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Postoperative Complications in Thyroidectomy Performed at Hospital Escuela Universitario and Hospital General San Felipe, Tegucigalpa Mdc in 2018

E.S Figueroa-Rosales[*1] **H.E. Sorto-Bueso**[1]

Department of Medical science, University of San Pedro Sula, Honduras

[*]**Corresponding author:** E.S Figueroa-Rosales, Department of Medical science, University of San Pedro Sula, Honduras, Tel: 98269640; Email: eel_fr@hotmail.com

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Abstract

Introduction: The specific complications of thyroid surgery include injury to the recurrent laryngeal nerve and the parathyroid glands, without being exempt from other complications such as infection of the surgical site, bleeding, surgical wound dehiscence, and others.

Methods: The present study is retrospective observational and aims to analyze the condition of thyroid surgery in the country, specifically in state hospitals in Tegucigalpa, its rate of complications and its relationship with associated factors before the procedure.

Results: A total of 92 patients undergoing thyroid surgery were studied at the Hospital Escuela and Hospital General San Felipe by reviewing the clinical record. The preoperative status, comorbidities and the surgical procedure performed were recorded and it was related to the main complications mentioned above.

Conclusions: A global rate of complications related to laryngeal nerve injury of 15% and late hypocalcemia of 7% was found, which are higher than the incidences reported in international series, however these vary from 0% of recurrent laryngeal nerve injury in thyroidectomies subtotal up to 22% in radical dissections in patients with neoproliferative processes.

Keywords: Thyroid; Surgical Complications; Parathyroid; Hy pocalcemia; Thyroidectoy

Objective Summary: To analyze the main post-surgical complications in adult patients undergoing thyroidectomy performed at the University School Hospital, and San Felipe General Hospital, Tegucigalpa MDC, in 2018.

Introduction

Postoperative complications in thyroid surgery are an important cause of morbidity in patients undergoing these procedures. While it is true that complication rates in international series are low, the associated morbidity and hospital costs justify their study [1].

Recurrent laryngeal nerve lesions and symptomatic hypocalcemias are the main complications of thyroid surgery and these are associated with multiple factors specific to the patient and their pathology as well as events related to the surgical procedure [2].

In Honduras there are few studies related to thyroid pathology and none studying the specific postoperative complications of them. The purpose of this study is to provide information on the state of endocrine surgery in the country and specifically on thyroid surgery and relate it to the global rates of postoperative complications. Having an initial diagnosis will provide the option of planning and managing efforts to reduce the rate of postoperative complications in thyroid surgery [3].

This study provides useful information for administrative decision-making, implementation of policies and management protocols, benefiting the population served, and the institutions involved in an attempt to identify predisposing characteristics of post-surgical complications [4].

Methodology

A review of the clinical record of patients who have undergone thyroid surgery was performed. Preoperative studies were collected establishing thyroid function status and calcium metabolism determining levels of thyroid hormones, albumin, calcium, vitamin D, thyroglobulin, albumin, thyroglobulin and paratohormone levels. Vocal cord function was verified by preoperative nasofibroscopy. The existence of comorbidities and associated conditions such as the presence of goiter, and other associated pathologies were verified. The suspicion or diagnosis of thyroid cancer was determined through the use of ultrasonography, fine needle aspiration biopsy or other diagnostic techniques such as CT, scintigraphy and / or magnetic resonance imaging. Ultrasound findings were associated with TRAD classification system and pathological anatomy with BETHESDA system [5,6,7].

The surgical indication, the surgical technique used, the operative findings, the visualization and identification of structures of interest, intraoperative complications and the biopsy result were reviewed. The control measurements of thyroid metabolism, calcium and the existence or not of complications of the procedure in the immediate postoperative

period and the control carried out in the outpatient clinic were verified [8,9].

Symptomatic hypocalcaemia was identified using serum calcium reference values according to the laboratory used associated with symptoms of hypocalcaemia such as tetany, cramps and/or paresthesias and the need for intravenous calcium replacement administration [10].

Laryngeal nerve injury was identified with recurrent laryngeal nerve paralysis with its clinical manifestations. Essential for data processing are general data information, admission diagnosis, procedure performed, postoperative evolution notes and subsequent evaluations in the consultation [11,12].

Results

A total of 92 cases of patients who underwent thyroidectomy in 2018 were studied, 30 at the School Hospital and 62 at the San Felipe General Hospital. In this study 95% of the patients were women while 5% corresponded to the male sex, More than a third of the patients were over 60 years old (see Table No.1)

Conclusion

Cholera can be prevented and controlled more effectively at basic environment level. This also requires a multi-disciplinary approach including poverty **molli ica ion** [13].

Table 1: Age distribution in post-surgery patients of Thyroidectomy in San Felipe General Hospital and School Hospital year 2018. N:92

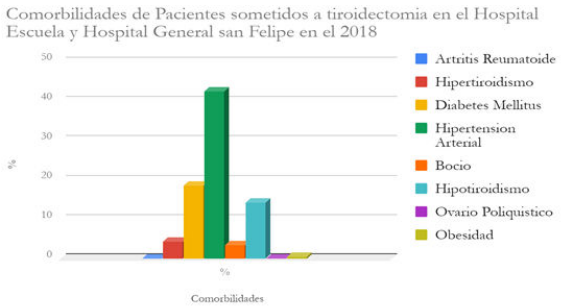
Age	Frequency	Percentage
18 - 29	10	10.87 %
30 - 39	21	22.83 %
40 - 49	14	15.22 %
50 - 59	14	15.22 %
60 or greater	33	35.87 %
TOTAL	92	100.00 %

Regarding the origin, 71.43% of the cases lived in an urban area, and 28.57% of the cases studied came from rural areas of the country.

Regarding the pathological personal history found in the patients of this study.

High blood pressure was present in 42% of the participants in the study, followed by obesity and diabetes mellitus with 25% and 18% respectively.

Note that because there are patients with multiple comorbidities, the sum of all percentages exceeds 100%.



Graph 1: Comorbidities of Patients undergoing thyroidectomy at the Hospital Escuela and Hospital General San Felipe in 2018.

Table 2: Transient Hypocalcemia According to Admission Diagnosis in post-thyroidectomy patients operated on at San Felipe General Hospital and School Hospital in 2018. N:92

Mediate Hypocalcemia According to Admission Diagnosis			
Pathological Anatomy Negative for Malignancy			
Admission diagnosis	**Yes**	**No**	**TOTAL**
Multinodular Goiter	3 (16%)	15 (83%)	18
Thyroid Cancer	0	6 (100%)	6
Thyroid Nodule	2 (11%)	16 (88%)	18
TOTAL	5 (11%)	37 (88%)	42
Pathological Anatomy Positive for Malignancy			
Admission diagnosis	Yes	No	TOTAL
Multinodular Goiter	1 (20%)	4 (80%)	5
Thyroid Cancer	11 (30%)	25 (69%)	36
Thyroid Nodule	3 (33%)	6 (66%)	9
TOTAL	15 (30%)	35 (70%)	50

Table 3: Permanent Hypocalcemia According to Admission Diagnosis in patients post-surgery of Thyroidectomy in San Felipe General Hospital and School Hospital year 2018. N:92

Late Hypocalcemia According to Admission Diagnosis			
Pathological Anatomy Negative for Malignancy			
Admission diagnosis	**Yes**	**No**	**TOTAL**
Multinodular Goiter	0	18 (100%)	18
Thyroid Cancer	0	6 (100%)	6
Thyroid Nodule	0	18 (100%)	18
TOTAL	0	42	42
Pathological Anatomy Positive for Malignancy			

Admission diagnosis	Yes	No	TOTAL
Multinodular Goiter	1 (20%)	4 (80%)	5
Thyroid Cancer	3 (8%)	33 (91%)	36
Thyroid Nodule	3 (33%)	6 (66%)	9
TOTAL	7 (14%)	43 (86%)	50

Table 4: Laryngeal Nerve Injury According to Admission Diagnosis in patients post-surgery of Thyroidectomy in San Felipe General Hospital and School Hospital year 2018. N:92

Laryngeal Nerve Injury According to Admission Diagnosis					
Pathological Anatomy Negative for Malignancy					
Admission diagnosis	No Injury	Bilateral	Right	Left	TOTAL
Multinodular Goiter	15 (84%)	1 (5%)	1 (5%)	1 (5%)	18
Thyroid Cancer	6 (100%)	0	0	0	6
Thyroid Nodule	18 (100%)	0	0	0	18
TOTAL	39 (92%)	1 (2%)	1 (2%)	1 (2%)	42
Pathological Anatomy Positive for Malignancy					
Admission diagnosis	Normal	Bilateral	Right	Left	TOTAL
Multinodular Goiter	1 (80%)	0	0	1 (20%)	5
Thyroid Cancer	28 (77%)	1 (3%)	2 (5%)	5 (14%)	36
Thyroid Nodule	7 (77%)	0	0	2 (22%)	9
TOTAL	39 (78%)	1 (2%)	2 (4%)	8 (16%)	50

Tables 2 to 4 show the complication rate of transient, permanent hypocalcemia and recurrent laryngeal nerve injury respectively. The distribution by admission diagnoses was made and the comparison with the definitive postoperative histological diagnosis was made. It is observed that 11% of patients with negative pathology presented mediate hypocalcemia while 30% of patients with pathological anatomy positive for malignancy presented transient hypocalcemia. 14% of patients with a positive biopsy result for malignancy had permanent hypocalcemia. Only 4% of patients undergoing thyroidectomy resulting in negative pathological anatomy had some type of recurrent laryngeal nerve injury, while 22% of patients with positive malignancy pathology presented some type of recurrent laryngeal nerve injury, the most frequent injury was left recurrent laryngeal nerve injury.

Table 5: Hypocalcemia According to Procedure Performed in patients post surgery of Thyroidectomy in General Hospital San Felipe and Hospital Escuela year 2018. N:92

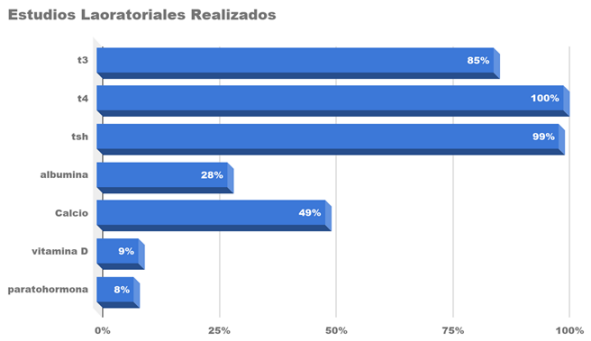
Hypocalcemia according to procedure performed				
	Transient Hypocalcemia		Permanent hypocalcemia	
Procedure	Yes	No	Yes	No
Subtotal Thyroidectomy	0	11 (100%)	0	11 (100%)
Total Thyroidectomy	13 (20%)	51 (80%)	4 (6%)	60 (94%)
Radical Dissection	7 (41%)	10 (59%)	3 (18%)	14 (82%)
TOTAL	20 (22%)	72 (78%)	7 (7%)	85 (93%)

Table 6: Recurrent laryngeal nerve injury according to Procedure Performed in patients post surgery of Thyroidectomy in San Felipe General Hospital and School Hospital year 2018. N: 92

Recurrent Laryngeal Nerve Injury According to Procedure Performed					
Procedure	Normal	Bilateral	Right	Left	TOTAL
Subtotal Thyroidectomy	11 (100%)	0	0	0	17
Total Thyroidectomy	54 (84%)	1 (2%)	2 (3%)	7 (11%)	11
Radical Dissection	13 (76%)	1 (5%)	1 (5%)	2 (11%)	64
TOTAL	78 (85%)	2 (2%)	3 (3%)	9 (10%)	92

Tables 5 and 6 show the incidence of transient, permanent hypocalcemia and recurrent laryngeal nerve injury according to the surgical procedure performed. It can be seen that subtotal thyroidectomy had 0% complications, total thyroidectomy had 20% and 6% transient and permanent hypocalcemia respectively. Total thyroidectomy has 15% recurrent laryngeal nerve injury while when a radical dissection was performed, 21% of patients developed recurrent, uni- or bilateral laryngeal nerve injury.

A significant percentage of the laboratory studies under study were not carried out or were not recorded in the clinical record. Graph #2 shows that only T4 was performed in 100% of cases and that albumin, calcium, vitamin D and paratohormone were not performed in more than 50% of cases. Similarly, preoperative and postoperative laryngoscopy was performed only in 1% and 24% respectively, thus making it impossible to completely analyze the data collected.



Graphic 2: Laboratory Studies Carried out in postoperative patients of Thyroidectomy in San Felipe General Hospital and School Hospital year 2018. N:92

Discussion and analysis

In the present study, 92 clinical records of patients undergoing thyroid surgery at the Hospital Escuela and the Hospital General San Felipe in 2018 were analyzed. The indications for surgery were multiple including thyroid nodules, goiter, cancer among others and the procedures varied according to the etiology from subtotal thyroidectomies to radical neck dissections [14,15,16].

The sociodemographic distribution has a marked inclination since the majority of patients studied are women in 98.39% compared to the male sex representing only 1.61% of the total sample. The age distribution shows that patients treated for thyroid pathology are, for the most part, elderly since 50% of the sample is over 50 years old. 71% of the patients studied came from urban areas. The profile of a patient undergoing thyroid surgery at the Hospital Escuela and Hospital General San Felipe is an elderly woman from an urban area [17,18].

The comrbid states have a decisive influence on the diagnosis and treatment of thyroid pathology, whether medical or surgical. In our study, the main pathologies found in which arterial hypertension was predominant were recorded, since 58.06% of the patients in the study were hypertensive. , diabetes mellitus is found in 18% of patients. Although it is true that they do not directly affect thyroid pathology, they condition and limit surgical action since it increases the rate of trans and postoperative bleeding as well as alters the subsequent inflammatory process. It was found that 3% of the sample had hyperthyroidism and hypothyroidism in 14.52 [19].

The main complications were related to the admission diagnosis of each patient, and subsequently separated into 2 groups. The first was the one in which, regardless of their admission diagnosis, they obtained a negative pathological study for malignancy, and the second group those in which the pathological study was positive for malignancy. The first fact that is pertinent to point out is that not all cases that enter with a diagnosis of thyroid cancer have positive biopsies for malignancy in the postoperative period. Of the patients who were admitted with a diagnosis of thyroid cancer, 6 obtained a negative biopsy for malignancy, these cases represent a false positive [20].

Hypocalcemia is a complication that can occur in a mediate way and be transient in most cases or be permanent. It is said that it is permanent hypocalcemia when there is serum hypocalcemia associated with symptoms by it, it is generally worthy of calcium intake. Patients admitted with a diagnosis of multinodular goiter were those who showed the most hypocalcemia in a mediate and transient manner (16%), since it was not necessary to continue therapy for more than 6 months in follow-up consultations. None of the patients diagnosed with thyroid cancer on admission and postoperative negative biopsies showed transient hypocalcemia [21].

Regarding permanent hypocalcemia, none of the patients with postoperative negative biopsies showed permanent hypocalcemia, even those who were admitted with a diagnosis of thyroid cancer. 7 of the patients studied showed permanent hypocalcemia, all of them with positive postoperative biopsies for malignancy, this represents 7% of the total sample and 14% of patients with positive postoperative biopsies for malignancy.

Hypocalcemia can manifest as a complication due to the complexity of the surgical procedure or due to a distorted anatomy. This is reflected in the data obtained, since none of the patients undergoing subtotal thyroidectomy suffered from hypocalcemia, only 6% of those undergoing total thyroidectomy and 18% of patients undergoing radical dissection had permanent hypocalcemia. Likewise, we observed that no lesion to NLR was found in subtotal thyroidectomies, however 16% of NLR lesion was observed in total thyroidectomies and 24% of radical dissections, which means that 1 in 4 patients undergoing radical neck dissection due to surgical pathology has a degree of NLR injury. Bilateral NLR lesions were also shown to be more frequent in neck dissection, with 5% in vrs dissections 2% in total thyroidectomies. This demonstrates the highest rate of complications depending on the complexity of the procedure.

Patients with positive pathological anatomy due to malignancy, it should be noted that this procedure prevailed in all surgical interventions in 80.65% of cases, 5% of cases with a diagnosis of admission of thyroid cancer and confirmatory diagnosis of malignancy pathology presented bilateral paralysis of the vocal cords, in addition 5% of cases presented paralysis of the left vocal cord, with regard to thyroid nodule, the absence of post-surgical laryngoscopy prevailed in 77.78% and 22.22% presented paralysis of the left vocal cord, and taking the issue of multinodular goiter 50% of cases presented paralysis of the left vocal cord and 50% was reported as normal [22-24].

It was evident that the profile of preoperative studies recommended by the international literature was not performed on the patients under study. One of the most alarming rates is the percentage of laryngoscopies performed, since they were performed only in 1% of the cases evaluated. Likewise, it was observed that the levels of paratohormone, calcium, vitamin D and thyroglobulin were not adequately evaluated in the preoperative period. This is relevant since, not having a preoperative parameter, it will not be possible to discern between a postoperative complication and an alteration in calcium metabolism or in the dysfunction of the NLR prior to the surgical procedure. Also, having a complete preoperative profile, it could be easily identified patients at higher risk of

postoperative complications. It is evident that the difficulty in completing the ideal preoperative studies has a multifactorial origin, but the economic factor plays a great role in this. Both the Hospital Escuela and the Hospital General San Felipe are state institutions with limited economic resources and the patients treated in these centers are, for the most part, unable to perform studies such as laryngoscopies, tomogra phy, special tests in private centers [25,26].

Conclusions

The profile of a patient undergoing thyroid surgery at the Hospital Escuela and Hospital General San Felipe is a female patient, of advanced age from an urban area, which predisposes the presence of associated pathologies and commorbid states that condition the presentation and evolution of surgical thyroid pathology.

The main comorbidities present in patients undergoing thyroidectomy are high blood pressure, obesity and diabetes mellitus.Of the total number of patients studied, 20% presented transient hypocalcemia, 7% presented permanent hypocalcemia and 15% presented a degree of recurrent laryngeal nerve injury.

The patients most at risk of postoperative complications in thyroidectomy are those who present malignant neoplastic pathology in which radical neck dissection is performed.

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