

## THE RESULTS OF ENDOSCOPIC THYROIDECTOMY VIA BREAST- AXILLARY APPROACH FOR NODULAR THYROID GOITER AT HUE CENTRAL HOSPITAL

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### ABSTRACT

**Background:** Endoscopic thyroidectomy performed for the first time in 1997 by Huscher. Today, this procedure is used in many countries around the world. The potential advantages of the endoscopic technique have better cosmetic results and better patient comfort. Endoscopic thyroidectomy via breast-axillary approach with harmonic scalpel is both safe and cosmetic.

**Aims:** To describe endoscopic technique and to evaluate efficacy of endoscopic thyroidectomy via a breast- axillary approach with CO<sub>2</sub> insufflation.

**Patients and method:** Patients were diagnosed nodular thyroid goiter; prospective study.

**Results:** Since October 2012, we have applied a new technique endoscopic thyroidectomy for nodular thyroid goiter at Oncology Center, Hue Central Hospital. 72 cases (66 females – 6 males), mean age was 28 (range 15 to 49); 65 solitary nodular goiter (90.3%), 6 multinodular at one lobe (8.3%) and 1 multinodular at two lobes (1.4%) underwent near-total lobectomy (81.9%) or total lobectomy (16.7%) and near-total thyroidectomy (1.4%). The preoperative diagnosis of thyroid tumors was established by using physical examination, fine-needle aspiration cytology, USG neck and FT4, TSH tests. The procedure is performed with the patient in a supine position under general anesthesia with endotracheal intubation. Three trocars are inserted at 3 positions as axilla and breast areola. The working space is created above pectoral muscle advancing towards the subplatysmal plane by monopolar cautery and maintained with a continuous pressure of 10 to 12 mmHg carbon dioxide (CO<sub>2</sub>). Thyroid nodule is exposed by dissection through along the SCM anterior border and removed by Harmonic scapel. There were no important postoperative complications such as recurrent laryngeal nerve palsy nor postoperative tetany..; less postoperative pain, earlier return to regular activities, superior cosmetic appearance. Histopathological results were follicular adenomas for 93.1%, 6.9% in all cases were carcinoma. All patients are satisfied with the cosmetic results.

**Conclusions:** It is a feasible, safe and effective technique. It is possible to achieve in cases: solitary nodular goiter, multinodular goiter, hyperthyroidism and thyroid cancer.

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## I. BACKGROUND

Nodular thyroid goiter is common diseases in our country, there are many different treatments but so far it is mostly surgery. Besides conventional thyroidectomy, the endoscopic thyroidectomy is developing and more and more plays an important role. In Vietnam, use of endoscopic surgery for goiter diseases might be feasible procedure and it was a great potential to adapt the more increasing needs of patients. Since October 2012, we have applied a technique endoscopic thyroidectomy via a axillo-breast approach for thyroid goiters at Oncology Center, Hue Central Hospital.

## II. AIMS

To describe endoscopic technique and to evaluate the efficacy of endoscopic thyroidectomy via a breast- axillary approach with CO<sub>2</sub> insufflation.

## III. MATERIALS AND METHODS

**Method:** Prospective study.

**Patients:** The patients underwent endoscopic thyroidectomy from October 2012 to September 2014 at Hue Center Hospital.

**Criteria to select patients:**

- Nodular thyroid goiter was diagnosed with physical examination and thyroid ultrasonography.
- Number of nodules: Solitary nodular goiter or multinodular goiter.
- FNA result was benign.

- FT<sub>4</sub>, TSH tests were normal.

**Criteria for exclusion:**

- Patients do not agree an endoscopic thyroidectomy.
- Patients are diagnosed with thyroid carcinoma before surgery.
- Patients had previous neck surgery.

### **Surgical procedure**

After administration of general anesthesia , the patient was placed in the supine position with the neck extended using a shoulder pillow. The arm of ipsilateral lesion was then raised over the patient's head to expose the axilla, and the contralateral arm was mildly abducted. Three trocars are inserted at 3 positions at axilla and breast areola. The working space is created above pectoral muscle advancing towards the subplatysmal plane by monopolar cautery and maintained with a continuous pressure of 10 to 12 mmHg carbon dioxide (CO<sub>2</sub>). Thyroid nodule is exposed by dissection through along the SCM anterior border and removed by Harmonic scapel.

A suction drain was placed before wounds were sutured and it would be removed after two postoperative days.

## IV. RESULTS

From 10/2012 to 9/2014, we performed 72 cases of endoscopic thyroidectomy via breast- axillary approach.

### *Ages*

Age group	n = 72	%
<20	14	21.5
20-29	31	43.1
30-39	15	18.5
40-49	12	16.9
≥50	0	0.0
Means	28.4 ± 9.2	

**Gender**

Male / Female ratio = 6 / 66

**Thyroid nodular characteristics**

Characteristics	No. of patients
<i>Site of nodules</i>	
Right lobe/ Left lobe/ Isthmus/ both lobes	40/ 30/ 1/ 1
<i>Number of nodules</i>	
Solitary nodular goiter/ Multinodular goiter	61/ 11
<i>Tumor size ( cm)</i>	2,4±0,7 ( 1,1-4,2 )
<i>FNA</i>	46 / 26
Cyst/ Follicular adenoma	
<i>Characteristics of thyroid ultrasound</i>	
Microcalcification/ Angiogenesis / both factors	3 / 6 / 7

**Surgical outcome**

Surgical outcome	No. of patients
<i>Surgical procedure</i>	
Near-total lobectomy/ Lobectomy/ Near totalthyroidectomy	61 / 10 / 1
<i>Mean operating time ( minute)</i>	75,5 ± 30,6 ( 40 - 150 )
<i>Complications during surgery</i>	
Skin burn/ Subcutaneous emphysema/ Others	2 / 1 / 0
<i>Postoperative complications</i>	
Neck paresthesia / Hoarseness/ Hypocalcemia	7 / 0 / 0
<i>Hospitalized time</i>	6.2 ± 1.5 ( 3 - 9 )
<i>Histopathology</i>	
Benign/ Papillary carcinoma/ Follicular carcinoma	66 / 5 / 1

*Relation between the characteristics of thyroid ultrasound and tumor histopathology*

Characteristics On ultrasound Histopathology	Microcalcification	Angiogenesis	Both factors	Featureless	n
Benign	2	6	2	56	66
Carcinoma	1	0	5	0	6
N	3	6	7	56	72

**Follow-up after surgery (3 months)**

Characteristics	No. of patients
<i>Thyroid</i>	
Humped / Normal	0 / 72
Euthyroidism / Hypothyroidism	72 / 0
<i>Cosmesis</i>	
Excellent/ Fairly	66 / 6
<i>Neck paresthesia</i>	
Less/ Decreases	71 / 1

## V. DISCUSSION

### *Age*

In our study, the average age of the patients was 28 (range, 20-29 years, 43.1%) in the endo group. At this time, people prepare for the most beautiful and memorable moments in their life with love and marriage. To maintain a beautiful expression is very important, and a scar on neck is unacceptable for them; it will cause them less confident in communication.

The development of endoscopic thyroidectomy has subsequently been an optimal choice for patients in this age with thyroid tumor. In comparison with results from some foreign studies, the age for endoscopic thyroidectomy is even older, for example, 48 in Zhang W's study while a 77 year-old patient was operated in Samy AK. The differences are probably caused by various need for sense of beauty and culture. In this study, there was no patient after 50 years. The oldest one in endo group was 49. This does not present a limitation in indication but comes from individual choice.

### *Gender*

It's similar to Godey B's study, most of patients were female, when the ratio female: male is 66/6 (female 91.2%). As the result of higher cases of multinodular thyroid goiter and more interest in beautiful expression, women likely take more proportion in this study. They mostly choose to undergo endoscopic thyroidectomy rather than open surgery when they are explained about both methods.

### *Indications*

In 72 patients, Nodules locate in various sites including left lobe, right lobe and isthmus. Especially, there was 2 cases in which patient had 2 nodules in both left and right side, however, the one was on left side, the other one is closed to isthmus and deviated to the right. We could make the removal on both sides by inserting a trocar in one side only.

We performed endoscopic thyroidectomy for

both solitary nodule thyroid and multinodular thyroid, the nodule size on ultrasound range 1.1-4.2 cm. However, we believe that this technique can be indicated with bigger tumor size. In future, we will perform endoscopic total thyroidectomy for thyroid cancer.

### *Surgical outcome*

Three trocars are inserted at 3 positions as axilla and breast areola; this approach helps to have better observe on the lateral of thyroid and reduce complications.

The working space is maintained with a continuous pressure of 10 to 12 mmHg carbon dioxide (CO<sub>2</sub>). One patient had subcutaneous emphysema but it was mild and disappeared two days later.

The patients were less postoperative pain, earlier return to regular activities and there were no important postoperative complications.

### *Histopathological results*

The patients had benign FNA but after surgery 6 patients had results of malignant histopathology. We have performed conventional open total thyroidectomy.

We pay attention to the case with microcalcification or angiogenesis on ultrasound. One in three case with microcalcification on ultrasound are have results malignant histopathology; 7 cases have both factor microcalcification and angiogenesis, there are 5 case with malignant histopathology. This is a noteworthy when we indicated for endoscopic thyroidectomy.

### *Three month follow-up results*

There were no postoperative complication such as: sticking neck, bad scar... One patient is still less paresthesia on the neck but it was disappeared then. All patients are satisfied with the beautiful results.

## VI. CONCLUSION

Characteristics of 72 patients of undergo endoscopic thyroidectomy surgery via axillo-breast approach with gas insufflations at Oncology Center, Hue Center Hospital. We conclude:

- Female plays the majority, 91.2 %.
- Mean age was 28 (15-49).
- Nodules were on various positions on the thyroid gland, it may be solitary nodular goiter or multinodular goiter.
- Mean operating time was 75,5±30,5 minutes, (40-150 minutes).
- There were no important postoperative complications.

- Histopathological results were follicular adenomas for 93.1%, 6.9% in all cases were carcinoma.

- All patients are satisfied with the cosmetic results.

It is a feasible, safe and effective technique. It is possible to achieve in cases: solitary nodular goiter, multinodular goiter, hyperthyroidism and thyroid cancer.

## REFERENCES

1. Amaral JF. The experimental development of and ultrasonically activated scalpel for laparoscopic use. *Surg Laparosc Endosc* 1994;4:pp.92-9.
2. Gagner M, Rubino F. Endoscopic parathyroidectomy. In (2002): Gagner M, Inabet WB, editors. Minimally invasive endocrine surgery. Lippincott, Williams and Wilkins: Philadelphia;.
3. Huscher CS, Chiodini S, Napolitano C, Recher A. Endoscopic right thyroid lobectomy. *Surg Endosc* 1997;11:877.
4. Ikeda Y, Takami H, Sasaki Y, Takayama J, Kurihara H. Are there significant benefits of minimally invasive endoscopic thyroidectomy? *World J Surg* 2004;28:1075-8.
5. Ikeda Y, Takami H, Sasaki Y, Takayama J, Niimi M, Kan S. Comparative study of thyroidectomies, Endoscopic surgery vs conventional open surgery. *Surg Endosc* 2002;16:pp.1741-5.
6. Inabet WB, Jacob BP, Gagner M. Minimally invasive endocrine thyroidectomy by a cervical approach. Early vessel ligation decreases the duration of surgery. *Surg Endosc* 2003;17:pp.1808-11.
7. Kitano H, Fujimura M, Kinoshita T, Kataoka H, Hirano M, Kitajima K. Endoscopic thyroid resection using cutaneous elevation in lieu of insufflations. Technical considerations and review of an open series. *Surg Endosc* 2002;16:pp.88-91.
8. Miccoli P, Bellantone R, Mourad M, Walz M, Raffaelli M, Berti P. Minimally invasive video-assisted thyroidectomy: Multi-institutional experience. *World J Surg* 2002;26:pp.972-5.
9. Miccoli P, Berti P, Raffaelli M, Conte M, Materazzi G, Galleri D. Minimally invasive video-assisted thyroidectomy. *Am J Surg* 2001;181:pp.567-70.
10. Palazzo FF, Sebag F, Henry JF. Endocrine surgical technique: Endoscopic thyroidectomy via the lateral approach. *Surg Endosc* 2006;20:pp.339-42.
11. Samy A.K., Ridgway D. (2010), "Minimally invasive, video-assisted thyroidectomy: first experience from the United Kingdom", *Ann R coll surg Engl*, 92, pp.379-384.
12. Yeung GH. Endoscopic thyroid surgery today: A diversity of surgical strategies. *Thyroid* 2002;12:pp.703-6.
13. Puntambekar Shailesh P; Endoscopic thyroidectomy: Our technique, *Journal of minimal access surgery*; 2007, volume 3, pp. 91-97.
14. Zhang W., Jiang J.G. (2010), "the minimally invasive effect of breast approach endoscopic thyroidectomy: an expert's experience", *Clinical developmental immunology*, Art ID 459143/5.