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COMPARISON OF OUTCOME OF SUTURELESS THYROIDECTOMY BY LIGASURE SMALL JAW VERSES CONVENTIONAL TECHNIQUE.

Muhammad Akram[1], Sajid Rehman Randhawa[2], Durr-i-Chaman[3], Saima Zafar[4], Muhammad Yaqoob[5], Sofia Irfan[6], Muhammad Sajid[7]

1. FCPS (Surgery)
Associate Professor
Department of Surgery
Allied Hospital Faisalabad.
2. FCPS
Assistant Professor
Department of Surgery
Allied Hospital Faisalabad.
3. FCPS
Assistant Professor
Department of Surgery
Allied Hospital Faisalabad.
4. FCPS
Medical Officer
Samanabad Hospital Faisalabad.
5. FCPS
Assistant Professor
Department of Surgery
Allied Hospital Faisalabad.
6. FCPS
Assistant Professor
Department of Surgery
Allied Hospital Faisalabad.
7. FCPS
Professor
Department of Surgery
Allied Hospital Faisalabad.

Correspondence Address:
Dr. Muhammad Akram
Department of Surgery
Allied Hospital Faisalabad.
akramdr2000@yahoo.com

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ABSTRACT… Thyroid is a highly vascular gland and hemostasis is a key limiting factor in morbidity and mortality in thyroid surgery. Hemostasis has always been a challenge and various techniques have been used. Vessel sealers like Ligasure are now gaining popularity. **Objectives:** The objective of this study is to compare thyroidectomy by Ligasure with conventional technique in terms of mean operative time and post-operative blood loss. **Study Design:** It is a Randomized Control Trial. **Setting:** Surgical Department of Allied Hospital Faisalabad. **Period:** Six months (March 2017 to August 2017). **Material & Methods:** After approval of study from ethical review committee and informed consent, the patients were subjected to complete history and clinical examination in addition to baseline investigations. Total 135 patients of multinodular goiter (MNG) and euthyroid were divided in two groups by simple random sampling. All surgeries were performed under general anesthesia with orotracheal intubation and procedure offered to each patient was subtotal thyroidectomy. Both techniques were compared by measuring the time from opening of pretracheal fascia till its closure in minutes by stop watch and mean was calculated. Post operative blood loss was measured in graduated drain placed in thyroid bed for 24 hours. **Results:** Mean operative time was recorded as 62.11+4.07 minutes in Ligasure technique group and 73.05+4.01 minutes in conventional technique group. Mean blood loss was recorded as 57.28+3.42 ml in Ligasure technique group and 70.85+4.12 ml in conventional technique group. **Conclusion:** We concluded that mean operative time and post operative blood loss is significantly lower in cases undergoing thyroidectomy with Ligasure as compared to conventional technique.

Key words: Conventional Technique, Ligasure, Mean Operative Time, Post Operative Blood Loss, Thyroidectomy.

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INTRODUCTION

Thyroid related diseases are common in world, about 20 million peoples in Pakistan lives in endemic areas hence exposed to thyroid diseases.[1] Benign thyroid disease are common in our country affecting predominantly female population specially the resident of iodine deficient areas.[2]

Subtotal thyroidectomy is the most commonly performed procedure in addition to Lobectomy for the benign conditions and total thyroidectomy for the malignant lesions.[1,2]

To avoid post operative complications like hematoma formation that can lead to airway obstruction, hemostasis is important in thyroid surgery along with careful dissection and identification of parathyroid gland and recurrent laryngeal nerve.[3]

Theodar Kocher was the pioneer for using ligature for hemostasis in thyroid surgery.[4] later on techniques were improved with the availability of fine sutures, clips, Diathermy and bipolar cautary.

Ligature and division of vessels are time consuming and presence of recurrent laryngeal nerve and delicate blood supply of parathyroid gland are the limiting factors for use of diathermy for small caliber vessels.[5] In spite of good techniques and suture material, there is chance of ligature

slippage and life-threatening complications that can be prevented by haemostatic devices.

Various haemostatic devices are used in surgery for last few years, well known among them are Harmonic Scalpel and Ligasure.[5] Ligasure provides combination of pressure and energy to create fusion of vessels and permanently seals medium sized vessels. Hemostasis is not due to thrombus formation instead it uses body's own collagen and elastin to seal vessels.[4]

Thyroid being more vascular and having delicate structures nearby is an ideal case for use of Ligasure. Thyroidectomy with Ligasure is associated with less blood loss. Operative time is also minimized by preventing instrument exchange during surgery, use of ligature and division of vessels. Ligasure has capability to seal, cut, blunt dissection and atraumatic grasping at the same time.[4]

Statistically very significant difference has been noted in reduction of operative time and blood loss by use of Ligasure but further studies are needed to establish a gold standard for thyroid surgery.[4]

AIM AND OBJECTIVE

The objective of this study is to compare thyroidectomy by Ligasure with conventional technique in terms of mean operative time and post operative blood loss.

RESULTS

A total of 130 patients (65 in each group) were enrolled to compare subtotal thyroidectomy by Ligasure™ with conventional technique in terms of operative time and post-operative blood loss.

Comparison of mean operative time was recorded 62.11+4.07 minutes in Ligasure™ technique group and 73.054+.01 in conventional technique group, P value was calculated as 0.0001 showing a significant difference.

Comparison of mean blood loss was recorded 57.28+3.42 ML in Ligasure™ technique group and 70.854+.12 ML in conventional technique group, P value was calculated as 0.0001 showing a significant difference.

Operative Time in Minutes	Ligasure™ Technique (n= 65)		Conventional Technique (n= 65)	
	Mean	SD	Mean	SD
	62.11	4.07	73.05	4.01

Table-I. Comparison of mean operative time (n= 130) P value = 0.0001

Blood loss in ML	Ligasure™ Technique (n= 65)		Conventional Technique (n= 65)	
	Mean	SD	Mean	SD
	57.28	3.42	70.85	4.12

Table-II. Comparison of mean blood loss (n=130) P value = 0.0001

DISCUSSION

The study was planned to see if the use of Ligasure™ in thyroidectomy can reduce the operative time and complications especially post-operative blood loss so we may change our practice to do thyroidectomy with use of this energy device.

Reduced operative time is associated with reduced exposure of patient to anesthesia and its drugs and hence patient will be saved from prolonged anesthesia related complication. Reduced blood loss during surgery may help us to avoid blood transfusion that has its own complications and reduction in post-operative blood loss may allow us to avoid drain placement that is responsible for post-operative pain.

We compared the mean operative time 62.11+4.07 minutes in Ligasure™ technique group with 73.05+4.01 in conventional technique group. P value was calculated as 0.0001 showing a significant difference. We also compared the mean blood loss 57.28+3.42 ML in Ligasure™ technique group with 70.85+4.12 ML in conventional technique group. P value was calculated as 0.0001 showing a significant difference.

We compared our results with a study where post-operative blood loss after sub-total thyroidectomy was 58.8+30.6ML and 76.0+36.9

ML in procedures done with Ligasure and conventional technique respectively.[6] These results are in accordance with our study. In another study reduction in operative time was observed as 60.20+22.36 minutes and 73.90+ 23.35 minutes in Ligasure and conventional technique respectively.[4] These results are also in agreement with our results. So statistically a significant difference is recorded in reduction of operative time by Ligasure.[4] Molnar C et al also described Ligasure as safe and effectively operative time reducing divice.[7]

Contin et al published a systemic review and meta-analysis comparing Ligasure (LS) and Harmonic Scalpel (HS) with the conventional technique in 2013 for sub-total thyroidectomy.[8] They concluded that the use of Ligasure and HS was considerably different compared to conventional hemostasis in terms of reduction of surgical time. This is again in agreement with our results. This study also concluded that HS was faster as compared to LS. The is also in accordance with the study performed by Arun Upadhyaya and others who compared surgical time, post-operative complications and other parameters between HS and Ligasure vessels sealing systems in the open thyroidectomy procedures and concluded significant decrease of surgical time of HS compared to Ligasure.[9] In another study by Hammad et al, they found hardily any difference in operative time and post operative complications in comparison of Ligasure and HS in thyroid surgery.[10] As our domain was to compare Ligasure with conventional techniques, still a study is needed in our setup to compare the results of HS with Ligasure.

Reduction of surgical time and blood loss is a important advantage for the surgical practice as it results in shorter hospital stay and avoidance of hospital related infections. However reduction in surgical time has to be set in association with the convenience of the patient, such as higher cost of the device. At present we used device provided by the organization, the initial cost may seems to be more but in the long run seems to be cost effective if cost of suture material and drugs of prolong anesthesia to be calculated. Cheng H et al described a reduction in total cost of thyroid surgery by use of energy devices in comparison to conventional technique of using suture material.[11] Since personnel and organizational costs differ between countries and institutions, every individual institution has to reconsider the possible advantage of using these devices. However the use of Ligasure in thyroid surgery is safe and effective for reducing time and postoperative blood loss.[12,7] so we may also change our practice of placing drain to without drain.

CONCLUSION

We concluded that mean operative time and post-operative blood loss is significantly less in cases of thyroid surgery with Ligasure as compared to conventional technique.

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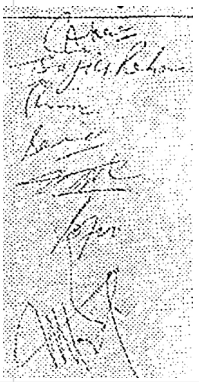
AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Muhammad Akram	Researcher	
2	Sajid Rehman Randhawa	Co-Researcher	
3	Durr-i-Chaman	Co-Researcher	
4	Saima Zafar	Co-Researcher	
5	Muhammad Yaqoob	Co-Researcher	
6	Sofia Irfan	Co-Researcher	
7	Muhammad Sajid	Co-Researcher	