

FREQUENCY OF POST-SURGICAL COMPLICATIONS OF THYROIDECTOMY AT A  
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## ABSTRACT

**Objective:** This study's objective was to determine the frequency of postoperative complications after thyroid surgery due to malignancy in the histopathology report. **Study design:** Descriptive cross-sectional study. **Place & Duration of study:** This study performed at Sheikh Zayed Hospital, Lahore, from January 2019 to December 2019. **Methodology:** 114 patients who underwent completion thyroidectomy to treat well-differentiated thyroid cancer were included in this study. Patients with medullary, anaplastic, and thyroid lymphoma were excluded. Serum calcium levels were monitored one day before the surgery and on the first postoperative day. Written and informed consent was taken, and data collected on a predesigned form. **Results:** Recurrent laryngeal nerve (RLN) was identified and preserved in all cases. Two (1.7%) patients developed transient hoarseness of voice, 8 (7.01%) had transient hypocalcemia, and 4 (3.5%) patients developed seroma. Two (1.7%) patient was re-explored on the same postoperative day for neck hematoma, which caused dyspnea and tachypnea. No patient developed a wound infection. No patient developed permanent hypoparathyroidism/hypocalcemia at three months follow-up. **Conclusion:** Complete thyroidectomy can be securely used as a foundation of treatment for well-differentiated thyroid malignancies.

**KEYWORDS:** Thyroidectomy, Thyroid carcinoma, complete thyroidectomy.

## INTRODUCTION

The most common endocrine tumor in thyroid carcinoma, accounting for around 92% of endocrine tumors. Papillary thyroid cancer (85%) is the most common type.<sup>[1]</sup> The most common presentation in the thyroid clinic is with a solitary thyroid nodule.<sup>[2]</sup> The routine evaluation is done by ultrasound neck and fine-needle aspiration cytology. UK National Multidisciplinary techniques propose unilateral thyroid lobectomy for thy-3 and thy-4 lesions.<sup>[3]</sup> However, the problem arises when histopathology of such thyroid tissues is reported as malignancy. Another issue is encountered when patients present with lobectomy history somewhere else, and malignancy in histopathology found later. In cases where completion thyroidectomy is indicated, surgeons are usually hesitant due to the complications following completion of thyroidectomy, including hypocalcemia, recurrent laryngeal nerve injury, and bleeding. These complications are mainly thought to be encountered due to adhesions and distorted anatomy after the initial surgery. This study aimed to find the frequency of complications following completion thyroidectomy and the surgical steps taken to reduce these adverse outcomes.

## METHODOLOGY

Conducted in Endocrine and General Surgical ward, Sheikh Zayed Hospital, Lahore, from January 2019 to December 2019. Fifty-seven patients with well-differentiated thyroid cancer who underwent completion thyroidectomy as a second operation were included in the study. Patients with medullary, anaplastic, or thyroid lymphoma were excluded. The initial surgery was performed due to a solitary thyroid nodule with no evidence of malignancy preoperatively. Data were compared based on age, gender, and type of complications.

Apart from general investigations including thyroid profile and ultrasound neck, all patients referred from other hospitals for completion thyroidectomy had CT-scan neck and upper chest for identification of residual tissue on the ipsilateral side. Those patients who were initially operated on already had a CT-scan neck. They were followed with ultrasound neck along with preoperative investigations. All patients also underwent indirect laryngoscopy to document any previous vocal cord paralysis. Serum calcium was measured one day before the surgery, 24 hours after surgery, and then two weeks postoperatively in the clinic. Postoperative serum

parathyroid hormone level was not measured routinely due to the lack of its availability.

A protocol was developed to check clinical signs and symptoms of hypocalcemia postoperatively every 6 hours, and if complimentary, serum calcium levels were sent immediately, and intravenous replacement with 10% calcium gluconate started. Along with IV replacement, oral supplementations of calcium and activated vitamin D are also given.

Data was collected on a predesigned form—statistical package for social sciences (SPSS) version 18.0 was used to analyze the data. The mean + standard deviation,

median, and range were calculated for numerical variables while frequency and percentages were computed for categorical variables.

## RESULTS

A total of 114 patients underwent completion thyroidectomy. There were 38 (33.3%) males, and 76 (66.6%) females. Male to female ratio was 1:2. The age varied from 12 to 75 years. Out of total patients, 98 (85.96%) had papillary cancer, 10 (8.77%) follicular cancer and 6 (5.26%) patients had Hurthle cell carcinoma. Fifty eight (50.87%) patients showed malignancy in the contralateral lobe.

**Table I: Complications Following Completion Thyroidectomy.**

Complications	Frequency n (%)	Frequency n (%)
Transient Hypocalcemia	8 (7.01%)	8 (7.01%)
Transient Hoarseness of Voice	2 (1.7%)	2 (1.7%)
Seroma	4 (3.5%)	4 (3.5%)
Hematoma	2 (1.7%)	2 (1.7%)

Preoperative hoarseness of voice was identified in 12 (10.5%) patients. In the second operation, the recurrent laryngeal nerve was identified and preserved in all cases. However, 2 (1.7%) patient developed transient hoarseness of voice, which was found to be significantly improved on follow-up after three months. Mean preoperative and postoperative calcium levels were 8.6+0.5 mg/dl and 8.9+0.5 mg/dl, respectively. Furthermore, transient hypocalcemia was noted in 8 (7.01%) patients. No patient with permanent hypoparathyroidism/hypocalcemia was found at three months follow up. None of the patients required prolonged calcium and vitamin D supplementation. All four patients who developed transient hypocalcemia were female and belonged to a younger age group with an average age of 20 year, raising the possibility of vitamin D and calcium insufficiency. Only 2 (1.7%) patient was re-explored on the same postoperative day for tension hematoma in the neck, causing respiratory discomfort 4 (3.5%) patients among this developed seroma. No patient developed a wound infection (Table I).

## DISCUSSION

Completion thyroidectomy is defined as removing residual thyroid tissue either unilateral or bilateral after initial thyroid surgery, either lobectomy, subtotal thyroidectomy, or near-total thyroidectomy due to malignancy in histopathology report. The removal of the entire thyroid gland has several advantages. Firstly, it facilitates the detection and ablation of recurrent and metastatic disease with radioactive iodine.<sup>[4]</sup> Secondly, thyroglobulin levels can be used as an essential indicator of recurrent or metastatic disease when nearly all normal thyroid tissues have been removed. Lastly, it reduces the small risk of Complications Following Completion Thyroidectomy carcinoma into anaplastic carcinoma. However, the morbidity associated with completion

thyroidectomy is also an important consideration. These include transient and permanent hypocalcemia, RLN injury, seroma, bleeding, and surgical site infection. A study done earlier has concluded that there was no significant difference in surgical outcome and risk of complication between early (within ten days) completion versus late (after three months) completion thyroidectomy.<sup>[5]</sup> However, recent systemic review and meta-analysis have favored delayed completion of thyroidectomy due to the low risk of complications.<sup>[6]</sup>

Hypocalcemia is the most common complication following total thyroidectomy.<sup>[7]</sup> A study has shown that transient hypoparathyroidism incidence is around 24.5%, followed by permanent and symptomatic hypocalcemia in 16.67% of patients after completion of thyroidectomy.<sup>[2]</sup> A diminishing trend was noted in other studies where these are reported as 20% and 5.8%, respectively.<sup>[8]</sup> Similar trend was also noted in a recent study from Korea that reported 9.4% and 3.1% frequency of transient and permanent hypoparathyroidism, respectively.<sup>[9]</sup> Our study had similar results as transient hypocalcemia following completion thyroidectomy occurred in 7.01%, and no patient developed permanent hypocalcemia. The relation of hypocalcemia with age and gender was not discussed in the past. However, in this study, we have found a strange relation that hypocalcaemia was more common in females of younger age groups, probably due to poor diet and decreased vitamin D consumption and calcium consumption. This area of study still needs to be discussed further.

The rate of RLN injury following thyroid surgery was estimated to 0.5 – 5%.<sup>[10]</sup> The risk of damage to RLN is more critical in redo surgeries. However, meticulous dissection, surgical loupes, and following appropriate surgical steps can lower this risk.<sup>[2]</sup> In this study, RLN

injury did not occur. In a study by Gangiti in 2016, where surgeries were performed using loupes, no RLN damage is reported.<sup>[2]</sup> During this study, experienced surgeons, performed all completion thyroidectomies without using loupes or nerve monitoring devices, and only one patient developed transient hoarseness of voice, which was also found to be significantly improved on six months' follow-up.

The occurrence of seroma after thyroid surgeries in previous studies reported as 1.7-7%.<sup>[11,12]</sup> Seroma formation is associated with wound infection, flap necrosis, and local swelling, resulting in a more extended hospital stay.<sup>[12]</sup> The study demonstrated a 2.2% incidence of seroma after thyroid surgeries.<sup>[11]</sup> Increased frequency of seroma formation was noted in our study, probably due to conventional clamp and tie technique and ligature.

Regarding wound infection after thyroidectomy, it is a rare but significant complication. The incidence was very low, with figures of 0.36% and 0.4%.<sup>[13,14]</sup> Although completion thyroidectomy is a clean surgery, prophylactic antibiotics were given in all cases in our study. No wound infection was noted in this study, but the use of prophylactic antibiotics cannot be adequately established, and its role remains controversial.<sup>[15]</sup>

## CONCLUSIONS

Completion thyroidectomy is a safe and effective procedure for well-differentiated thyroid carcinoma in experienced hands. None of the patients developed permanent hypocalcemia, and a patient with RLN injury also showed improvement in follow up. Females of younger age groups should be properly evaluated preoperatively for vitamin D and calcium levels, and if deficient, they should be corrected before surgery to further reduce the risk of transient hypocalcemia.

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