Original Article

Thyroidectomy

Role of Harmonic Scalpel Versus Conventional Haemostasis Among Patients Undergoing Total Thyroidectomy

Fida Buzdar, Muhammad Azim Khan, Majeed Ullah Buzdar, Imran Asim, Hafeez Ullah Laghari and Rizwan Ahmad

ABSTRACT

Objective: To compare the outcome of harmonic Scalpel versus Conventional haemotasis in patients undergoing total thyroidectmy.

Study Design: Randomized controlled comparative study.

Place and Duration of Study: This study was conducted at the district head quarters & teaching Hospital Dera Ghazi Khan, from August 2019 to February 2020.

Materials and Methods: Consective 94 patients undergoing thyroidectmy were taken and were divided into two groups. Group A were treated using harmonic scalpel and while there in group B were treated by conventional haemotasis by same surgeon to record outcomes. Both gender male and female patients were included and the age range of those patients were from 18-50 years. Patients having heart disease, CRF, CLD and with traumatic history and the patients with Hepatitis-B and Hepatitis-C and pregnant ladies were excluded from the study.

Results: Of these 94 patients, 45(47.9%) were male patients while 49 (52.1%) were female patients. Mean age of patients was 37.26 + 5.50 years (with minimum age of study was 23 years while maximum age was 50 Years. Mean duration of surgery in group A was 41.94 $\pm$ 5.82 minutes while in group B Mean duration was of surgery was 70.45 $\pm$ 8.52 minutes (P = 0.000). Mean duration of hospital stay in group A was 2.74 $\pm$ 0.675 days while in group B, it was 3.89 $\pm$ 0.938 days (P = 0.000). hypocalcemia was noted in 29 (30.9 %) in group A hypocalcemia was noted to be 12.8 % versus 48.9 % in group B. (P = 0.000).

Conclusion: Harmonic Scalpel is safe and effective procedure for patients undergoing total thyroidectmy as compared to Conventional haemostasis. Harmonic scalpel is associated with shorter duration of surgery, shorter hospital stay and decreased chance of Hypocalcemia.

Key Words: Thyroidectomy, harmonic, scalpel, conventional haemostasis.

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INTRODUCTION

Thyroid disorders are the most frequently encountered endocrine diseases all over the world[1].

The prevalence of hyperthyroidism in women is between 0.5 % and 2 % and it is ten times less common in man. Total thyroidectomy is a surgical procedure which is performed to treat various thyroid diseases wherein thyroid gland is removed[2] completely. Total thyroidectomy provides advantages of eliminating the risk of recurrence and hence increasing the number of total thyroidectomies being performed for benign diseases. Knowledge about clinical profiles of thyroidectomy cases and understanding post-thyroidectomy complications is an important milestone in public health[3].

Bleeding remains one of the major post operative complications of thyroid surgery, with the potential to cause life-threatening air way obstruction. During thyroidectomy, bleeding can obscure the operative field, making safe dissection of recurrent laryngeal nerve (RLN), and parathyroid gland difficult. Effective vessel hemeostasis can be achieved by using the conventional clamp-and- tie technique[4], several studies have reported the successful use of bipolar vessel sealing system or the harmonic scalpel in shortening the length of thyroid surgery and reducing the blood loss[5].

It has been claimed that the use of the harmonic scalpel decreases the operative time, complications and bleeding in abdominal surgery, thoracic surgery, parotid surgery and thyroid surgeries[6].

This study was designed to document hypocalcaemia, mean hospital stay and duration of operative time among the patients undergoing thyroidectomy any

Department of Surgery, DG Khan Medical College & Teaching Hospital Dera Ghazi Khan.

Correspondence: Dr. Fida Buzdar, Assistant Professor of Surgery, DG Khan Medical College & Teaching Hospital Dera Ghazi Khan.
Contact No: 0333-6103827
Email: surgeonfidahussain@gmail.com

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using harmonic scalpel versus conventional hemostasis techniques.

MATERIALS AND METHODS

This study was conducted in the department of general surgery, district head quarter and teaching hospital Dera Ghazi Khan for a period of 6 months from 01-08-2019 to 01-02-2020. Patients of both gender male and female were included in the study. The age range of the patient were from 18-50 years. The patients with pre-operative hypocalcemia, previous history of thyroid surgery, patient with heart diseases, CRF, CLD and with traumatic injuries. Patient with Hepatitis B and C positive along with the patient with alcohlic abuse and pregnant ladies were excluded from the study. Consecutive 94 patients undergoing thyroid surgery were taken for our study. These patients were divided into two groups group A and group B. patients with group A were managed with harmonic scalpel during surgery and patients with group B were treated by conventional hemostasis technique by the surgeon having more than ten years experience after fellowship. Duration of surgery and duration of hospitalisation were noted in the performa. Mean operative time and duration of post operative hospital stay was compared using independent T-test at level of significance of 0.05. Hypocalcemia (Yes/No) in both groups was compared using chi-square test.

Post stratification chi-square test was applied to see their effect on hypocalcemia while independent t- test was applied to see the effect of these confounders on duration of surgery and post operative hospital stay.

P- value equal or less than 0.05 was considered as significant.

RESULTS

Our study comprised of a total of 94 patients meeting inclusion criteria of our study. Of these 94 study cases, 45 (47.9 %) were male patients while 49 (52.1%) were female patients.

Table No. 1: Gender wise distribution of study cases (n = 94)

Gender (n = 94)	Group A		Group B	
	Frequency	%age	Frequency	%age
Male n = 45 (47.9 %)	21	44.7	24	51.1
Female n = 49 (52.1 %)	26	55.3	23	48.9
Total	47	100	47	100

Mean age of our study cases was 37.26 ± 5.50 years. (with minimum age of our study cases was 23 years while maximum age was 50 years). Mean age of the male patients was noted to be 37.64 ± 5.45 years while that female patients was 36.90 ± 5.80 years. (P – 0.514). our study results have indicated that majority of our study cases i.e 57 (60.6%) were aged more than 35 years.

Table No. 2: Age wise distribution of study cases (n = 94)

Age Groups (in Years) (n = 94	Group A		Group B	
	Frequency	%age	Frequency	%age
Up to 35 n = 37 (39.4 %)	18	38.3	19	40.4
More than 35 n = 57 (60.6 %)	29	61.7	28	59.6
Total	47	100	47	100

Of these 94 study cases, 52 (55.3%) belonged to rural areas and 42 (44. 3 %) belonged to urban areas. Diabetes was present in 18, 19, 17, 5 of our study cases. Hypertension was present in 26 (27.7 %) of our study cases. Mean body index of our study cases was 24.94 ± 2.23 kg / mn^2 and obesity was present in 8 (8.5%) of our study cases.

Mean duration of surgery in group A was 41.94 + 5.82 minutes while in group B mean duration of surgery was 70.45 ± 8.52 minutes (P 0.000)

Table No. 3: Distribution of duration of surgery among study cases (n = 94)

Group A (In Minutes)		Group B (In Minutes)	
Mean	SD	Mean	SD
41.94	5.82	70.45	8.52
P < 0.001			

Mean duration of hospital stay in group A was 2.74 ± 0.675 days while in group B was, 3.89 ± 0.938 days (P = 0.000).

Table No. 4: Distribution of mean hospital stay among study cases (n = 94)

Group A (In Days)		Group B (In Days)	
Mean	SD	Mean	SD
2.74	0.675	3.89	0.938
P < 0.001			

Hypocalcemia was noted in 29 (30.9%) in group A, it was 12.8% versus 48.9% in group B (P = 0.000)

Table No. 5: Distribution of hypocalcemia among study cases (n = 94)

Hypocalcemia (n = 94)	Group A		Group B	
	Frequency	%	Frequency	%
Yes , n = 29 (30.9 %)	06	12.8	23	48.9
No , n = 65 (69.1 %)	41	87.2	24	51.1
Total	47	100	47	100

* P < 0.001

DISCUSSION

Total thyroidectomy a surgical procedure which is performed to treat various thyroid diseases wherein complete thyroid gland is removed. The use of total thyroidectomy procedure is considered not to be a safe procedure for thyroid CA and also for treatment of few benign diseases because of the risks involved.

Our study comprised of total of 94 patients meeting inclusion criteria of our study. Of these 94 study cases, 45 (47.9%) were male patients while 49 (52.1%) were female patients. A study reported female gender predominance with male to female ratio was 1: 2.6 which is in compliance with our study results[7].

Another study reported female gender preponderance with male to female ratio was 1: 2.2 which is similar to that of our study results[8].

Mean age of our study cases was 37.26 $\pm$ 5.50 years (with minimum age of our study cases was 23 years while maximum age was 50 years).

Mean age of male patients was noted to be 37.64 $\pm$ 5.45 years while that female patients was 36.90 + 5.80 years (P = 0.514).

Of these 94 study cases, 52(55.3 %) belong to rural areas and 42 (44.7%) belong to urban areas.

Hypertension was present in 26 (27.7%) of our study cases. Obesity was present in 8 (8.5%) of our study cases.

Mean duration of surgery in group A was 41.94 $\pm$ 5.82 minutes while in group B, it was 70.45 $\pm$ 8.52 minutes (P = 0.000).

Mean duration of hospital stay in group A was 2.74 $\pm$ 0675 days while in group B, it was 3.89 $\pm$ 0.938 days (P = 0.000) A study documented Harmonic scalpel when compared with conventional Haemostasis (CH) involves short post-operative hospital stay (2.2 $\pm$ 0.9 versus 3.7 $\pm$ 1.3 days[9]. The findings are close to our study results. Hypocalcemia was noted in 29 (30.9%), in group A. Hypocalcemia was also lower in Harmonic Scalpel group A patients (14%) as compared with conventional haemostasis having 42% hypocalcemia which is incompliance with our study results[10].

CONCLUSION

Harmonic scalpel is safe, reliable and effective for patients undergoing total thyroidectomy. As compared to conventional haemostasis, harmonic scalpel is associated with significantly shorter duration of surgical procedure, shorter hospital stay and decreased hypocalcemia. All surgeons treating such patients should employ total thyroidectomy with harmonic scalpel to achieve the desired clinical outcomes.

Author's Contribution:

Concept & Design of Study:	Fida Buzdar
Drafting:	Muhammad Azim Khan, Majeed Ullah Buzdar
Data Analysis:	Imran Asim, Hafeez Ullah Laghari, Rizwan Ahmad
Revisiting Critically:	Fida Buzdar, Muhammad Azim Khan
Final Approval of version:	Fida Buzdar

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