Journal of Cardiovascular Disease Research

ISSN: 0975-3583, 0976-2833 VOL 13, ISSUE 05, 2022

Original Research Article

Post Operative Complications of Thyroid Surgery: A Prospective Study

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Abstract

Introduction: The thyroid gland is a small organ that's located in the front of the neck, wrapped around the windpipe (trachea). When thyroid makes either too much or too little of these important hormones, it's called a thyroid disease. Thyroid surgery is one of the most commonly performed surgery for benign and malignant conditions of the thyroid gland worldwide. **Aim and Objectives**: Present study undertaken to know post-oprative complication of thyroid surgery. **Materials and Methods**: This is an analytical study conducted in Department of General Surgery, RVM Institute of Medical Sciences and Research Centre, Laxmakkapally Village, Mulugu, Siddipet. After getting an informed consent and those who have followed inclusion and exclusion criteria. Total of 50 patients who has undergone thyroid surgery included. For all selected patients a thorough history was elicited followed by a complete physical examination. Ultrasonography of neck, chest and neck X-rays, and FNAC was performed in all patients. **Results :**Among all patients 43 (86%) were female and 7(14%) of the patients were males. Mean age of all the patients was 41.3 and standard deviation of 8.34 years, minimum age of the patient was 28 years and maximum age was 71 years. Almost all the patients had complaints of swelling in anterior aspect of neck, 38(76%) patients had no pain while 12(24%) patients presented with swelling and pain. 8% of the patients presented with Hypoparathyroidism- Transient, 6% of the patients presented with Temporary Recurrent Laryngeal Nerve Palsy, among each of 4% patients were with Haemorrhage-Immediate, Respiratory obstruction and wound infection complication respectively, each 2% of the patients were with Superior Laryngeal Nerve Palsy, Seroma and Oesophageal Injury respectively. **Conclusion**: we can conclude that the operative skills and experience determine the complication rates rather than the type of operative procedure.

Keywords: Thyroidectomy, Haemorrhage-Immediate, Hypoparathyroidism- Transient

Introduction

The thyroid gland is a small organ that's located in the front of the neck, wrapped around the windpipe (trachea). It's shaped like a butterfly, smaller in the middle with two wide wings that extend around the side of throat.Thyroid creates and produces hormones that play a role in many different systems throughout body. When thyroid makes either too much or too little of these important hormones, it's called a thyroid disease. There are several different types of thyroid disease, including hyperthyroidism, hypothyroidism, thyroiditis and Hashimoto's

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thyroiditis. Diseases of thyroid are amongst the commonest endocrine disorders worldwide. Thyroid surgery is one of the most commonly performed surgery for benign and malignant conditions of the thyroid gland worldwide. [1]

Another reason for thyroid surgery is the swelling or enlargement of thyroid in the form of nodular or colloid goiter, when enlarged, causing difficulties in breathing, voice production, and swallowing. Thyroidectomy is also indicated in cases where an enlarged thyroid gland exhibits toxic symptoms, or where there is a high index of suspicion of malignancy, albeit cosmesis is the most common indication. [2] The type of thyroidectomy is contingent upon the benign or malignant features of lesion, size of the lesion, and degree of impairment. [3] During the eighteenth century, the mortality rate of thyroid surgery was as high as 40% from hemorrhage and sepsis.[4] But now a days thyroidectomy is a common operation with an extremely low mortality [5]. It is associated with specific morbidities which are related to the experience of the surgeon, however [6]. Very low surgical morbidity rates for thyroidectomy are reported in specialised centers.

In competent hands, thyroid surgery is associated with few complications and no fatality. Post operative complications may be as insignificant as edema of the flap or as dangerous and life threatening as hemorrhage or respiratory obstruction. The majority are avoidable with sound surgical technique and good preoperative preparation. With proper preoperative management, the patient will be euthyroid at the time of surgery.
Lack of experience or of attention to technical details may involve removal of too little or too much thyroid tissue or possibly all parathyroids, resulting in myxedema, recurrent hyperthyroidism, or parathyroid deficiency.

Complication rates associated with thyroid surgery can be evaluated only through analysis of case studies and follow up data. Thus in the present study we have undertaken, to know the postoperative complication in thyroid surgery.

Material and Methods:
This is an analytical study conducted in Department of General Surgery, RVM Institute of Medical Sciences and Research Centre, Laxmakkapally Village, Mulugu, Siddipet. After getting an informed consent and those who have followed inclusion and exclusion criteria, patients undertaken for the study. Total of 50 patients who has undergone thyroid surgery included in the study. Who has followed following exclusion and exclusion criteria.

Inclusion Criteria
1. Patients who presented with thyroid swelling and who underwent thyroidectomy.
2. Patients who has given consent for this study.

Exclusion Criteria
1. Patients with other Chronic diseases like CAD
2. Patients who has not given consent for this study.

Methodology
For all selected patients a thorough history was elicited followed by a complete physical examination. The basic biochemical and hematological investigations were done for all patients. It was decided to request special investigations like thyroid hormone profile and serum calcium estimation only in selected cases, where a disturbance in the functional status was suspected.

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Vocal cords were examined pre operatively by indirect laryngoscope in all the patients, whereas post operative vocal cord examination was performed only when hoarseness occurred. Ultrasonography of neck, chest and neck X-rays, and FNAC was performed in all patients.

Results:

In present study we have undertaken 50 patients of thyroid disease who underwent thyroid surgeries. Among all patients 43 (86%) were female and 7(14%) of the patients were males. Mean age of all the patients was 41.3 and standard deviation of 8.34 years, minimum age of the patient was 28 years and maximum age was 71 years.

Almost all the patients had complaints of swelling in anterior aspect of neck, 38(76%) patients had no pain while 12(24%) patients presented with swelling and pain.

Table 1 : Distribution of Histopathological Diagnosis among the gender

Diagnosis	Male	Female	No. of Patients
Colloid & Recurrent Goitre	1(2%)	1(2%)	2(4%)
Solitary Nodule	2(4%)	12(24%)	14(28%)
Multinodular Goitre	1(2%)	18(36%)	19(38%)
Toxic Multi Nodular Goitre	2(4%)	7(14%)	9(18%)
Thyroid Cancer	1(2%)	5(10%)	6(12%)
Total	7(14%)	43(86%)	50(100%)

Table 2: Distribution of Histopathological Diagnosis among surgeries performed

Diagnosis	Hemithyroidectomy	Bilateral subtotal thyroidectomy	Near total thyroidectomy	Total thyroidectomy
Colloid & Recurrent Goitre	0(0%)	0(0%)	0(0%)	2(100%)
Solitary Nodule	13(92.9%)	1(7.1%)	0(0%)	0(0%)
Multinodular Goitre	1(5.6%)	15(83.3%)	1(5.6%)	1(5.6%)
Toxic Multi Nodular Goitre	0(0%)	8(88.9%)	0(0%)	1(11.1%)
Thyroid Cancer	1(14.3%)	0(0%)	1(14.3%)	4(57.1%)
Total	15(30%)	24(48%)	2(4%)	8(16%)

Table 3 : Incidence of complications post operatively

Complications	Frequency	Percentage
Haemorrhage - Immediate	2	4%
Respiratory Obstruction	2	4%
Temporary Recurrent Laryngeal Nerve Palsy	3	6%

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Superior Laryngeal Nerve Palsy	1	2%
Hypoparathyroidism- Transient	4	8%
Seroma	1	2%
Wound Infection	2	4%
Oesophageal Injury	1	2%

Above table showed incidence of post operative complications, 8% of the patients presented with Hypoparathyroidism- Transient, 6% of the patients presented with Temporary Recurrent Laryngeal Nerve Palsy, among each of 4% patients were with Haemorrhage-Immediate, Respiratory obstruction and wound infection complication respectively, each 2% of the patients were with Superior Laryngeal Nerve Palsy, Seroma and Oesophageal Injury respectively.

Table 4 : Complications After Each Operative Procedure

Complications	Hemithyroidectomy	Bilateral Subtotal Thyroidectomy	Near Total Thyroidectomy	Total Thyroidectomy
Number of Patients	15	24	2	8
Wound Infection	0	2	0	0
Haemorrhage - Immediate	0	0	0	2
Respiratory Obstruction	0	2	0	0
Temporary Recurrent Laryngeal Nerve Palsy	0	2	1	0
Superior Laryngeal Nerve Palsy	0	0	0	1
Hypoparathyroidism- Transient	0	1	0	3
Seroma	1	0	0	0
Oesophageal Injury	0	1	0	0
Total	1(6.66%)	8(33.33%)	1(50%)	6(75%)

Table 5: Complications After Thyroidectomy For Various Thyroid Disorders

Complication	Collide & Recurrent Goitre	Solitary Nodule	Multi Nodular Goitre	Toxic Multi Nodular Goitre	Thyroid Cancer
Number of Patients	2	14	19	9	6
Haemorrhage - Immediate	0	0	1	1	0
Respiratory Obstruction	0	0	1	0	1

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Temporary Recurrent Laryngeal Nerve Palsy	0	0	2	1	0
Superior Laryngeal Nerve Palsy	0	0	0	1	0
Hypoparathyroidism-Transient	1	0	2	1	0
Seroma	0	0	1	0	0
Wound Infection	0	0	1	1	0
Oesophageal Injury	0	0	1	0	0

Discussion :

In the study we had 50 patients underwent different thyroid surgeries aged between 28 years to 71 years of age during the study period, study had 43 females and males

Histopathological diagnosis for each case and the number of patients undergoing each type of operation is detailed in table 2. Surgical morbidity associated with thyroidectomy undertaken during the study period is detailed in table 3.

Hemorrhagic complications where more frequent in total thyroidectomy 2(4%) when compared to bilateral subtotal thyroidectomy (0%) When compared to the results published by Rosato L et al[7]. Though the hemorrhagic complication is considerably lower in bilateral subtotal thyroidectomy group (2.1%), it was higher in total thyroidectomy (1.6%) . It frequently occurs during the post anaesthetic period when the end tracheal tube is removed. The prevention of post operative bleeding is dependent on good intra operative haemostasis. Sound surgical technique is essential.

The 6% incidence of recurrent laryngeal nerve (vocal cord) palsy seen in this series is in concordance with reported incidence figures (0.1% - 7 %)[8-11]. Complications of thyroidectomy are largely related to the magnitude of the operation and the experience of the surgeon involved.

Every effort should be made to preserve parathyroid glands with their own blood supply however, this may not be sufficient to prevent the occurrence of transient hypoparathyroidism and transient post – thyroidectomy hypocalcaemia, secondary to hypoparathyroidism, is common [12,13]. Delbridge et al [14] state that transient hypoparathyroidism should be an accepted outcome of bilateral thyroid surgery rather than a complication. It is noted that the degree and duration of hypocalcemia increase with the extent of thyroid surgery [15]. Permanent hypoparathyroidism has been reported to occur after total thyroidectomy is between 0.1 % and 32 % of patients overall [9-11, 16, 17]. The risk is higher for cancer surgery and ranges from 3 to 32 % [9-11, 17]. Most published reports in the last five years, however quote a figure below 10%. Our results (9%) concur with the literature with an incidence of temporary hypoparathyroidism increased with extent of surgery.

The non –capsular dissection technique may be the cause for the 8% incidence of hypoparathyroidism, as the parathyroid gland is vulnerable to devascularisation or inadvertent removal with the thyroid gland during such a procedure. The capsular dissection technique may be useful in reducing this complication.

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This study also reveals complication rate was identical to both bilateral subtotal thyroidectomy (8/50, 16%; 8/24, 33.33%) and in total thyroidectomy (6/50, 12%; 6/8, 75%)

The greater incidence of complications with TT is attributable mainly to the greater incidence of transient hypocalcemia and to a lesser extent to the slightly higher incidence of hemorrhage, whereas, the incidences of recurrent laryngeal nerve injuries were slightly higher in bilateral subtotal thyroidectomy. Incidences of other complications are also higher in bilateral subtotal thyroidectomy. Our results concur with the study report published by Rosato et al[7].

Bearing in mind that total thyroidectomy is the absolute indication in the more demanding thyroid disease (tumours, retrosternal goitre, Basedow's disease, and recurrences) and in view of its fairly low complication rate; we believe that total thyroidectomy is a safe, reliable procedure, provided it is performed in a technically scrupulous manner. Bilateral subtotal thyroidectomy is a technique which should be abandoned owing to the fact that its complication rate is comparable to that of total thyroidectomy and to the recurrences it may give rise to[7].

This study reveals that the hemithyroidectomy is an extremely safe procedure without any complication.

In our study we have observed no mortality, in many articles post-operative mortality was observed in between 0% to 1 % . The highest reported incidence was 1% by Haider A et al.

Conclusion:

From overall observation and results we can conclude that study shows the total thyroidectomy or hemithyroidectomy can be done with very low complication rate in cases of benign thyroid disease affecting the whole gland. Total thyroidectomy was the commonest procedure where these complications were observed. Hypoparathyroidism however, is a relatively common and significant complication than the recurrent laryngeal nerve injury after surgery for thyroid disorders. Recurrent goiter, toxic goiter and total thyroidectomy are risk factors for post operative complication. Complication rates are similar for bilateral subtotal thyroidectomy and total thyroidectomy, and there is a risk of recurrence with bilateral subtotal thyroidectomy. Because total thyroidectomy carries a risk of complication similar to that for bilateral subtotal thyroidectomy, it is not logical to avoid total resections. Therefore near total or total thyroidectomy may be the operation of choice for multinodular goiter. Finally we can conclude that the operative skills and experience determine the complication rates rather than the type of operative procedure.

Acknowledgement : None

Conflict of Interest : None

Funding : None

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