

## The Endoscopic Thyroid Surgery Compared to Conventional Surgery, Reviews of Different Studies

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**Abstract:** This study aims to make a comparison between endoscopic thyroid surgery and conventional surgery and assess the quality of life of patients after the operation where information and demographic data were collected for 80 patients, and the patients were distributed according to the type of technique used in thyroid surgery (55 patients with thyroid surgery) (25 patients with conventional surgery). This study was designed according to a questionnaire distributed to patients to know the type of complications that were obtained after the operation and Comparison of quality-of-life parameters between the group undergoing trans-oral endoscopic thyroidectomy and the group undergoing conventional open thyroidectomy for the first three months. The hospital stay (range 2-4 days) was for endoscopic patients as for patients those who underwent conventional thyroid surgery (3-8 days). The mean operation time in our study was  $118 \pm 33$  minutes for cataract patients,  $90.3 \pm 33.5$  for conventional surgery patients. The patient's pain intensity was assessed over a period of 3 months, and it was noted that the pain intensity increased over the first three months by 40%, and this is clear evidence that endoscopic surgery provides better results than the Conventional surgery.

**Keywords:** Endoscopic, questionnaire, conventional, thyroidectomy, VAS, BMI.

### INTRODUCTION

Thyroidectomy is the most common procedure in endocrine surgery, as cervical incision has been the "gold standard" of thyroid surgery since it was introduced by Kocher at the end of the 19th century [Lang, B.H.H, 2010; Lang, B.H.H. *et al.*, 2010; Hüscher, C.S.G. *et al.*, 1997]. Since then, thyroidectomy, as we know it now, has proven to be an effective and safe method, but it has not stopped developing, and through previous studies, it has been observed that results and quality have been achieved in terms of fewer complications and deaths [Sgourakis, G. *et al.*, 2008; Ikeda, Y. *et al.*, 2000; Ohgami, M. *et al.*, 2000; Huang, J.K. *et al.*, 2016].

With more than 1000 surgeries annually in Iraq, thyroid surgeries are among the most common surgeries in general surgery [Shimazu, K. *et al.*, 2003; Ding, Z. *et al.*, 2014]. The high epidemiological prevalence of thyroid nodules in Iraq and the diagnostic inaccuracy in the evaluation of these nodules lead to a relatively high frequency of operations [Yang, J. *et al.*, 2015; Kandil, E.H. *et al.*, 2012]. Screening of thyroid tests and routine measurement of blood calcium leads to early diagnosis of thyroid disorders, and in this regard, the spectrum of patients is shifted towards younger and older results [Dionigi, G. *et al.*, 2011; Lang, B.H. *et al.*, 2010].

Minimally invasive techniques have become an integral part of the surgical repertoire of thyroid diseases. However, there is a need to critically evaluate technical surgical procedures with respect to their indications and benefit to the patient compared to current methods of conventional surgery [Terris, D. J, 2013].

Thyroid surgeries are considered very safe, as there are no measurable deaths and a very low complication rate. Recurrent nerve paralysis and hypocalcemia after surgery are major risks of surgery, and possible secondary, potentially life-threatening bleeding is extremely rare and can be controlled with appropriate treatment [Kim, J.H. *et al.*, 2008].

There are many factors that can influence the prognosis of patients after thyroidectomy, such as the prognosis of the disease (benign or malignant), the size of the thyroid gland, retrosternal growth or the lining of the chest, the presence of inflammation or invasion outside the thyroid gland, and most importantly, the surgeon's experience [Kim, W.W. *et al.*, 2011].

The emergence of new technologies and the constant attempt to improve surgery has led to the emergence of new approaches. In this article, we review various new approaches in thyroid surgery in an attempt to show their indications, benefits, and limitations [Tae, K. *et al.*, 2011].

## MATERIALS AND METHODS

### Patient Sample

An observational, descriptive, cross-sectional study based on the number of patients undergoing laparoscopic thyroidectomy and conventional surgery between 2018 and March 2021 in several different hospitals in Iraq.

In this study, information and demographic data were collected for 80 patients, and the patients were distributed according to the type of technique used in thyroid surgery (55 patients with thyroid surgery) (and 25 patients with conventional surgery).

### Study Design

This study was designed according to a questionnaire distributed to patients to know the type of complications that were obtained after the operation and Comparison of quality-of-life parameters between the group undergoing trans-oral endoscopic thyroidectomy and the group undergoing conventional open thyroidectomy for the first three months.

The VAS PAIN SCORE was used to assess pain intensity by qualitative verbal assessment where pain intensity is described in specific terms ranging from 0 (no pain) to 4 (worst pain). Of the proposed verbal properties.

The inclusion criteria in this study were patients aged between 25-50 years and patients who

underwent conventional and endoscopic thyroidectomy.

Patients with severe sensitivity to anesthesia, aged over 50 and less than 25 years, with fatal diseases were also excluded.

Among other things, we took into account the social factor that plays an important role for a certain category of patients - the desire to avoid scars on the neck. This is especially true for patients who lead an active social life.

All patients were told in detail about the new surgical approach, indicating all possible nuances, including possible diversion and complications, and consent was given for the procedure. Preparation before surgery did not differ from the standard for elective operations, the only difference being the mandatory sanitation of the oral cavity within one day before the operation.

### Study Period

Written consents were obtained from patients for surgical management, and a questionnaire distributed to patients assessed the severity of complications as well as the quality of life between 2018 and March 2021 in several different hospitals in Iraq.

## AIM OF RESEARCH

This study aims to make a comparison between endoscopic thyroid surgery and conventional surgery and assess the quality of life of patients after the operation.

## RESULTS

**Table 1:** Demographic data of patient N=100

Variable	Value
Age	36±11.1
BMI	
>25	70
<25	30
Sex	
Female	44
Male	56
comorbidities	
Diabetes	30
Hypertension	22
Obesity	20
Heart disease	18
Others	10
Education level	
Primary	20
Secondary	44
College	19

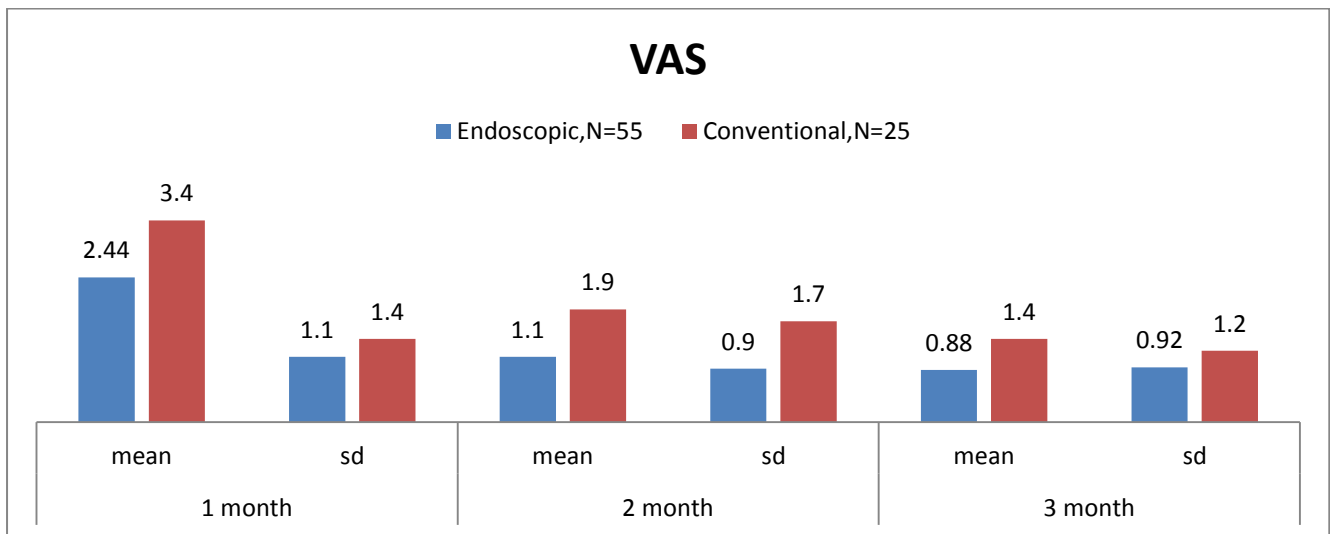
high	17
financial capacity	
Low	18
Medium	60
high	22

**Table 2:** Outcomes related to Surgery, endoscopic thyroid surgery compared to conventional surgery N=100

Variable	Endoscopic=55	Conventional=25	P-value
Benign nodule	40	25	0.003
Micropapillary carcinoma	15	---	0.001
Nodule size (Mean ± SD; cm)	2.4±1.6	2.9±1.8	0.056
Operative time (Mean ± SD; min)	118 ± 33	90.3 ± 33.5	0.01
Blood loss (Mean ± SD)	30.4 ± 50.3	28.4 ± 28.8	0.004
Hospital stays (Median) days	2-4	3-8	0.001

**Table 3:** Surgical complications for patients

Variable	Endoscopic=55	Conventional=25	P-value
bleeding	2	2	0.00
injury to the recurrent laryngeal nerve	1	1	0.00
hematoma	1	2	0.99
Surgical site infection	3	1	0.01
Hoarseness	3	1	0.01
Hypocalcemia	1	2	0.76
Mortality	1	3	<0.001



**Figure 1:** Assessment of pain score according to VAS of patients

Period	v	Endoscopic			Conventional		
		instrumental activities	General Health	Mental health	instrumental activities	General Health	Mental health
One month	mean	88	87	93	77	68	69
	sd	22	13	7	23	32	31
Two months	mean	89	91	94	59	72	74
	sd	11	9	6	41	28	26
Three months	mean	94	93	91	66	79	75
	sd	6	7	9	34	21	25

**Figure 2:** Assessment of quality of life according to the to 36-Item Short Form Survey

## DISCUSSION

In this study, 80 patients were collected and distributed into two groups (Endoscopic, N=55, Conventional, N=25), and the average ages ranged between 25 to 50 years, and the study showed a high BMI for ages ranging from 40 to 50 years.

In this study, the percentage of male patients was observed for both groups, and the most important risk factors in this study were diabetes, hypertension, obesity, and heart disease).

The most common thyroid nodules appear due to iodine deficiency. When iodine is low, the thyroid gland releases growth factors so that thyroid cells multiply. In addition, less thyroid hormones are accumulated due to iodine deficiency, so that there is no inhibition of the pituitary gland.

Thyroid nodes can continue to grow until symptoms such as swallowing problems, hoarseness, or a feeling of pressure in the neck area appear. In addition, thyroid nodes can be sensitive to pressure. But thyroid nodules usually grow so slowly that they are often discovered as accidental findings on routine tests.

In this study, it was detected Nodule size (Mean  $\pm$  SD; cm) of endoscopic  $2.4 \pm 1.6$  patients, which is smaller compared to patients who underwent conventional thyroid surgery.

The hospital stay (range 2-4 days) was for endoscopic patients as for patients those who underwent conventional thyroid surgery (3-8 days).

A visual analog scale (VAS) is used to determine postoperative pain. The primary endpoint and perioperative variables are then analyzed using SPSS software.

According to Figure 1, the patient's pain intensity was assessed over a period of 3 months, and it was noted that the pain intensity increased over the first three months by 40%, and this is clear evidence that endoscopic thyroidectomy surgery provides better results than the Conventional surgery. In Spain, where 700 patients were collected in this study, the patients were evaluated according to VAS, and the degree of pain was increased in patients who underwent conventional surgery with 55%.

[Lee, H. *et al.*, 2012] The experience in the USA was somewhat different, with 60% of their patients being obese, which limited a longer operation time and a number of complications, which prompted

them to develop other approaches such as the retrograde approach that has been adopted in Brazil since 2014.

The mean operation time in our study was  $118 \pm 33$  minutes for cataract patients,  $90.3 \pm 33.5$  for conventional surgery patients, and in other studies, for John Reston 2011 America and Ki Ri Sun 2009 in Korea, operation time was 126.8 minutes and 131 minutes respectively.

Significant difference in complications was found in conventional surgery and laparoscopic thyroidectomy; however, bleeding, injury to the recurrent laryngeal nerve, hematoma, Surgical site infection, Hoarseness, and Hypocalcemia.

The complications described in our series do not differ from those reported in the global literature for conventional thyroidectomy, illustrating the safety of the transaxillary technique. [Tan, Z. *et al.*, 2015]

Some international trials have not been very successful with regard to brachial plexus injury, which is explained by the characteristics of the patient with a high body mass index and due to excessive stretching of the arm as occurred initially in the early years of application of this technique, which is currently avoided by appropriate patient selection and avoidance of overload On the plexus, by flexing the forearm slightly above head level in a comfortable position previously assessed with the patient awake prior to induction of anaesthesia. [Kim, S.K. *et al.*, 2016]

In conclusion, laparoscopic thyroidectomy is the most versatile method of choice among clinicians for the purpose of thyroidectomy with the technological resources found in most health institutions that have video endoscopy equipment. It is considered a safe procedure and has accurate indications for a particular group of patients, and the complications described are the same as those envisaged with conventional thyroidectomy.

## CONCLUSION

Thyroid surgery is constantly evolving despite the fact that it has proven to be effective as well as safe and currently has quality indicators that are hard to beat.

The implementation of laparoscopic surgery has made it possible to use distant approaches to the thyroid gland with the aim of reducing the scar or making it invisible, and currently, it has been proven that the best methods used in thyroid surgery are debridement due to the fewer

complications and deaths after surgery compared with Conventional method.

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