

ORIGINAL ARTICLE

Comparison of uncomplicated thyroidectomy with and without drain.Zahid Sattar¹, Mehsood Bin Saeed², Waqas Hussain Qureshi³

ABSTRACT... Objective: To compare uncomplicated thyroidectomy with drain and without drain in terms of postoperative hematoma, wound infection and hospital stay. **Study Design:** Prospective study. **Period:** January 2024 to 30 June 2024. **Setting:** Department of Surgery, Sahiwal Teaching Hospital. **Methods:** A total of 72 patients with 36 patients in group (with drain) and 36 patients in group (without drain) were included in the study. Inclusion criteria were patients with diagnosed thyroid swelling, age 18-60 years, both genders. Comparison of outcome between both groups were using chi square test and independent t test. **Results:** The study included 72 patients, with 36 in each group undergoing uncomplicated thyroidectomy. Post-operative hospital stay was significantly longer in the drain group (2.47 ± 0.61 days) compared to the without drain group (1.62 ± 0.55 days). Hematoma incidence showed a higher percentage in the drain group (38.8%) compared to the without drain group (27.7%). On the other hand, post-operative infection was significantly higher in the drain group (42.6%). **Conclusion:** Our study indicates that using drains in uncomplicated thyroidectomy prolongs post-operative hospital stays and increases the risk of post-operative infection. While hematoma rates show no significant difference, these findings question the routine use of drains in such surgeries.

Key words: Drain Usage, Post Op Recovery, Surgical Complications, Thyroidectomy.

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INTRODUCTION

The incidence of thyroid disease is 18.57% in females and 13.06% in males¹ and treatment is multimodal, some patients still need surgery as the last resort for their disease. Thyroidectomy is done for multiple diseases related to thyroid gland: including, multinodular goiter, Grave's disease, carcinoma of thyroid and many other diseases related to thyroid enlargement. Thyroid gland is in very close proximity to oesophagus, trachea, carotid vessels and internal jugular vein. The laryngeal nerves (Recurrent laryngeal nerve and superior laryngeal nerve) run very close to the gland. Moreover, thyroid gland receives high blood supply from large vessels. As a result, delicate hemostasis is required for precise dissection.²

In complicated thyroid gland surgery, like retrosternal goiter and neck dissection, there is a universal consensus through various resources such as articles to put the drain postoperatively.³ However, in uncomplicated thyroid surgery, there is controversy about the usage of drain.³ The drain is commonly used by many surgeons in uncomplicated

thyroid surgeries and it was also recommended previously to use drain after every thyroid surgery due to high complication rate after thyroidectomy.³ The use of drain ought to be minimal as much as possible. It has also been reported that the use of drain after uncomplicated thyroid surgery is not useful.^{4,6} According to some literatures, there was no difference in morbidity between two groups i.e. with and without drain after uncomplicated thyroidectomy.^{7,8}

Furthermore, wound complication rate was not related to the absence of drain postoperatively.⁹ Contrarily, according to some surgeons, the use of drain increased the incidence of postoperative skin infection in thyroid surgery patients and therefore they consider its use optional in uncomplicated thyroid surgery as well as in parathyroid surgery.¹⁰ A study was conducted in 2019 which revealed following results: The average length of hospital stay for patients with drains was 2.7 ± 1.4 days in comparison to 1.8 ± 1.3 days for those without drains ($P < 0.010$).¹¹

1. MBBS, FCPS, Associate Professor Surgery, Sahiwal Medical College / Sahiwal Teaching Hospital, Sahiwal.

2. MBBS, Resident Surgery, Sahiwal Teaching Hospital, Sahiwal.

3. MBBS, FCPS, Senior Registrar Surgery, Sahiwal Teaching Hospital, Sahiwal.

Correspondence Address:

Dr. Zahid Sattar
Department of Surgery, Sahiwal Medical College / Sahiwal Teaching Hospital, Sahiwal.
drzahidsattar@yahoo.com

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The usage of drain can cause several problems like; 1) The need for careful hemostasis will not be met, 2) The possibility of drain displacement and problems caused by it is high, 3) It creates a dead tissue space, which interferes in wound healing, 4) The secretion of interstitial fluid can be stimulated, leading to increase in the drainage secretion, 5) The patient's post-operative hospitalization is long, 6) It damages the patients psychologically and they are not pleased with drain use, 7) Additional financial cost will be imposed on patients, 8) Scar of drain exit site is also unpleasant.

As there is much controversy between different researches and also surgeon's experiences to insert or not a drain after uncomplicated thyroidectomy and this research is not done at national level before, we aimed to compare between both groups in terms of hemostasis/ hematoma formation, wound infection and hospital stay. It will help to formulate local guidelines to use or not a drain after uncomplicated thyroidectomy.

METHODS

This Prospective Study was conducted at department of surgery Sahiwal teaching hospital from January 2024 to 30 June 2024 after approval from institutional review board (301/IRB/SLMC/SWL). A sample size of 72 patients [36 in each group] was calculated by taking hospital stay as 2.7 ± 1.4 days in patients with drain and 1.8 ± 1.3 without drains.¹¹ The confidence interval will be 95% while study of power was 80%. This is calculated by using openepi software version 3. Non probability Consecutive Sampling technique was used.

Inclusion Criteria

Patients having Thyroid Swelling diagnosed with

1. Multinodular goiter
2. Thyroid nodule
3. ASA status I, II and III
4. Age groups 18 to 60 years
5. Both females and males

Exclusion Criteria

Patients having

1. Thyroid cancer proved by biopsy
2. Coagulation disorder if abnormal PT and INR
3. Diabetes if HbA1c more than 7.5
4. Cardiovascular disease if known patient of

previous MI/ stenting

5. Require radical neck dissection in case of carcinoma thyroid
6. Retrosternal goiter diagnosed clinically as well as on radiological investigations

Data Collection Procedure

A total of 72 patients was selected fulfilling the inclusion criteria from department of surgery, Sahiwal teaching hospital. Patients were divided into two groups randomly. Informed consent was taken. Demographic details (name, age, gender, BMI (were measured by dividing weight in Kgs by height in Meters², ASA status) was also be noted. All the operations were carried out by same consultant under general anesthesia. Randomization was done per operatively. Two groups were formed, with and without drain. Postoperative routine care was done without any special patient monitoring. Tracheostomy set was available at bed site as per routine. If drainage less than 30 cc in 24 hours, the drain will be removed. The patient was discharged with drain if drainage more than 30cc in 24 hours and he is well with the advice to revisit the hospital after 24-48 hours. Postoperatively, the duration of stay in the hospital, surgical site infection and hematoma formation were noticed in both groups.

Statistical Analysis

The collected data was analyzed using SPSS version 23.0. Chi-square and t-test tests were used to compare between the qualitative and quantitative variables and the two groups with and without drain. Qualitative variables (gender, family history of thyroid disease, hematoma formation, post-operative infection) were displayed as percentage. Quantitative variables like (age, hospital stay) were displayed as means and standard deviations. These potential variables have been reported to be associated with risk of thyroid surgery complications, such as bleeding or hematoma. The Kolmogorov-Smirnov test and the Shapiro-Wilk test was used to test the normality of the data. ANOVA analog and Mann-Whitney tests were used in case the data is not normally distributed. A p-value <0.05 was considered as statistically significant.

RESULTS

A total of 72 patients were included in the study 36

in each group for with drain versus without drain to compare the uncomplicated thyroidectomy. Mean age among drain group it was 42.97 ± 9.52 and without drain group were 43.08 ± 12.44 (Table-I). Gender distribution showed that among drain group it was males were 15 (41.6%) while females were 21 (58.4%) and in without drain group gender distribution was seen as 14 (38.88%) were males and 22 (61.12%) were females. (Table-II). Comparison of uncomplicated thyroidectomy with drain and without drain in term of post-operative hospital stay among drain group it was seen as $2.47 \pm .61$ (days) while without drain group it was $1.62 \pm .55$ (days), with a significant p-value of 0.001. (Table-III). Comparison of uncomplicated thyroidectomy with drain and without drain in term of post-operative hematoma was With Drain group it was seen in 14 (38.8%) while without Drain it was seen in 10 (27.7%). Non significant p value was seen 0.317, post operative infection was With Drain group it was seen in 15 (42.6%) and without Drain group it was among 7 (19.4%). With a significant p value of 0.04. (Table-IV). Stratification of post operative hematoma, post operative hematoma and hospital stay with to respect to age, BMI, gender and ASA class are presented from (Table-V-IV).

TABLE-I**Mean & SD of Age, & BMI (n=72)**

Variables	With Drain (n=36)	Without Drain (n=36)
	Mean & SD	Mean & SD
Age (years)	42.97 ± 9.52	43.08 ± 12.44
BMI	24.41 ± 2.44	23.79 ± 2.09

TABLE-II**Distribution of gender, ASA Class, family history of thyroid. (n=72)**

Variables		With Drain (n=36)	Without Drain (n=36)
Gender	Male	15	14
	Female	21	22
ASA class	I	11	7
	II	17	22
	III	8	7
Family History of Thyroid	Yes	9	12
	No	27	24

TABLE-III**Comparison of uncomplicated thyroidectomy with drain and without drain in term of post-operative hospital stay**

	With Drain (N=36)	Without Drain (N=36)
Post-Operative Hospital Stay	Mean & SD	Mean & SD
	$2.47 \pm .61$	$1.62 \pm .55$
P-Value	0.001	

TABLE-IV**Comparison of uncomplicated thyroidectomy with drain and without drain in term of post-operative hematoma and post operative infection. (n=72)**

Group	Post operative Hematoma		P-Value
	Yes	No	
With Drain	14	22	0.317
Without Drain	10	26	
	Post operative Infection		
	Yes	No	
With Drain	15	21	0.0413
Without Drain	7	29	

DISCUSSION

The incidence of thyroid disease is reported to be 18.57% in females and 13.06% in males, making thyroid disorders a common surgical problem worldwide.¹² The thyroid gland receives a rich blood supply from several major vessels; therefore, meticulous hemostasis is essential during thyroid surgery to ensure precise dissection and to minimize post-operative complications such as bleeding and hematoma formation.¹³ These anatomical and clinical considerations have contributed to the longstanding debate regarding the routine use of surgical drains following thyroidectomy.

Our investigation aligns with the ongoing debate surrounding the necessity and benefits of drains in thyroid surgeries. Several key aspects, including post-operative hospital stay, hematoma incidence, and post-operative infection, were scrutinized.

In terms of post-operative hospital stay, our results support the observations of studies such as that by Erbil et al., which found a prolonged duration of hospitalization in cases where drains were employed after thyroidectomy.¹⁴ This suggests that the use of drains may contribute to an extended

TABLE-V

Stratification of wound infection with to respect to age, BMI, gender and ASA class. (n=72)

Variables		Yes	Post operative wound infection		P-Value
			No		
Age	18-40	Group A	4	8	1.00
		Group B	7	11	
	41-60	Group A	11	13	0.001
		Group B	0	18	
BMI	Normal	Group A	12	14	0.009
		Group B	4	25	
	Over to Obese	Group A	3	7	0.484
		Group B	3	4	
Gender	Male	Group A	8	7	0.858
		Group B	7	7	
	Female	Group A	7	14	0.004
		Group B	0	22	
ASA Class	I	Group A	8	3	0.332
		Group B	3	4	
	II	Group A	3	14	1.00
		Group B	4	18	
	III	Group A	4	4	0.077
		Group B	0	7	

TABLE-VI

Stratification of hospital stays with to respect to age, BMI, gender and family history of thyroid

Variables		Groups	N Mean	Post Operative Hospital Stay		
				SD	P- Value	
Age	18-40	Group A	12	2.43	.51	0.002
		Group B	18	1.71	.58	
	41-60	Group A	24	2.49	.66	0.001
		Group B	18	1.53	.52	
BMI	Normal	Group A	26	2.57	.63	0.01
		Group B	29	1.60	.62	
	Over to Obese	Group A	10	2.20	.48	0.020
		Group B	7	1.71	.10	
Gender	Male	Group A	15	2.48	.54	0.001
		Group B	14	1.72	.47	
	Female	Group A	21	2.46	.66	0.001
		Group B	22	1.55	.60	
Family History of Thyroid	Yes	Group A	9	2.50	.86	0.101
		Group B	12	2.03	.32	
	No	Group A	27	2.46	.52	0.020
		Group B	24	1.41	.54	

recovery period. However, our study contrasts with others such as the work by Rosato et al., where no significant difference in hospital stay was noted between drain and non-drain groups.¹⁵ The divergence in findings underscores the need for further investigation to establish a consensus.

Hematoma incidence in our study did not exhibit a statistically significant difference between the drain and without-drain groups, aligning with some prior research.¹⁵ Nevertheless, our results contrast with a study by Thomusch et al., which reported a higher hematoma rate in the non-drain group.¹⁶ These conflicting findings emphasize the complexity of factors influencing hematoma development, necessitating a nuanced understanding of patient-specific variables.

Regarding post-operative infection, our study reveals a significantly higher rate in the drain group, consistent with the findings of Smith et al.¹⁷ However, this contradicts studies such as that by Zhang et al., which did not identify a significant association between drain use and post-operative infection.¹⁸ These contradictions highlight the need for a more comprehensive exploration of factors contributing to infection risk, potentially including variations in surgical techniques and patient populations.

In conclusion, our study contributes to the ongoing discourse on the utility of drains in uncomplicated thyroidectomy. While aligning with certain studies on extended hospital stay and increased infection risk, our findings contrast with others on hematoma incidence. The conflicting nature of results emphasizes the multifaceted considerations in deciding whether to use drains, urging researchers and clinicians to tailor their approach based on patient-specific factors and further investigate the nuanced outcomes of drain utilization in thyroid surgeries.

CONCLUSION

Our study indicates that using drains in uncomplicated thyroidectomy prolongs post-operative hospital stays and increases the risk of post-operative infection. While hematoma rates show no significant difference, these findings question the routine use of drains in such surgeries, highlighting the importance

of personalized decision-making and the need for further investigation.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

1	Zahid Sattar: Conceived the idea, drafting, acquisition of data.
2	Mehsood Bin Saeed: Data analysis.
3	Waqas Hussain Qureshi: Revision of manuscript.