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ORIGINAL ARTICLE

Outcome of total thyroidectomy: A prospective study.

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ABSTRACT… Objective: To evaluate the incidence, outcome and complication of total thyroidectomy. **Study Design:** Prospective study. **Setting:** Surgical Department, Services Hospital Lahore. **Period:** from 1st January 2020 to 1st January 2023. **Methods:** Eighty hundred and twenty six consecutive patients underwent total thyroidectomy were included. **Results:** There were 124 male and 702 female. Their ages were between 18 to 82 years with mean age 48 years. Out of 826 patients, 430 have MNG (52%), 281 have cancer thyroid (34%), 58 have toxic nodular goiter (7%), 33 have Grave's disease (4%), 16 have Hashimoto's thyroiditis (2%) and 8 have Follicular adenoma (1%). Post operative hematoma was found in 17 patients (2%), Transient hoarseness in 25 patients (3%), unilateral permanent RLN paralysis in 4 patients (0.5%). No patient has permanent bilateral RLN paralysis. Transient hypocalcemia was found in 41 patients (5%) and permanent hypocalcemia in 3 patients (0.4%). **Conclusion:** Total thyroidectomy is safe procedure in experienced hands. Most of complications are managed conservatively.

Key words: Complication, Incidence, Outcome, Total Thyroidectomy, Thyroid Malignancies.

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INTRODUCTION

Total thyroidectomy is widely performed surgical procedure in the world. This is primary treatment for benign and malignant diseases including symptomatic MNG, hyperthyroidism including Grave's disease and toxic nodular goiter and thyroid cancer.[1]

Total thyroidectomy has increased over the past three decades and this is more common in female.[2,3] The reason for this increased incidence is not fully understood. More awareness, routine physical checkups, widespread application of high-resolution ultrasound may be the causes.

Total thyroidectomy in the hands of experienced surgeon is safe procedure while complications of thyroid surgery can be debilitating and even life threatening[4,5] Complications like hypoparathyroidism, recurrent laryngeal nerve (RLN) injury and post operative bleeding highlights the importance of meticulous surgical technique and thorough pre operative assessment.

METHODS

This prospective study was conducted in all patients underwent total thyroidectomy in Services hospital Lahore from 1st January 2020 to 1st January 2023 vide letter No. 0068. Focused history and examination were recorded on proforma along with investigations including complete blood count, clotting profile, thyroid function tests and other blood tests according to history and examination findings. Pre-operative assessment, operative procedure, post-operative care and complications were also recorded. All patients above 18 years old were included in the study. Those patients with anaplastic carcinoma, advanced cancer involving lymph nodes, trachea, esophagus and muscles, recurrent thyroid surgery and already immobile vocal card were excluded.

Pre-operative Assessment

All the patients have complete blood count, clotting profile, thyroid function tests, (T_3, T_4, TSH), thyroid antibodies, ultrasound neck and indirect laryngoscopy. Patients with solitary and dominant nodules have FNAC. Patients with Grave's disease and toxic nodular goiter were prepared by

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endocrinologist with carbimazole and Inderal and patient underwent surgery when euthyroid.

Surgical Procedure

Under GA and positioning the patient on table with neck extended, collar skin incision made at the level of cricoid cartilage. Sub platysma flap raised, cervical fascia incised in midline and strap muscles separated. Thyroid lobe in one side mobilized and superior thyroid artery ligated at upper pole. Recurrent laryngeal nerve explored in all patients. Parathyroid glad identified and preserved. Inferior thyroid artery branches were ligated. The same procedure performed on other side. Both lobes and isthmus dissected from trachea and removed. Hemostasis secured, drain placed and wound closed in layers.

Post-operative Care

At the time of extubation, mobility of vocal cords assessed by anesthetist and documented. Serum calcium and albumin checked on day one and corrected calcium calculated and recorded. When drain was less than 20 ml and corrected calcium more than 2 mmol/l, drain was removed and patient discharged. If corrected calcium was between 1.9 to 2 mmol/l, patient was discharged on tab calcium 3 gm per day and Alfacalcidol 0.5 ug per day. If the patient was symptomatic and corrected calcium was below 1.9, injection calcium was given until patient was shifted to oral calcium. All patients were discharged on tab thyroxine 100 ug daily. Patients were followed in OPD after one week and stitches removed. If histopathology was benign, patients were referred to endocrinology for further follow up. If histopathology was malignant, patients were referred to nuclear medicine for further management.

RESULTS

There 124 were male and 702 were female. The age of patients ranged between 18 and 82 years, mean age 48 years. Most common indication of surgery was MNG followed by thyroid carcinoma, suspicious thyroid nodules, toxic nodular goiter and Grave's disease in descending order.

After surgery, specimen was sent for histopathology. Final diagnosis was made on the basis of histopathology results

TABLE-I

Most common indications of surgery

Clinical Diagnosis	Number of Patients	%age
Multi nodular goiter	421	51
Thyroid cancer	248	30
Suspicious thyroid nodules	66	8
Toxic nodular goiter	58	7
Grave's disease	33	4

Final diagnosis according to histopathology

TABLE-II

Table-II Further treatment done according to final diagnosis.

Diagnosis	Number of patients	%age
Multi nodular goiter	430	52
Thyroid cancer	281	34
Papillary carcinoma	230	82
Follicular carcinoma	45	16
Medullary carcinoma	3	1
Hurtle cell carcinoma	3	1
Toxic nodular goiter	58	7
Grave's disease	33	4
Hashimoto's thyroiditis	16	2
Follicular adenoma	8	1

Complications encountered in 90 patients (11%) in this study are shown in Table-III.

TABLE-III

Complication	Number of Patients	%age
Post operative hematoma	17	2
Transient hoarseness	25	3
Recurrent laryngeal N paralysis		
Unilateral	4	0.5
Bilateral	0	0
Transient hypocalcemia	41	5
Permanent hypocalcemia	3	0.4

DISCUSSION

Total thyroidectomy has markedly increased worldwide in last few decades. One reason is increasing incidence of thyroid cancer and other reason is change of practice from subtotal thyroidectomy to total thyroidectomy[6,7] Subtotal thyroidectomy was performed very frequently for MNG before, but recurrence was common and thyroid surgery for recurrent MNG was very difficult and with high complication rate.

Our study, majority of patients have MNG (52%) followed by thyroid cancer (34%). In the study

published by Jisheng Hu et al, MNG was 56% and thyroid cancer 29%.[8] Histopathology of remaining patients in our study was toxic nodular goiter (7%), Grave's disease (4%), Hashimoto's thyroiditis (2%) and follicular adenoma (1%).

Complications observed in 90 patients (11%). These complications are shown in Table-III. Post operative hematoma seen in17 patients (2%). Majority of these were managed conservatively. Only 3 patients developed dyspnea few hours after surgery. These patients were taken to OR, wound opened, hematoma evacuated and hemostasis secured. All these patients were discharged safely. Study conducted by Materazzi et al in 2017, incidence of hematoma was 1%.[9] Another study by Neil Bhattacharyya et al also showed incidence of hematoma 1.5%.[10]

In our study, we observed transient hoarseness in 25 patients (3%). In most of these patients, the symptoms were resolved in few weeks. In patients who had persistent hoarseness for 6 weeks, IDL done. This was repeated at 6 months. Four (0.5 %) of patients have permanent paralysis of one vocal cord, although hoarseness resolved in all patients in 6 months. No patient has bilateral vocal cord paralysis in our study. The incidence of temporary and permanent vocal cord paralysis was 7.1% and 0.9 % in study by Sewefy et al. [11] Muller et al reported the incidence of permanent recurrent laryngeal nerve injury 0.9%.[12]

Transient hypocalcemia was found in 41 patients (5%). These patients were discharged on oral calcium 3 gm per day along with oral Alfacalcidol 0.5 ug per day. After 6 w, PTH level was checked, and if this was normal, calcium and Alfacalcidol were discontinued. In 38 out of 41 patients, PTH was normal after 6 w. In 3 patients, PTH level checked again at 3 months, this was still low. So, these patients were labelled as permanent hypoparathyroidism and they were advised to continue to take Calcium and Alfacalcidol permanently. Smaanth et al has incidence of transient hypocalcemia 4.87% in their study.[13] The incidence was 7.6%, 13.4% and 24.1% in studies by Efremidou et al, Serpell et al and Koyuncu et al.[14,15,16]

CONCLUSION

Total thyroidectomy is safe procedure if performed by experienced surgeon. Most of the complications are transient and managed conservatively. However, permanent RLN and Parathyroid glad injury have lifelong consequences.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORSHIP AND CONTRIBUTION DECLARATION	
1	**Abdul Rauf Arshad:** Accusation, analysis, interpretation of data.
2	**Kamran Cheema:** critical review.
3	**Muhammad Aslam:** Design of manuscript.
4	**Tariq Nazir:** Drafting.
5	**Shafqatullah:** Data analysis.
6	**Muhammad Imran:** Concept of abstract.