



ORIGINAL ARTICLE

Frequency of post-operative pain in thyroid surgery with or without use of ligasure.

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ABSTRACT... Objective: To compare mean postoperative pain score and analgesia requirement in thyroid surgery with or without use of Ligasure. **Study Design:** Randomized Control Trial. **Setting:** Department of Surgical, Allied Hospital, Faisalabad. **Period:** one year March 2018 to March 2019. **Material & Methods:** All included patients were randomly allocated into two groups. Group 'L' underwent thyroid surgery with Ligasure without diathermy and group 'C' patients underwent thyroid surgery with conventional knot and tie technique using sutures and diathermy. Data was entered in questionnaire. **Results:** Comparison of mean pain score shows that 2.2+0.66 in Group-L and 2.88+0.77 in Group-C, p value was 0.0001. Comparison of postoperative analgesia requirement in thyroid surgery with or without use of Ligasure shows that analgesia requirement in Group-L was 7.5% (n=6) and 23.75 % (n=19) in Group-C, p value was 0.004. **Conclusion:** The mean postoperative pain score and analgesia requirement in thyroid surgery with the use of Ligasure was significantly reduced when compared to those without it.

Key words: Analgesia, Conventional Knot Tying, Ligasure, Thyroid Surgery, Visual Analog Scale.

INTRODUCTION

The history of thyroid disease is as elderly as the narration of mankind. Pakistan is an area of endemic thyroid diseases. Mostly the thyroid diseases present with benign lesions including single nodule (warm or cold), multinodular goiter and grave's disease.¹ Frequently performed thyroid surgeries consist of lobectomy, isthmectomy, subtotal thyroidectomy, near total thyroidectomy and total thyroidectomy. Thyroid is highly vascular endocrine gland. Its surgery demands meticulous hemostasis that is achieved with ligation of superior and inferior pedicle of the thyroid, its numerous blood vessels and venous plexus entering its parenchyma directly from trachea.²

Control of pain after thyroid surgery is important in post-operative period.³ To achieve effective analgesia we have options of oral analgesics, intra-muscular or intra-venous non-steroidal anti-inflammatory / narcotic agents.⁴ Among the

different assessment tools for pain perception, one is Visual Analogue Scale (VAS) for pain with 10 scores with 0=no pain and 10 worst intolerable pain.⁵⁻⁷

The study is concerned with mean postoperative pain score assessment with use of conventional knot and tie with suture technique in comparison with Ligasure, while keeping analgesics common for both. We found significance of 3.6+1.2 with former and 2.4+1.6 for the later, while in another study, no significant difference was found in postoperative pain score in both surgical techniques, results were 2.1 with use of Ligasure and was 2.6 with conventional technique.⁸ As in previous studies are scanty for variable of pain and results are controversial, our study will provide ground data that will assist surgeons to select most suitable practice to control post-operative pain and to lessen analgesia requirement in thyroid surgery.

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To compare mean postoperative pain score and analgesia requirement in thyroid surgery with or without use of Ligasure.

Operational Definitions

Post-Operative Pain

It was assessed on 2nd postoperative day in 24-48 hours after surgery by visual analog scale and presented as 100 mm vertical or horizontal line, with numbers from zero to ten, 0=no pain and 10 worst intolerable pain.

Analgesic Requirement

Number of analgesia required up to 48 hours postoperatively.

Hypothesis

Mean post-operative pain score and analgesia requirement in thyroid surgery with Ligasure is less as compared to thyroid surgery without Ligasure.

MATERIAL & METHODS

This Randomized Control Trial was conducted at Surgical Department of Allied Hospital, Faisalabad for one year from March 2018 to March 2019. The study was approved by ethical committee (ER NO 856/2018).

Non-probability consecutive sampling was used to recruit 160 (80 in each group).

Inclusion Criteria

Male and female patients between ages 18-70 years diagnosed with solitary or multi nodular goiter, euthyroid both clinically and biochemically were selected.

Exclusion Criteria

Patients already diagnosed thyroid cancer, with past history of neck surgery and radiation therapy, already suffering from complain of pain in neck and taking NSAIDS and opioids for more than one month for any illness were excluded from the study.

All included patients were randomly allocated into two groups to reduce bias. Group L underwent

thyroid surgery with Ligasure without diathermy and group C patients underwent thyroid surgery with conventional knot and tie technique using sutures and diathermy. Lobectomy, isthmectomy, sub-total thyroidectomy and total thyroidectomy in one group compared with similar procedures in second group with or without use of Ligasure. Both group patients were operated by consultants and senior post graduate residents.

Surgery was done under general anesthesia with endotracheal intubation. In both groups post operatively pain was assessed using VAS system. On request of patient at VAS injection tramadol+paracetamol was given. Number of analgesia requirement was taken from hospital record file and data was entered by researcher in questionnaire.

The collected information was analyzed by using SPSS version 20. Mean and standard deviation were calculated for quantitative variables like age, pain score and number of analgesia consumption. Frequency and percentage were calculated for qualitative variables like gender and analgesia requirement. Effect modifiers like age, gender and type of procedure was controlled through stratification. Post stratification 't' test and chi square test were applied by taking p value <0.05 as significant. Mean pain was compared by using independent sample 't' test. Analgesia was compared between L and C groups by chi square test.

RESULTS

A total of 160 cases (80 in each group) fulfilling the selection criteria were enrolled to compare mean postoperative pain score and analgesia requirement in thyroid surgery with or without use of Ligasure.

Age distribution shows that 52.5%(n=42) in Group-L and 55%(n=44) in Group-C were between 18-40 years of age whereas 47.5%(n=38) in Group-L and 45%(n=36) in Group-C were between 41-70 years of age, mean+SD was calculated as 40.74+10.08 years in Group-L and 40.23+10.05 years in Group-C. (Table-I)

Age (in years)	Group-L (n=80)	Group-C (n=80)
	No. of Patients (%)	No. of Patients (%)
18-40	42 (52.5%)	44 (55%)
41-70	38 (47.5%)	36 (45%)
Total	80 (100%)	80 (100%)
Mean+SD	40.74+10.08	40.23+10.05

Table-I. Age distribution (n=160)

Gender distribution showed 37.5% (n=30) in Group-L and 35% (n=28) in Group-C were male whereas 62.5% (n=50) in Group-L and 65% (n=52) in Group-C were females. (Table-II)

Gender	Group-L (n=80)	Group-C (n=80)
	No. of Patients (%)	No. of Patients (%)
Male	30 (37.5%)	28 (35%)
Female	50 (62.5%)	52 (65%)
Total	80 (100%)	80 (100%)

Table-II. Gender distribution (n=160)

Comparison of mean pain score shows that 2.2+0.66 in Group-L and 2.88+0.77 in Group-C, p value was 0.0001. (Table-III)

Pain on VAS	Group-L (n=80)		Group-C (n=80)	
	Mean	SD	Mean	SD
	2.2	0.66	2.88	0.77

Table-III. Comparison of main pain score (n=160)
P value=0.0001

Comparison of postoperative analgesia requirement in thyroid surgery with or without use of Ligasure shows that analgesia requirement in Group-L was 7.5% (n=6) and 23.75% (n=19) in Group-C whereas 92.5% (n=74) in Group-L and 76.25% (n=61) in Group-C had no analgesic requirement, p value was 0.004. (Table-IV)

Analgesia Requirement	Group-L (n=80)		Group-C (n=80)	
	No. of Patients	%	No. of Patients	%
Yes	6	7.5	19	23.75
No	74	92.5	61	76.25
Total	80	100	80	100

Table-IV. Comparison of postoperative analgesia requirement in thyroid surgery with or without use of ligasure (n=160)
P value=0.004

Effect modifiers like age and gender was controlled

through stratification. Post stratification t test and chi square test was applied by taking p value <0.05 as significant. Mean pain was compared by using independent sample t test. Analgesia was compared between L and C groups by chi square test.

DISCUSSION

In contest to thyroid surgery the major challenge was haemorrhage.⁹ In the first era of thyroid surgery (1867-1915) this was managed by Robert and Moorish with improving the understanding of anatomy of pedicle and its ligation. In the second era (1867-1915) T. Kocher further contributed to control of bleed by introducing hemostatic forceps.¹⁰ In the modern era almost the issue of haemorrhage is addressed with help of energy devices and use of fine suture materials.^{11,12} As surgical community is committed to continuously add to the ease of mankind, management of post operative pain is the next challenge to be addressed. As the modern energy devices (Ligasure) are available in public hospitals so we tried to make an analysis between our previous methods of ligation use in comparison with Ligasure to observe post operative pain. Literature review suggests lot of work regarding comparison between energy devices Ligasure, Hormonal Scalpel and thunder beat.¹³ The variables of operative time¹⁴, intraoperative / postoperative blood loss and hospital stay¹⁵ were discussed in many studies but very infrequent data regarding the post-operative pain. In our setting study already conducted on different variables¹⁶ but for post-operative pain we conducted the current study.

Ligasure is a modern bipolar energy device. It uses collagen and elastin of the body to create a permanent hemostatic zone. It is best for the dissection of tissues and hemostasis.¹⁷ Ligasure significantly reduces the duration of procedure as it just takes two to four seconds to complete its cycle. Use of Ligasure is associated with less post operative pain, early recovery and return to daily activity.¹⁸

In this study the mean age was calculated as 40.74+10.08 years in Group-L and 40.23+10.05

years in Group-C. 37.5% (n=30) in Group-L and 35% (n=28) in Group-C were male whereas 62.5% (n=50) in Group-L and 65% (n=52) in Group-C were females, comparison of mean pain score shows that 2.2+0.66 in Group-L and 2.88+0.77 in Group-C, p value was 0.0001.

Comparison of postoperative analgesia requirement in thyroid surgery with or without use of Ligasure shows that analgesia requirement in Group-L was 7.5% (n=6) and 23.75% (n=19) in Group-C, p value was 0.004. The findings of this study are in accordance with another study for thyroid surgery conducted by Khafagy AH and Abdelnaby I showing that mean postoperative pain was significantly less in patients where Ligasure use verse conventional method. Here demand for analgesia was 20% with conventional technique and with use of Ligasure it was 6.7% for less than the former.¹⁹ In another study the need for analgesia was (1.1+0.3) and (2.5+0.5) for Ligasure and suture ligation method respectively, here they observed post operative pain for first 48 hours on VAS.²⁰

These results were again comparable with our study. In another study Sakr MF et al favored the use of Ligasure declaring that it causes less post operative pain and one can join its work earlier. This again favors the results our study.²¹ As typically the data for post-operative pain is infrequent for thyroid in contest of use of Ligasure, if we go through the literature for other operations like haemorrhoidectomy, hysterectomy and thyroidectomy in different meta-analysis again we found results in favor of Ligasure for better outcome in post-operative pain.

A meta-analysis by Macario et al²² including 29 prospective studies in which patients underwent different surgeries concluded 2.8% reduction of post operative pain with use of Ligasure in comparison with suture ligation in addition to reduction in operative time and blood loss. This is again in accordance with results of our study. In another meta-analysis comparing Harmonic scalpel and Ligasure versus conventional techniques declared reduction in mean operating time, blood loss but this meta-analysis never

advocates any increase in post operative pain.²³

CONCLUSION

Mean postoperative pain score and analgesia requirement in thyroid surgery with the use of Ligasure was significantly reduced when compared to those without it.

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