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Original Research Article

Thyroidectomy with and without drains: a clinical comparative study

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ABSTRACT

Background: Thyroid surgery is one of the most commonly performed procedures by a general surgeon, and almost every surgeon tends to use closed suction drain at the end of surgery, with an intention of preventing the most dangerous complication i.e., suffocating haematoma, which may be not necessary as suggested by many studies. The objective of the study was to assess the benefit of drain use after thyroidectomy by determining; length of hospital stay, post operative pain and wound sepsis.
Methods: This prospective clinical comparative study was undertaken at tertiary care teaching Hospital, for duration of one year from September 2017 to August 2018.
Results: A total of 44 patients were evaluated. There were 29 females (65.90%) and 15 males (34.09%). The mean age for the drain group was 35.45 years and 33.79 years for the no drain group. Most participants were female. Mean duration of hospital stay after thyroidectomy was significantly higher among the drain arm as compared with the no drain arm. Seven patients developed complications in the drain group and one developed complication in the no drain group. The mean hospital stay of the drain group was 3.15 days which in the no drain group was 2.51 days.
Conclusions: Thyroidectomy without drains causes less discomfort, early discharge, hence has lesser expenses, without increasing the risk of post operative including haemorrhage and hematoma formation. Meticulous haemostasis and an adequate surgical technique are the keys for avoiding haemorrhage and hematoma formation.

Keywords: Haematoma, Suction drains, Thyroidectomy

INTRODUCTION

Thyroid surgery forms one of the most integral parts of General surgical practice. Most Surgeons are well versed in this surgery. Although there has been an ongoing debate about routine use of drains in Thyroid surgery, most of the surgeons still continue to use drains. Many authors have reported that the drains are ineffective in preventing a life threatening haematoma formation after thyroidectomy.[1,2] Drains may also cause discomfort, might increase the rate of surgical wound infections, prolong the length of the hospital stay and thereby increase the cost, and deteriorate the cosmetic result.[3] The small lumen of the drain usually gets blocked by clot in the presence of severe bleeding.[2] The need for use of drains in thyroid surgery has been debated after various types of surgeries with much larger potential dead spaces like cholecystectomy and anastomosis of colon are being performed without drains.[4,5] Hence we undertook a clinical comparative study at a Tertiary care teaching hospital to compare Thyroidectomy with drains versus Thyroidectomy without drains. The objective of the study was to assess the benefit of drain use after thyroidectomy by determining; length of hospital stay, post operative pain and wound sepsis.

METHODS

This prospective clinical comparative study was undertaken at Tertiary care teaching Hospital, for

duration of one year from September 2017 to August 2018.

Inclusion criteria

- All Patients undergoing Thyroidectomy between the ages of 18 to 70 years were included in the study.
- Patients in euthyroid state.

Exclusion criteria

- Patients who were diagnosed with thyroid maglinancy.
- Preganancy, lactation, cardiac disorders, uncontrolled diabetes.
- Patient on anticoagulants, bleeding diasthesis.

Sample size calculation: Calculation done using open epi software version 2.3.1. At 95% confidence limit, 80% power of the study;

Study includes a total of 44 patients

- 22 patients Thyroidectomy without drain (Group-A)
- 22 patients Thyroidectomy with drain (Group-B)

Randomization was done using computer generated random number and sealed envelopes.

Surgical technique

Informed consent for surgery and consent for participation in the study were taken. A preoperative standard protocol included an Indirect Laryngoscopy, Thyroid hormone assay, Fine needle aspiration cytology of the swelling, Ultrasonography of the thyroid. Routine preoperative fitness work up was done as per ASA guidelines. Any other post operative complications were also recorded. All cases were operated upon by senior surgeons well versed in Thyroidectomy surgery with a minimal experience of 6yrs.

Intraoperative strict adherence to surgical protocol, with identification and preservation of recurrent laryngeal nerve, thorough hemostasis, and meticulous closure was done.

Post operative pain levels were recorded at 24 hours and 72 hours using a standard visual analogue score (VAS). All patients in the drain group underwent drain removal at 72 hrs post operatively. Wound dressing was opened at 72 hrs and any wound related complications were recorded. Also this was repeated at 4 days and 8 days post operatively.

Data was analysed using recent SPSS V22 software. A Chi-squared test was used to evaluate the significance of the associations between variables. A P value of ≤ 0.05 was considered significant.

RESULTS

Out of 44 (22 in each group) Thyroidectomies performed, majority of patients were Female 72.5% and 27.5% Males. Most of the patients were aged between 21- 40 years fulfilled the inclusion and exclusion criteria. The drain group served as the control group and the no drain group served as the treatment group 70% of patients under went total Thyroidectomy, and 30% hemi Thyroidectomy. Twenty two patients (8 males, 14 females) were in the drain group and with 22 patients (7 males, 15 females) in the no drain group.

Table 1: Age.

Age (yrs)	With drain	Without drain
0-20	0	0
21-40	19	18
41-60	2	2
61-80	1	2
80-100	0	0
Total	22	22

Table 2: Gender.

	With drain		Without drain	
Gender	**Male**	**Female**	**Male**	**Female**
Number	8	14	7	15
Percentage	36%	64%	31%	69%

Twenty two patients were in the drain group (mean age 35.45 years, range of 21- 40) and Twenty two in the no drain group (mean age 33.79 years, range 21-40) but the mean age difference between groups was not statistically significant (Table 1). There was no statistically significant difference in demographic characteristics of age and gender between the two groups ($p<0.05$) (Table 2).

Of the 22 patients in the drain group, 14 underwent total thyroidectomy and 8 underwent Hemi thyroidectomy. In the no drain group, 16 underwent total thyroidectomy and 6 underwent Hemi thyroidectomy. This comparison of operations performed in both groups was statistically significant ($p=0.5$) (Table 3).

Most of the specimens were forwarded to the Pathology Department of the hospital, submerged in formalin solution (potentially resulting in smaller measurements) and were measured by an independent pathologist.

The two groups were relatively equal in terms of age, gender distribution, blood loss and final histopathological report. There were significant differences in operation performed and operative time. As shown in Table 4, the duration of hospital stay was significantly higher among the patients who received a drain as compared with those who didn't ($p=0.0008$). There was no statistically significant difference between the frequencies of wound sepsis after 24 hours postoperatively in the two groups.

Table 3: Operative procedure.

	With drain		Without drain	
Operative procedure	**Total thyroidectomy**	**Hemi thyroidectomy**	**Total thyroidectomy**	**Hemi thyroidectomy**
Number	14	8	16	6
Percentage (%)	64	36	72.7	27

Table 4: Length of hospital stay.

Length of hospital stay	With drain	Without drain
2 days	0	4
2-5 days	8	14
More than 5 days	14	4

Table 5: Post operative pain at 24 hours (VAS).

VAS at 24 hours	With drain	Without drain
0-2	15	7
3-4	3	5
5-6	1	0
7-8	0	0
9-10	0	0

On the first postoperative day, pain was significantly more severe in the drain as compared with the no drain arm (<0.001). There was no statistically significant difference in the occurrence of all other post operative complications in the two study groups.

Table 6: Post operative pain at 72 hours (VAS).

VAS at 48 hours	With drain	Without drain
0-2	12	6
3-4	4	2
5-6	0	0
7-8	0	0
9-10	0	0

Table 7: Post operative wound complications.

Post operative wound complications	With drain	Without drain
Seroma	2	0
Minor haematoma	1	0
Major haematoma	0	0
Life threatening haematoma	0	0
Wound infection	4	1

There were a total of six complications out of 44 patients recorded during the study, a rate of 9.09%. Of the 22 patients in the drain group, seven developed complications, while one complication was observed out of 22 patients in the no drain group (Table 7). The seven complications of the drain group included two seoma, one minor hematoma, four wound. Complications from the no drain group were wound infection. The comparison of occurrence of complications between the two groups was statistically significant (P value = 0.05).

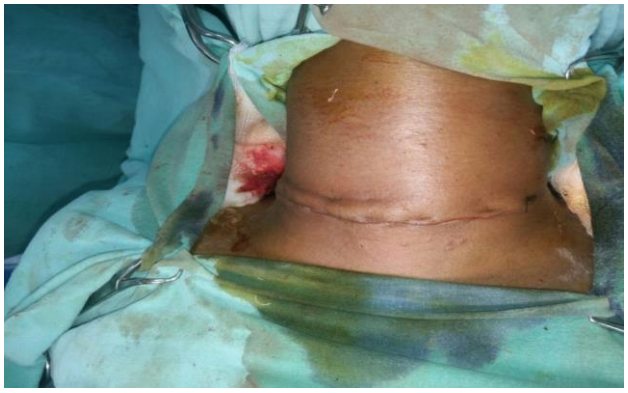

Figure 1: Hemithyroidectomy without drain.

DISCUSSION

Despite various studies and evidence showing that usage of drain for thyroidectomy is not necessary and associated with prolonged hospital stay, increase post operative pain, may be associated with increased risk of post operative infection, surgeons continue to use drain in event of preventing collection in post operative field.

Severe life threatening tracheal compression may occur due to haemorrhage in dead space around trachea, which requires urgent exploration incidence ranging from 0.3-2.5% and risk is higher in patients with retrosternal Goitre and Graves's disease.[2,6,7]

Haemorrhage usually occurs between 2 to 6 hours post operativel.[7] The small lumen of the drain usually gets blocked by clot in the presence of severe bleeding.[2]

Some authors have suggested that the presence of drain incites inflammatory reaction, which may lead to increased fluid production.

Moreover suction drain due to negative pressure may also prevent the cut lymphatics from closing and hence increase fluid drainage.[2,3] Thus, the use of a neck drain did not prevent life-threatening haemorrhage and the decision to re-operate was made only after the development of dyspnoea.

Hurtado-Lopez et al. found that the presence or absence of drains did not affect the incidence of seromas or haematomas in an analysis of 150 patients.[8]

Suslu et al. studied 135 Thyroid surgery patients; one patient developed the respiratory symptoms after their drain became blocked by a clot.[9]

Mass size was therefore not considered a factor influencing drain insertion. Dunlap et al.compared the use of drains in 100 patients undergoing lobectomies and total thyroidectomies and reported that type of surgery and mass size could not be used as indicators for drain insertion or predictors of postoperative bleeding.[10] Hurtado-Lopez et al. also presented evidence that gland size, diagnosis, type of surgery and intraoperative bleeding were invalid arguments for the use of an external drain.[11]

In the current study Hospital stays were significantly longer among patients with drains in comparison to those without drains. The wound infection rate was also found to be higher in patients with drains; however, this was not statistically significant.

A recent meta-analysis showed that the use of drains after routine Thyroid surgery was not beneficial to patients; drain insertion was associated with a higher risk of wound infection, a higher pain score on the first postoperative day and longer hospital stays.[12] Furthermore, Hurtado-Lopez et al. found that hospital stay was significantly shorter for patients without drains compared to those with drains, leading to a reduction in costs and minimising the risk of intrahospital infections.[13] The duration of hospital stay was found more in the patients with a drain and these findings were also reported by other studies.[1,2,5,7,9]

We have found in our study that post operative pain/ discomfort was more in with drain group that could be due to the irritating factor of having a drain placed.

Shorter hospital stay lessens the burden on hospitals. It also lessens the burden of our patients, where majority are belonging to low socio economic group, and they can't take long leave from work.

Limitations: As this is a clinical comparative study with small sample size, kit needs a Randomised control study to further prove the case. There was a small risk of patients being predisposed to acquiring infection after surgery as a result of over staying on the ward prior to surgery.

CONCLUSION

Thyroidectomy without drains feasible, causes less discomfort, early discharge as hence less cost expenses, and doesn't increase the risk of post operative complications.

Drains should be used in selected cases only like, Thyroidectomy with radical neck dissection and those was being operated for malignant conditions. Meticulous haemostasis and an adequate surgical technique are the keys for avoiding haemorrhage and hematoma formation.

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