Endoscopic Thyroidectomy : Current Status and Technique

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Thai – Vietnam Laparoscopic - Endoscopic Surgery for ASEAN People
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Standard Approach For Thyroid Surgery
CURRENT STATUS OF MINIMAL INVASIVE THYROID SURGERY

Retrosternal Thyroid

- Neck incision
- Sternal splitting incision

Thyroid gland in neck

Thyroid gland in retrosternal
Endoscopic subtotal parathyroidectomy in patients with hyperparathyroidism.

Gagner M, et al.
Br J Surg 1996; 83: 875

Endoscopic neck surgery by the axillary approach.

Ikeda Y, et al.
Report 45 cases of Lobectomy & Isthmusectomy

Port placements & Approaches of the Common Techniques

1. CERVICAL APPROACH
2. EXTRA-CERVICAL APPROACH
1. CERVICAL APPROACH

CERVICAL APPROACH
(Miccoli’s Technique)

Prof. Quan-Yang Duh, U. of California, San Francisco

CERVICAL APPROACH

Picture 1: Total endoscopic thyroid lobectomy using the lateral approach

Picture 2: Video-assisted thyroid surgery with central skin incision

Lang BH, The Hong Kong Medical Diary; 14 : 7: 2009 . 9-11.
2. EXTRA - CERVICAL APPROACH

ANTERIOR CHEST & BREAST APPROACHES

PURE AXILLARY APPROACH

3 Ports
5 mm
30 mm purse-string, 12 mm port
5 mm

4 Ports
5 mm
30 mm purse-string, 12 mm port
5 mm

Single port / Single Incision
30 mm


COMBINE AXILLARY APPROACH

12 mm
12 mm
tumour side
12 mm

10 mm
10 mm

10 mm
10 mm
10 mm

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<th>Study</th>
<th>n</th>
<th>Level</th>
<th>Approach</th>
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<tr>
<td>Gagner et al. [3]</td>
<td>18</td>
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<td>Cougand et al. [4]</td>
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<td>III-IV</td>
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<td>Axillary</td>
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**SPACING TECHNIQUES**

1. **Total Video - Endoscopic Thyroidectomy.**
   (CO₂ insufflation)

2. **Minimally Invasive Video - Assisted Thyroidectomy.** (MIVAT)
   (Gasless technique)
Rajavithi’s Gas Technique

Gasless Technique

Picture 4: Gasless trans-axillary thyroidectomy

Lang BHH, The Hong Kong Medical Diary; 14 : 7: 2009 . 9-11.
Rajavithi’s Gasless Technique

Axillary Approach Technique
O.R. Layout

- Anesth
- Assist. 2
- Assist. 1
- Nurse
- LCD display

Position & Incision

- Right Axilla Approach
- Left Axilla Single Port
- Bilateral Axilla Approach
- Left Axilla Approach
Regular Rigid laparoscope
(5 mm. or 10 mm / 0° or 30°)
Flexible laparoscope
(10 mm. or 5 mm.)

Set $\text{CO}_2$ pressure at $\leq 4$ - 6 mm-Hg
Ultrasonically activated scalpel
(Johnson & Johnson, U.S.A.)
Right Lobectomy: Axillary Approach

Remove the resected specimen
Immediate Post-op

First Day Post-op

Rt. Lobectomy & Isthmusectomy

Lt. Lobectomy & Rt. Subtotal Lobectomy (MNG)
First Week Post-op after Lobectomy

First Week Post-op after Total Thyroidectomy by Both Axilla Approach
## Rajavithi Hospital Experience
(April 2001 – Feb 2014)

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<th>TECHNIQUES</th>
<th>n (cases)</th>
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<tr>
<td>- Lobectomy &amp; isthmusectomy</td>
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<tr>
<td>- Lobectomy &amp; subtotal lobectomy</td>
<td>25</td>
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<tr>
<td>- Total Thyroidectomy</td>
<td>23</td>
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<tr>
<td><strong>2. Single Incision / Single Port Technique:</strong></td>
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<tr>
<td>2.1 Closed Technique (Gas):</td>
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<td>- Lobectomy &amp; isthmusectomy</td>
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<td>2.2 Gasless Technique:</td>
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<td>- Lobectomy &amp; isthmusectomy</td>
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Total 874

## FUTURE DIRECTIONS OF MINIMAL INVASIVE THYROID SURGERY
**Future Directions:**

**Approaches:**
- Both Cervical & Extracervical Ports
- Single Incision & Single Port

**Indications:**
- Include benign, Grave’s and malignant diseases
- Usage for Neck node dissection

**Robotic Neck Surgery:**
- Mostly from Korea

Grave’s Disease
Hartley-Dunhill’s Operation for “Grave’s Disease”
(Rt. Lobectomy & Lt. Subtotal Lobectomy)

Total Thyroidectomy for “Grave’s Disease”
Robotic Thyroidectomy

Current status of robotic thyroidectomy and neck dissection using a gasless transaxillary approach.

To describe refinements in surgical techniques using robotic thyroidectomy and robotic modified radical neck dissection (MRND), and to discuss the impact of such developments on thyroid cancer management, from oncological, functional, and surgical viewpoints. From 2009 to present, 23 reports, including three multicenter trials, on the conduct of robotic thyroid surgery via a gasless transaxillary approach appeared. Twenty-two studies discussed robotic thyroidectomy, whereas one described robotic MRND. These clinical studies showed that robotic surgery afforded identical or superior levels of surgical radicality and oncologic safety compared to use of conventional open or endoscopic surgery in patients with thyroid carcinomas. In such patients, the clinical benefits of robotic thyroidectomy include excellent cosmetic results, reduced pain, improvement in swallowing function, and low morbidity rates. From the viewpoint of surgeons, robotic surgery shortens the surgical learning curve, and causes less musculoskeletal discomfort compared with the conduct of open or endoscopic surgery. The accumulated evidence to date suggests that robotic thyroidectomy and MRND can benefit both patients and surgeons.

Single Incision/Port

4 PORTS AXILLARY APPROACH

5 mm
30 mm purse-string, 12 mm port
5 mm
5 mm

Asian J Surg 2003
1 PORT AXILLARY APPROACH

30 mm

RIGHT Lobectomy: Single Incision Gas Technique

Glove Port
RIGHT Lobectomy: Single Incision Gasless Technique

Single Incision Technique

Right Lobectomy | Left Lobectomy

First day after surgery
Single Incision Technique

1 week

After surgery

1 year

Cancer Surgery
Is a thyroid follicular neoplasm a good indication for endoscopic surgery?


Endoscopic thyroidectomy is a safe and feasible alternative as compared with conventional open thyroidectomy in patients with a small thyroid cancer or a benign thyroid tumor. However, despite the many advantages of endoscopic surgery, it can result in unexpected complications. Recently, the authors experienced a case of follicular thyroid cancer recurrence that developed around the operative bed and along the port insertion site after endoscopic thyroidectomy for a large follicular neoplasm. The authors suggest that a smaller follicular neoplasm is a good indication for endoscopic thyroidectomy, but that a large follicular neoplasm should not be viewed as indicators for endoscopic surgery, because of the possibility of malignancy and rupture during manipulation.

Tract recurrence of a follicular thyroid neoplasm following transaxillary endoscopic thyroidectomy.

Beninato T, Kleiman DA, Scognamiglio T, Fahey TJ, Zarnegar R - Thyroid - Feb 2012; 22(2): 214-7

Endoscopic thyroidectomy is gaining popularity, particularly in Asian countries, as an alternative to conventional cervical thyroidectomy. Multiple large case series have been published that confirm the feasibility and safety of this procedure compared to conventional methods. However, no data are available that demonstrate long-term oncologic outcomes or complications. PATIENT FINDINGS: A patient who underwent transaxillary gas insufflation thyroidectomy for a follicular neoplasm presented to the authors with a mass along the operative tract 31 months after her first surgery. The mass was found to be a recurrence of the thyroid neoplasm. Since this is a relatively new procedure, the potential complications differ from those of conventional cervical thyroidectomy. Further studies are needed to determine size limitations on nodules considered for endoscopic resection. When performing these procedures, care should be taken to ensure that the specimen is removed entirely and in one piece. Long-term outcomes data for endoscopic thyroidectomy are warranted prior to this becoming an acceptable standard of care for thyroid surgery.
Endoscopic minimally invasive thyroidectomy (eMIT): a prospective proof-of-concept study in humans.

NOTES thyroidectomy eliminates the skin incision.

- 4 total thyroidectomy
- 4 partial thyroidectomy.

**Procedures:** 10-mm, sublingual mucosal incisions.

- 3 converted to standard open approach,
- 2 developed RLN injury (1 permanent),
- 6 had transient mental nerve injury.

**Conclusion:** This proof-of-concept study demonstrated the feasibility of pure NOTES thyroidectomy.

Trans-Oral Video-Assisted Neck Surgery (TOVANS)
Gasless Pre-Mandible - single incision surgery in the mouth.

An L-shaped pole to lift up a retracting wire was fixed above the patient's neck.
Surgeons approach the thyroid gland from inside of the mouth.
Make a 2.5 cm incision at the vestibulum under the lower lip.
From the vestibulum oris to the anterior cervical region, a subplatismal tunnel is created.

Trans-oral approach – Closure
Incision in the mouth were closed with absorbable sutures. A slender drainage tube was placed beside the trachea. There is no surgical scar except small pin-point scar of slender tube. However sensory disorder around the chin have been persisted more than 6 months.
SUMMARY

• What ever the technique or approach
  • The first thing to concern is the benefit of our patients.
SUMMARY

• What ever the technique or approach
  • The first thing to concern is the benefit of our patients.
  • As a surgeons, we should offer the “safe and effective surgery” to our patient.
• Depend on our knowledges and skills.
THANK YOU FOR YOUR ATTENTION