

Original Research Article

Outcome of thyroid lobectomies undergone with and without drains

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ABSTRACT

Background: Thyroid lobectomy is a common operative technique of management of benign solitary thyroid nodules in which drains are used routinely. Objective of this study to compare the outcome of thyroid lobectomies undergone with and without drains in patients of benign solitary thyroid nodules.

Methods: A comparative cross-sectional research was completed on 98 patients of benign solitary thyroid nodules at surgery department of Liaquat University Hospital Jamshoro. Patients having age of 18-60 years underwent thyroid lobectomies were included and distributed in two groups A and B. Group A includes thyroid lobectomies with drain and Group B without drain. Postoperative outcomes including pain score assessed via visual analog score (VAS), hospital stay and complications including wound infection, seroma and hematoma.

Results: Out of 98 cases, 49 underwent thyroid lobectomy with drain and 49 without a drain. Females patients were in majority in group A 42 (85.7%) and also in group B 47 (95.9%). No significant difference (p-value=0.674) was in mean age of group A 30.8±10.2 years and group B 31.8±12.2 years. Higher mean with significant difference (p-value=0.001) was in pain score of group A 5.61±1.25 as compared to group B 3.55±0.70. No significant difference was in complications; seroma 1 (2.04%) vs 5 (10.20%), hematoma 1 (2.04%) vs 1 (2.04%) and infection 3 (6.12%) vs 0 (0.0%) in group A and B respectively. Higher mean with significant difference (p-value=0.001) was in hospital stay of group A 2.40±1.57 days as compared to group B 1.42±0.54 days. No significant difference (p-value=0.748) was in overall rate of complications in group A 5 (10.20%) and B 6 (12.24%).

Conclusions: Thyroid lobectomy with drain is not effective in lowering the postoperative complications whereas enhanced the risk of postoperative pain, wound infection and duration of hospital stay as compared to thyroid lobectomy without a drain.

Keywords: Drain, Nodules, Operative, Thyroid lobectomy

INTRODUCTION

Thyroid nodules are challenging to evaluate, diagnose and manage for general surgeons because of its malignant potential and possibility of toxicity in nodule and complications like pressure effects and hemorrhage. Solitary thyroid nodule, a clinical term denotes the single palpable nodule present in an otherwise normal thyroid gland.¹ The solitary thyroid nodule is rather a common

disease having an incidence of 4-7% reported in the general population and most of them are benign.² The prevalence of these nodules depends on several factors such as age, sex, diet iodine deficiency, therapeutic and environmental radiation exposure. The prevalence of solitary nodule increases with age at a rate of 0.8% per year.³ Often these swelling are large-sized and develop on the edge of the thyroid gland making them easy to be palpated and visible known as palpable thyroid nodules.

The incidence of palpable thyroid nodules was found to be 4 to 7% with only 5 to 10% of nodules being malignant. Therefore, the decision of operative management depends upon the clinical, cytological and radiological assessment of the nodule. Several solitary nodules on palpation are prominent nodules of a multinodular goiter. This distinction is vital because solitary nodules are further likely to be malignant than a multinodular goiter.^{3,4}

Thyroid lobectomy is a most frequently carried out procedure in general surgery used in benign thyroid disorders such as solitary nodules. Postoperative complications such as bleeding, wound infection, seroma and hematoma can worsen the state of disease.⁵⁻⁷

Some of the common indications for thyroid lobectomy are compression of trachea or esophagus, growth of the nodule, recurrence of a cystic nodule after aspiration, neck discomfort, cosmetic concern and patient's anxiety about the nodule.⁷

Insertion of the drain is a common practice by many surgeons after thyroid surgeries, including total thyroidectomy, lobectomy and isthmusectomy, for preventing acute airway obstruction caused by postoperative hemorrhage or excessive accumulation of lymphatic fluid following surgery.⁸⁻¹¹ Most of the complications are apparent within six hours of surgery.¹¹

Most of the studies from the world reported that there are no benefits from drain placement whereas drain is associated with patient discomfort, increased analgesic requisite from a patient, provoking inflammatory reaction locally, leading to further formation of fluid, drains blocking with clotted blood leading to unawareness of surgeons about concealed bleeding, increased hospital stay and cost of treatment.¹²⁻¹⁴ The purpose of this study was to evaluate the necessity of drain and its routine usage after thyroid lobectomy and to see if findings from further studies have any relevance to ours.

The study objective was to compare the outcome of thyroid lobectomies undergone with and without drains in patients of benign solitary thyroid nodules.

METHODS

Authors conducted comparative cross-sectional research on patients of benign solitary thyroid nodules who underwent thyroid lobectomy at surgical unit II of Liaquat University Hospital (LUH) Jamshoro during the period of six months from 01-06-2017 to 30-11-2017.

Inclusion criteria

All diagnosed patients of benign solitary thyroid nodules with an age of 18-60 years, either of gender underwent thyroid lobectomies were included in the research.

Exclusion criteria

Patients with toxic or huge vascularized goiter, thyroid cancers, history of thyroidectomy or neck dissection, clinical or laboratory evidence of coagulopathy, uncontrolled co-morbidities such as diabetes mellitus (DM) or hypertension and unfit for general anesthesia were excluded from research.

The sample size was calculated using a statistical sample size calculator for comparing two means, the difference in the outcome was anticipated as 19%.¹⁰ The power of the study was taken as 80% and the confidence intervals 95%. The sample size was calculated as 44 in each of the two groups, but due to drop-out rate 10% increase in sample size was done that makes sample size 49 in each group and a total 98 sample size in both groups. All the cases of thyroid lobectomies were selected by a non-probability convenient sampling technique. All odd patients were in group A which included thyroid lobectomies with the placement of a drain, whereas all even patients were in group B and included thyroid lobectomies without placement of a drain.

Benign solitary thyroid nodules were diagnosed on the basis of a complete history, clinical examination, ultrasound (US) and fine-needle aspiration cytology (FNAC). Hospital stay of patients was considered as prolonged hospital stay when the postoperative stay at the hospital was more than 5 days. Seroma was defined as an accumulation of fluid in a tissue or organ that can occur after surgery. Hematoma was defined as an abnormal collection of blood outside of a blood vessel. Wound infection was defined as the presence of micro-organism on wound confirmed on culture. Postoperative pain was assessed according to VAS after surgery. VAS of pain is a measurement instrument for subjective characteristics or attitudes of pain that cannot be directly measured. When responding to a VAS item, respondents specify their level of agreement to a statement by indicating a position along a continuous line between two end-points, from 0 (no pain) to 10 (worst pain imaginable) as shown in Table 1.

Table 1: Visual analog Scale for pain intensity.

Scale	Pain intensity
0	No pain
1-3	Mild pain
4-5	Moderate pain
6-7	Severe pain
8-9	Very severe pain
10	Worst pain possible

The research was conducted at surgical unit II of LUH Jamshoro after obtaining permission from the ethical committee of LUH Jamshoro. Patients' detailed history was obtained with clinical evaluation and preoperative investigations including complete blood count (CBC),

blood sugar, anti-hepatitis C virus (HCV), hepatitis B surface antigen (HBsAg), serum calcium, US and FNAC. All procedures were carried out under the direct supervision of a senior surgeon. After fulfilling all the above-mentioned requirements patients underwent elective thyroid lobectomy. Steps of the standard procedure followed in the hospital were as follows;

- After all aseptic measures skin was incised by giving collar incision (slightly curved transverse skin crease incision), two-finger breath above the sternal notch, using number 15 blade.
- Platysma was incised in line with skin and then platysma, subplatysmal flaps were raised superiorly up to thyroid cartilage and inferiorly up to the sternum.
- Strap muscles (sternohyoid and sternothyroid) were identified and dissected through its fascia.
- Just deep to this dissection lies the thyroid gland. The lobe which was involved was identified and the superior pole was released.
- Recurrent laryngeal nerve was identified in many cases.
- Finally, thyroid lobectomy was done and after removal specimen was inspected.
- Hemostasis in the thyroid bed was achieved.
- In the drain group (group A), a closed suction or a negative pressure drain (redivac drain number 14/16) was placed just beneath the strap muscles before they were approximated, drain was brought out through a separate wound. the platysma was sutured and finally, the skin was closed using sutures or staples.

Postoperative pain was assessed via VAS after surgery. Postoperative complications including wound infection, seroma and hematoma were assessed. Clinical and ultrasonic assessment of amount of fluid collection in the neck was assessed on the 1st postoperative day. Duration of postoperative hospital stay and necessity for re-exploration was assessed. Follow-up after two weeks was done. Obtained results were interpreted with the help of SPSS version 25.

RESULTS

Out of 98 cases of benign solitary thyroid nodules, 49 underwent thyroid lobectomy with the placement of drain and 49 without a drain. Females patients were in majority in both groups; 42 (85.7%) vs 7 (14.3%) and 47 (95.9%) vs 2 (4.1%) as compared to males in A and B group respectively. No significant difference (p-value = 0.674) was in mean age of group A 30.8±10.2 years and group B 31.8±12.2 years. Higher mean with significant difference (p-value = 0.001) was in pain score of group A 5.61±1.25 as compared to group B 3.55±0.70. Higher mean with significant difference (p-value = 0.001) was in hospital stay of group A 2.40±1.57 days as compared to group B 1.42±0.54 days (Table 2).

Table 2: Demographic and clinical characteristics comparison.

Variable	Group A (n=49)	Group B (n=49)	p-value
Age in years (Mean±SD)	30.8±10.2	31.8±12.2	0.674
Gender			
Male	7 (14.3%)	2 (4.1%)	0.08
Female	42 (85.7%)	47 (95.9%)	
Pain score (Mean±SD)	5.61±1.25	3.55±0.70	0.001
Postoperative hospital stay in days (Mean±SD)	2.40±1.57	1.42±0.54	0.001

No significant difference was observed in complications in both group. Seroma was present in 1 (2.04%) vs 5 (10.20%) and absent in 48 (97.96%) vs 44 (89.80%) in group A and B respectively. Hematoma was present in 1 (2.04%) vs 1 (2.04%) and absent in 48 (97.96%) vs 48 (97.96%) in group A and B respectively. Wound infection was present in 3 (6.12%) vs 0 (0.0%) and absent in 46 (93.88%) vs 49 (100.0%) in group A and B respectively. No significant difference (p-value = 0.748) was also observed in overall rate of complications in group A 5 (10.20%) and B 6 (12.24%) (Table 3).

Table 3: Comparison of postoperative complications.

Variable	Group A (n=49)	Group B (n=49)	p-value
Seroma			
Yes	1 (2.04%)	5 (10.20%)	0.092
No	48 (97.96%)	44 (89.80%)	
Hematoma			
Yes	1 (2.04%)	1 (2.04%)	1.00
No	48 (97.96%)	48 (97.96%)	
Infection			
Yes	3 (6.12%)	0 (0.0%)	0.079
No	46 (93.88%)	49 (100.0%)	
Total	5 (10.20%)	6 (12.24%)	0.748

DISCUSSION

Drains have been traditionally used in most surgical procedures including thyroid lobectomy, whereas there is limited evidence of any benefit with drains.¹²⁻¹⁴ Similar to previous studies, no significant advantages of drain were found during thyroid lobectomy, although the pain was more found among patients who underwent drain placement, whereas short hospital stay and less operative pain was found among patients without a drain. Comparable results were found in other similar studies such as Devenci U, et al. reported the failure to find any advantage in the routine use of the drain after thyroid lobectomy.¹⁴ Another study by Kalemera SE, et al. also reported the no advantage in drain group patients whereas

short hospital stay and less operative pain among patients without drain.¹⁵

In current study, females were most common among both groups (42 (85.7%) in group A and 47 (95.9%) in group B) and almost all patients were young as mean age of patients was 30.8±10.2 years and 31.8±12.2 years in group A and B respectively without significant difference (p-value = 0.674). Comparable results were reported by different researchers such as Colak T, et al. reported the 79.3% female patients in both groups.⁵ A study by Afzal A, et al. reported the 80% females in group A and 70% females in group B. Mean age of patients in Group A and Group B was 36.86 ± 12.30 years and 40.20±9.28 years respectively.⁹ Deveci U, et al. reported the 78.8% female patients in both groups.¹⁴ Kalemera SE, et al. reported the 90% of female patients in both groups whereas reported the higher age of patients 45.3±8.8 years and 43.7±12.6 years in the drain and no drain arm.¹⁵ Gooda MR, et al. reported the 96% female patients in both groups.¹⁶

In current study patients of thyroid lobectomy with drain showed the significant (p-value=0.001) higher mean of pain score as 5.61±1.25 as compared to patients of thyroid lobectomy without drain as mean of pain score was 3.55±0.70. Different other studies such as Afzal A, et al. reported a lower pain score than our study but higher pain score 2.63±0.49 in the drain group and lower pain score 2.13±0.34 in without drain group.⁹ Another study by Nawaz S, et al. also reported the higher pain score 60.87±7.06 in the drain group and lower pain score 41.19±4.18 in without drain group.¹⁰ Another study by Portinari M, et al. also reported the mean VAS pain score to be significantly reduced in the non-drain group on postoperative day 0 and 1.¹⁷

In current study rate of complication was lower in cases of benign solitary thyroid nodules such as seroma was in 1 (2.04%) and 5 (10.20%), hematoma in 1 (2.04%) and 1 (2.04%) and wound infection in 3 (6.12%) and 0 (0.0%) in drain and without a drain group respectively. A similar study by Memon ZA et al, reported no benefit of using drains after thyroid surgery and it has been observed that if correct surgical techniques and hemostatic procedures are followed, excessive postoperative bleeding can be avoided, resulting in decreasing the incidence of hematoma formation.⁷ A study by Portinari M et al, who reported the hematoma in 2.9% and 2.6%, seroma in 2.7% and 3.2% and wound infection in 2.6% and 0.7% in drain and without drain group respectively.¹⁷ Precautions such as staying within the subplatysmal plane during surgery and using coagulation diathermy along with proper ligation of bleeding vessels will reduce the chances of postoperative hemorrhage.^{16,17}

In current study, drain group showed the significant (p-value=0.001) higher mean of hospital stay 2.40±1.57 days as compared to without a drain group 1.42±0.54 days. Nawaz S, et al, also find similar findings and reported the significantly higher mean of hospital stay

3.63±0.707 days in drain group and a lower mean of hospital stay 1.19±2.14 days in without drain group.¹⁰ Short hospital stay is useful in our setup as it lessens the burden on hospitals. Short hospital stay is also economical for our patients as majority of them are underprivileged, belong to far-flung areas and they can't take long leave from work.

CONCLUSION

It was concluded that routine drain placement after thyroid lobectomy is not necessary nor it is effective in decreasing the rate of postoperative complications. Although the use of drain in thyroid lobectomy increases the risk of wound infection, restricts early mobility, increased the postoperative pain, prolong hospital stay and cost of treatment. Furthermore, it was recommended that thyroid lobectomy should be performed by experienced thyroid surgeons without drain placement.

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