

# Thyroidectomy With Drain And Without Drain, A Clinical Comparative Study

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## Author's Contribution

<sup>1</sup> Conception of study

<sup>1,2</sup> Experimentation/Study Conduction

<sup>1,2,6</sup> Analysis/Interpretation/Discussion

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## Abstract

**Background:** Thyroidectomy is one of the most difficult surgical procedures. The study aims to compare the thyroidectomy procedure with drain placement and without drain concerning the hospital stay, Postoperative complications, and pain assessment using a visual analog scale.

**Methods:** A prospective comparative study was designed in the Department of Otorhinolaryngology & Head Neck Surgery at Aziz Fatimah Hospital from March 17<sup>th</sup>, 2021 to August 20, 2022. A total of 117 patients were enrolled in the study from which 9 were excluded due to loss of follow-up. The patients were divided into two groups by using computer-generated randomized numbers containing sealed envelopes. Both groups contained 54 patients. Group A patients with a drain placed while Group B contained patients without a drain. The patients with drain have a longer hospital stay and reported increased pain as compared to the patients with drainless thyroidectomy.

**Results:** The mean age and standard deviation calculated for the patients enrolled in both groups after randomization was 13.28 ± 42.5 and 12.18 ± 43.9 in groups A and B respectively. The mean ages were statistically insignificant. However, Postoperative variables such as length of hospital stay and post-operative pain by visual analog scale were assessed. The hospital stays of the patients with a drain placed was found statistically significant with a P-value < 0.05 Postoperative pain assessed by visual analog scale was also significant having a P-value < 0.05 for patients having stayed for 2 to 4 days.

**Conclusion:** Placement of drain after thyroidectomy saves the patient from life-threatening complications but at the same time increases the post-operative pain on day one and increases the length of hospital stay of the patient. The routine practice of drain placement should be avoided unless there must be a risk of the development of hematoma or seroma.

**Keywords:** Thyroidectomy, thyroidectomy with drain, thyroidectomy without drain

## Introduction

Thyroidectomy is one of the most common and challenging surgical procedures <sup>(1)</sup>. The torturous course of different arteries and nerves and the complexity of a very small gland enclosing different surrounding structures with it make the procedure more prone to irreversible complications. However, some of the major concerns for a surgeon is the development of a seroma or hematoma post-operatively. According to the literature, the incidence of hematoma reported is approximately 0% to 2.6% and these hematomas tend to lead to airway compression leading to the death of the patient. <sup>(2)</sup> In such circumstances, the concept of the drain was introduced. The majority of surgeons tend to place a drain in the dead space to avoid the formation of hematoma or seroma in the thyroid cavity. The placement of drains has been a controversial table talk for surgeons in the past years. The pros and cons have equally balanced the odds and there is considerable debate over the placement of the drain or not. <sup>(3)</sup> The majority of authors advocate the idea to place the drain to avoid life-threatening complications after thyroidectomy. <sup>(4)</sup> Contrary to that, literature evidence states the discomforts and difficulties faced by the patient prolonging the hospital stay despite any complication. Total thyroidectomy or thyroidectomy involving malignancies that require clearance and dissection of lymph nodes creates a larger dead space. These larger spaces have the probability to create suffocating hematoma or seroma. <sup>(5,6)</sup> Therefore, in such procedures the placement of a drainage tube is necessary.

The objective of this study was to explore the benefits of placing a drain after thyroidectomy by estimating the post-operative pain, patient compliance, Postoperative complications, and hospital stay.

## Materials and Methods

A Prospective comparative study was conducted at the Department of Otorhinolaryngology and Head Neck Surgery at Aziz Fatimah Hospital from March 17<sup>th</sup>, 2021, to August 20<sup>th</sup>, 2021. A total of 117<sup>(7)</sup> patients were enrolled in the study with ages ranging from 18 to 65 years of either gender. All the patients were counseled and informed consent was obtained before enrolling them in the study. 6 patients refused and 3 patients didn't respond on follow-up, so they were

excluded from the study. The study also excluded patients with lobectomy and recurrent goiter. All the patients enrolled in the study underwent total thyroidectomy. The patients were divided into two groups after randomization. The patient record was maintained in computers and a random number allocated by the group was assigned to the specific patient. Group A contained all patients with thyroidectomy with a drain and Group B contained patients containing thyroidectomy without a drain. Post-operative variables such as pain, Hospital stay, and presence of post-operative complications such as hematoma and seroma were assessed. A visual analog scale of pain was used to assess the postoperative pain during their hospital stay each day. All the patients were subjected to the same analgesics except the ones who reported extreme pain were treated with Nalbuphine HCL. Post-operative analgesic administration was recorded. The drains were removed after 24 hours if the fluid level is recorded below 50ml.

The data collected was recorded in an Excel sheet and analyzed in SPSS 21. The categorical data was represented in frequencies while the continuous data included variables such as post-operative stay. The continuous data were represented in Mean, Standard deviation while continuous data is represented in frequencies. An independent t-test has been applied as the test of significance to rule out the statistically significant variables.

## Results

After the inclusion and randomization of patients, a total of 108 patients were enrolled in the study and divided into two groups with 54 patients in each group.

**Table-1: Demographic variables of patients enrolled in the study.**

Variables	Group A (Thyroidectomy with drain) N (%)	Group B (Thyroidectomy without drain) N (%)
Age Distribution		
18-33	18 (17%)	12 (11%)
34-48	15 (14%)	17 (16%)
49-65	21 (19%)	25 (23%)
Mean $\pm$ SD	13.28 $\pm$ 42.5	12.18 $\pm$ 43.9
Gender		
Male	19 (18%)	23 (21%)
Female	35 (32%)	31 (29%)
	N=108 (100%)	

The mean and standard deviation calculated for group A were 13.28 ± 42.5 and 12.18 ± 43.9 in group B. No statistical difference was found in the meaning of both groups. However, the incidence of disease among females was greater than in males. The P-value was 0.895 proving there is no statistical significance of age between the two groups.

**Table-2: Post-Operative Hospital Stay**

Length of Hospital Stay	Group A Thyroidectomy with Drain	Group B Thyroidectomy without Drain	P- Value
2 days	3	29	<0.05
3-4 Days	43	18	<0.05
5 or more days	8	7	<0.05

Table 2 Indicates the length of hospital stays for both groups. The P-value of <0.05 is considered highly significant. Table 1 Indicates the demographic profile of the patients enrolled in the study.

**Table-3: Post-Operative Pain using Visual Analog Pain Scale**

Postoperative pain	Group A Thyroidectomy with Drain	Group B Thyroidectomy without Drain	P- Value
Day 1	7.92 ± 0.87	5.92 ± 1.03	<0.05
Day 2	6.44 ± 1.27	4.83 ± 0.81	<0.05
Day 3	4.51 ± 0.6	3.83 ± 0.85	<0.05
Day 4	2.37 ± 0.48	2.4 ± 0.49	0.7490
Day 5	2.37 ± 0.48	2.4 ± 0.49	0.7490

Post-operative complications were also recorded in patients listed in Table 3.

**Table 4: Post-Operative Complications**

Variables	Group A Thyroidectomy with Drain	Group B Thyroidectomy without Drain
Hematoma	0	1
Seroma	0	0
Hypocalcemia	0	1
Recurrent laryngeal nerve paralysis	1	3
Wound sepsis	1	1

Post-operative pain is assessed by using the visual analog pain scale. The patients with a drain inserted have a significantly high P-value of <0.05 on both days one and day 2. The P-value recorded on the third day

was P-value <0.05. However, the pain was non-significant for both groups on days four and five. The mean value and standard deviation on each day have been recorded in Table 3.

## Discussion

Operative procedures like total thyroidectomy cause the formation of dead space which is more prone to the development of life-threatening complications such as hematoma which requires urgent exploration of the neck. The incidence of such life-threatening complications is less than 0.3% to 2.5%. (2) According to the literature, the incidence of such complications is higher in patients suffering from retrosternal goiter and grave disease. (6) To avoid such complications, a drain is placed post-operatively. The majority of surgeons prefer to insert a drain after a thyroidectomy. However, the Insertion of the drain causes prolonged hospital stays and increased pain post-operatively.

According to our study, the placement of a drain after thyroidectomy significantly increases the hospital stay. As the patients in group A have a P value of 0.0001 which is statistically significant. The study conducted by Shailesh Kumar M. Emmi also proves a statistically significant variable prolonging hospital stay. (8) Moreover, a randomized control trial also states the shorter hospital stay in drainless thyroidectomy. Thyroidectomy without drain significantly reduces the stay in the hospital and also reduces hospital expenses and chances of hospital-acquired infection. (9) The patients with drain also recorded a significantly higher pain scale as compared to people without drain. Literature evidence also suggests a high value of postoperative pain due to the placement of the drain. (10)

The development of seromas and hematomas is quite rare and has no effect on the placement of drains and without drains. Our study also reports only 1 case of hematoma without a drain. A study by Hurtado-Lopez et al. stated that the presence or absence of drains has not affected the incidence of seromas and hematomas. A recent meta-analysis contradicts the idea to insert the drain after thyroidectomy. It also states that this is not beneficial for the patient as it is associated with a higher risk of wound infection and higher pain on the 1<sup>st</sup> postoperative day. However, contrary to our study, there were two cases, one in each group which were later covered by the administration of broad-spectrum antibiotics. (11)

## Conclusion

Thyroidectomy without drain reduces the length of hospital stay and the chances of the patient's hospital-acquired infections. Routine placement of the drain after thyroidectomy is not necessary. A surgeon must assess all the predisposing conditions before placing the drain if there is a risk of the development of life-threatening complications such as hematoma or seroma.

### Limitations:

The study is a comparative analysis with small sample size and is based on a single institute only. The above issue needs to be addressed by designing a Randomized control trial.

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