

Study Of Early Postoperative Complications After Thyroidectomy

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Abstract: Background: Thyroidectomy is an operation that involves the surgical removal of all or part of thyroid gland. Having proper knowledge about the anatomy of neck structures during thyroidectomy is very important as any damage to any structure can lead to dreadful consequences in early postoperative period. A surgeon should be aware about the postoperative complication after thyroidectomy and its management. Aims And Objectives: 1) To study age wise incidence of different thyroid pathologies. 2) To study the type of thyroidectomy preferred for different thyroid pathologies. 3) To study early postoperative complication after thyroid surgery in relation to type of thyroidectomy, and thyroid disorder, 4) To study prevention and management of early complications after thyroidectomy. Material And Methods: This study is a retrospective study conducted on 47 patients who underwent thyroidectomy between June 2017- January 2019 in General Surgery and ENT Department of S.V.P. Hospital Ahmedabad. A detailed history was taken from all the patients. Result: In this study the various postoperative complications following thyroid surgeries which occurred in 47 patients who underwent thyroidectomy in the Department Of General Surgery and ENT at S.V.P. Hospital Ahmedabad were analyzed. Patients between 11 to 70 years were included in this study. 47 patients underwent thyroidectomy 25 hemithyroidectomy, 22 total thyroidectomy. Benign pathologies include – colloid goiter, solitary nodule, multinodular goiter. Malignant pathologies include – Papillary Carcinoma, Follicular Carcinoma, Hurthle Cell Carcinoma, Lymphoma. The only three complications noted in these 47 patients were Hypocalcemia In 6 Patients, Laryngeal Nerve Palsy In 2 Patients, Traumatic Vocal Cord Paresis in 1 patient. No case of permanent Bilateral Recurrent laryngeal nerve paralysis occurred in this study. Other complications like wound infection, wound hematoma and hemorrhage were not noticed in our study. Conclusion: This study was conducted to study the outcome of thyroid surgeries. It can be concluded that incidence of complication was not related to age of the patient, Complication rate depends on the experience of the surgeon, type of thyroidectomy, and thyroid pathology. Good understanding of thyroid gland anatomy, improved techniques in hemostasis, RLN dissection, preservation of parathyroid glands and postoperative monitoring are the best way to prevent complications. Appropriate postoperative care with early identification of complications and prompt institution of corrective treatment plays an important role in reducing the duration of postoperative hospital stay and limiting patient morbidity. [Rabari M Natl J Integr Res Med, 2020; 11(3):44-48]

Key Words: thyroidectomy , complications

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Introduction: Thyroidectomy was first introduced by Kocher in 1906 at that time mortality associated with the procedure was high but with advances in technology - skillful techniques, advanced instruments and detailed knowledge about anatomy of neck and thyroid gland mortality associated with this procedure has decreased. Having proper knowledge about the anatomy of neck structures during thyroidectomy is very important as any damage to any structure can lead to dreadful consequences in early post operative period. A surgeon should be aware about the postoperative complication after thyroidectomy and its management.

During the eighteenth century, the mortality rate of thyroid surgery was as high as 40% from hemorrhage and sepsis¹. Today most of the complications of thyroid surgery are related to

either metabolic derangements or injury to the recurrent laryngeal nerve. Other complications include superior laryngeal nerve injury, infection, airway compromise and bleeding².

Thyroidectomy as a frequent and relatively safe surgical procedure is associated with a minimal rate of complications. In fact, the focus of modern thyroidectomy, centers on potential morbidity from the procedure with emphasis on prevention of injury to closely investing structures such as the parathyroid glands and the recurrent laryngeal nerve^{3,4}

To minimize morbidity, it is recommended that these anatomical structures be recognize during surgery, moreover the surgeon should keep in mind anatomic variations of parathyroid glands and recurrent laryngeal nerves^{5,6}.

Ramirez et al asserted that complications accompanying thyroid surgery are directly proportional to the extent of thyroidectomy and inversely proportional to the surgeon's Experience.⁷

Indication Of Thyroidectomy:

- Suspicion of malignancy – Hard, firm, fast growing nodules, cervical lymphadenopathy, USG showing features Of malignancy – hypoechoic, solid component, irregular margins, microcalcifications; FNAC showing malignant cells.
- Presence of Compression Symptoms – hoarseness of voice, dysphagia, dyspnea,
- Positive Family History of MEN syndrome or carcinoma of thyroid.
- In case of Graves Disease – during pregnancy, women wish to have child, radioiodine therapy is contraindicated, recurrence after conservative treatment.
- Cosmetic reasons

Surgery Not Indicated:

- Asymptomatic euthyroid nodular goiter without suspicion of malignancy.
- For cold nodule on scintigraphy without indicators of malignancy(USG, FNAC, family history).

Complications After Thyroidectomy

Early Postoperative Complications:

- Hypocalcemia – due to damage to parathyroid gland or its vascular supply⁸
- Laryngeal complications – damage to Vocal Cords, Strap Muscles, Cricothyroid Muscle
- Recurrent Laryngeal Nerve Palsy
 - Unilateral –hoarseness of voice
 - Bilateral – stridor, respiratory compromise
- External laryngeal nerve palsy
 - Unilateral – hoarseness of voice
 - Bilateral – difficulty in phonation, aspiration
- Thyrotoxicosis
- Infection
- Bleeding
- Hematoma or Seroma formation in wound

Late Postoperative Complication:

- Hypothyroidism
- Recurrence of malignancy or thyrotoxicosis

Types Of Thyroidectomy: The type of thyroidectomy is contingent upon the benign or malignant features of lesion, size of the lesion, and degree of disability.⁹

1) Total Thyroidectomy: Removal of both lobes and isthmus of thyroid gland Preferred for diffuse or malignant pathologies – Multinodular goiter, Graves disease^{10,11}, Thyroid Carcinoma Preferred over subtotal and hemithyroidectomy as chances of recurrence are less but more chances of post thyroidectomy complications and hypothyroidism.

2) Hemi Thyroidectomy: Preferred for benign disease – benign solitary nodules, follicular adenoma, colloid goiter where disease is confined to one lobe and chances of recurrence and metastasis are absent. Done in BETHESDA Category 3 for further investigation, if the swelling involving one lobe. Papillary carcinoma of thyroid localized to one lobe – age< 45 years, size<4cm, no metastasis in lymph nodes.

3) Sub Total: Removal of both lobes and isthmus of thyroid gland leaving>1gm remnant of thyroid gland bilaterally near Ligament Of Berry. Used in multinodular goiter by beginners.¹²

4) Near Total: Removal of both lobes and isthmus of thyroid gland leaving<1gm remnant of thyroid gland contralaterally near ligament of berry. Used when chances of injury to contralateral RLN are higher.

Material & Methods: This study is a retrospective study conducted on 47 patients who underwent thyroidectomy between June 2017- January 2019 in General Surgery and ENT Department of S.V.P. Hospital Ahmedabad. A detailed history was taken from all the patients. A thorough clinical examination along with examination of other system was performed. Routine laboratory tests, serum calcium, electrolyte, thyroid profile, FNAC, Indirect Laryngoscopy, ECG, Xray chest and neck and USG of neck and CT Scan of neck and thorax for retrosternal goiters and carcinomas (suspected or FNAC proven) were performed. Patients were monitored from time of admission till their 10th postoperative day. The operative specimen was sent for histopathological examination. The different type of surgeries performed were total thyroidectomy, hemithyroidectomy.

Post operative complications included are – hypocalcemia(serum calcium<7.5mg/dl), voice change, respiratory difficulty, thyrotoxicosis, bleeding, infection, hematoma or seroma formation. Surgeries were performed by both professors and resident doctors.

Results: In this study the various postoperative complications following thyroid surgeries which occurred in 47 patients who underwent thyroidectomy in the Department Of General

Surgery and ENT at S.V.P. Hospital Ahmedabad were analyzed. Patients between 11 to 70 years were included in this study. 47 patients underwent thyroidectomy 25 hemithyroidectomy, 22 total thyroidectomy. Youngest patient was - 13 years and oldest patient was – 70 years. Benign pathologies include – colloid goiter, solitary nodule, multinodular goiter. Malignant pathologies include – Papillary Carcinoma, Follicular Carcinoma, Hurtle Cell Carcinoma, Lymphoma.

Table 1: Age Wise Incidence Of Thyroid Pathologies

Pathology	10-20	21-30	31-40	41-50	51-60	61-70	Total	Percentage
Colloid Goiter	3	3	3	3	2	2	16	34%
Solitary Nodule	1	1	4(40%)	3		1	10	21.27%
Multinodular Goiter	1	1	1	4(44.4%)		2	9	19.14%
Papillary Carcinoma		5(71.4%)	1	1			7	14.9%
Follicular Carcinoma		1		1	1		3	6.3%
Hurthle Cell Carcinoma						1	1	2.1%
Lymphoma			1				1	2.1%
	5	11	10	12	3	6	47	

Most common thyroid pathologies are benign 74.5%(35/47) and prevalent in age group 41-50 years 28.57%(10/35). Incidence of malignant pathologies 25.5%(12/47) more prevalent in 21-30 age group 50%(6/12). Colloid goiter is the

most common benign pathology 45.7%(16/35) and incidence is almost same in each age group. Papillary carcinoma of thyroid is the most common malignancy – 58.3%(7/12) and common in 21-30 age group 71.4%(5/7)

Table: 2 Incidence Of Complication With Respect To Histopathological Diagnosis

Pathology	Hemi Thyroidectomy	Complications	Total Thyroidectomy	Complications	Percentage
Colloid Goiter	15	1	1		6.25%
Solitary Nodule	10				
Multinodular Goiter			9	3	33.3%
Papillary Carcinoma			7	4	57.14%
Follicular Carcinoma			3	1	33.33%
Hurthle Cell Carcinoma			1		
Lymphoma			1		
	25	1(4%)	22	8(36.3%)	

Incidence of complication after total thyroidectomy is 36.4 %(8/22) higher compared to hemithyroidectomy 4%(1/25). Total thyroidectomy my most commonly performed for multinodular goiter - 41%(9/22) but the incidence of complication is more for papillary carcinoma 57.14%(4/7) compared to multinodular goiter 33.3%(3/9). In this study complication rate for malignant pathologies is – 41.6 %(5/12) and for benign pathologies 11.4%(4/35). Most common complication is hypocalcemia 66.7% (6/9) followed by unilateral laryngeal nerve palsy

22.2%(2/9) In this study airway obstruction is seen in 41 year old patient suffering from multifocal papillary carcinoma of thyroid 2.1% due to traumatic vocal cord paresis during intubation as glottic space was narrow. In this study complication – bilateral recurrent laryngeal nerve palsy, bleeding, thyrotoxicosis, infection, seroma or hematoma were not seen. Recurrent laryngeal nerve palsy is the most serious complication in thyroid surgery, resulting in significant impairment of the quality of life¹³ and having a negative impact on job performance.

Table: 3 Post Operative Complications And Their Incidence

Post Operative Complications	No. Of Patients	Percentage
Hypocalcemia	6	12.76%
Unilateral Laryngeal Nerve Paresis	2	4.2
Vocal Cord Paresis	1	2.1%
Bilateral Laryngeal Nerve Paresis	-	-
Thyrotoxicosis	-	-
Bleeding	-	-
Infection	-	-
Seroma/Hematoma	-	-

Dralle H. et al¹⁴ concluded that routine visual nerve identification and preservation should be the gold standard in thyroid surgery.

Conclusion: This study was conducted to study the outcome of thyroid surgeries. The only three complications noted in these 47 patients were Hypocalcemia In 6 Patients, Laryngeal Nerve Palsy In 2 Patients, Traumatic Vocal Cord Paresis in 1 patient. No case of permanent Bilateral Recurrent laryngeal nerve paralysis occurred in this study. Other complications like wound infection, wound hematoma and hemorrhage were not noticed in our study. It can be concluded that incidence of complication was not related to age of the patient; Complication rate depends on the experience of surgeon, type of thyroidectomy, and thyroid pathology.

Good understanding of thyroid gland anatomy, improved techniques in hemostasis, RLN dissection, preservation of parathyroid glands and postoperative monitoring are the best way to prevent complications. Appropriate post-operative care with early identification of complications and prompt institution of corrective treatment plays an important role in reducing the duration of postoperative hospital stay morbidity.

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