Original Article

Total Thyroidectomy

Comparative Study Between Insertions of Postoperative Drain Versus No Drain After Total Thyroidectomy

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ABSTRACT

Objective: To compare total thyroidectomy with insertion of post-operative drain versus no drain in terms of level of post-operative pain, duration of hospital stays and post-operative hematoma, seroma and wound infection.
Study Design: Randomized controlled clinical trial study.
Place and Duration of Study: This study was conducted at the Department of General Surgery, SKBZ/CMH, Muzaffarabad for 02 years from June 2018 to June 2020.
Materials and Methods: After taking permission from hospital ethical committee, a total of 62 patients were included, who were undergoing total thyroidectomy for benign multinodular goiter admitted in Department of Surgery, SKBZ/CMH, Muzaffarabad.
Results: Mean age of patients was 39.90 ± 14.13 years. Male patients were 54.8% while females were 45.2%. The score of pain and duration of hospital stay was statistically high in the drain group in comparison to the no drain group. After T-test and Chi-square test, there was no significant association found in both groups in terms of hospital stay or Post-operative pain regarding effect modifiers like age or gender.
Conclusion: In post-operated cases of thyroid surgery where drains were not placed, were associated with short duration of hospital stay and less post-operative pain. So the results of this study do not support the regular insertion of drain after thyroid surgery.
Key Words: Postoperative thyroid complications, Total Thyroidectomy, Post thyroidectomy drain.

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INTRODUCTION

Among all the operations of general surgery, thyroidectomy is a commonly performed operations. Thyroid is a highly vascular gland, having multiple thin walled vessels. This is the reason that thyroidectomy is associated with preoperative and postoperative bleeding complications. Postoperative hemorrhage in a closed space leads to compression of the air way causing respiratory depression and then leading to fatal complications. To detect the early occurrence of postoperative bleeding many surgeons prefer to insert a darin.

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On the other hand, there are arguments that postoperative bleeding is a rare complication of thyroidectomy.[1]

Although postoperative bleeding can lead to fatal complications in thyroid surgery but it is reported in only 0.3–1 % of thyroid surgeries. Drains are placed to indicate early bleeding complication in postoperative period of thyroid surgery but it is a fact that many times these drains are blocked with clotted blood and give a false perception of no postoperative bleeding. Site of exit of a drain is usually around the collar bone of the patient, which is a highly cosmetically sensitive area, and this wound of drain leaves an ugly scar in this area. Also drains are associates with patient's anxiety and sometimes are also financial burden for the patient.[2]

In recent years, the number of all the malignancies are increasing worldwide and thyroid carcinomas are about 1.7% of all the malignancies. Due to this rise of thyroid malignancies, thyroidectomies are also increasing.[3] With the development of surgical techniques, overall occurance of postoperative complications is reduced in cases of thyroidectomies but still there are cases which are getting postoperative complications, including haemorrhage (0.3–6.5%), haematoma formation (1–1.2%), recurrent laryngeal nerve injuries (0.5–4.4%)[4] and hypocalcaemia (3.1–11%)[5]. According to many surgeons insertion of a drain in postoperative cases of thyroidectomy reduces dead space which helps in

prevention of seroma formation and also helps in early detection of bleeding complication.[6]

Many patients undergoing thyroidectomy have bleeding disorders, in these cases drains are very beneficial. But insertion of postoperative drains have bad impact on patients and causes scar formation[7], increased pain[8], high infection rate[9] and longer duration of hospital stay[10].As thyroidectomy is a common surgical procedure and multiple studies were carried out to detect both the necessity as well as the complications of postoperative drain placement, but inspite of all this there is still no structured formation of guidelines or recommendations; so weather to place a drain or not postoperatively depends upon the surgeon's personal experience and choice[11]

MATERIALS AND METHODS

A total of 62 patients undergoing surgery for benign multinodular goiter admitted in CMH, Muzaffarabad, were selected for the study. Permission from hospital ethical review committee was taken over. Written informed consent was taken from all the patients. Patients were divided into 2 equal groups randomly by lottery method. Each group having 31 patients. All the patients were diagnosed by detailed history, thorough clinical examination, ultrasound neck, FNAC of thyroid and laboratory investigations including thyroid function tests. Patients diagnosed as being multinodular goiter and with normal thyroid function tests (euthyroid) were included in the study.

In Group A patients, Redivac suction drain of size 14 F was placed after total thyroidectomy beneath the deep cervical fascia. Drain output was measured after every 6 hours and drain was removed when the output was not increasing in a 6-hour period. While in group B patients, drain was not placed and the wound was closed by continuous subcuticular sutures. All the patients were followed postoperatively for severity of pain, duration of hospital stay and other post-operative complications like hematoma formation, seroma formation and wound infection. Patients were taught VAS(visual analog score) for pain and a record of pain was made on 1st postoperative day and then on 7th post-operative day. Hospital stay and postoperative complications were recorded. Post-operatively patients were followed on 1st, 7th and 14th postoperative days for development of hematoma formation, seroma formation and wound infection. Data in both the groups were recorded on a predesigned proforma. All patients were given due respect and their comfort was considered during the study.

Data was analyzed by SPSS version 20. Mean and SD were calculated for quantitative variables including age, pain as per VAS and hospital stay. Frequency and percentage were computed for qualitative variables like gender and postoperative complications including hematoma formation, seroma formation and wound infection. Data was stratified for age and gender. Post-stratification independent sample t-test was used to compare mean postoperative pain and hospital stay between the two groups. Chi square test will be used to analyze postoperative complications between the two groups. P-value ≤ 0.05 was taken as significant.

RESULTS

Minimum age was 15 years and maximum was 60 years with mean and standard deviation of 39.90 ± 14.13 years. The minimum postoperative pain was 3 and maximum was 6 with mean and standard deviation of postoperative pain was 4.5 ± 1.13. Minimum duration of hospital stay was 1 day, and maximum duration was 4 days with mean and standard deviation of 2.53 ± 0.99 days.

Males were 34/62 (54.8%) while females were 28/62 (45.2%). Hematoma formation was present in 2/62 (3.2%) patients while it was absent in 60/62 (96.8%) patients. Seroma formation was present in 6/62 (19.7%) patients while it was absent in 56/62 (90.3%) patients. Wound infection was present in 2/62 (3.2%) patients while it was absent in 60/62 (96.8%) patients.

Independent T-test was applied after stratification of age, it was found that in both groups of age (< 40 years and ≥ 40 years) p-values were 0.208 and 0.103 respectively. Therefore, no significant association was found in both groups and hospital stay regarding the age of patients. By the stratification of age, it was found that in both groups of age (< 40 years and ≥ 40 years) the mean Post-operative pain was not significant in both groups. Independent T-test was applied, and it was found that there were no significant differences in groups and hospital stay, post-operative pain regarding male and female patients.

Table No.1: Descriptive statistics

	Minimum	Maximum	Mean	Std. Deviation
Age	15	60	39.90	14.13
Postoperative Pain	3	6	4.5	1.13
Hospital stay	1	4	2.53	0.99

Table No.2: Hematoma formation

Hematoma formation	Frequency	Percent
Present	2	3.2
Absent	60	96.8
Total	62	100.0

Table No.3: Seroma formation

Seroma Formation	Frequency	Percent
Present	6	19.7
Absent	56	90.3
Total	62	100.0

Chi-square test was applied to see effect in the both groups of age (< 40 years and ≥ 40 years) and there was no significant association in both groups and hematoma

formation. There was no significant association in both groups (insertion with drain and without drain) between hematoma formation and gender. Chi-square Test was applied to see the effect in both groups of age (< 40 years and > 40 years) and there was no significant association found in both groups (With drain or without drain) and Seroma formation according to the age of patients. There was no significant association between both groups (p-value greater than 0.05). When Chi-square Test was applied to see effect in the both groups of age (< 40 years and > 40 years), there was no significant association between both groups and Seroma formation. When Chi-square Test was applied to see effect in the both groups of gender, no significant association was between both groups and Seroma formation.

Table No.4: Wound infection

Wound infection	Frequency	Percent
Present	2	3.2
Absent	60	96.8
Total	62	100.0

DISCUSSION

The objectives of the present study were to compare total thyroidectomy with insertion of post-operative drain versus no drain in terms of severity of post-operative pain, duration of hospital stay and frequency of post-operative complications. In this regard, the present survey was conducted from the patients visiting at department of General Surgery, CMH Muzaffarabad. A sample of 62 patients was selected by using non-probability consecutive sampling technique.

From 62 patients, the minimum age was 15 years and maximum was 60 years with mean and standard deviation of 39.90 ± 14.13 years. The minimum postoperative pain was 3 and maximum were 6 with mean and standard deviation of 4.5 ± 1.13. The minimum duration of hospital stay was 1 day, and maximum was 4 days with mean and standard deviation of 2.53 ± 0.99 days.

Males were 34/62 (54.8%) while females were 28/62 (45.2%). Hematoma formation was present in 2/62 (3.2%) patients while it was absent in 60/62 (96.8%) patients. Seroma formation was present in 6/62 (19.7%) patients while it was absent in 56/62 (90.3%) patients. Wound infection was present in 2/62 (3.2%) patients while it was absent in 60/62 (96.8%) patients.

Independent T-test was applied after stratification of age, it was found that in both groups of age (< 40 years and > 40 years) p-values were 0.208 and 0.103 respectively. Therefore, no significant association was found in both groups and hospital stay regarding the age of patients. By the stratification of age, it was found that in both groups of age (< 40 years and > 40 years), the mean Post-operative pain was not significant in both groups (i.e. insertion with drain and without drain). Independent T-test was applied, and it was found that there were no significant differences in both groups and hospital stay regarding male and female patients. Independent T-test was applied, and it was found that there were no significant differences in both groups and Post-operative pain regarding male and female patients.

Chi-square Test was applied to see effect in the both groups of age (< 40 years and > 40 years) and there was no significant association in both groups and hematoma formation. There was no significant association in both groups (insertion with drain and without drain) between hematoma formation and gender. Chi-square Test was applied to see the effect in both groups of age (< 40 years and > 40 years) and there was no significant association found in both groups (With drain or without drain) and Seroma formation regarding the age of patients. There was no significant association was found between both groups and Seroma formation with respect to gender having p-value greater than 0.05. When Chi-square Test was applied to see the effect in both groups of age (< 40 years and > 40 years) there was no significant association found between both groups and Seroma formation. When Chi-square Test was applied to see the effect in both groups of gender, no significant association was found between both groups and Seroma formation.

Tian J et al conducted a meta-analysis in which 14 studies comprising if 1927 patients were included. This meta-analysis was conducted to find out the frequency of postoperative complications of thyroidectomy such as sroma or hematoma formation, wound site infections, hypoparathyroidism, injury to recurrent laryngeal nerve and duration of hospital stay. The results of that meta-analysis showed that the patients in which drain was inserted, had more frequency of postoperative infection than as compared to the patients in which no drain was inserted (pooled OR = 2.94, 95 % CI 1.27–6.85, P = 0.012). In case of the hospital stay, it was prolonged in patients where drain was inserted in comparison to the patients having no drain (pooled difference in mean = 1.16, 95 % CI 0.72–1.59, P < 0.001). As a result of this meta-analysis there was no statistically significant differences between the groups in terms of seroma or hematoma formation, hypoparathyroidism, injury to recurrent laryngeal nerve. It was concluded from the study that there is no significant advantage of postoperative drain insertion in thyroidectomies. But on the other hand, this Study also concluded that frequency of infection and duration of hospital stay was higher in patients where drain was inserted. [12]

In a previous study the postoperative pain score of 24 hours had revealed finding of a significant higher pain score in the group that had placement of a drain. The minimum hospital stay in drain group was 4 days and in case of no drain 1 day. In patients where drain was inserted mean duration of hospital stay was 3.63 days ± 0.707 SD and 1.19 days ± 2.145 SD in the group that had no postoperative drain (p value <0.05).[13]

Similar results were found in this present study i.e. hospital stay in drain group was at least 3 days and in case of no drain 1 day and mean duration of hospital stay was 3.12 ± 0.60 in drain group and 3.42 ± 0.51 in the group that had no drain. Regarding postoperative complication there was no overall proven statistical variation between the two groups. Majority of surgeons

insert drain after thyroidectomy to prevent seroma or hematoma collection in the operative field.

Bleeding complication after thyroidectomy leading to hematoma formation is not constant and ranges between 0.3–2.5%.[2]The duration of hospital stay was found lesser in the patients without a drain and these findings were also reported by other studies.[1]

Short hospital stay is also economical for our patients as majority of them are poor patients having minimum resources, belong to far-flung areas and they can't take long leave from work. In short, in all cases of thyroidectomy, drains are not always required. Along with prolonged hospital stay, drains are a source of infection as well as discomfort for the patient. Post-thyroidectomy bleeding chances are more with recurrent goiter, Graves' disease, retrosternal goiter and in patients taking anticoagulants. When thyroid surgeries are performed by meticulous surgeons then the rate of major postoperative complications is very low. As bleeding is a common complication among all the complications of thyroidectomy, thus, surgeons generally place drains after thyroid operations to detect bleeding early.[14]

On the other hand, the insertion of drains itself causes high rate of infection and prolonged hospital stay. Post operative bleeding mostly occurs in the first 6 hours of the thyroid surgery, leading to the hematoma formation and respiratory distress, so patients should be kept under close observation during this period and can be discharged on the next day. This practice reduces duration of hospital stay as well as reduction in financial burden.[9,10].

CONCLUSION

Total thyroidectomy, without insertion of post-operative drain is better than with drain in terms of post-operative pain, hospital stays and cost effectiveness. There is no need of inserting a drain in patients who don't have any risk factor. In case a large hematoma is formed, it can be aspirated by a needle. Finally, the insertion of a drain predisposes a patient to infections as well as increase patient discomfort, prolongs the hospital stay and increases financial burden on patient.

Author's Contribution:

Concept & Design of Study:	Raja Ijaz
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