

Thyroidectomy: A Comparison of Drain and No-Drain Strategies

Ahmed Hussain Pathan¹, Karim Bux², Sandesh Kumar³, Shahbaz Zahoor⁴, Syed Moin Islam Shah⁵, Rihan Aslam Khan⁶

¹ Ahmed Hussain Pathan, Associate Professor General Surgery, Liaquat University of Medical and Health Sciences Jamshoro Pakistan.

Email: dr.ahmedhussain@outlook.com

² Karim Bux, Senior Registrar General Surgery, Liaquat University of Medical and Health Sciences Jamshoro Pakistan.

Email: karimbhurgri@gmail.com

³ Sandesh Kumar, Assistant Professor General Surgery, Liaquat University of Medical and Health Sciences Jamshoro Pakistan.

Email: dr_skumar@hotmail.com

⁴ Shahbaz Zahoor, Senior Medical Officer General Surgery, Peoples University of Medical and Health Sciences Nawabshah Pakistan.

Email: shahbazmirza27@gmail.com

⁵ Syed Moin Islam Shah, Assistant Professor General Surgery, Sulaman Roshan Medical College Tandoadam Pakistan.

Email: drmoishah67@gmail.com

⁶ Rihan Aslam Khan, Post Graduate Trainee General Surgery, Ziauddin Hospital Keamari Karachi Pakistan.

Email: rehan.aslam@ymail.com

*Correspondence author: Ahmed Hussain Pathan (dr.ahmedhussain@outlook.com)

Received: 15 December 2023

Accepted: 1 December e 2023

Citation: Pathan AH, Bux A, Kumar S, Zahoor S, Shah SM, Khan R A. (2023). Thyroidectomy: A Comparison of Drain and No-Drain Strategies. History of Medicine 9(2): 764–767. <https://doi.org/10.17720/2409-5834.v9.2.2023.099>

Abstract

Objective: To evaluate the differences in the effectiveness of thyroidectomy with and without a drain.

Background: The thyroid gland converts iodine from our food into two primary active forms: triiodothyronine (T4) and thyroxine (T3). Neck hematomas, an unusual but dangerous consequence, can arise as a result of faulty hemostasis or a bleeding problem, and while the yearly incidence is just 1%, they can asphyxiate the patient and create airway blockage. It has also been shown that employing a drain after basic thyroid surgery is futile. **Study design:** A randomized controlled trial **Place and Duration:** This study was conducted in Liaquat University of Medical and Health Sciences Jamshoro from October 2022 to October 2023. **Methodology:** This study was carried out among 140 patients with consent from the hospital's ethics review committee. Participants in our study were those who had a palpable or noticeable enlargement of the thyroid gland, regardless of size. Group A comprised patients with drains, while Group B included patients without drains. For three days, every patient in both groups was observed. When the drainage was less than 20 millilitres per day, the drain was sealed. A statistically significant p value was one that was less than 5%.

Results: It was observed that 26 (37.14%) males were in group A and 22 (31.43%) in group B; the proportion of females was higher than that of males, being 44 (62.86%) and 48 (68.57%) in groups A and B, respectively. Suction drain efficacy was observed in both groups in terms of resulting in no hematoma formation. The efficacy was observed at 72.86% and 70% in groups A and B respectively with a p value of 0.42. There was no hematoma in 75% of females in group A and 72.92% of females in group B. **Conclusion:** This study shows that precise dissection and hemostasis cannot be replaced with drains. Although the patient may have felt less pain after thyroid surgery, the absence of drains was not linked to any problems.

Keywords

Thyroidectomy, Drain, Hematoma.

The butterfly-shaped thyroid is an organ that is situated close to the base of the neck. It is a part of the endocrine system that sends hormones into the bloodstream to enter the body's cells and control metabolism, respiration, heart rate, body weight, temperature, and menstrual cycles, among other

essential bodily activities. [1, 2]. The thyroid gland converts iodine from our food into two primary active forms: triiodothyronine (T4) and thyroxine (T3). This gland has been related to a number of diseases and maladies that can emerge at any age due to a variety of factors such as injury, sickness, or nutritional deficiency

[2-4].

There are several reasons why a thyroidectomy may be necessary. Fine-needle aspiration (FNA) of a nodule is a common method of confirming and diagnosing thyroid cancer, which is one of the most common symptoms. In the medical literature, it is stated that "when a fine-needle aspiration reveals a follicular neoplasm with Hürthle cells, patients must have at least a hemi thyroidectomy—the removal of one lobe—on the ipsilateral side of the nodule. If the specimen's histology report reveals indications of malignancy, a full thyroidectomy may be necessary." [4] Furthermore, persons with symptomatic thyroid tumors or goitres, as well as patients with medically refractory Graves' disease or hyperthyroidism, may benefit from this procedure [5, 6].

Thyroid surgery, like any other surgery, includes potential post-operative complications. Neck hematomas, an unusual but dangerous consequence, can arise as a result of faulty hemostasis or a bleeding problem, and while the yearly incidence is just 1%, they can asphyxiate the patient and create airway blockage [6].

Therefore, in this study, we aim to evaluate the efficacy in terms of the formation of hematoma in thyroidectomy carried out with and without drain in a tertiary care setting.

Methodology

This randomized controlled experiment was carried out with consent from the hospital's ethics review committee. The sample size was 70 in each group presenting with palpable or visible enlargement of any size of the thyroid gland as part of our study (total sample size = 140 according to WHO sample size estimates). A non-probability sequential sampling approach was applied.

All patients fulfilling the study's inclusion criteria were admitted to the ward for further examination. The patients were duly informed about the purpose of the study, and formal consent was obtained. A thorough blood picture, coagulation profile, liver testing, blood grouping, urine examination, blood sugar, ECG, serum electrolytes, and other necessary procedures were all part of the standard baseline pre-operative examinations performed on all patients. We used the lottery technique to distribute the patients into two groups. Patients with drains were allocated to group A, and those without drains were assigned to group B. Experienced general surgeons performed the surgical operations in accordance with general surgery norms. All patients in both groups were monitored for 3 days. The drain was removed when the drainage was less than 20 ml every 24 hours. The trained radiologist performed an ultrasound of the neck on all patients on the first postoperative day to determine the extent of thyroid bed accumulation. On the 3rd day after surgery, patients were discharged following a medical examination.

The statistical computations were performed with SPSS version 20 software. Categorical characteristics were analyzed using frequencies and percentages. We estimated the mean \pm SD for continuous variables. A chi-square test was used to compare the association between the placement of the drain on the first post-operative day between the two groups. Statistically, a p value less than 5% was considered significant.

Results

It was observed that there were 26 (37.14%) males in group A and 22 (31.43%) in group B; the proportion of females was higher than that of males, with 44 (62.86%) and 48 (68.57%) in groups A and B, respectively. (As shown in Table 1)

Table I: Distribution of Patients Based on Gender and Age.

Variable	Group A		Group B		p-value
	n	%	n	%	
Gender					
Female	44	62.86	48	68.57	0.149
Male	26	37.14	22	31.43	
Age (Years)					
Below 25	11	15.71	13	18.57	0.435
25-40	21	30.00	22	31.43	
41-60	25	35.71	26	37.14	
Above 60	13	18.57	9	12.86	

The suction drain efficacy was observed in both groups in terms of resulting in no hematoma formation. The efficacy was observed 72.86% and 70% in group A and B respectively with p value 0.42. (As shown in Table II)

Table II: Effectiveness in Terms of no Hematoma in Two Groups.

Effectiveness	Group A		Group B		p-value
	n	%	n	%	
Yes	51	72.86	49	70.00	0.42
No	19	27.14	21	30.00	

There was no hematoma in 75% of females in group A and 72.92% of females in group B. There was no hematoma in 73.08% of males in group A and 68.18% of males in group B.

However, there was no hematoma in 90.91% of the patients aged below 25 years in group A and 84.62% of the patients aged below 25 years in group B. There was no hematoma in 80.95% of the patients aged between 25 and 40 years in group A and 77.27% in group B; there was no hematoma in 80% of the patients aged between 41 and 60 years in group A and 73.08% in group B; there was no hematoma in 76.92% of the patients aged above 60 years in group A and 66.67% in group B. (as shown in Table III)

Table II: Comparison of Effectiveness in Gender and Age in Terms of no Hematoma in Two Groups.

Effectiveness	Group A				Group B				p-value
	Yes		NO		Yes		No		
Gender									
Female	33	75.00	11	25.00	35	72.92	13	27.08	0.09
Male	19	73.08	7	26.92	15	68.18	7	31.82	
Age (Years)									
Below 25	10	90.91	1	9.09	11	84.62	2	15.38	0.18
25-40	17	80.95	4	19.05	17	77.27	5	22.73	
41-60	20	80.00	5	20.00	19	73.08	7	26.92	
Above 60	10	76.92	3	23.08	6	66.67	3	33.33	

Discussion

Nevertheless, the thyroid medication protocols are at an advanced level these days; however, there are still several cases each time that need surgical intervention. In thyroidectomy surgery, many scientists are on the same page about putting emphasis on placing the drain in infrequent cases of retrosternal thyroid and cervical lymphatic dissection, but the authenticity of placing the drain in routine cases is still on the borderline [10].

It was observed that there were 26 (37.14%) males in group A and 22 (31.43%) in group B; the proportion of females was higher than that of males, with 44 (62.86%) and 48 (68.57%) in groups A and B, respectively. Most of the participants were in the age group of 41–60 years in group A, and likewise in group B. Suction drain efficacy was observed in both groups in terms of resulting in no hematoma formation. The efficacy was observed at 72.86% and 70% in groups A and B, respectively, with a p value of 0.42. According to one study, using suction drains or not had no statistically significant impact on the frequency of post-thyroidectomy hematomas. This finding is consistent with other research. [11]

We observed that there was no hematoma in 75% of females in group A and 72.92% of females in group B. There was no hematoma in 73.08% of males in group A and 68.18% of males in group B.

However, there was no hematoma. 90.91% of the patients aged below 25 years in group A and 84.62% of the patients aged below 25 years in group B had no hematoma. 80.95% of the patients aged between 25 and 40 years were in group A, and 77.27% were in group B. Similar reports were published in a large study of 250 to 400 patients and found that drains provided no significant benefits following thyroid surgery [12, 13].

Talmi also found that the use of vacuum drains during thyroid surgery to reduce post-operative hematoma development has yet to be statistically validated [14]. The use of drains after thyroid surgery has also been demonstrated to have no impact in two large, non-randomized trials with 250 and 400 individuals [15, 16].

Our investigation observed that employing a drain on a regular basis in such procedures was ineffective. Bleeding near the trachea constricts the airway and causes severe edema between the laryngeal and pharyngeal connective tissues. The

upshot of such events is a suffocating hematoma, which needs immediate surgical intervention in the operating room.

Conclusion

This study shows that precise dissection and hemostasis cannot be replaced with drains. Although the patient may have felt less pain after thyroid surgery, the absence of drains was not linked to any problems.

Conflict of Interest

The authors declared no conflict of interest.

Source of Funding

There was no funding involved.

References

- National Endocrine and Metabolic Diseases Information Service (NEMDIS). Thyroid Tests. March 2013. <http://www.endocrine.niddk.nih.gov/pubs/thyroidtests/index.aspx>
- British Thyroid Foundation. Your Thyroid Gland. <http://www.btf-thyroid.org/index.php/thyroid>.
- National Center for Biotechnology Information, U.S. National Library of Medicine. PubMed Health: How Does the Thyroid Gland Work? July 2011. <http://www.ncbi.nlm.nih.gov/pubmed/health/PMH0010393>
- Lai SY, Mandel SJ, Weber RS. Management of Thyroid Neoplasms. Flint, P; Haughey BH, Lund VJ, Niparko JK, Rich-ardson MA. Flint: Cummings Otolaryngology: Head & Neck Surgery, 5th ed. 5th. 2010. Ch.124.
- Myers, Eugene. Thyroidectomy. Myers, Eugene. Operative Otolaryngology: Head and Neck Surgery. 2nd. Ch.65.
- Watkinson JC. Fifteen years' experience in thyroid surgery. Ann R Coll Surg Engl. 2010 Oct;92(7):541-7.
- Musa AA, Agboola OJ, Banjo AA, Oyegunle O. The use of drains in thyroid surgery. Niger Postgrad Med J. 2010;17(1):15-18.
- Samraj K, Gurusamy KS. Wound drains following thyroid surgery. The Cochrane Database of Systematic Reviews. 2007(4):CD006099.
- Portinari M, Carcoforo P. The application of drains in thyroid surgery. Gland Surg. 2017;6(5):563-73.
- Vashishta R, Mahalingam-Dhingra A, Lander L, Shin EJ, Shah RK. Thyroidectomy outcomes: a national perspective. Otolaryngology-Head and Neck Surgery. 2012;147(6):1027-34

- Khanna J, Mohil R. Is the routine drainage after surgery for thyroid necessary? A prospective randomized study. *Biomed Central Surg* 2005 May;19:5-11
- Shaha AR, Jaffe BM. Selective use of the drain in thyroid surgery. *J Surg Oncol* 1993;52:241-3
- Arrivanavagam DC, Naravan SV, Busby D, Sieunarine K, Raju G. Thyroid surgery without drainage; 15 years of clinical experience. *J Roy Coll Surg Edin* 1993;38:69-70
- Talmi YP. Thyroid surgery without drains. *Harefuah* 2004 Aug;143(8):560-2
- Ariyanayagam DG, Naraynsingh V, Busby D, Sieunarine K, Raju G, Jankey N. Thyroid surgery without drain- age: 15 years of clinical experience. *J Royal Coll Surg Edin-burgh* 1993;38(2):69-70.
- Suslu N, Vural S, Oncel M. Is the insertion of drains after uncomplicated thyroid surgery always necessary? *Surg To-day* 2006;36(3):215-8.