Original Article

Comparison of Outcomes of Microscopic Versus Conventional Thyroidectomy

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ABSTRACT:

Objectives: To compare the outcomes of microscopic versus conventional thyroidectomy.

Study design & settings: Randomized controlled trial from 16th December 2025 to 15th March 2026 at ENT Department at Sheikh Zayed Hospital, Lahore.

Methodology: This Randomized controlled trial (ClinicalTrials.gov Identifier: NCT07488858) involved 74 patients who underwent thyroidectomies at the age of 18 and 65 years. The patients were split into microscopic thyroidectomy (n = 37) and conventional thyroidectomy group (n = 37). EBSLN palsy, RLN palsy, transient and persistent hypocalcemia were categorical variables whereas operation time, and intraoperative blood loss were continuous. The SPSS version 26 was used to analyze the data. The independent t-test was used to compare the continuous variables and the categorical variables were compared with the chi-square test or the Fisher exact test. A p-value of =0.05 was regarded as significant.

Results: The mean time of operation of the MT group was 92.6 ± 15.4 minutes and the CT group was 78.9 ± 14.7 minutes. The intraoperative mean blood loss of the MT group was however significantly less than that of the CT group (52.3 ± 18.6 mL vs., 84.7 ± 25.1 mL). Transient RLN palsy was also seen in 5.4% of patients in the MT group, as compared to 13.5% in the CT group, and only persistent RLN palsy occurred in 2.7% patients in the CT group.

Conclusion: Even though technique was slightly slower than conventional thyroidectomy, intraoperative blood loss and postoperative complications were also reduced substantially by microscopic thyroidectomy.

Keywords: Thyroidectomy, microscopic thyroidectomy, laryngeal nerve palsy recurrent

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INTRODUCTION:

Thyroid disorders requiring surgical intervention are common, with conditions such as multi nodular goiter, thyroid malignancies, and hyperthyroidism frequently necessitating thyroidectomy.[1] The procedure, while effective, poses risks due to the intricate anatomy of the thyroid gland and its proximity to critical structures such as the recurrent laryngeal nerve (RLN), external branch of the superior laryngeal nerve (EBSLN), and parathyroid glands.[2] Such complications as RLN palsy, hypocalcemia, and hematoma may lead to serious morbidity. Hypocalcemia is reported in 20%-30% of cases and RLN injury is in 5-11 cases although bilateral RLN paralysis is an extremely rare but fatal complication that can be prevented using accurate surgical techniques, sufficient anatomy and expertise in surgeon management.[3,4]

Surgery of the thyroid has also developed greatly and it now takes different methods to increase the safety and the results. The traditional thyroidectomy (CT) is still the most commonly used, as it offers direct visualization and direct excision of the gland. Endoscopic thyroidectomy which makes use of minimal access measures has enhanced cosmetic results nevertheless has been reported to take more time to perform. Robotic-assisted thyroidectomy has also improved the accuracy, but at a cost and accessibility has been a limiting factor.[5-7] Microscopic thyroidectomy (MT), enabling the use of magnification to improve visualization, has been introduced in order to reduce complications. Research indicates that MT is better preserving RLN, EBSLN, and parathyroid glands, decreasing the levels of

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transient nerve palsies and hypocalcemia when compared to traditional methods.[8,9] it is necessary to evaluate the efficacies in the normal clinical practice.

Gautam et al.[10] compared MT and CT in 60 patients (30 per group), with a female predominance (9.1:1). Transient RLN palsy was lower in MT (3.3%) than CT (6.6%), and transient hypocalcemia was significantly lower in MT (3.3%) than CT (13.3%, $P < 0.05$). (9) Khan and Anas (2020) studied 15 patients (MT: 7, CT: 8), with mean ages of 40.3 ± 7.6 years in CT and 41.6 ± 8.3 years in MT ($P > 0.05$). Operative time was longer in MT (100.6 ± 18.4 min) than CT (75.2 ± 27.4 min, $P > 0.05$). One CT patient (12.5%) had permanent RLN palsy, while no RLN injuries occurred in MT ($P > 0.05$). No EBSLN palsy was observed. Hypocalcemia occurred in 1 CT patient (12.5%) but none in MT ($P > 0.05$).[10] Seven et al.[11] analyzed 98 patients (MT: 58, CT: 40), with similar operative times (MT: 98.6 ± 24.7 min, CT: 91.2 ± 32.4 min, $P > 0.05$) and intraoperative blood loss (MT: 95 ± 103 mL, CT: 132 ± 114 mL, $P > 0.05$). Transient RLN and EBSLN palsy occurred in 1.7% of MT and 7.5% of CT patients ($P > 0.05$). The transitory hypocalcemia rate was substantially lower in communities with complete thyroidectomy (MT: 4.1%, CT: 33.3, $P = 0.022$) than in communities without complete thyroidectomy (12.5, $P = 0.032$). Wound hematoma occurred in 1 CT patient (2.5%) but none in MT. Minor wound complications were seen in 10% of CT and 8.6% of MT patients.[11]

One of the most practiced endocrine surgical operations is thyroidectomy. However, even with the development of surgical methods, recurrent laryngeal nerve (RLN), hypocalcemia, and external branch of the superior laryngeal nerve (EBSLN) palsy are still significant issues. Optical magnification in thyroidectomy has been suggested to enhance detection of the fine anatomical structures and minimize the level of complications. Microscopic thyroidectomy remains not commonly used in local surgery practice, in which traditional thyroidectomy is conventionally used, although foreign studies have given promising outcomes. The present study aims at bridging this gap in the research, by comparing the operational time, intraoperative blood loss, and postoperative complications in microscopic versus conventional thyroidectomy in our setting.

METHODOLOGY:

After approval from institutional ethical review committee (Ref no. 02-TERC/NHRC-SZH/INT-SC/769 dated 26-6-2025), the ENT Department at Sheikh Zayed Hospital, Lahore conducted this Randomized controlled trial (ClinicalTrials.gov Identifier: NCT07488858) from 16th December 2025 to 15th March 2026. A sample size of 74 (37 in each group) is calculated by assuming the proportion of transient hypocalcemia among patient underwent microscopic thyroidectomy (4.1%) versus conventional thyroidectomy (33.3%), keeping the confidence interval of 95% and power 90%.[11] It was calculated by using online software OpenEpi.

Inclusion criteria were benign or malignant thyroid disease patients that have undergone thyroidectomy and aged between 18 and 65 years old, regardless of their gender. The inclusion criteria was patients whose vocal cords had moved normally prior to the operation as determined by the laryngoscopy and patients who were not hemodynamically unstable and did not have any significant comorbidities that would interfere with surgery or anesthesia according to the ASA classification (Class I-III). Prior history of prior thyroid surgery, evidence of lateral lymph node metastasis or local invasion on preoperative imaging (ultrasonography or computed tomograph), pre-existing hypocalcemia or parathyroid disorders, severe medical comorbidities, including uncontrolled diabetes (HbA1c > 8%), chronic kidney disease (eGFR < 30 mL/min/1.73m²), liver cirrhosis (Child-Pugh class B or C), or coagulopathy (INR > 1.5 or platelet count < 50,000/μL), were excluded from the study. Invasive thyroid carcinoma, anaplastic thyroid carcinoma, and thyroid lymphoma that demanded radical surgery were also eradicated as well as the pregnant and nursing women.

Patients were recruited based on some selection criteria in the inpatient wards and the outpatient department (OPD). It was the guidelines of the Helsinki Declaration that were adhered to when carrying out the study to ensure the safety and well-being of the participants as well as protecting their rights. Informed consent was given by each participant in writing before the recruitment and the confidentiality of patient information will be maintained at any time. Each patient was recorded in terms of age, gender, lesion type of the thyroid (multinodular goiter, Grave disease, or thyroid cancer), duration of the symptoms, and comorbidities (diabetes and hypertension). Two categories of enrolled patients were formed: Patients that have a thyroidectomy under a surgical microscope belong to Group A (Microscopic Thyroidectomy, or MT). Group B Patients who undergo Thyroidectomy (Conventional Thyroidectomy, or CT) do not use a surgical microscope.

Microscopic Thyroidectomy (MT) in Group A Despite the use of endotracheal intubation, the surgery was done under general anesthesia. A 45-cm transverse cervical incision was made along a natural line of the skin. Magnification (Magnification, Zeiss Sensera, 3x-5x) was applied to the external branch of the superior laryngeal nerve (EBSLN) and recurrent laryngeal nerve (RLN) to allow the dissection of the parathyroid glands. The ligatures were done at the superior pole of the thyroid gland and not at EBSLN. The RN was determined on the entry site to the larynx and kept in perfect condition. The parathyroid glands were distinguished, frozen or remedied in the event of the devascularization. The thyroid gland had been removed according to the intended operation (lobectomy, sub-total, or the total thyroidectomy). The wound was closed in layers and hemodynamics was restored.

Group B - Conventional Thyroidectomy (CT) A similar method was employed except that no microscopic magnification was employed. The standard visual techniques were used to identify RN and EBSLN and the process was accomplished according to the traditional approach. The traditional methods were used to identify and preserve parathyroid glands without any further magnification. The recovery room paid close attention to patients following surgery in case of any immediate complications such as bleeding or airway obstruction. Serum calcium levels were tested 24 hours after operation to determine whether they were hypocalcaemic and indirect laryngoscopy carried out prior to discharge to determine the functioning of the vocal cords. Normal analgesic treatment was administered and supplementation with calcium or vitamin D was started in case of need. In case of a stable, patients were sent out within 48 hours and were followed after one month. In follow-up, final outcome measurements were operative time, intraoperative blood loss and laryngoscopic measure of transient or permanent RLN palsy. EBSLN palsy was determined with videostroboscopy and range of serum calcium levels were determined at 24 hours and one month after surgery to determine transient or permanent hypocalcemia. Data collection was done using data collection proforma.

All the data collected were discussed through SPSS version 26. Examples of continuous variables that were measured in mean +SD were age, the duration of operations, intraoperative blood loss, and the level of serum calcium. These variables were compared in the compartments of conventional thyroidectomy (CT) and microscopic thyroidectomy (MT) with independent t-test. Categorical variables, such as the presence of transient or persistent recurrent laryngeal nerve (RLN) palsy, external branch of the superior laryngeal nerve (EBSLN) palsy, transient and permanent hypocalcemia were represented in frequencies and percentages. The comparison of the two groups was done using either the chia-square test or the Fisher exact test depending on the expected number of cells. The post-stratification chi-square test of the effect of the confounding variables (age, gender, comorbidity, and kind of lesion) was applied after stratification of the latter. In any analysis, the p-value of less than 0.05 was considered statistically significant.

RESULTS:

The average age of the patients, who underwent microscopic thyroidectomy, was 41.3 ± 11.2 years, and that of the conventional thyroidectomy and the conventional thyroidectomy was 42.7 ± 10.5 years. The difference in the mean of ages between the two groups was not statistically significant (p = 0.58). As to gender, both groups were mainly female. The sample consisted of 11 (29.7%) and 26 (70.3%) male and female patients respectively in the MT group. The CT group had an equal amount of 13 (35.1%) men and 24 (64.9%) women. The p-value did not show any significant difference between the groups (p = 0.62). [Table I].

On the comorbid conditions, 7 (18.9%) and 9 (24.3%) of the patients in the MT and CT groups, respectively, were diabetic with 30 (81.1%) and 28 (75.7%) having no diabetes mellitus. It was established that this was not statistically significant (p = 0.54). On the same note, it was also found out that 27 (73.0%) and 25 (67.6%) patients in the normotensive and the MT and CT groups respectively were hypertensive. The group difference of the statistics was 0.47. [Table I]

In terms of the type of thyroid lesion, multinodular goiter is the most widely examined pathology in 18 (48.6%) and 16 (43.2%) participants of the MT and CT groups, respectively. The patients with the MT group had twelve (32.4%) and the CT group had fourteen (37.8) that had single thyroid nodules. Each group had seven (18.9%) patients who were diagnosed with thyroid cancer. The type of lesions in the two groups did not differ statistically (p = 0.63). [Table I].

The average operative time in the microscopic thyroidectomy group was 92.62±15.4 minutes compared to the conventional thyroidectomy group which was 78.92±14.7 minutes. The operative duration was also much more in the microscopic group of thyroidectomy (p = 0.001). (Table II).

Mean intraoperative blood loss was calculated as 52.3±18.6 mL in the group of microscopic thyroidectomy and 84.7±25.1 mL in the group of conventional thyroidectomy. This was statistically significant (p < 0.001) that showed a significant decrease in intraoperative blood loss with microscopic thyroidectomy. Table II.

There were two (5.4%) patients of the microscopic thyroidectomy group with temporary RLN palsy and five (13.5%) patients of the conventional thyroidectomy group. The difference did not turn out to be significant (p = 0.23) even though the CT group had more complications. Permanent RLN palsy was observed in one (2.7%) patient in conventional thyroidectomy and non in microscopic thyroidectomy group. The distinction was not high (p = 0.31). In Table III.

There was EBSLN palsy in one patient (2.7%) in the case of microscopic thyroidectomy and four patients (10.8%) in the conventional thyroidectomy. Although this was higher in the CT group, the incidence was statistically insignificant (p = 0.17). In Table III.

Three (8.1%) patients in the microscopic thyroidectomy group suffered temporary hypocalcemia, and seven (18.9%) patients in conventional thyroidectomy group. The statistical significance of the two groups was found not to be significant (p = 0.18). Hypocalcemia was permanent in 1 (2.7%) patient of normal thyroidectomy and none of the patients of microscopic thyroidectomy. This was also statistically unnoticed (p = 0.31). (Table III).

Following the separation of the individuals by age, the microscopic thyroidectomy group took a significantly longer time to perform operation compared to the standard thyroidectomy group among individuals whose age range was 18 to 40 and 41 to 65 years. Similarly, both age groups had a significantly lower amount of blood during surgery following a microscopic thyroidectomy. The level of gender stratification was also of a consistent pattern, and it means that both male and female patients with microscopic thyroidectomy had a longer operating time and much fewer blood losses in comparison to the patients with conventional thyroidectomy. Microscopic thyroidectomy took a relatively long operational time than conventional thyroidectomy; however, it led to a very minimal intraoperative blood loss among the patients with diabetes mellitus. The same tendency was witnessed with non-diabetic patients. Stratified by hypertension, hypertensive and normotensive patients undergoing microscopic thyroidectomy exhibited prolonged surgery with less intraoperative blood loss than did their conventional counterparts undergoing thyroidectomy. (Table IV). In terms of type of lesion, the longest time spent on operating was with patients with thyroid carcinoma and specifically in the microscopic thyroidectomy. Regardless, the microscopic thyroidectomy group never recorded more blood loss during the surgery than the other groups which consisted of multinodular goiter, solitary thyroid nodules, and thyroid cancer.

Table-1: Baseline Demographic and Clinical Characteristics of Patients (n = 74)

Variable	Microscopic Thyroidectomy (n=37)	Conventional Thyroidectomy (n=37)	p-value
Age (years)	41.3 ± 11.2	42.7 ± 10.5	0.58
Gender			
Male	11 (29.7%)	13 (35.1%)	0.62
Female	26 (70.3%)	24 (64.9%)	
Diabetes Mellitus			
Yes	7 (18.9%)	9 (24.3%)	0.54
No	30 (81.1%)	28 (75.7%)	
Hypertension			
Yes	10 (27.0%)	12 (32.4%)	0.47
No	27 (73.0%)	25 (67.6%)	
Type of Lesion			
Multinodular Goiter	18 (48.6%)	16 (43.2%)	0.63
Solitary Thyroid Nodule	12 (32.4%)	14 (37.8%)	
Thyroid Carcinoma	7 (18.9%)	7 (18.9%)	

The higher cases of RN palsy and hypocalcemia were in people who experienced conventional thyroidectomy in the groups 18-40 and 41-65 but the difference was not statistically significant. Further, gender-based stratification revealed that, females with conventional thyroidectomy had a higher probability of having RLN palsy and hypocalcemia compared with those with microscopic thyroidectomy and this was not statistically significant. In the case of the stratification of the groups in terms of the diabetes mellitus and the high blood pressure, the complication rates were found to be statistically higher in the normal thyroidectomy group. When the groups were divided, however, a major correlation was not found. Multinodular patients with thyroid cancer, solitary nodules of thyroid who underwent a regular thyroidectomy and cases with hypocalcemia were found to have high rates of RLN palsy and hypocalcemia when compared to patients with microscopic thyroidectomy. This was especially obvious in the case of thyroid cancer patients but not significantly. (Table IV)**DISCUSSION:**

In the current research, the operative time in the MT group equalized 92.6 ± 15.4 minutes, in the CT group equalized 78.9 ± 14.7 minutes. This shows that microscopic thyroidectomy took a little more time to operate. These results were also reported by Li et al. who revealed that the minimally invasive thyroidectomy procedures are likely to take longer periods to be performed than the traditional open

Table 2: Comparison of Operative Outcomes between Groups

Variable	Microscopic Thyroidectomy (n=37) Mean ± SD	Conventional Thyroidectomy (n=37) Mean ± SD	p-value
Operativ Time (minutes)	92.6 ± 15.4	78.9 ± 14.7	0.001
Intraoperative Blood Loss (mL)	52.3 ± 18.6	84.7 ± 25.1	<0.001

Table 3: Comparison of Postoperative Complications

Complication	Microscopic Thyroidectomy (n=37)	Conventional Thyroidectomy (n=37)	p-value
Transient RLN Palsy	2 (5.4%)	5 (13.5%)	0.23
Permanent RLN Palsy	0 (0%)	1 (2.7%)	0.31
EBSLN Palsy	1 (2.7%)	4 (10.8%)	0.17
Transient Hypocalcemia	3 (8.1%)	7 (18.9%)	0.18
Permanent Hypocalcemia	0 (0%)	1 (2.7%)	0.31

Table 4: Stratification of Effect Modifiers with Respect to Operative Time, Intraoperative Blood Loss and complications (n = 74)

Effect Modifier	Category	Operative Time (min)		p-value	Blood Loss (mL)		p-value	RLN Palsy n (%)		p-value
		MT	CT		MT	CT		MT	CT	
Age (years)	18–40	90.4 ± 14.8	76.9 ± 13.9	0.002	50.6 ± 17.3	81.5 ± 23.7	<0.001	1 (5.9%)	3 (18.8%)	0.28
	41–65	94.3 ± 16.1	80.5 ± 15.2	0.004	53.8 ± 19.4	87.1 ± 26.3	<0.001	1 (5.0%)	3 (14.3%)	0.30
Gender	Male	91.8 ± 14.9	77.6 ± 13.8	0.003	51.4 ± 18.2	82.6 ± 24.5	<0.001	1 (9.1%)	2 (15.4%)	0.41
	Female	93.0 ± 15.7	79.7 ± 15.2	0.005	52.7 ± 18.9	85.6 ± 25.4	<0.001	1 (3.8%)	4 (16.7%)	0.24
Diabetes Mellitus	Yes	95.1 ± 15.8	82.3 ± 14.6	0.02	54.7 ± 19.3	88.4 ± 26.1	0.001	1 (14.3%)	2 (22.2%)	0.56
	No	91.8 ± 15.2	77.8 ± 14.5	0.001	51.8 ± 18.4	83.5 ± 24.8	<0.001	1 (3.3%)	4 (14.3%)	0.21
Hyperten-sion	Yes	96.2 ± 16.3	83.5 ± 15.1	0.01	55.2 ± 19.8	89.7 ± 27.2	0.001	1 (10.0%)	2 (16.7%)	0.48
	No	91.3 ± 15.0	77.1 ± 14.2	0.001	51.1 ± 18.1	82.9 ± 24.6	<0.001	1 (3.7%)	4 (16.0%)	0.22
Type of Lesion	Multinodular Goiter	90.8 ± 14.6	76.5 ± 13.7	0.002	50.9 ± 17.8	80.7 ± 23.9	<0.001	1 (5.6%)	2 (12.5%)	0.30
	Solitary Nodule	93.7 ± 15.3	79.2 ± 14.8	0.003	52.8 ± 18.6	84.1 ± 25.1	<0.001	1 (8.3%)	2 (14.3%)	0.39
	Thyroid Carcinoma	97.4 ± 16.8	84.9 ± 15.9	0.02	55.6 ± 20.1	90.5 ± 27.6	0.002	0 (0%)	2 (28.6%)	0.29

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Effect Modifier	Category	Hypocalcemia n (%)		p-value
		MT	CT	
Age (years)	18–40	1 (5.9%)	3 (18.8%)	0.22
	41–65	2 (10.0%)	5 (23.8%)	0.19
Gender	Male	1 (9.1%)	2 (15.4%)	0.33
	Female	2 (7.7%)	5 (20.8%)	0.20
Diabetes Mellitus	Yes	1 (14.3%)	2 (22.2%)	0.49
	No	2 (6.7%)	5 (17.9%)	0.17
Hyperten-sion	Yes	1 (10.0%)	3 (25.0%)	0.44
	No	2 (7.4%)	4 (16.0%)	0.19
Type of Lesion	Multinodular Goiter	1 (5.6%)	3 (18.8%)	0.26
	Solitary Nodule	1 (8.3%)	2 (14.3%)	0.31
	Thyroid Carcinoma	1 (14.3%)	3 (42.9%)	0.23

thyroidectomy because of the complexity of the dissection, and greater visualization needs.[12] Similarly, Ding et al. showed more operative times in endoscopic thyroidectomy than in conventional thyroidectomy which they put down to the accuracy needed in the identification of the anatomical structures.[13]

On the contrary, other investigations have shown reduced operating time using magnification-assisted thyroidectomy. Nagaty et al. discovered that surgical loupe would significantly cut down on the amount of time spent on the operation as nails and vessels became easy to detect.[14] Nevertheless, variations in surgeon experience, surgical technique, and case-selection could be the cause of the difference in studies.

The current research also established that the intraoperative blood loss was also very low in the microscopic thyroidectomy group (52.3 ± 18.6 mL) than in conventional thyroidectomy group (84.7 ± 25.1 mL). This finding is in line with the research carried out by Venkataramani et al., who stated that a considerable amount of blood loss was significantly reduced in patients who received loupe-assisted thyroidectomy.[15] Equally, Das et al. indicated that with improved visualization delivered by magnification, meticulous dissection and control ensues, hence minimizing intraoperative bleeding.[16]

Regarding nerve related complications, the current study demonstrated that transient RLN palsy was presented in 5.4% of the patients in the MT group and permanent RLN palsy was presented in the CT group only (2.7%). These data can be correlated with the results of Karpathiotakis et al., who had to note that better visualization during thyroid surgery leads to a substantial decrease in the risk of RLN injury.[17] Equally Haddadin et al. have found that the rates of RLN injury were highly dependent on the surgical procedure and surgeon experience.[18]

EBSLN palsy was found in 2.7% of patients in the MT and 10.8% in the CT group in the current study. This finding correlates with the research conducted by Al-Qahtani et al., who showed that magnification when performing thyroidectomy enhances the detection of the superior laryngeal nerve and minimizes the chances of damage.[19]

Hypocalcemia is still among the most common issues that follow thyroid surgery as a result of accidental damage or devascularization of the parathyroid glands. In the given research, transient hypocalcemia was observed in 8.1 behind of the patients in the MT group and 18.9% of the patients in the CT group and permanent hypocalcemia was only observed in the CT group (2.7%). Such results align with the report of Kim et al. who found lower incidence of postoperative hypocalcemia in cases of operations performed with better visualization methodology in case of thyroid surgery.[20] Surgical technique is also another determinant of postoperative hypocalcemia that was found in a meta-analysis conducted by Chen et al.[21]

The outcomes of the current research are also consistent with the data of Datta et al., who claimed that the microscopic thyroidectomy was less related to the number of complications in comparison with the conventional thyroidectomy.[22] Likewise, systematic review by de Vries et al. also found that minimum invasive and magnifying-aided thyroid surgery methods are safe and effective options as compared to traditional thyroidectomy with equal or better complication rates.[23]

The relevance of the surgical expertise and visualization techniques has also been supported by large population-based studies. According to the report by Stopenski et al., the rate of complications was much lower in those surgeries that were carried out by special endocrine surgeons who also employed nerve monitoring and magnification methods much more frequently.[24]

Similarly, Alkaf et al. showed that risk of RLN being injured could be considerably minimized due to a careful approach and attention paid to the nerve identification during the surgical procedure.[25]

In general, the results of the current investigation indicate that microscopic thyroidectomy is beneficial in the form of minimized intraoperative blood loss and the decreased level of complications, but it might take a little bit longer to complete the surgery. Enhanced visualization during surgery is more effective in identifying and preserving vital structures like the RLN, EBSLN and parathyroid glands.

Limitations: To begin with, the sample size was smaller (n = 74). Nevertheless, since the study provided the valuable data on the comparison, a bigger sample size would have enhanced statistical power and augmented the overall generalizability of the results. The conclusions of the future studies on broader populations in numerous centers would be more significant. Second, the research was carried out in one tertiary care center and likely reduces the external validity of the findings. The result of surgical procedures can be different according to the institutional practices, the experience of the surgeon, and the resources. Thus, the results might not be entirely applicable to the results in other healthcare environments. Third, the follow-up time in this research was one month after the operation. Other complications especially the injury of nerves or hypocalcemia can recover or appear after this time. Better assessment of long-term outcomes like permanent RLN palsy and permanent hypocalcemia would be possible through a longer follow-up period.

CONCLUSION:

This study revealed that microscopic thyroidectomy was related to much less intraoperative blood loss in contrast to conventional thyroidectomy which can be explained by the fact that meticulous surgical dissection was performed under the impact of a magnifying glass and vascular structures could be more easily observed. Although, in microscopic thyroidectomy group the operative time was a little more probably because of the care and precision involved when carrying out the surgery when it was under magnification. Microscopic thyroidectomy had lower rates of transient RLN palsy, permanent RLN palsy, EBSLN palsy, transient hypocalcemia, and permanent hypocalcemia than conventional thyroidectomy with respect to postoperative complications. These differences did not have any statistical significance at all parameters but this trend was observed consistently in favour of microscopic thyroidectomy that offers greater preservation of the critical anatomical structures.

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Authors Contribution:
Laraib Abro: Conception and design, acquisition of data, analysis and interpretation of data, drafting and critical revision, final approval of the version to be published
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Gulnaz Arshad: Conception and Design, acquisition of data, analysis and interpretation of data, drafting and critical revision, final approval of the version to be published
Sarfraz Latif: Conception, acquisition of data, critical revision of the manuscript
Aqsa Yaqub: Acquisition of data, drafting and final approval of the manuscript
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