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A RETROSPECTIVE STUDY DONE ON COMPLICATIONS AFTER THYROID SURGERY

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Abstract:

The aim of the study to find out the incidence and risk factors of complications in patients submitted to thyroidectomy in a cancer hospital for this purpose a retrospective study was conducted and reviewed complications of 1020 patients (1990-2000) underwent to thyroidectomy. And the results come out that transient hypocalcemia in 134 (13.1%) patients was the main postoperative complications as compared to permanent hypocalcemia in 26 (2.5%) patients, transient vocal cord palsy in 14 (1.4%) patients, and permanent vocal cord palsy in 4 (0.4%) patients. we conclude that thyroidectomy, whether or not associated with neck dissection, is an operation that has low morbidity with hypocalcemia as the most important postoperative complication. Paratracheal lymph node dissection was the most significant predictor of hypocalcemia in patients who underwent total thyroidectomy.

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INTRODUCTION:

Thyroidectomy is one of the main forms of treatment for thyroid gland diseases. The incidence of palpable thyroid nodules varies from 4% to 7% in the U. S. adult population. [1] In cases of uni- or multinodular goiter, the indications for surgical treatment are: the presence of obstructive symptoms, cosmetic problems (size of the goiter), hyperthyroidism, and any clinical suspicion of malignant neoplasia. [2-4]

Thyroidectomy is indicated in the treatment of all patients with primary malignant differentiated cancer. Undifferentiated carcinomas are usually not resectable. [1, 5-8] the type of thyroidectomy depends on the benign or malignant characteristics of the lesion, size of the nodule(s), and extent to which the gland is affected. In differentiated thyroid cancer, the type of surgery used (lobectomy with isthmusectomy or total thyroidectomy) depends on the prognostic factors. [1, 9] A unilateral or a bilateral paratracheal dissection is usually performed in patients with differentiated carcinoma. At the beginning of the 20th century, the major complications of thyroidectomy were hematoma and postoperative infection, and most publications reported some postoperative mortality. [8, 10, 11] currently, the main postoperative complications are vocal cord palsy due to dysfunction of the recurrent laryngeal nerve and hypocalcemia. Postoperative death is rare or even unrecorded. [3, 8, 10-13]

The incidence and severity of complications are linked to the experience of the surgical team and the extent of the operation. [11,14] The main purpose of this article is to evaluate the incidence and risk factors of complications in patients undergoing thyroidectomy in a cancer hospital with a surgical residency training program, with a view to propose preventive measures that can result in reduction of costs, period of hospitalization, as well as improvements in the patients quality of life.

METHOD:

Between January 2000 and December 218, 1020 patients underwent thyroidectomy in the Head and Neck Surgery at one cancer hospital in Pakistan .There were 888 (87%) female patients and 132 (13%) male patients, with a mean age of 46 years (range, 2 to 88 years). Preoperative evaluation included clinical history and physical examination, thyroid function tests, and radiography of the thorax. All patients had preoperative evaluation of vocal cord mobility by means of indirect laryngoscopy. The indication for thyroidectomy included 702 (69%) benign thyroid diseases and 318 (31%) malignant tumors.

Most surgeries were performed by 3rd to 5th year residents under the supervision of 10 different head and neck surgeons. Surgeons were stratified according to the total number of thyroidectomies they performed or supervised during the study period: Group a (1 to 50 thyroidectomies), group B (50 to 100), and group C (over 100). We routinely identified the parathyroids and recurrent laryngeal nerves before performing the ligation of the inferior thyroid pedicles.

An autotransplant of the parathyroid in the sternocleiodomastoid or anterior scalene muscle was performed every time there was vascular supply injury or the glands were accidentally removed. The use of surgical drains varied throughout the study period. Drains were not used in 138 patients undergoing lobectomy with isthmusectomy, in 14 lobectomy, in 8 subtotal thyroidectomy, in 13 partial lobectomy, and 5 completion of thyroidectomy. All patients were evaluated with regard to the occurrence of postoperative complications. We routinely performed indirect laryngoscopy or nasofibroscopy before the 30th postoperative day.

Recurrent laryngeal nerve dysfunction, hypoparathyroidism, and other complications are analyzed according to the number of operations, type of thyroidectomy, and whether or not drains were used. Postoperative vocal cord palsy was defined as the presence of immobility or decreased movement of the vocal cords. A persisting vocal cord dysfunction after 6 months was considered permanent. Palsies that resulted from inferior laryngeal nerve resection due to neoplastic involvement were considered as sequelae and not computed as complications. Hypocalcemia was considered whenever there was a need for exogenous calcium replacement in order to maintain normal serum levels (8 to 10.4 mg/dL) or to eliminate the clinical signs and symptoms of hypocalcemia. Hypocalcemia was considered permanent when calcium replacement was necessary for over 6 months.

Statistics analysis:

The association between the studied variables with the occurrence of complications was evaluated by the Chi-square test, or Fisher's exact test when applicable. Values of $P < 0.05$ were considered significant.

RESULTS:

One thousand twenty thyroidectomies were performed during the study period. There were 295 total thyroidectomies, 436 lobectomies with

isthmusectomy, 75 unilateral lobectomies, 73 reoperative thyroid resections (completion of thyroidectomy), 114 subtotal thyroidectomies, and 27 partial lobectomies. Ipsilateral neck dissection was performed in 50 patients (6 jugular chain dissections, 38 type III modified radical dissections, and 6 classical radical neck dissections). Bilateral neck dissections were performed in 12 patients (3 bilateral jugular chain dissections, 8 bilateral type III modified radical dissections, and 1 type III ipsilateral radical neck dissections with contralateral jugular chain dissection). Paratracheal lymph node dissection was performed in 128 patients (63 ipsilateral and 65 bilateral). Thyroidectomy was performed or supervised by surgeons classified according to the number of thyroidectomies: 3% in group A, 27.3% in group B, and 69.7% in group C. The mean duration of hospital stay was 2 days (range, 2 to 30) for the 702 patients with benign tumors and 3 days (range, 2 to 19) for the 318 patients with a malignant tumor. However, complications were most significantly associated with thyroidectomy performed for the treatment of malignant disease ($P < 0.05$), with hypocalcemia as the most frequent complication. Other less frequent complications were vocal cord palsy, hematoma, seroma, and surgical site infection (Table 1).

The overall rate of vocal cord palsy was 1.8% (Table 2). Transitory palsy occurred in 14 patients with full recovery occurring within 6 months. Four patients had permanent vocal cord palsy. There were no bilateral palsies nor was there a need for tracheotomy. The type of thyroidectomy, the surgeon's experience, patient's gender, diameter of the nodule, and the association or not with neck dissection did not have any significant association with the incidence of vocal cord palsy. Postoperative hypocalcemia occurred in 15.6% patients (Table 2). Permanent hypocalcemia occurred in 26 patients (2.5%) and transitory hypocalcemia was found in 134 (13.1%) patients. The rates of postoperative hypocalcaemia was higher after total thyroidectomy as compared with other procedures (Table 2).

Temporary hypocalcaemia was significantly associated with total thyroidectomy (P 0.021) and paratracheal lymph node dissection (P 0.017). In the same way, neck dissection was significantly associated with permanent hypocalcaemia (0.033) (Table 3). There were no significant associations among surgeons classified per number of thyroidectomies performed or supervised and temporary or permanent hypocalcemia rates. Similarly, there was no significant association of hypocalcemia with gender or nodule diameter (Table 3)

Table 1. Post-thyroidectomy complications

Complications	Procedures (N) (%)
THypo.*	119 (11.7)
PHypo.†	25 (2.5)
TVC palsy‡	7 (0.7)
PVC palsy§	4 (0.4)
Hematoma	7 (0.7)
Seroma	31 (3.0)
Surgical site infection	12 (1.2)
THypo TVC palsy‡	5 (0.5)
THypo. Seroma	4 (0.4)
THypo. Surgical site infection	2 (0.2)
THypo. chyle leaks	2 (0.2)
PHypo. Surgical site infection	1 (0.1)
Hematoma Seroma	1 (0.1)
Seroma Surgical site infection	1 (0.1)
THypo. TVC palsy Hematoma	1 (0.1)
THypo. TVC palsy Seroma	1 (0.1)

Table 2. Extent of thyroidectomy and complications

Thyroidectomy	N		%		%		%		%
Partial lobectomy	27	0	0	0	0	0	0	0	0
Unilateral lobectomy	75	0	0	0	0	0	0	0	0
Lobect. Istm.§	436	0	0	0	0	2	0.5	2	0.5
Subtotal	114	4	3.5	0	0	2	1.8	1	0.9
Reoperation	73	18	24.7	5	6.8	1	1.4	0	0
Total	295	112	38	20	6.8	9	3.1	1	0.3
Total of cases	1020	134	13.1	26	2.5	14	1.4	4	0.4

Table 3. Hypocalcemia after total and reoperative thyroidectomy according to clinical variables

Variable	No	Transient	*P*	Permanent	*P*
Gender					
Male	59	17 (28.8)	0.253	3 (5.1)	0.569
Female Nodule (cm)	309	113 (36.6)		22 (7.1)	
4	220	83 (37.7)	0.240	12 (5.5)	0.213
4	148	47 (31.8)		13 (8.8)	
Surgeon group					
A	13	3 (23.1)	0.591	2 (15.4)	0.277
B	111	38 (34.2)		5 (4.5)	
C	244	89 (1.6)		18 (0.6)	
Thyroidectomy					
Total	295	112 (38)	0.021	20 (6.8)	0.577
Re-operation Neck dissection	73	18 (24.7)		5 (6.8)	
No	306	105 (34.3)	0.087	18 (5.9)	0.033
Unilateral	50	23 (46)		4 (8.2)	
Bilateral	12	2 (16.7)		3 (25)	
Paratracheal dissection					
No	247	75 (30.4)	0.017	13 (5.3)	0.143
Unilateral	55	25 (45.5)		4 (7.3)	
Bilateral	66	30 (45.5)		2 (2.9)	

DISCUSSION:

Thyroidectomy is a very common therapeutic procedure worldwide and is performed by surgeons with varied training and backgrounds: general surgery, thoracic surgery, endocrine surgery, otolaryngologic surgery, oncologic surgery, and head and neck surgery, where the greater part of such operations are performed by 3rd to 5th year residents in surgical oncology or head and neck surgery fellows under the direct supervision of a head and neck surgeon. Although some reports [11,14] in the literature relate the complications of this operation directly to the surgeon's experience, there are also several reports [3,4,11,15] that point out the safety of this operation performed at residency training centers, with acceptable complication rates, when performed under the supervision of an experienced surgeon.

In our study, 69.7% of the thyroidectomies were performed by 4 surgeons, 27.3% by 3 surgeons, and 3% by 3 surgeons. However, no statistically significant differences were observed between the groups. These results differ from other reports possibly because it is a single institution experience. All the members of the staff have similar backgrounds and the junior assistants are constantly supervised by more experienced surgeons. Similarly, in other previous study stated in a series of 1192 thyroidectomies done by 11 surgeons.

CONCLUSION:

In view of the results of this study, we conclude that thyroidectomy, whether or not associated with neck dissection, is an operation that has low morbidity with hypocalcemia as the most important postoperative complication. Paratracheal lymph node dissection was the most significant predictor of hypocalcemia in patients who underwent total thyroidectomy. Thyroidectomy may be safely performed in resident centers, provided that it is performed under the supervision of an experienced surgeon.

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