

The Outcome of Thyroid Surgery

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ABSTRACT

Background: Thyroid surgeries are common procedures performed by surgeons. Most of the complications of thyroid surgery are related to either metabolic derangements or injury to the recurrent laryngeal nerve.

Objectives: To evaluate the outcome of thyroid surgery regarding morbidity, mortality and hospital stay.

Methods: A prospective study of (106) cases of thyroid surgery conducted at Baghdad teaching hospital from January 2011 to January 2014. The study included the patients who underwent thyroid surgery. All of the operations were carried out by the same surgical team.

Results: The mean age was 34.7 ± 11.6 years, females to male ratio was 4.7:1. Goiter was the dominant complaint in 99.1%, followed by pressure symptoms 42.5%. In 62.3% of the patients they were euthyroid, 35.8% hyperthyroid and 1.9% were hypothyroid. Benign multinodular goiter was found in 73.6%, single nodule in 21.7% and malignancy in 4.7%. Subtotal thyroidectomy performed in 60.4%. Temporary hypothyroidism developed in 8.5%, permanent hypothyroidism in 4.7%, temporary recurrent laryngeal nerve (RLN) injury in 5.7%, permanent RLN injury in 1.9%, hypertrophic scars in (4.7%), hematoma in one patient. Hospital stay ranged from one to three days in 92 patients and five to seven days in 14 patients who developed complications and needed further close management.

Conclusions: thyroid surgery is a safe procedure if done correctly with appropriate patient selection, proper preoperative evaluation and close postoperative observation finding any complication early on, only 13.2% of the cases developed complication.

Keywords: Goiter, Multinodular goiter, Thyroidectomy, Hyperthyroidism, Euthyroid, Hypothyroidism, Hypoparathyroidism.

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Goiters are a common disorder worldwide including Iraq, and it could be associated with normal, elevated or decreased thyroid function, it can be diffusely enlarged, or with a single nodule or multiple nodules⁽¹⁾.

Morbidity of a goiter arises from the underlying pathology (e.g. malignancy, hyperthyroidism), which present a challenge by itself as patients in the developing world where healthcare facilities are poor, normally present with an advanced disease. Morbidity and mortality may also arise from the goiter itself, either due to size or management (complication of surgery: e.g. recurrent laryngeal nerve (RLN) injury, hypocalcemia, hypoparathyroidism etc.)^(2,3).

This study is aims to evaluate the outcome of thyroid surgery regarding morbidity, mortality and hospital stay.

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Methods

During the period from January 2011 to January 2014 a total of (106) patients were enrolled in this study, all were subjected to different types of thyroid surgery. Patients with thyroid disease associated with an already damaged RLN or vocal cords as diagnosed by pre-operative clinical examination, and patients with no immediate postoperative complications who missed the follow up process were excluded from this study.

Complete history including demographic data and complete physical examination were obtained, preoperative investigations included: routine complete blood count, blood urea, serum creatinine, PT, PTT, Bleeding time, ECG, and thyroid function tests, neck ultrasound, chest x-rays were taken, CT scan was performed for patients with bulky goiters or with compression symptoms. Furthermore, 28 cases that

were suspected to have malignancy (single nodule larger than 1 cm in diameter or nodular goiter with sonographic evidence of malignancy) were sent for fine needle aspiration (FNA) to exclude malignancy.

Indirect Laryngoscopy was done routinely in all cases to look for vocal cord status.

The choice of the type of surgery were decided by the supervising consultant and in accordance with results of the preoperative evaluation and the results of FNAC. Vocal cord mobility were examined postoperatively by the anesthetist immediately after extubation in all patients. Non-narcotic analgesic medication were given if the patient's pain is only minimal to moderate.

Most patients progress from clear liquids to solid food within hours after the operation.

Evaluated complications were: transient and permanent hypocalcemia, transient and permanent hypothyroidism, transient and permanent recurrent laryngeal nerve (RLN) injury, infection, bleeding, stitch sinus, hypertrophic scar formation, for one year postoperatively.

Results

A total of (106) patients were enrolled in this study with a mean age of (34.7 ± 11.6) ranging from 17 to 63 year old. Females to male ratio was (4.7:1). Almost all the patients (n=105); (99.1%) presented with

neck swelling, (45) patients (42.5%) presented with pressure symptoms, (38) patients (35.8%) with loss of weight, and (13) patients (12.3%) had nervousness, one patients may present with more than one symptom.

In 62.3% of patients (n=66) they were euthyroid, 35.8% (n=38) were hyperthyroid, 1.9% (n=2) were hypothyroid.

Seventy-eight patients (73.6%) had benign multinodular goitre and (23) patients (21.7%) had benign single nodule in either side, five patients (4.7%) had malignancy (those patients re-operated on after the diagnosis proved by histopathology (completion thyroidectomy in two who had lobectomy or subtotal thyroidectomy and neck dissection was performed in all five of them).

Subtotal thyroidectomy was performed in (64) patients (60.4%), right hemithyroidectomy in (15) patients (14.2%), near total thyroidectomy in (14) patients (13.2%), left hemithyroidectomy was performed in (8) patients (7.5%), and total thyroidectomy with neck dissection was performed in five patients (4.7%), (those patients who had malignancy).

Complications are summarized in table 1.

The overall hospital stay ranged (1-3) days in (92) patients (86.8%), and (5-7) days in (14) patients (13.2%) whom developed complications and needed further follow up and management.

Table 1: Frequency and percentages distribution of post-operative complication of the studied group (arranged according to incidence).

Complication	Number of patients	%
Temporary hypothyroidism	9	8.5
Temporary RLN injury(unilateral)	6	5.7
Transient hypocalcemia	6	5.7
Permanent hypothyroidism	5	4.7
Hypertrophic scars	5	4.7
Permanent RLN injury(unilateral)	2	1.9
Hematoma	1	0.9
Stich sinus	1	0.9
Mortality	0	0.0%

Discussion

Disorders of the thyroid gland constitute the second most common endocrine disease following diabetes mellitus. Thyroid surgery is one of the most frequent operations performed for thyroid swelling worldwide⁽⁴⁾.

The minimum patients age was 17, maximum was 63 with an average age of 34.7 years-old, taking gender into consideration this study's demographic results are consistent with other studies like that of Islam MS et al⁽⁵⁾ in 2010, in which the mean age was found to be (37.7). Another study by Sreeramuluet al⁽⁶⁾ in 2012, a mean age of (35.4) years was reported which is also consistent.

In this study the most common presentation was neck swelling, 105 out of 106 patients (99.1%) presented with this complaint, either alone or accompanied with other symptoms, agreeing with published data in previous studies and literatures⁽⁵⁾.

Regarding thyroid function, in the current study 38 patients (35.8%) had hyperthyroidism and two patients (1.9%) had hypothyroidism while the remaining (66) patients (62.3%) were euthyroid. In a study conducted by Chi SY et al in 2005⁽⁷⁾ an incidence of hyperthyroidism was (20-45%) reported over a period of (10) years which is comparable with this study.

Subtotal thyroidectomy was the most common procedure performed, in (64) patients (60.4%), total thyroidectomy with neck dissection was performed in five patients (4.7%) (those patients who had malignancy). In Sasson AR et al⁽⁸⁾ study in 2001, total thyroidectomy performed in (49%) and lobectomy in (51%). Quiros RM et al in 2005⁽⁹⁾ performed total thyroidectomy 45 patients out of (72), (16) patients had a hemithyroidectomy, nine patients had a completion thyroidectomy, and two patients had a neck dissection alone for recurrent thyroid cancer. A study by Rix TE et al⁽¹⁰⁾ in 2005, mentioned that over three years (126) thyroid operations

were performed; (96) total thyroid lobectomies and (30) total thyroidectomies. Of these, 12 (10%) were performed for malignant disease.

In the current study 14 patients (13.2%) developed hypothyroidism post operatively, 9 patients (8.5%) had temporary hypothyroidism and the other five patients (4.7%) had permanent hypothyroidism and those patients were medically treated. Our findings were lower than the (24.1%) reported in a retrospective study of (58) patients conducted by Seiberling KA et al⁽¹¹⁾, and higher than that reported by Vashishta R et al⁽¹²⁾, where (7.6%) of their patients developed hypothyroidism post operatively.

Temporary unilateral RLN occurred in six patients (5.7%) and permanent unilateral RLN injury occurred in two patients (1.9%). These rates were higher than the incidence rates of RLN injuries reported in an analysis of nearly (15,000) patients by Rosato et al⁽¹³⁾ who found that the incidence of unilateral in (1%) and bilateral paresis in (0.4%) of the cases with a total incidence rate of (1.4%).

A study done by Bhattacharya N et al⁽¹⁴⁾ in 2002 on (517) patients undergoing total thyroidectomy, reported that incidence of unilateral and bilateral vocal cord paralyses were (0.77%) and (0.39%), respectively.

This discrepancy with Rosato et al study⁽¹³⁾ and Bhattacharya N et al⁽¹⁴⁾ might be attributed to the differences in medical facilities or procedures that were performed where they analyzed data of patients with total thyroidectomy only and not other procedures, in addition to the differences in patients characteristics.

The incidence of temporary hypocalcemia is 5.7% (n=6), which is comparable to other studies like that of Vashishta et al⁽¹²⁾ in 2012, who found hypocalcemia in (6.18%). And is lower than that reported by Pradeep PV et al⁽¹⁵⁾ in 2007 who reported temporary hypocalcemia in (24%) and permanent hypocalcemia in (3%) of the cases. incidence of hypocalcemia depend on the type of

surgery, temporary hypocalcemia was more common after total thyroidectomy.

Studies showed development of hypertrophic scar after thyroidectomy was found to be associated with specific preoperative factors such as incision site near the sternal notch, prominent sternocleidomastoid muscles, and high body mass index⁽¹⁶⁾. Hypertrophic scars developed in five patients (4.7%), and this was close to that found in Bhattacharya N et al⁽¹⁴⁾ study who reported (3.1%) of the patients had hypertrophic scar.

Only one patient (0.9%) in our study developed stitch sinus and discharge, this patient subjected to total thyroidectomy, however, this patient who had stitch sinus was medically treated with appropriate antibiotics and cleaning of the wound. Literatures are very sparse on this because most are not reported for medicolegal implications^(17,18).

Postoperative bleeding and subsequent hematoma formation is a potential life threatening complication that must be carefully monitored during the postoperative period. Wound haemorrhage is a problem of early post-operative period. Usually within the first (12) hours. Hemorrhage is the most serious complication of thyroid surgery because even a small amount of hematoma deep to the strap muscles can compress the trachea and cause respiratory obstruction^(19,20). Hematoma was reported in only one patient (0.9%) in our study, this is very close to the findings of Bhattacharya et al⁽¹⁴⁾ who reported hematoma in (1%).

In conclusion, thyroid surgery is generally a safe procedure if done appropriately, in this study, only (13.2%) of the cases developed complications. Appropriate patient selection, preoperative preparation, meticulous dissection during surgery and appropriate postoperative care with early identification of complications and prompt treatment play an important role in reducing incidence of complications and the duration of postoperative hospital stay

and limiting patient morbidity with much emphasis on follow up.

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