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COMPLICATIONS OF THYROID SURGERY FOR PATIENTS ATTENDING TO TISHREEN UNIVERSITY HOSPITAL

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ABSTRACT

Background: Thyroidectomy is considered a safe operation that performed frequently for many indications with low incidence of life threatening complications. **Aim:** The purpose of this study was to determine complications of thyroidectomy and the differences in occurrence according to the type of surgical procedure. **Patients and Methods:** In this retrospective study, we reviewed medical records of 100 patients referred to the department of general surgery, Tishreen University Hospital, Lattakia, during two-years period(2022-2023) who underwent either total thyroidectomy (80 cases) or subtotal procedure (20 cases). **Results:** Out of 100 patients, 25(25%) were male and 75(75%) were female, with mean age of the patients was 47.18±12.4 years. The overall rate of postoperative complications was 17%, which were more frequent in females than males (20% vs. 8%, p:0.04) and all were recorded in total thyroidectomy group(21.3% vs. 0% in subtotal group,p:0.02). Complications of total thyroidectomy included: injury to recurrent laryngeal nerve either transient(6.3%) or permanent in one side(1.3%), hypoparathyroidism either transient(5%) or permanent(1.3%), poor scar formation(2.5%) surgical site infection(2.5%), seroma(1.3%) and hematoma(1.3%). **Conclusion:** The current study revealed rise in complications rates for patients undergoing total thyroidectomy than subtotal one especially neurological and hypoparathyroidism.

KEYWORDS: Complications, subtotal, Syria, Thyroidectomy, total.

1. INTRODUCTION

Thyroid gland is an vital endocrine gland located in the lower part of the anterior neck which consists of two lobes connected by isthmus.[1,2] It weighs 20-25 grams in normal population and makes hormones that regulate metabolic rate of the body, growth and development.[3,4,5] Thyroidectomy is defined by removal of all or part of the thyroid gland, and it is classified according to the amount of tissue that removed into three main groups; total(involves removal of two lobes, isthmus with pyramidal lobe if present), subtotal (leaves 3 to 5 gram on less affected side of gland), and near-total thyroidectomy(leaves less than 1 ml on one or both sides).[6,7,8,9]

Thyroidectomy is performed for management of various thyroid diseases including benign and malignant cases , which witnessed a significant global increase due to high frequency of diagnosed thyroid diseases as well as increasing in indications of surgical interventions.[10,11] Complications of thyroid surgery include generally hypocalcaemia resulting from hypoparathyroidism, bleeding, injury to the recurrent or superior laryngeal nerve and infection.[12,13,14,15,16] Prevention of complications following thyroidectomy is considered crucial to improve final outcome through proper assessment before surgery, knowledge of the surgical anatomy, undertaking careful surgical planning as well as preservation of adjacent organs.[17,18,19,20]

There are different studies conducted to assess the prevalence of postoperative complications, and there is no previous local review regarding final outcome of thyroidectomy. Therefore, the aims of current study were:1- to evaluate complications among patients who underwent thyroidectomy. 2-to compare the incidence between total and subtotal thyroidectomy.

2. PATIENTS AND METHODS

2.1. Study population

This was an observational retrospective study of a group of patients attending department of general surgery at Tishreen University Hospital in Lattakia-Syria during two-years period (2022 and 2023). The inclusion criteria were: all patients who underwent total or subtotal thyroidectomy. The exclusion criteria were presence one

of the following: patients younger than 14 years, secondary thyroid surgery, removal of one of the lobes, or patients who underwent concomitant neck dissection.

History and physical examination were performed for all patients, as well as laboratory investigations including thyroid functions, serum calcium and echocardiography of neck and thyroid gland. Patients with hyperthyroidism were treated by methimazole and propylthiouracil until reaching the status of euthyroid. Laryngoscopy was performed to examine vocal cord with administration of preoperative antibiotic prophylaxis for all patients. Surgical intervention was done under general anesthesia with using drains after thyroidectomy. Patients were followed up on regular periods with recording of complications associated with surgery.

2.2. Ethical consideration

After discussing the study with the patients, all of them gave a complete and clear informed consent to participate in the study. This study was performed in accordance with the Declaration of Helsinki and approval for the study was obtained from the institutional ethics committee.

2.3. Statistical Analysis

Statistical analysis was performed by using IBM SPSS version 25. categorical variables were reported as numbers and percentages and continuous variable were presented as mean± standard deviation(SD). Chi-square test was used to examine the comparisons between the two groups. All the tests were considered significant at a 5% type I error rate ($p<0.05$), β:20%, and power of the study:80%.

3. RESULTS

The study included a group of 100 patients who fulfilled the criteria of the study. Age ranged from 19 to 73 years, with mean age of 47.18±12.4 years. The most frequent age group was 41-50 years (33%), followed by 51-60 years (24%), 31-40 years (18%), 61-70 years (12%), 21-30 years (8%), 71-80 years (3%) and 14-20 years (2%). Female represented 75 % of the study sample and males were 25% with sex ratio (Female: male 3:1). Patients were classified into two groups according to the type of surgical intervention; total thyroidectomy in 80 cases (80%) and subtotal in 20 cases (20%), in which final outcomes were compared between two groups.

Table 1: Demographic characteristics of the study population.

Variable	Result
Age(years)	47.18±12.4(Range:19-73)
Age group(n,%)	
14-20	2(2%)
21-30	8(8%)
31-40	18(18%)
41-50	33(33%)
51-60	24(24%)
61-70	12(12%)
71-80	3(3%)
Sex,(n,%)	
Male	25(25%)
Female	75(75%)
Type of surgical intervention	
Total thyroidectomy	80(80%)
Subtotal thyroidectomy	20(20%)

Complications were developed in 17 cases, with significant gender disparity in the occurrence; female(15 cases: 20%) and male (2 cases:8%), p:0.04.

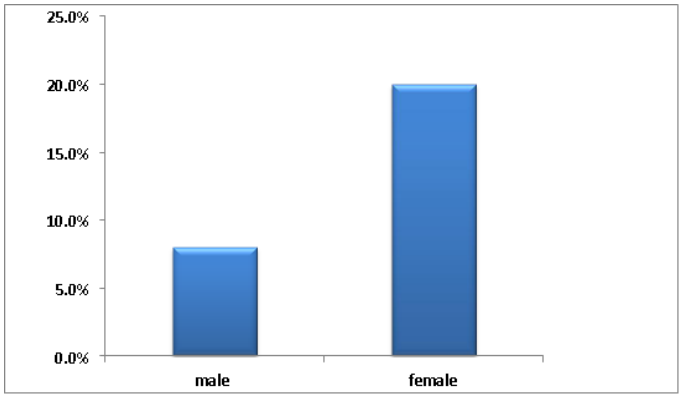

Figure 1: Distribution of complications according to the sex.

All complications were developed in patients who underwent total thyroidectomy;21.3% versus 0% in other group, p:0.002. As shown in table (2), injury to the recurrent laryngeal nerve was transient in 5 cases (6.3%) and permanent in one side in one case (1.3%), without any case of permanent bilateral injury.

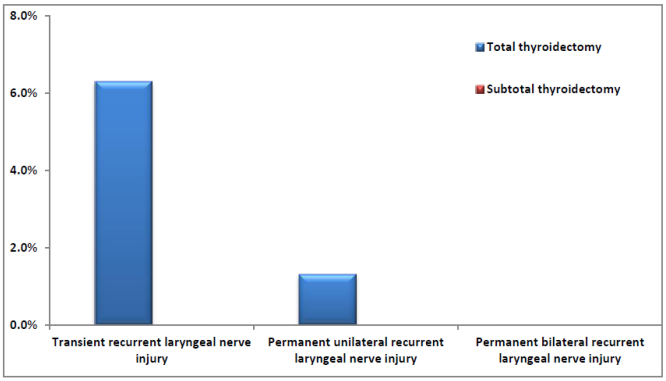

Figure 2: Distribution of neurological complications according to the surgical procedure.

Postoperative hypoparathyroidism was either transient in 4 cases (5%) or permanent in one case (1.3%).

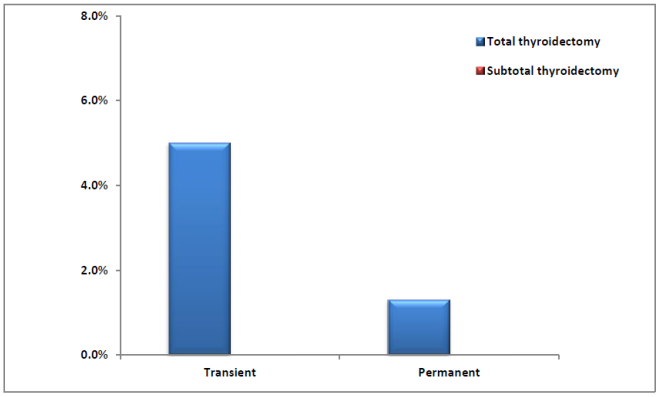

Figure 3: Distribution of hypoparathyroidism according to the surgical procedure.

Seroma was developed in one case (1.3%) on the fourth day after surgery, which managed by fine needle aspiration. In addition to, hematoma after thyroid surgery was recorded in one case (1.3%) which regressed spontaneously without any surgical intervention. The prevalence of poor scar formation and surgical site infection was 2.5% for each of them.

Table 2: Complications according to the type of surgical procedure.

Complication	Total thyroidectomy (80 cases)	Subtotal thyroidectomy (20 cases)
Neurological complications Transient recurrent laryngeal nerve injury Permanent unilateral recurrent laryngeal nerve injury Permanent bilateral recurrent laryngeal nerve injury	 5(6.3%) 1(1.3%) 0(0%)	 0(0%) 0(0%) 0(0%)
Hypoparathyroidism Transient Permanent	4(5%) 1(1.3%)	0(0%) 0(0%)
Seroma	1(1.3%)	0(0%)
Hematoma	1(1.3%)	0(0%)
Poor scar formation	2(2.5%)	0(0%)
Surgical site infection	2(2.5%)	0(0%)

4. DISCUSSION

In spite of thyroidectomy is considered the most common and safe endocrine surgery, it is not free from complications that affect final outcome. The current study of 100 patients who underwent either total or subtotal thyroidectomy showed the main findings: first, patients were from different age groups in which 41-50 and 51-60 years groups comprised approximately 60%

of the patients and majority of the patients were females. Second, postoperative complications rate was 17%, and all of them were occurred in patients who underwent total thyroidectomy with rate of 21.3%. Third, complications were detected significantly in females than males, p:0.04. Finally, injury to recurrent laryngeal nerve and hypoparathyroidism represented the most frequent complications, followed by poor scar formation, surgical site infection, seroma and hematoma, without any case of mortality.

The results of current study are consistent with the previous studies.

A retrospective study conducted by Watkinson et al (2010) in 1113 patients (mean age: 46 years, female:82.3%) undergoing thyroidectomy by various methods: total (28.6%), near –total (3.9%) or lobectomy (64.3%) demonstrated that complications which occurred after surgery were; injury to nerve(2.8%: temporary 2.4%, transit 0.4), hypoparathyroidism (24%: temporary 21%, transit 3), surgical site infection (1.2%) and poor scar formation(0.8%).[21]

In another retrospective clinical trial conducted by Bauer et al (2013) which included 683 patients(mean age: 52±17 years, female:79%) undergoing either lobectomy(61%) or total thyroidectomy(39%) demonstrated that complications rate was 14.7% (8% of lobectomy cases, 26% of total thyroidectomy cases) which included: injury to nerve(6.7%: temporary 6.4%, transit 0.3) and hypoparathyroidism (temporary 6.1%).[22] Sekhar et al(2015) demonstrated in a study included 100 patients (range: 22-55 years, female:90%) who underwent thyroidectomy by various techniques: total(63%), subtotal (18%), or hemi-thyroidectomy(16%) that the prevalence of postoperative complications was 20.6%(18.7% of hemi-thyroidectomy cases, 20.6% of total thyroidectomy cases, 16.6% of subtotal cases).[23]

A prospective study conducted by Kompally et al (2020) in 60 patients (range of age: 18-71 years, female:83.3%) who underwent thyroid surgery by various methods: 16.6% of hemi- thyroidectomy cases, 25% of total thyroidectomy cases, 50% of subtotal cases, 8.33% near total thyroidectomy) that the rate of postoperative complications was 43.3% which included: injury to nerve (temporary 1.66%), hypoparathyroidism (5%), seroma (11.6%), surgical site infection (13.3%) and poor scar formation (1.6%).[24]

In addition to, Farook et al(2023) conducted a study in 100 patients (mean age: 34.9±8.1years, female:68%) who underwent subtotal thyroidectomy that the prevalence of postoperative complications was 17% which included injury to nerve (5%: temporary 4%, transit 1%), hypoparathyroidism(11%: temporary 10%, transit 1%) and hematoma (1%).[25]

5. CONCLUSION

The current study revealed that development of complications after thyroid surgery was associated significantly with female gender and total thyroidectomy, so that we emphasis the importance of careful surgical intervention to improve final outcome.

We recommend using of nerve stimulator machine during thyroid surgery to prevent the most frequent complication represented by recurrent laryngeal nerve injury.

COMPETING OF INTERESTS

All the authors do not have any possible conflicts of interest.

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