OUR EXPERIENCES OF ENDOSCOPIC THYROIDECTOMY VIA BREAST- AXILLARY APPROACH FOR NODULAR THYROID GOITER AT HUE CENTRAL HOSPITAL

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ABSTRACT

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

Objective: *To describe endoscopic technique and to evaluate efficacy of endoscopic thyroidectomy via a breast- axillary approach with CO_2 insufflation.*

Patients and method: *Patients were diagnosed with 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. 108 cases (100 females – 8 males), mean age was 28.2 (range 15 to 53); 98 solitary nodular goiter (90.8%), 9 multinodular at one lobe (8.3%) and 1 multinodular at two lobes (0.9%) underwent partial lobectomy (89.8%) or total lobectomy (9.3%) and near-total thyroidectomy (0.9%). The preoperative diagnosis of thyroid tumors was established using physical examination, fine-needle aspiration cytology, USG neck and FT4, TSH tests. The procedure is performed with the patient at 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_2). Thyroid nodule is exposed by dissection through along the SCM anterior border and removed by Harmonic scapel. There were severe 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.*

Key words: *endoscopic thyroidectomy, breast- axillary approach, CO_2 insufflation*

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 being developied

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and plays an important role. In Vietnam, use of endoscopic surgery for goiter diseases might be feasible and it was a great potential to adapt the 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.

Objective: To describe endoscopic technique and to evaluate the efficacy of endoscopic thyroidectomy via a breast- axillary approach with CO_2 insufflation.

II. MATERIALS AND METHODS

2.1. Patients: The patients underwent endoscopic thyroidectomy from October 2012 to August 2016 at Hue Center Hospital.

Criteria to select patients:

- Nodular thyroid goiter was diagnosed by with physical examination and thyroid ultrasonography.
- Number of nodules: Solitary nodular goiter or multinodular goiter.
- FNA result was benign.
- FT_4, TSH tests shown normal results.

Criteria for exclusion:

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

2.2. Method: prospective study.

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_2). 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.

III. RESULTS

From 10/2012 to 8/2016, we performed 108 cases of endoscopic thyroidectomy via breast-axillary approach.

Table 3.1. Ages

Age group	n = 108	%
<20	15	13.9
20-29	56	51.9
30-39	20	18.5
40-49	16	14.8
≥50	1	0.9
Means	**28,2± 9.4**	

Gender

Male / Female ratio = 8 / 100

Table 3.2. Thyroid nodular characteristics

Characteristics	No. of patients
Site of nodules	
Right lobe/ Left lobe/ Isthmus/ both lobes	60/ 46/ 1/ 1
Number of nodules	
Solitary nodular goiter/ Multinodular goiter	98/ 10
Tumor size (cm)	2.4±0.7 (1.1-4.2)
FNA	
Cyst/ Follicular adenoma	69 / 39
Characteristics of thyroid ultrasound	
Microcalcification/ Angiogenesis/ both factors	3 / 6 / 7

Table 3.3. Surgical outcome

Surgical outcome	No. of patients
Surgical procedure Partial lobectomy/ Lobectomy/ Near- totalthyroidectomy	97 / 10 / 1
Mean operating time (minute)	70 ± 34.6 (40 - 150)
Complications during surgery Skin burn/ Subcutaneous emphysema/ Others	4 / 2 / 0
Postoperative complications Neck paresthesia / Hoarseness/ Hypocalcemia	15 / 1 / 0
Hospitalizedtime	6.2 ± 1.5 (3 - 9)
Histopathology Benign/ Papillary carcinoma/ Follicular carcinoma	102 / 5 / 1

Table 3.4. Relation betweenthe characteristics of thyroid ultrasound and tumor histopathology

Characteristics On ultrasound / Histopathology	Microcalcification	Angiogenesis	Both factors	Featureless	n
Benign	2	6	2	92	102
Carcinoma	1	0	5	0	6
N	3	6	7	92	108

Table 3.5. Follow-up after surgery (3 months)

Characteristics	No. of patients
Thyroid Humped / Normal Euthyroidism/ Hypothyroidism	 0 / 108 08 / 01
Cosmesis Excellent/ Fairly	 97 / 11
Neck paresthesia Less/ Decreases	 105 / 3

IV. DISCUSSION

Age

In our study, the average age of the patients was 28.2 (range, 20-29 years, 51.9 %) 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 make them feel less confident in communication.

The development of endoscopic thyroidectomy has made this technique been an optimal choice for patients in this age with thyroid tumor. In comparison with results from some foreign studies,

the age forendoscopic thyroidectomy is even older, for example, 48 in Zhang W's study while a 77 year-old patient was operated in Samy AK. The differencies are probably caused by various need for sense of beauty and culture. In this study, there was no patient after 60 years. The oldest one in endo group was 53. This doesnot present a limitation in indication but comes from individual choice.

Gender

It's similar to Godey B's study, in which most of patients were female, when the ratio of female: male is 100/8 (female 92.6%). 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 108 patients, Nodules were located 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, there was on left side, the other one is closed to isthmus and deviated to the right. We could make the removement of the modules on both sides by inserting a trocar in one side only.

We performed endoscopic thyroidectomy for both solitary nodule thyroid and maintain thyroid, the nodule size on ultrasound range 1.1-4.2cm. However, we believe that this technique can indicate 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 maintain better observation 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_2). One patient had subcutaneous emphysema but it was mild and disappeared two days later.

The patients were in less postoperative pain, returned to regular activities earlier 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 complications such as: sticking neck, bad scar... One patient is still has less paresthesia on the neck but it was disappeared then. All patients are satisfied with the beautiful results.

V. CONCLUSION

Characteristics of 108 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, 92.6 %.
- Mean age was 28.2 (15-53).
- Nodules were on various positions on the thyroid gland, it may be solitary nodular goiter or multinodular goiter.
- Mean operating time was 70 ± 34.6 minutes, (40-150 minutes).
- There were no important postoperative complications.
- Histopathological results were follicular adenomas for 94.4%, 5.6% 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.

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