

Thyroid Surgery Complications: Frequency of Thyroid Surgery Complications and its association to the Extent of Procedure

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Abstract

Objectives: To Determine the frequency of thyroid surgery complications and its Association to the extent of procedure. **Study Design:** Cross sectional comparative study. **Setting:** Surgical and Radiological Department of District Head Quarters (DHQ) Hospital, Madina Teaching Hospital (MTH) and Allied Hospital Faisalabad. **Duration:** From December 2007 to December 2009. **Subjects:** 90 patients admitted with goiter due to benign diseases. **Methods:** In Group A, 30 patients underwent unilateral lobectomy. In Group B surgical procedure was Total Thyroidectomy. In Group C patients underwent Subtotal Thyroidectomy. Post operative complications were noted in each group and all three groups were compared. **Results:** we compared different complications like hemorrhage,

respiratory distress, thyroid storm, and hypocalcaemia, injury to recurrent laryngeal or external laryngeal nerves or to cervical sympathetic chain, wound infection, and recurrence of goiter and hypocalcaemia. After excluding hypothyroidism as complication, (as all the patients in group B developed a hypothyroidism), in group A, one patient developed fore mentioned complications and in group B, ten patients developed complications. In group C complications noted in three patients were more as compared to group A but less as compared to group B. **Conclusion:** More extensive procedures are associated with greater number of complications in thyroid surgery. **Key Words:** Goiter, Lobectomy, Subtotal Thyroidectomy, Total Thyroidectomy, Complications.

INTRODUCTION

The history of thyroid disease is as old as the history of mankind¹. Female to male ratio is 3:1^{2,3}. The morbidity and mortality being dependent on primary pathology of goiter, procedure done and surgeon's skill. Permanent hypothyroidism is an inevitable complication of total thyroidectomy and the chances of injuring parathyroid glands and recurrent laryngeal nerves are also maximal with total removal of the gland⁴. The pathogenesis of hypocalcaemia after thyroidectomy is not completely understood. Hypocalcaemia after thyroidectomy has been most commonly attributed to parathyroid insufficiency related to injury, devascularization or inadvertent excision of the parathyroid glands. Symptoms of hypocalcaemia were mainly reported in 15% of patients after sub- total thyroidectomy and 75% of patients after total thyroidectomy, with no case reported after lobectomy⁵. Another common and

potentially life-threatening complication in thyroid gland surgery is bilateral vocal cords palsy. Voice changes have been regarded as an infrequent complication of thyroidectomy and damage to the recurrent laryngeal nerve has been given as their major cause. Complication rates still range from 5 - 15% for procedures being carried for benign diseases^{6,7}. For extensive procedures done for malignant conditions, complication rates are more than 30% (Hypocalcaemia being the most common with permanent hypocalcaemia in less than 3% of patients after total thyroidectomy)^{8,9}. We compared three commonly performed thyroid procedures done in patients presenting with benign thyroid problems, unilateral lobectomy and isthumectomy, subtotal thyroidectomy and total thyroidectomy. The rationale of the study was that, whether there is any significant difference in frequency of complications in all the three groups.

MATERIALS AND METHODS

Cross sectional comparative study conducted in Surgery Department of MTH, Allied, and D.H.Q Hospital (P.M.C.) Faisalabad. From 2007 to 2009. Total 90 patients were recruited and divided in groups A, B and C.

Group A = 30 patients (Lobectomy and isthumectomy done).

Group B = 30 patients (Total thyroidectomy done).

Group C = 30 patients (Subtotal thyroidectomy done).

Non probability convenience sampling technique was used.

All inclusive patients of the study were taken from outpatient department of General Surgery where detailed history and examination were done. Patients were selected on the basis of specified criteria.

INCLUSION CRITERIA

- All patients of goiter with benign pathology (like colloid goiter, adenoma, multinodular goiter, diffuse goiter) diagnosed preoperatively requiring surgical treatment were included.
- Patients of thyrotoxicosis well controlled with drugs.

EXCLUSION CRITERIA

- Patients with co-morbid conditions unrelated to thyroid pathology.
- Patients already having damage to nerves or vocal cords due to preceding pathology or intervention.
- Patients previously operated for any thyroid pathology.
- Patients with hypoparathyroidism.

The variables were complications of surgery on day of operation and first, third, seventh postoperative days, and follow up on one month, two months and six months post-operatively. The data was qualitative, as it was presence or absence of complication and was assessed by looking on the data in forms of tables. The three groups were compared by applying chi-square test. The results were compared using a level of significance of 0.05. The statistical analysis of the data was done by the software SPSS version 10.

RESULTS

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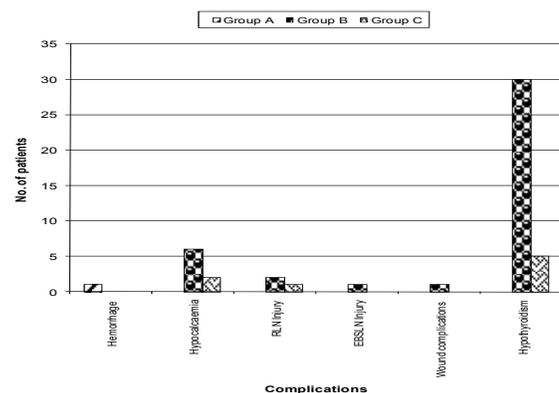
By non probability convenience sampling technique 30 cases (**Group A**) underwent unilateral lobectomy and isthumectomy, 30 patients (**Group B**) underwent total thyroidectomy and in 30 patients (**Group C**) subtotal thyroidectomy was done. In all the three groups, data was collected on seven occasions. When we exclude hypothyroidism as complication, as all of our patients in TT group became hypothyroid. The frequency of complication in Group A was 3.33% (1/30), group B 33% (10/30) group C (3/30). This shows significant difference among three groups, complication being highest in TT group and lowest in lobectomy and isthumectomy group, which is consistent with extent of resection in three groups.

Table-1
Comparison of Three Groups

Complications	Group A	Group B	Group C
Hemorrhage	1	-	-
Respiratory distress	-	-	-
Thyroid storm	-	-	-
Hypocalcaemia	-	6	2
RLN *Injury	-	2	1
EBSLN *Injury	-	1	-
Cervical sympathetic chain damage	-	-	-
Wound complications	-	1	-
Recurrence of goiter	-	-	-
Hypothyroidism	-	30	5

- RLN = Recurrent Laryngeal Nerve
- EBSLN = External Branch of Superior Laryngeal Nerve

Figure-1
Comparison of Three Groups



Patients were between the ages of 12 to 80 years. According to age, patients were divided into four groups. In G1 (<20 years) patients were 16 in number that is (17.78%), G2 (21—30 years) were 31 (34.44%), G3 (31-40 years) were 26 (28.88%) and G4 (above 40 years) were 17 (18.89%) So mostly patient affected with thyroid disease were of group G2 (21-30years).

Table-2

Age Distribution: Total No Patients=90

Group	Cases	%Age
G1	16	17.78%
G2	31	34.44%
G3	26	28.89%
G4	17	18.89%

G1 Group = < 20 Years

G2 Group= 21-30Years

G3 Group= 31-40Years

G4 Group= >40 Years

Mostly patient affected with thyroid disease were females 91.11 % (82) while the males were 8.89% (08)

Table-3

Sex Distribution: Total No Patients=90

Sex	No of Patients	Percentage
Male	08	8.89%
Female	82	91.11%

The most common pathology found was MNG (60%). The other four were colloid goiter (26.66%), Grave disease (4.44%), Thyroid cyst (4.44%) and Thyroiditis (4.44%).

Table-4

Pathology Distribution: Total number of Patients=90

Pathology	No of Patients	Percentage
M.N.G	54	60%
Colloid Goiter	24	26.66%
Graves Disease	04	4.44%
Thyroid Cyst	04	4.44%
Thyroiditis	04	4.44%

DISCUSSION

We compared the three most commonly performed thyroid procedures for the development of complications and co-related our results with those in the literature. We noticed the benign disease of thyroid is more common in young females than males, with common presentation of multi nodular goiter. The same observation was also mentioned in various

literatures^{2,10,11}. We choose to limit our study to benign disease of thyroid, because malignant disease is more prone to bleeding, moreover involvement of parathyroids and other complications are higher in patients operated for malignant diseases. This fact is shown in many other studies¹². Transient hypoparathyroidism after thyroidectomy had an incidence as high as 83%¹³. Most authors believe that the hypo function of these glands occurs because of ischemia or inadvertent removal of gland during surgery¹⁴. The high incidence of symptoms of hypocalcaemia in postoperative period was similar to that reported by others^{15,16}.

The only patient, who developed permanent hypoparathyroidism belonged to TT group. In lobectomy and isthmectomy group none of the patient developed hypoparathyroidism. As regards recurrent laryngeal nerve injury, highest incidence noted in total thyroidectomy followed by 3.33% in sub total thyroidectomy group. Only patient to develop permanent RLN injury belong to TT group which is consistent with other studies as well^{12,17}. A very common complication noted in our study was hypothyroidism. Significant difference was noted among the groups for the development of hypothyroidism. These results are comparable with other studies in the literature^{18,19}. In our study we did not observe any recurrence. Recurrence rate as high as 42-45% has been reported following STT^{18,19}. The incidence of recurrence has been directly related to a long postoperative follow up and to large amounts of remnant tissue^{18,20}. According to literature data, the weight of the thyroid remnant should be less than 4.0 g to avoid postoperative hyperthyroidism²⁰. Our data was consistent with this recommendation. Another possible reason for no recurrence in our study was short time follow up (every patient was followed for six months). Most recurrences develop 10-20 years after primary surgery¹⁸.

In our study we noted postoperative bleeding in only one patient out of the total 90 patients operated (1.1%). That patient belonged to Lobectomy group. In our study we noted postoperative wound infection in only one patient out of the total 90 patients operated (1.1%). That patient belonged to TT group. This is evident from the literature that with good prophylactic antibiotics and better sterilization the incidence of wound infection is very low now a days, which is shown by different studies¹². Only one patient in our

study to develop injury to EBSLN belonged to TT group. This patient was having voice changes but the RLNs were normal in case on IDL and there was no laryngeal edema. As there is no definite test to detect EBSLN injury, it is only subjective evidence of voice changes with normal vocal cords^{21,12 22}. None of the patients in our study developed respiratory distress, thyroid storm or injury to cervical sympathetic chain. These complications are extremely rare now a day as in shown in literature^{12,22}. In our study we noted that there is statistically significant difference among all the three groups, for the development of complications.

CONCLUSION

Complications of thyroid surgery are much dependent on extent of thyroidectomy, primary pathology and experience of the surgeon. The more extensive procedures are associated with greater number of complications.

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