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To Drain or Not to Drain? - The Importance of Drain Placement in Post - Thyroidectomy

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Abstract: ***Over many years, the decision to place a drain following thyroidectomy has always been challenged. While most surgeons firmly believe that drain placement could prevent or help early identification of a potentially life - threatening hemorrhage. Some studies have suggested that, while a drain can assist in the recognition of a hematoma, it cannot prevent it from developing. It is also suggested that the drain could get blocked with a clot, aiding in the expansion of a hematoma, and preventing identification of a major bleeder. Aim to compare the outcome of drain versus no drain in post thyroidectomy, in a tertiary care hospital. Study sample consist of 50 patients, they were randomized pre - operatively into two groups Drain Group (n=25) and Non - Drain Group (n=25). When we compared the drainage in both the groups, the p value was found to be significant (p 0.001*) in drain group. When we compared the post - operative complications in both the groups, there was no statistically significant difference noted (p=0.213).***

Keywords: drain, no drain, complications, post thyroidectomy, hemorrhage, hematoma, seroma, malignancy, respiratory distress

1. Introduction

Over many years, the decision to place a drain following thyroidectomy has always been challenged. While most surgeons firmly believe that drain placement could prevent or help early identification of a potentially life - threatening hemorrhage. The thyroid gland is found posterior to the strap muscles of the neck, and it wraps itself around the thyroid and cricoid cartilages respectively. It is supplied by the superior and inferior thyroid arteries, and the drainage is by the corresponding veins and middle thyroid vein. These structures are, therefore, carefully identified intraoperatively and ligated. Hemorrhage following thyroidectomy can cause airway compression, thereby making the role of a drain much more significant. Hence, surgeons prefer placing a drain to a get a good night's sleep owing to the fear of bleeding. The incidence of bleeding is significant following subtotal thyroidectomy, as surgeons leave behind approximately 8 mg of vascularized thyroid tissue, which is the potential source of bleeding, apart from slipping of the ligatures; it is found to be almost 0.3 - 1%. Drain placement can also prevent formation of a seroma and wound dehiscence. Some studies have suggested that, while a drain can assist in the recognition of a hematoma, it cannot prevent it from developing. It is also suggested that the drain could get blocked with a clot, aiding in the expansion of a hematoma, and preventing identification of a major bleeder, which could lead to delay in exploration. It has also been observed that Otorhinolaryngologists are more inclined to place a drain than general Surgeons.

We aim to compare the outcome of drain versus no drain in post - thyroidectomy, in a tertiary care hospital.

2. Materials and Methods

Study sample consist of 50 patients, who underwent thyroidectomy in department of General Surgery, January 2021 to December 2021. Patients were randomized pre - operatively into two groups Drain Group (n=25) and Non - Drain Group (n=25). Hematological tests and coagulation profile, along with thyroid hormone profile, assessment of thyroid nodularity with ultrasound and FNAC was performed for all the patients undergoing thyroidectomy. Patients with thyroid carcinoma requiring simultaneously neck dissection, laboratory indicator of coagulation disorder and patients with Graves' disease were excluded from the study. All patients underwent preoperatively indirect laryngoscope and informed written consent was taken. The surgeon was informed of the group just before the closure of the wound. In drain group negative section pressure (Romovac Suction drain size 14) drain was brought out through a separate skin wound.

All patients were assessed for post - operative complications like fluid collection in thyroid bed, seroma formation, change in voice, prolonged hospital stay, respiratory distress and wound infection. Data were analyzed by using SPSS software v21.

3. Results

In present study out of 50 patients, 42 (84%) were females and only 8 (16%) were males. Mean age of both groups is 42.3 years (range 18 - 67 years). Both groups equally distributed regarding clinical diagnosis, size of nodule and type of surgery. Data were analyzed by descriptive and inferential statistics. The types of thyroidectomy was divided as total, near total and hemithyroidectomy.

Group	Total thyroidectomy	Near total thyroidectomy	Hemithyroidectomy
Drain	10	5	10
No drain	13	4	8
total	23	9	18

Benign cases included - single nodule (10), multinodular goiter (18) and adenoma (18). Malignant cases included papillary carcinoma (4), medullary carcinoma (2) and anaplastic carcinoma (1).

Majority of the patients underwent total thyroidectomy, followed by hemithyroidectomy. There was no statistically significant difference between the two groups (p = 0.107)

Group	Benign	Malignancy
Drain	17	8
No drain	20	5
Total	37	13

Majority of the cases were done for benign thyroid disease, and there was no statistically significant difference between the two groups (p = 0.116)

When we compared the drainage in both the groups, the p value was found to be significant (p 0.001*). Post - operative complications

Group	Bleeding	Respiratory distress	Seroma
Drain	4	1	4
No drain	1	0	1
Total	5	1	5

When we compared the post - operative complications in both the groups, there was no statistically significant difference noted (p=0.213).

Figure 1: Haematoma and bleeding in patient with drain insiru

Figure 2: Well healed wound despite lack of drain placement

4. Discussion

When it comes to surgical procedures in our institute, Thyroidectomy is a common procedure. The patients undergoing this procedure can be due to benign goiters, multinodular goiters or even carcinoma thyroid. In most cases, total or near total thyroidectomy is warranted. Thyroid particularly is a highly vascular gland, and hence care has to be taken to avoid post - operative bleeding [1 - 3]. For this reason, negative suction drains are placed routinely after thyroidectomy. Studies done in the past have proven that drains don't add any advantage, and infact the placement can be detrimental to the patient.

It is postulated that the negative suction may hinder the lymphatic drainage or the drain being a foreign body may induce reactive fluid formation, thus encourage seroma formation [2, 3, 10]. It is observed that post operative haematoma incidence following thyroidectomy is 0 - 30%. Hematoma can result from inadequate hemostasis at time of closure, ligature slip or increase venous pressure at extubation because of coughing or straining [4 - 6]. This, however, can't be prevented by bulky dressings or the placement of a drain [7, 8]. Many authors have demonstrated that the use of drainage after uncomplicated thyroid surgery included total Thyroidectomy, subtotal thyroidectomy and lobectomy does not decrease the rate of complications related to post - operative bleeding [9, 10]. However, in cases of subtotal thyroidectomy or even for substernal goiter resection, a large dead space and raw bed warrants the use of a drain. Even some authors recommend the use of drains in cases of hypervascularity as in Graves disease or extensive dissection of some cancers [11 - 14].

Study	Findings
Corsten M Johnson et al (n=944)	Meta - analysis= no difference in post - thyroidectomy haematoma rate
Irfan Ishaq et al (n=60)	Observational= no difference in bleeding
Tian et al (14 studies meta - analysis)	Meta - analysis= no difference in post - thyroidectomy haematoma or seroma rate
Safia Zahir Ahmed et al (n = 3297)	There is significant difference in post - operative complications, incidence of post - operative pain and length of hospital stay in patients who have drain placement compared to those with no drain placement. However, seroma formation is observed more frequently in patients who have no drain placed after thyroid surgery

In a large meta - analysis of eight series from 1993 till 2022 consisting of 944 patients, there was no statistically significant difference between the rates of post Thyroidectomy hematoma whether or not suction drains were used [15]. In a study by Irfan Ishaq et al, they found no statistical significant difference between post - operative complications between both groups [16].

However, keeping a suction drain has prevented formation of haematoma leading to respiratory distress, which is a great relief to the patient and surgeon.

In a meta - analysis of 27 studies by Safia Zahir Ahmed et al [18], there is significant difference in post - operative complications, incidence of post - operative pain and length of hospital stay in patients who have drain placement compared to those with no drain placement. However, seroma formation is observed more frequently in patients who have no drain placed after thyroid surgery.

5. Conclusion

From our study, there is a definite advantage of a drain placement following thyroidectomy without complications and with out drain also no significant post operative side effects. However, further randomized controlled trials on a larger study population is necessary to draw a definitive conclusion.

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