

## Original Research Article

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# Hemithyroidectomy with or without use of drain a randomized prospective clinical study

Ravi Kumar G. V., Madhu B. S., Ajay Kumar Jhajharia\*

Department of Surgery, Mysore Medical College and Research Institute, Mysore, Karnataka, India

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**\*Correspondence:**

Dr. Ajay Kumar Jhajharia,  
E-mail: ajayjhajharia@gmail.com

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## ABSTRACT

**Background:** The practice of using the drain in thyroid surgery including hemithyroidectomy is common to avoid complications like a hematoma. The aim of this study is to evaluate the necessity of routine drainage in hemithyroidectomy.

**Methods:** In this randomized prospective clinical study conducted in tertiary care government training hospital, 60 patients who underwent hemithyroidectomy for various thyroid disorders were randomly allocated to either non-drainage (group A) or drainage (group B). The various complications including hematoma, seroma, wound infection, post-operative pain, the length of hospital stay was then compared.

**Results:** Both groups were comparable according to age, gender, thyroid size and histopathological diagnosis. A total number of 60 patients evaluated among them 45 females (75%) and 15 males (25%) were there. No significant difference in complications was observed between two groups regarding hematoma, wound infection, but the length of hospital stay was significantly reduced in the non-drainage group compared to drainage group ( $p=0.004$ ), along with the significant reduction in post-operative pain ( $p=0.001$ ).

**Conclusions:** In present study, author observed that there is a significant reduction in length of hospital stay and post-operative pain in non-drainage group compared to drainage group. So suction drainage should be done in selected patients rather than a routine procedure and it is safe without suction drain especially in hands of experienced surgeons.

**Keywords:** Hemithyroidectomy, Short stay, Suction drain, Wound drainage

## INTRODUCTION

Many surgeons use drain following thyroid surgery with an intention to evacuate the collected serum and blood. 75% of hematomas usually occur within the first 6 hours after the operation and the rest occur in the next 6 to 24 hours.<sup>1-4</sup> Hemorrhage can be life threatening which makes most of the surgeons to put the drain in thyroid surgery though the actual incidence is only 0.3 -1%.<sup>1,5,6-8</sup> A number of studies have also failed to show any advantages of the drain in thyroid surgery.<sup>2,5,6,9-11</sup>

The routine use of drains seems to be more a result of surgical training rather than based on evidence.<sup>2</sup>

In the institute keeping drain after thyroid surgery is standard-of-care but author have observed that incidence of postoperative seroma and hematoma is very low.

Previously all studies were done with thyroidectomy in general, so author decided to evaluate the necessity of drain in hemithyroidectomy specifically.

## METHODS

Author included total 60 patients in the randomized prospective study which was double blinded. Informed consent was taken from all the patients. All 60 patients underwent hemithyroidectomy between July 2015 and February 2017 and randomized into two groups according to whether or not drain put during surgery. Group A consisted of 30 patients without a drain and group B consisted of 30 patients with drain. The local complications after surgery like a hematoma, infection, seroma, bleeding, laryngeal nerve palsy, pain etc. and length of hospital stay recorded for all the patients. Patients who were undergoing anticoagulant therapy were not included in the study.

The duration of surgery from the time of incision to the last suture placement was also recorded and wound closed with subcutaneous 3/0 absorbable suture. A closed suction drain with negative pressure kept in each patient in group B. Post-operatively at 24 hours author checked the volume of fluid collection in wound bed n drain separately with ultrasonography using B mode of 7.5Mhz by the same radiologist. All group B patients had less than 50 ml collection in the drain after 24 hours hence drain removed after 24 hours from all the patients.

Author used visual analog scale (VAS) for post-operative pain assessment with 0 scores (no pain) to 10 scores (worst pain) at 6 and 24 hours postoperatively. All patients were given injection diclofenac sodium 50mg (intramuscular) twice daily till 24 hours postoperatively. All parameters compared between two groups with student's t-test and a p-value <0.05 were taken as significant.

**Table1: Patient characteristics.**

	Group A	Group B
Age	46.60(18-80)±12.40	44.20(20-76)±12
Gender (m/f)	8 /22	7/23
Type of surgery	hemithyroidectomy	hemithyroidectomy
Diagnosis		
Benign	30 (100 %)	30 (100 %)

The data is presented as the number of patients with percentiles in parenthesis. A chi-square test was used for all of the complications. \*p value is presented for the total number of complications.

## RESULTS

Between July 2015 and February 2017, author performed 60 hemithyroidectomies in the hospital. The male to female ratio was 1:3, and there was an equal distribution in both groups based on the type of surgery and size of the nodule. Table 1 presents the patient's characteristics and had no significant differences with regard to gender, age and diagnosis between the two groups.

There was a significant decreased postoperative pain in group A both at 6th hour and after 24 hours which was measured by VAS score. The mean vas score for group A and group B at 6th hour post-operatively was 3.60, (2-7±1.04) and 4.90, 2-8±1.03 (p=0.002) and after 24 hour was 2.06 (1-5±0.72) and 3.06, (1-5±0.75) with p-0.001, respectively (Table 2).

**Table 2: post-operative values of the patients.**

	Group A	Group B	p
*Post-operative 6 <sup>th</sup> hour VAS	3.60(2-7±1.04)	4.90(2-8±1.03)	0.002
*Post-operative 24 th hour VAS	2.06(1-5±0.72)	3.06(1-5±0.75)	0.001
**Hospital stay (day)	1.08(1-30±0.30)	1.52(1-6±0.78)	0.04

VAS-visual analogue scale. the data presented as mean min-max±SD; \*The Mann-whitney U test used; \*\*student 's t-test was used

Intramuscular NSAID was required in both groups, however, the lesser number of patients in group A (80% VS 100%) compared to group B. Student t-test was applied to find any difference in volume of fluid collection in thyroid bed at 24-hour post-operatively by ultrasonographically and found no statistically significant difference with p-value 0.11 (Table 3).

**Table 3: volume of fluid collection in both groups assessed by USG.**

Group A [N - 30 ]	Group B [ N- 30 ]
4.06 (0-25)±6.06ml	3.62 (0-30)±5.05ml

P = 0.11; The data presented as mean (min-max0±SD student's t-test was used for assessment.

The observed post-operative complications in present study and there was no significant difference between the two groups (Table 4). Author got no hematoma case, 2 seroma, no wound infection, 1 suture reaction, and no recurrent nerve injury in group A whereas no hematoma, 1 seroma, no wound infection, 1 suture reaction, no recurrent nerve injury in group B with p-value greater than 0.05.

**Table 4: Postoperative complications.**

	Group A	Group B
Hematoma	0 (0%)	0 (0%)
Seroma	2	1
Wound infection	0 (0%)	0 (0%)
Suture reaction	1	1
Transient recurrent nerve praxy	0 (0%)	0 (0%)
Persistent recurrent nerve injury	0 (0%)	0 (0%)
<i>P</i> >0.05*		

There was a significant difference in hospital stay period between both groups with group A 1.08 (1-3±0.30) days and group B 1.52 (1-6±0.78) days. Decreased hospital

stay was mainly because of the reduced pain and less discomfort without the drain.

Hence author concluded in present study that drain is not helping in reducing any postoperative complications but can increase the pain, discomfort for the patient and leads to increased length of hospital stay.

## DISCUSSION

Drains have been routinely used in most of the thyroid surgeries including hemithyroidectomy but there is limited evidence to support their use.<sup>9,11-13</sup> Present study failed to show any benefit in the routine use of the drain in hemithyroidectomy. Hematoma around trachea compresses airway and produces significant soft tissue edema in larynx and pharynx. This is a very challenging complication for which immediate surgical evacuation in operation-theater is mandatory. Though this complication is rare, ranging from 0.3 to 2.5%.<sup>14-16</sup> This serious complication most of the time appears between 2 to 6 hours post-operatively and many patients complain coughing just before hemorrhage. Possible causes for this are slippage of an improperly applied suture and improperly cauterized area.<sup>14</sup>

In the series, no postoperative bleeding occurred. Studies have shown that drains not always able to prevent this complication as blood might get clotted inside drain tube.<sup>2,9,11,12,14</sup>

Two large nonrandomized studies of 250 and 400 patients have also documented that no benefits of using the drains in thyroid surgery.<sup>15,17</sup> Author found that drain was containing fluid even in the absence of collection in thyroid bed by ultrasonography. The reason for this may be an inflammatory effect of drain itself and effect of suction which prevents lymphatic channels from sealing off.<sup>9,18</sup>

Few studies have observed infective complications with the use of drain, but we didn't find such associations with drain use in present study.<sup>7,17,19</sup>

Author found decreased post-operative pain in group A (without drain) which has been already reported in previous few studies.<sup>5,7</sup> Because of reduced pain and less discomfort, author found decreased length of hospital stay in the non-drainage group without any morbidity. Morrissey et al also demonstrated similar result in their study.<sup>20</sup>

Corsten et al, also had the conclusion that drain use in thyroid surgeries is not evidenced based.<sup>10</sup>

Khanna et al. found no significant reduction in the fluid collection in the operative wound in patients with suction drain by ultrasonography.<sup>11</sup>

Most of the studies in literature concluded that suction drain is not necessary for routine thyroid surgery and the similar result author have got in present study for hemithyroidectomy.<sup>2,5,7,9,11,19</sup> Hence author believe that hemithyroidectomies are also safe without drains and no added advantages in keeping drains in thyroid surgeries.

## CONCLUSION

The randomized double-blinded prospective study found that routine use of drain is not necessary for thyroid surgeries including hemithyroidectomies and not effective in preventing any post-operative complication of thyroid surgery. Prevention of complications depends more on the experience of surgeon, meticulous hemostasis and attention to finer details during surgery. Hence author concluded that thyroid surgeries including hemithyroidectomies without drain are safe in hands of experienced surgeons in addition to that it reduces pain and discomfort to the patient hence reduces hospital stay without increasing morbidity.

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