

Hospital Based Study on Thyroidectomy in Elderly Patients and Their Surgical Outcomes

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ABSTRACT

BACKGROUND

With increase in geriatric population, there is need to establish guidelines and protocols by clinicians to standardize care for these patients. There is an elevated risk of perioperative morbidity among elderly patients undergoing surgical procedures.

METHODS

We performed a retrospective analysis on our database of elderly (aged over 60 years) patients undergoing thyroidectomy for benign as well as malignant lesions in a tertiary care hospital in North East India with the aim to find out the incidence of thyroid disease, preoperative diagnosis, management and prognosis in elderly patients.

RESULTS

A total of fifty four cases was included in the study, out of which forty six were operated and eight had palliative treatment. No major complication was noticed.

CONCLUSIONS

Our experience suggests that thyroidectomy in the geriatric population can be performed safely, without any increased risk of complications. With close monitoring of the comorbidities and a structured planning with a careful preoperative evaluation and a risk factor stratification, the hazards of surgical procedures could be contained. While a delay in performing surgical procedure in a suspicious thyroid can expose the patients to a number of complications like development of subclinical- or overt-hyperthyroidism or even metastasis in cases of a malignant thyroid.

KEYWORDS

Geriatric Thyroidectomy, Lateral Approach to Thyroidectomy, Elderly Thyroidectomy

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BACKGROUND

There has been no unanimously agreed definition of the term "elderly". The cutoff age can vary from sixty to eighty years or older. It is projected that by the year 2050, the population of elderly people aged more than sixty years will double nearing about 2.1 billion. The thyroid nodule's prevalence increases with age; almost half of the patients ≥ 65 years demonstrate nodules on ultrasound examination.

It has been estimated that around ninety percent women over the age of seventy years have thyroid nodules and around eighty percent of males above the age of eighty have thyroid nodules. The incidence of thyroid cancer also increases with age. Elderly patients often present with more aggressive forms of thyroid cancer, larger tumors, more extensive local growth, or distant metastases.

Achieving an adequate balance between treatment indication and surgical risk is deemed necessary in operating an elderly patient as geriatric population is more often affected by a large incidence of cardiovascular and metabolic comorbidities.^{1,2} The aim of our study is to review the demographic pattern indication for surgery and their outcome in elderly patients who attended our Department.

METHODS

We performed a retrospective analysis on our database of our thyroidectomy patients of two years in a tertiary care hospital of North East India. All elderly patients (aged over 60 years), total of fifty four cases undergoing thyroidectomy for benign as well as malignant lesions were included in study. Basic demographic data, preoperative diagnosis, type of surgery done, operative time, blood loss, complications, the need to divide strap muscles, identification of parathyroid glands, recurrent laryngeal nerves and superior laryngeal nerve and post-operative complications were recorded. The statistical analysis of data was performed using the computer program, Statistical Package for Social Sciences (SPSS for Windows, version 20.0. Chicago, SPSS Inc.) and Microsoft Excel 2010. The informed written consent was taken from all the participants of the study.

All patients underwent clinical examination, routine laboratory tests and ultrasound with biopsy; further examinations were selectively performed (i.e., functional imaging, computed tomography, or magnetic resonance imaging (MRI)).

Operative Technique

4–6 cm skin crease neck incision was used but instead of midline separation and retraction of strap muscles, the anterior border of SCM was identified and mobilized laterally. The superior belly of omohyoid is traced up to insertion in hyoid bone retracted cranially. The lateral edge of strap muscles was identified and retracted medially to expose the underlying goitre. The ansa cervicalis is identified coursing downwards anterior to the sternohyoid muscle and retracted medially with the sternohyoid and sternothyroid muscles to

expose the anterior surface of the thyroid lobe. Next thyroid was retracted downwards and superior pole of thyroid identified the triangle. The superior vascular pedicle could be easily identified in this technique allowing individual ligation of vessels and preservation of external laryngeal nerve. Once the middle thyroid vein was identified (if present) mostly at junction of superior belly of omohyoid and internal jugular vein and ligated, the rest of thyroid lobe can be easily dissected and retracted medially for easier identification of recurrent laryngeal nerve at the point of entry at cricothyroid junction or in Simon's triangle and superior parathyroid glands identified in the lateral triangle itself in posterolateral aspect of thyroid lobe and inferior parathyroid in close proximity to inferior thyroid vessels. The inferior thyroid veins can be easily located travelling transversely over common carotid artery and ligated. The thyroid lobe was freed from its attachment to the ligament of Berry and underlying trachea rings. For hemithyroidectomy, the isthmus was then transected to complete the operation. For patients undergoing total thyroidectomy, similar dissection of the opposite lobe was performed after identifying and retracting the opposite SCM. Once both the thyroid lobes were fully dissected and freed from the overlying strap muscles, the smaller of the lobes could be easily pushed beneath strap muscles to the opposite site. Wash with warm normal saline is given and haemostasis is achieved by ligation and cauterization. At the end of operation, the midline strap muscles cover over the trachea remained intact preventing adherence of skin flap to the tracheal cartilage. Drain was given and skin closed in layers. All total thyroidectomy specimens were removed intact in the LA group measured and sent for histopathological examination.

Parameters

Intra-operative blood loss was total of drain collection and no. of gauze used (1 gauze=7 ml blood).

Complications

Postoperative voice changes, swallowing difficulty, postoperative stridor or respiratory distress, tetany (both by trousseau sign and serum calcium level measured after 24 hrs), hematoma or serosa formation were checked clinically.

Follow Up

Patients were discharged on 5th postop day with or without thyroxine (depending upon the procedure). Follow up was done after one, two and six weeks and healing of scar mark and TSH level and other comorbidities were noted.

RESULTS

In a period of two year a total of fifty four cases were admitted and underwent thyroid surgery. Of those forty two patients were in the age group of 61-70 years, eleven patients of 71-80 years and one case was of 81-90 years. In our institution, prevalence of thyroid disorders was highest

(35%) in the age group 31-40 yrs. (total 7% cases were elderly). Distribution of pre-op diagnosis according to age and sex is given in Table 1.

Pre-Op Diagnosis	61-70 Yrs.	71-80 Yrs.	81-90 Yrs.
Colloid Goitre	20 (16 female)	-	-
Follicular Neoplasm CAT 4	7 male	3 male	-
NIFT- P	1 male	4 (2 female)	-
Follicular Neoplasm CAT 5	11 male	-	-
Undifferentiated CA	-	2 male	1 male
Anaplastic Carcinoma	3 male	2 male	-

Table 1. Age and Sex Wise Distribution of Pre-Op Diagnosis of Thyroid Cases

Out of these, twenty cases were diagnosed colloid goitre and hemithyroidectomy was done, ten follicular neoplasm Cat. 4 and were managed by hemithyroidectomy. HPE of three of the cases came out to be follicular carcinoma in whom completion thyroidectomy was performed. Eleven cases were diagnosed as follicular neoplasm Cat. 5 where total thyroidectomy was performed. Five cases were diagnosed as NIFT-P (non-invasive follicular neoplasm with papillary like nuclei) where hemithyroidectomy was performed. Five cases were anaplastic carcinoma and three cases were undifferentiated carcinoma with distant metastasis to lung was managed by palliative treatment. (Table 2). In our study all the cases were operated with lateral approach thyroidectomy.

Pre-Op Diagnosis	No. of Cases	Procedure Performed	Completion Thyroidectomy
Colloid Goitre (u/l)	20	Hemithyroidectomy	-
Follicular Neoplasm cat 4	10	Hemithyroidectomy	3 case (HPE=Follicular Carcinoma)
Follicular Neoplasm cat 5	11	Total thyroidectomy	-
NIFT-P	5	Hemithyroidectomy	-
Undifferentiated CA with Distant Metastasis	3	Palliative Treatment	-
Anaplastic Carcinoma	5	Palliative Treatment	-

Table 2. Pre-Op Diagnosis and Procedure Performed

Complications	No. of Patient with Complication	Improved After
Conversion to Strap Muscles Cutting	0	-
External Branch of SLN Injury	0	-
Recurrent Laryngeal Nerve Injury (Transient + Permanent)	1	Steroid Administration
Parathyroid Injury	0	-
Seroma or Hematoma Formation	0	-
Swallowing Difficulty	0	-
Postoperative Stridor or Respiratory Distress	0	-
Tetany (Clinical & Biochemical)	0	-
Hypothyroidism (biochemical)	14	Thyroxine Administration (TSH,T3,T4 Monitoring)

Table 3. Complications Noted in Elderly Thyroid Cases

The mean operative time was 100 minutes (range; 60-140 minutes). The mean amount of intra-operative blood loss was about 84 ml and post-operative drainage was 30 ml (range; 10-70 ml). Postoperative voice change was seen in one case which improved after 3 days of steroid administration. Fourteen cases with total thyroidectomy were supplemented with levothyroxine 25 micro gram after negative radio iodine scan. No complications like postoperative swallowing difficulty, seroma, hematoma and post-op stridor were noted. (Table 3)

DISCUSSION

With better health care facilities and standards of living there has been an upsurge in elderly population of India. As the geriatric population increases it mandates the clinicians to construct guidelines and protocols so that uniform and standardized care can be provided to these patients. Because of an increased risk for perioperative and postoperative morbidity among elderly patients undergoing surgical procedures, indications for thyroidectomy in this population are often limited to overt compressive symptoms or a sound suspicion for malignancy.³

In our institution in a period of two years from January 2018 to January 2020 prevalence of thyroid disorders was highest (35%) in the age group 31-40 yrs. (total 7% cases were elderly). In a period of two year a total of fifty four elderly cases (more than sixty years) were admitted and underwent thyroid surgery. Of those forty two patients were in the age group of 61-70 years accounting for 77.7% of study group. Terris D. J. et al⁴ in their study highlighted a total of 359 patients underwent thyroidectomy during the study period; there were 57 males and 302 females, with a mean (\pm standard deviation) age of 45.9 \pm 15.1 years. Results of our departmental data were consistent with study with mean age of 39 yrs. When only elderly patients (more than 60 yrs.) were considered as a study group mean age was 66 years. Distribution of pre-op diagnosis according to age and sex is given in Table 1. 37% cases were diagnosed colloid goitre and hemithyroidectomy was done. Five cases were diagnosed as NIFT -P (non-invasive follicular neoplasm with papillary like nuclei) and were managed by hemithyroidectomy. HPE report of all 5 cases were benign. Girardi et al. conducted a retrospective study of thyroid cancer in 596 adults from 2000-2010; their results similarly showed a lower frequency of PTC among elderly patients, with a complementary increase in the frequency of FTC, poorly differentiated and anaplastic thyroid carcinoma.⁵ In our study, five cases were anaplastic carcinoma and three cases were undifferentiated carcinoma with distant metastasis to lung and were managed by palliative treatment. (Table 2). In a prospective study of 6,391 patients referred for thyroid nodules at a large academic center, Kwong et al. showed a linear increase in the number of thyroid nodules per patient with age, rising from an average of 1.55 nodules \geq 1 cm in patients age 20–29 years old to a mean of 2.21 nodules \geq 1 cm in patients \geq 70 years old, demonstrating a 1.6% annual increased risk for multinodularity. This study also found that despite a lower likelihood of malignancy for nodules in elderly patients, these cancers were more likely to have aggressive phenotypes.⁶ In our study, out of the fifty four cases, twenty nine cases either had a sumptuous nodule or a confirmed malignancy suggesting increased prevalence of Malignancy in elderly patients. Assuming that thyroid cancer in the elderly is more invasive, increased mortality could depend also on less appropriate treatments for geriatric patients. It is wise to perform a definitive surgery considering the increase in average life expectancy.^{7,8} In our study all the

cases were operated with lateral approach thyroidectomy which according to us takes less operating time and less associated complications mentioned in table 3.

Common diseases in the elderly have a significant impact on anaesthesia and require special care. The risk from anaesthesia is more related with the presence of co-existing disease than with the age of the patient. Thus, it is more important to determine the patient's status and estimate the physiologic reserve in the preanaesthetic evaluation. If the condition can be optimized before surgery this should be done. Decreasing the operating time is also very important to decrease the perioperative morbidity in elderly which can be achieved with lateral approach as it guides in taking out superior pedicle, middle thyroid vein and inferior pedicle very quickly at the same time helps in identifying parathyroid, recurrent laryngeal nerve and superior laryngeal nerve and thus preserving these vital structures related to thyroid gland. Maximum time in thyroid surgery by new surgeons is wasted in achieving haemostasis therefore a meticulous dissection and control of major vessels if achieved early by lateral approach helps to decrease the operating time.

In our study, the mean operative time was 83 minutes (range; 60-140 minutes). The mean amount of intra-operative blood loss was about 84 ml and post-operative drainage was 30 ml (range; 10-70 ml). Postoperative voice change was seen in one case which improved after 3 days of steroid administration. Fourteen cases with total thyroidectomy were supplemented with levothyroxine 25 micro gram after negative radio iodine scan. No complications like postoperative swallowing difficulty, seroma, hematoma and post-op stridor were noted. (Table 3) Morbidity and mortality associated with thyroidectomy in elderly patients may be higher than in young patients. Both Passler et al and Miccoli et al described a higher overall complication rate in their elderly patients.^{9,10} Passler et al speculated that this higher complication rate correlated with a higher rate of malignant disease in their elderly cohort. According to our experience after operating forty six cases of thyroid surgery, age should not be regarded as a limiting factor per se. In experienced hands, and with all needed instrumentations available, it can be safely performed also in the elderly.^{3,11}

CONCLUSIONS

Our experience suggests that thyroidectomy in the geriatric population can be performed safely, without any increased

risk of complications. With close monitoring of the comorbidities and a structured planning with a careful preoperative evaluation and a risk factor stratification, the hazards of surgical procedures could be contained. While a delay in performing surgical procedure in a suspicious thyroid can expose the patients to a number of complications like development of subclinical- or overt-hyperthyroidism or even metastasis in cases of a malignant thyroid.

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