



# Uniport subxiphoid VATS approach

Dr. NGO GIA KHANH  
BACH MAI hospital





Bach Mai Hospital was established in 1911  
The largest hospital in the Northern of Vietnam  
with 3000 patients beds and about 10,000 outpatients  
per day

Department of Thoracic Surgery established since 2018  
50 patients beds  
All the surgeries were performed starting with  
uniportal VATS technique in 2019



# Uniport subxiphoid VATS approach in Bach Mai hospital

- Numbers: 30 cases/ 2 years (2022 – 2023)

Procedures		n
Lobectomy	Right upper lobe	3
	Left upper lobe	2
	Time operation	193 ± 45 (min)
	Conversion	1
	Complication	1
Thymectomy		21
	Time operation	135 ± 32 (min)
	Conversion	0
	complication	0
Bilateral bullectomy		2
Pericardiostomy		1
Bilateral Hemorrhagic Pleural		1
Total		30

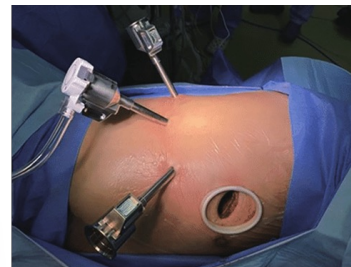
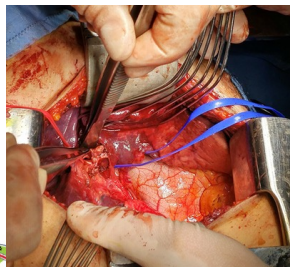


# VATS - lateral video-assisted thoracoscopic surgery (L-VATS) - Standard Technique

- VATS 4–6 cm incision made between the ribs, no rib spreading, procedure performed under control of VATS camera.

The Role of VATS in Lung Cancer Surgery: Current Status and Prospects for Development.  
Dariusz Dziezic, Tadeusz Orłowski. Minim Invasive Surg. 2015

- VATS has advantages: a faster recovery, shorter hospital stays, fewer complications, good long term result compare with thoracotomy...
- Video-assisted thoracoscopic surgery as the gold standard



Trước 1990

1990 - 2010

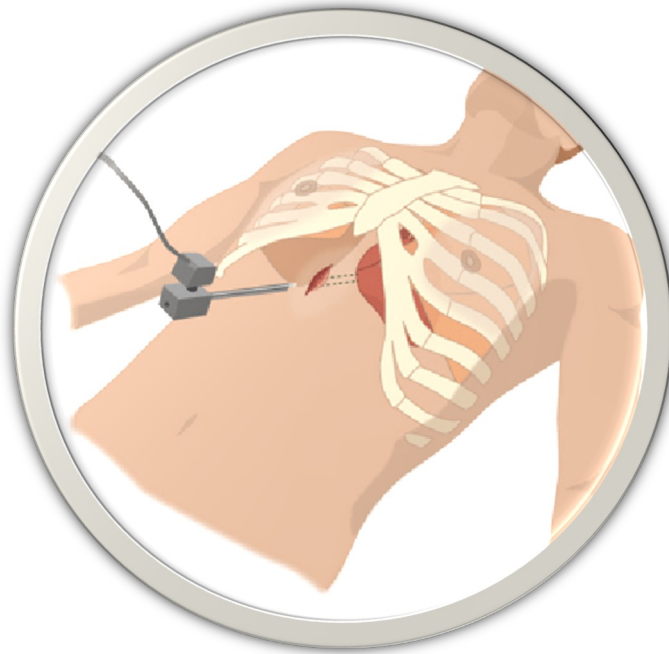
2011





- It is not possible to observe contralateral phrenic nerve
- Difficult to reach thymic horn
- Chronic pain after VATS due to intercostal nerve injury (10%)
- Approaching bilateral lesions (metastases, bullae...)???

why  
not



Subxiphoid uniportal video-assisted thoracoscopic surgery (S-UVATS)



# The first report subxiphoid uniportal VATS

2012

## Single-Port Thymectomy Through an Infrasternal Approach

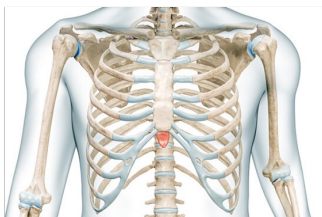
Takashi Suda, MD, Hiroshi Sugimura, MD, Daisuke Tochii, MD, Mariko Kihara, MD, and Yoshinobu Hattori, MD

Division of Thoracic Surgery, Fujita Health University School of Medicine, Toyoake, Aichi, Japan

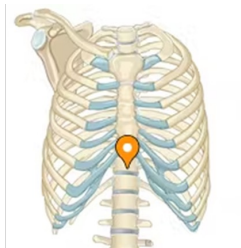
We report a surgical procedure in which a port and devices designed for single-incision endoscopic surgery are employed for thymectomy through an infrasternal approach. As this single-port thymectomy procedure can be performed through a single 3.5-cm incision in the abdominal region usually concealed under clothes, it is esthetically excellent and is among the least invasive

thymectomy procedures because no sternal incision is applied and no intercostal nerve is injured. Investigation of the safety of this procedure and long-term therapeutic outcomes for myasthenia gravis and anterior mediastinal tumors is necessary.

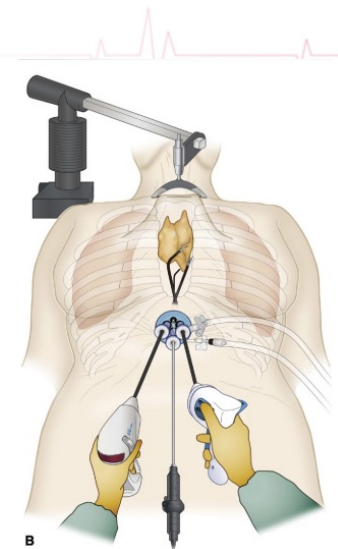
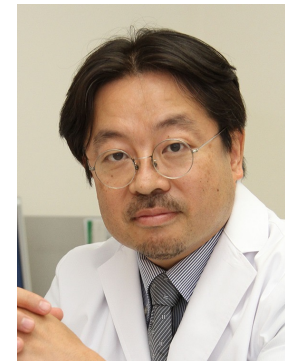
(Ann Thorac Surg 2012;93:334-6)  
© 2012 by The Society of Thoracic Surgeons



Xiphoid process: Mũi mũi kiếm



Infrasternal: Vùng dưới xương ức



Google

Subxiphoid uniportal video-assisted thoracoscopic surgery

Hình ảnh

Video

Mua sắm

Tin tức

Sách

Maps

Chuyến bay

Tài chính

Khoảng 19.500 kết quả (0,45 giây)

### Bài viết học thuật cho Subxiphoid uniportal video-assisted thoracoscopic surgery

... uniportal video-assisted thoracoscopic surgery (VATS) ... - Song - Trích dẫn 68 bài viết

Subxiphoid uniportal video-assisted thoracoscopic ... - Suda - Trích dẫn 20 bài viết



National Institutes of Health (.gov)  
<https://www.ncbi.nlm.nih.gov/articles>

### Subxiphoid uniportal video-assisted thoracoscopic surgery ...

viết bởi N Song · 2016 · Trích dẫn 68 bài viết — The **subxiphoid uniportal VATS** lobectomy is safe and reliable, which is appropriate for bilateral lung diseases, and significantly relieves...

[Abstract](#) · [Introduction](#) · [Methods](#) · [Discussion](#)







# Indications of Subxiphoid VATS

- Thymectomy
- Anterior mediastinal surgery
- Bilateral pulmonary diseases: Bilateral bullae, pulmonary metastases
- Pulmonary surgery: wedge resection, major pulmonary resection: lobectomy or segmentectomy





# Contraindications for subxiphoid VATS surgery

- Absolute

- Significant cardiomegaly

- Severe arrhythmia

- Impaired left ventricular function

- Relative

- Body mass index >30 kg/m<sup>2</sup>

- Age >80 years

- More complex and prolonged surgery



# Advantages and disadvantages of the subxiphoid-VATS thymectomy

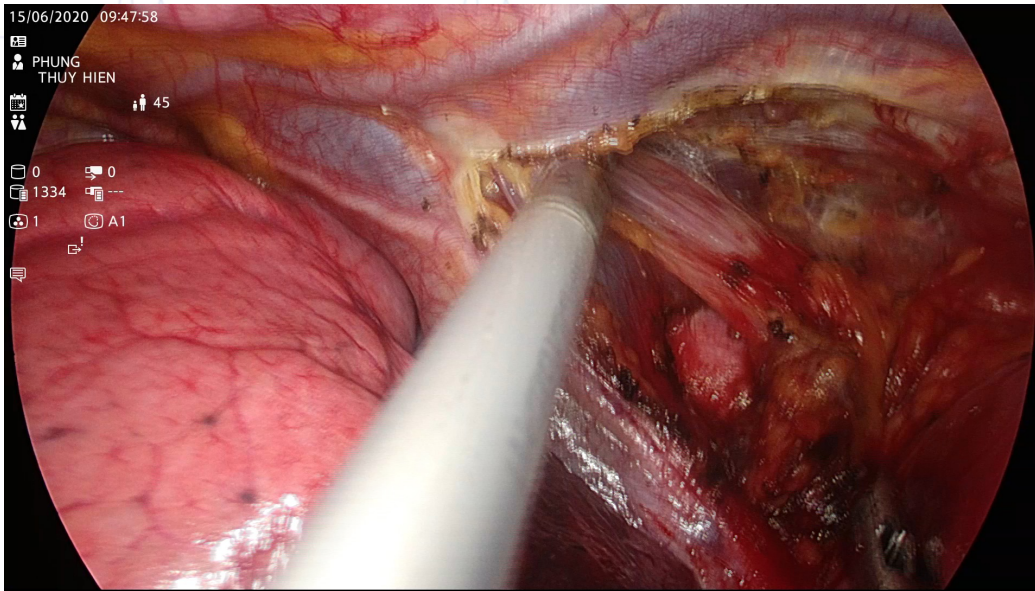
## Advantages

1. It provides **excellent views** of the anterior mediastinum includes thymic horn, innominate vein, bilateral phrenic nerves
2. Visualization and dissection up to the thyroid possible, which **enables complete removal of the thymus**
3. **Reduced postoperative** pain and chest wall paraesthesia due to preservation of the intercostal nerver
4. **Perfect cosmetic** result with no visible scar in the neck

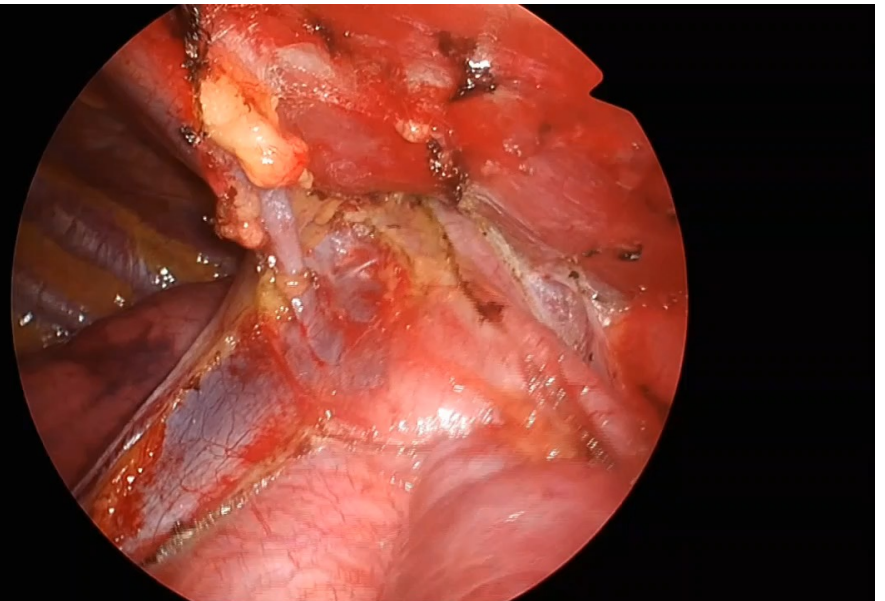
## Disadvantages

1. Not applicable in **advanced thymomas**
2. decreased maneuverability of instruments
3. Hemothorax or pneumothorax after surgery **affects both sides**





Lateral uniport VATS



Subxiphoid uniport VATS



# Clinical application of uniport subxiphoid VATS approach Thymectomy/Anterior mediastinal surgery

> Eur J Cardiothorac Surg. 2020 Aug 1;58(Suppl\_1):i44-i49. doi: 10.1093/ejcts/ezaa

European Journal of Cardio-Thoracic Surgery 58 (2020) i44–i49  
doi:10.1093/ejcts/ezaa183 Advance Access publication 4 July 2020

ORIGINAL ARTICLE

ogus Kalp Damar Cerrahisi Derg. 2023 Apr 28;31(2):239-248.  
06/tgkdc.dergisi.2023.23455. eCollection 2023 Apr.

## Early outcomes in 147 consecutive cases of subxiphoid single-port thymectomy and evaluation of learning curves

Takashi Suda<sup>1</sup>, Hisato Ishizawa<sup>1</sup>, Hiromitsu Nagano<sup>1</sup>, Takahiro Negi<sup>1</sup>, Hiroshi Kawai<sup>1</sup>, Daisuke Tochii<sup>1</sup>, Sachiko Tochii<sup>1</sup>, Yasushi Hoshikawa<sup>1</sup>

Affiliations + expand

PMID: 32620967 DOI: 10.1093/ejcts/ezaa183

### Abstract

**Objectives:** The aim of the present study was to examine some initial results and learn from surgical approaches for thymectomy, we employ median sternotomy, trans-intercostal approach thymectomy via the side chest, SSPT (Fig. 1), subxiphoid dual-port thymectomy (SSPT with an additional 5-mm port on the right fifth intercostal space) [6] and subxiphoid robotic thymectomy (robot-assisted thymectomy) [7].

**Methods:** From March 2011 to August 2019, a total of 203 patients underwent thymectomy for anterior mediastinal tumours or myasthenia gravis at Fujita Health University Hospital. Of 147 patients who had undergone SSPT were selected as participants for the present study.

**Results:** Of the 147 cases, transition to a different approach was required in three (2.0%) cases. One (0.7%) case transitioned to median sternotomy, whereas one (0.7%) case transitioned to chest trans-intercostal approach. The two cases that transitioned to median sternotomy were for different operators after they began performing this technique. There were no complications and no deaths. The operation time cumulative summation analysis revealed that the curves descended from the 38th case. In the 83 cases handled by the first surgeon, the learning curves descended from the 31st case.

**Conclusions:** SSPT is a safe modality with few complications and no associated cases reported. Operators are required to experience 31–38 cases until the operation time is stabilized. Special care should be exercised to prevent vascular damage in the vicinity of the innominate veins during the early stages after SSPT introduction.

**Keywords:** Minimal invasive surgery; Single port; Subxiphoid; Thymectomy; Uniport thoracic surgery.

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## Early outcomes in 147 consecutive cases of subxiphoid single-port thymectomy and evaluation of learning curves

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intercostal approach thymectomy via the side chest, SSPT (Fig. 1), subxiphoid dual-port thymectomy (SSPT with an additional 5-mm port on the right fifth intercostal space) [6] and subxiphoid robotic thymectomy (robot-assisted thymectomy) [7]. With regard to the selection of surgical approach, SSPT was applied to cases without pericardial/vascular infiltration and for those wherein suture was deemed unnecessary. When a contralaterally asymmetrical tumour renders it difficult to locate the phrenic nerve or when suturing the pericardium and blood vessels is deemed necessary, subxiphoid dual-port thymectomy or subxiphoid robotic thymectomy is applied. For cases with apparent vascular infiltration, median sternotomy is used. In cases wherein tumour infiltration into the lung was observed, we performed combined resection of the lung from one wound beneath the xiphoid process if it was confirmed that stapler insertion via the subxiphoid wound, and lung wedge resection was possible. Typically, we do not currently use the intracervical and lateral intercostal approaches because the subxiphoid approach facilitates an adequate view of the bilateral phrenic nerves and the entire thymus.

## Anterior mediastinal tumor surgery applying single-port thoracoscopy using the subxiphoid approach

Bindong Xu<sup>1</sup>, Qiang Zhang<sup>1</sup>, Pengfei Chen<sup>1</sup>, Maoen Cai<sup>1</sup>, Jinmei Yao<sup>1</sup>

+ expand

PMCID: PMC10357856 DOI: 10.5606/tgkdc.dergisi.2023.23455

article

### Abstract

**Objective:** This study aims to investigate the effectiveness of application of single-port thoracoscopy using the subxiphoid approach in anterior mediastinal tumor surgery.

**Methods:** Between June 2014 and June 2016, a total of 108 patients (59 males, 49 females; mean age: 62.5 years; range, 45 to 79 years) with anterior mediastinal tumors were randomized into subxiphoid (experimental) or right chest (control) groups. Single-port thoracoscopy using the subxiphoid approach was performed in the subxiphoid group, while thoracoscopy using the right chest approach was performed in the control group. Preand postoperative pain stress indicators, Visual Analog Scale scores, quality of life scores, postoperative tumor recurrence, and five-year survival rates were compared between the groups.

There were no mortality or serious complications in either group. The mean Visual Analog Scale scores on postoperative Days 1 and 7 were 6.5±0.8 and 2.9±0.8 in the subxiphoid group, respectively, compared to 7.2±0.8 and 3.4±0.8 in the control group (p<0.05 for all), respectively. The quality of life scores on postoperative Days 1 and 7 were 81.5±5.0 and 79.3±7.7, respectively, in the subxiphoid group compared to 72.4±4.3 and 71.3±4.8 in the control group, respectively (p<0.05 for all). Postoperative pain and pain mediator indexes were lower in the subxiphoid group (p<0.05 for all). Postoperative tumor recurrence rates were 3.70% and 20.37% in the subxiphoid and control groups, respectively (p=0.008). The five-year survival rates were 85.2% and 63.0% in the subxiphoid and control groups, respectively (p=0.008).

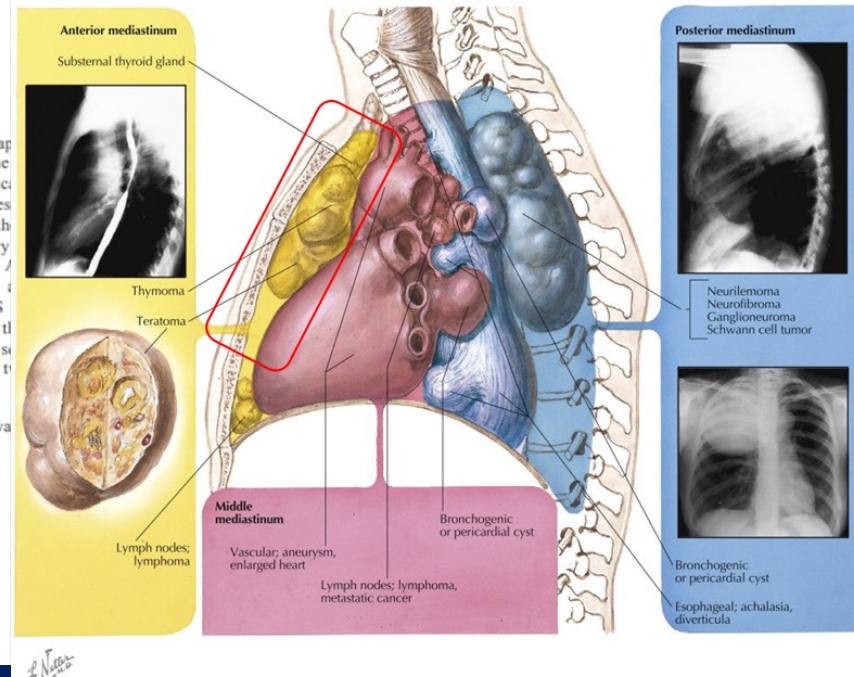
**Conclusion:** Single-port thoracoscopy using the subxiphoid approach is technically feasible, safe, and effective in performing surgery for anterior mediastinal tumors with an intact capsule and a tumor diameter of ≤5 cm.

# Subxiphoid uniportal approach the future of VATS



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## rior Analysis

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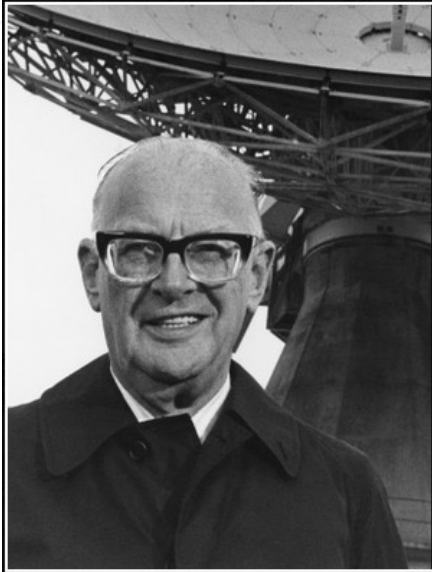
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: -1.46 days, 95%  
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Subxiphoid approach is a feasible alternative approach and even can be a better option for anterior mediastinal surgery





New ideas pass through three periods: 1) It can't be done. 2) It probably can be done, but it's not worth doing. 3) I knew it was a good idea all along!

— Arthur C. Clarke —



For actually the Earth had no roads to begin with, but when many men pass one way, a road is made

Lu- Xu






# Clinical application of uniport subxiphoid VATS approach

## How to do?



- Practice lateral uniportal VATS
- A good assistant
- Improving surgical instruments: Instruments must be longer, thin and better angled
- begin with minor surgeries. After gaining more confidence and experience, moving to more complex procedures.



whatever easy comes





# Nothing Comes Easy Unplugged

Nothing comes easy



Thank You!

