 cases (5%) were present.(Table 3)

Late Complications	No of cases	Percentage
Hypothyroidism	2	3.33
Hypoparathyroidism	1	1.67
Scar Formation	3	5

TABLE 3

DISCUSSION

Sixty cases were taken for study in the Department of Surgery, Assam Medical College and Hospital, Dibrugarh.

AGE AND GENDER: The present study shows maximum of 24 (40%) patients in age group of 31 to 40 years, followed by 14 cases (23.33%)in the group of 41 to 50 years. The mean age in this study was 40.54years.

Andre J.Van Herle and Amy J.Lutz stated that in a children under the age of 14, a thyroid nodule is likely to be malignant in 50% of cases, and after the age of 65,a growing nodule has a good chance of being malignant.

Thyroid nodules are more common in women than in men by a ratio of about 4 to 1, and increase in frequency with age and with decreasing iodine intake .[4]Our study showed the ratio to be of 3:1.

PRESENTING COMPLAINTS:

Only swelling in front of neck was present in 43(71.66%) patients, accompanied by pain in 7 patients(11.67%),respiratory difficulty in 5 patients(8.33%), dysphagia in 3 patients(5%) and change in voice in 2 patient(3.33%).

The pain over the swelling could be due to sudden haemorrhage or degeneration inside the nodules. The difficulty in swallowing and in breathing was most probably due to the thyroid swelling pressing over the trachea and oesophagus and is collectively referred to as pressure symptoms

In 1982 S.K. Bhansali had examined 600 cases and reported pain in 78 (13%), dysphagia in 70 (11.67%) of cases.[5]

DURATION CONSISTENCY AND LOCATION OF SWELLING

Our study showed 12 cases(20%) whose thyroid swelling were of less than 6 months,20 cases (33.33%) between 6 months to 2 yrs and 28 cases (46.67%) of more than 2 years.

The swelling varied in consistency from cystic to solid. On clinical examination, 7 (11.67%) cases were cystic, 24 (40%)cases were solid and 29 (48.33%) cases were mixed.

In 1977,Tunbridge WMG, Evered DC, Hall R, et al; reported that in patients with a single palpable nodule, 20-48% had additional nodules as detected by ultrasonography.

In our study, thyroid swellings involved the right lobe most of the time. G. Messaris, et al concluded that the right lobe was more frequently involved (57.6 per rent) than the left.[6]

THYROID FUNCTION TEST: 2 cases (5.88%) presented with hypothyroidism and 1case (2.94%) with hyperthyroidism. Mary Jo Welker et al in 2013,found that the majority of thyroid nodules were asymptomatic. Most persons with thyroid nodules were euthyroid.

PULSE RATE: In our study ,only one patient with hyperthyroidism showed tachycardia. According to Ingabar and Woeber (1974), tachycardia was almost always present in thyrotoxicosis even at rest.[7]

LARYNGOSCOPIC EXAMINATION: In our study, only 1 patient with large thyroid swelling showed diminished vocal cord movement. Wade (1960) stated that, to know the status of recurrent laryngeal nerve, the need of laryngoscopic examination arose. The reported incidence of recurrent.laryngeal nerve palsy varies widely from 0-14 %[8]

USG , FNAC AND HISTOPATHOLOGICAL FINDING: It was done in the Department of Radiology and Pathology, Assam Medical College and Hospital. In our study 49 cases showed to be benign and 11 cases to be malignant on histopathological examination.

Emily J Mackenzie and Robin H Mortimer (2004) stated that about 5% of thyroid nodules are malignant.[9] Laurel J. Bessey, et al (2013) concluded in their study that the typical 5% risk of thyroid nodule malignancy on FNA varies depending on patient age and gender. Cooper DS et al reported that the overall risk of malignancy in a thyroid nodule is 5–10%.[10]

TREATMENT:

In this study, most common surgery performed was Right Hemithyroidectomy , 25 cases (41.66%),followed by Near Total Thyroidectomy , 18 cases (30%), Left Thyroidectomy ,7 cases (11.67%),Lobectomy 8 cases (13.33%) and Total Thyroidectomy , 2 cases (3.33%) only.

In 2013, Bauer PS et al had performed a total of 683, thyroidectomy for multinodular goiter and of these patients, 420 (61%) underwent

unilateral resection and 263 patients (39%) underwent total thyroidectomy for bilateral multinodular goiter.[11]

Gershinsky M et al concluded in his study For patients with monofocal disease within the thyroid gland and no LN involvement, hemithyroidectomy can be considered an option, bearing in mind a higher risk for recurrence. For all other patients with PMC, we propose total thyroidectomy as initial treatment.[12]

Ashwini Aithal Padur et al in his study stated that total thyroidectomy is a safe and effective procedure for most of the thyroid diseases in the hands of an expert surgeon. Subtotal thyroidectomy is similarly effective but it is associated with significant recurrence rate and may leave a few traces of inadequately treated thyroid cancers.[13]

In 2004, Zeki Acun, MD et al did a study on near total thyroidectomy and achieved a a lower complication rate of hypoparathyroidism and a similar complication rate of recurrent laryngeal nerve palsy and recurrence when compared with the rates reported in the literature for total thyroidectomy.[14]

Rahul Lokhande et al in his study found that Near-total thyroidectomy achieves a lower complication rate of hypoparathyroidism and a similar complication rate of recurrent laryngeal nerve palsy when compared with the rates reported in the literature for total thyroidectomy. It is an effective and safe surgical treatment option for various benign thyroid diseases.[15]

COMPLICATIONS:

Injury to recurrent laryngeal nerve in 4 cases (6.67%) was the most common immediate complication followed by Hypothyroidism in 2 cases (3.33%), Hypo parathyroidism in 1 case (1.67%) and scar formation in 3 cases (5%) occurring lately.No case of recurrence was seen in the study period.

Wade (1967) reported 7.5% cases of wound infection in his series.

Eleni I. Efremidou, et al did a study on total thyroidectomy and concluded that incidence of permanent bilateral recurrent laryngeal nerve palsy was 0% and that of permanent unilateral recurrent laryngeal nerve palsy was 0.2%, whereas the incidence of temporary unilateral recurrent laryngeal nerve palsy was 1.3%. Permanent hypocalcemia occurred in 0.3% and overall temporary hypocalcemia occurred in 7.3% of patients. Hemorrhage requiring repeat surgery occurred in 0.2% of patients.Thus, Total thyroidectomy is safe and is associated with a low incidence of disabilities.[16]

Chow TL et al in his study on complications of thyroid surgery found that the overall rate of permanent vocal cord palsy was 2%. Near-total thyroidectomy became the preferred surgical treatment for toxic goitre over the study period. The incidence of recurrent hyperthyroidism was reduced from 21% to 7% (P>0.1, not significant). The incidence of hypoparathyroidism was approximately 30% after thyroidectomy for cancer. Hypoparathyroidism, however, is a relatively common complication after surgery for thyroid cancer[17].

CONCLUSION

Hemithyroidectomy , 32 cases (53.33%) was the most commonly performed surgery, mainly performed for the benign disorders .Injury to recurrent laryngeal nerve in 4 cases (6.67%) was the most common immediate complication followed by Hypothyroidism in 2 cases (3.33%), Hypo parathyroidism in 1 case (1.67%) and scar formation in 3 cases (5%) occurring lately. No case of recurrence was seen in the study period.

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