VATS - How I do it

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Relevant Financial Relationship Disclosure Statement

In Compliance with UEMS/EACCME Guidelines, potential conflicts of interest or support relevant to the above presentation that might cause a bias are declared as follows:

- Conflicts of interest to report:
- Consultant for Covidien, Clinical Immersions and mentorships.
- Travel grants Takeda
Rigshospitalet Copenhagen
1192 major general thoracic procedures
- 266 Thoracotomies/sternotomies
- 809 VATS procedures
  - 231 VATS lobectomies
  - 11 VATS segmentectomies
- 117 Oesophageal resections

2463 endoscopic procedures

75% of all lung and pleura operations were performed by VATS
VATS lobectomies Copenhagen 2013

February 26th. 2013: 1200 VATS lobectomies
A standardized anterior approach

VATS Endosuite
Instruments

- Curved thoracoscopic instruments
  - Babcock, Duvall and other tissue graspers
  - Suction
  - Isolated for coagulation
- Long traditional instruments
  - Peanuts
  - Vessel clamps
- A hook
Contraindications?

Pushing the boundaries...

- T3 ? or T4 tumour
- Tumour > 7-8 ? cm
- (Tumour visible by bronchoscopy)
- (Bronchial Sleeve resection/pneumonectomy)
- Vascular Sleeve resection
Advanced cases

- Positive N1 lymph nodes
- Adhesions
- Former thoracic surgery on the same side
- Former CABG with LIMA
- Former TB
- Obese patients
- Severe emphysema
- Severe co-morbidity
- Downstaged tumours
- Former radiation
- Single N2
Right upper lobe

1. The vein
2. The truncus sup.
3. The fissure to the middle lobe
4. The rest of the arterial branches
5. The bronchus
6. Fissure to lower lobe
The hilar pleura
Right upper lobe vein
Anterior fissure
Bronchus
Posterior fissure
Superior mediastinum
Airtest
Sup. mediastinum on the right side after nodal removal

Trachea

Aorta

V. Cava sup.
Subcarinal node, right side
Multimodal analgesic treatment in video-assisted thoracic surgery lobectomy using an intraoperative intercostal catheter.

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Abstract

OBJECTIVES: No golden standard for analgesia in video-assisted thoracic surgery (VATS) lobectomy exists. A simple multimodal approach using an intercostal catheter (ICC) may be of benefit since acute post-operative pain following VATS lobectomy primarily originates from the chest drain area.

METHODS: Prospective observational cohort. Forty-eight consecutive patients received a standardized regimen consisting of paracetamol, non-steroidal anti-inflammatory drug and gabapentin. Further, surgeons performed a single-shot paravertebral block (PVB) at five levels (15 ml of 0.5% bupivacaine) and inserted an ICC at the drain site level for continuous delivery of 6 ml of 0.25% bupivacaine h(-1). Pain scores at rest, mobilization and with the extended arms were followed until discharge or for 4 days.

RESULTS: Forty-eight patients, mean age 64 years (CI: 61-68), were included. The mean time for the PVB and ICC placement was 5 min (CI: 4.7-5.9). The mean pain score at rest using a numerical rating scale (NRS, 0-10) was <3 for 1-16 h and decreased from 4.7 to 1.7 (NRS day 1-4: getting out of bed). The ICC was removed with the drain in 48/73/92% on day 1/2/3 after surgery. The median day of discharge was 3 (interquartile range 2-4) with >85% of patients reporting satisfactory or very satisfactory pain treatment all days.

CONCLUSIONS: Acute pain after VATS lobectomy may be adequately controlled using a multimodal non-opioid regime including PVB and an ICC. The low pain scores and reduced time used inserting the ICC may present an alternative to continuous epidural analgesia or conventional PVB.
Chest drain strategy

- Routinely only one chest drain
- Chest drain removed when
  1) Serous output < 500 ml
  2) Airleak < 20 ml/min in > 12 hours
- Rounds every day by operating surgeon
Air leak – Fissureless technique
Vessel division without stapler
Suturing the fissure
Suturing the artery
VATS lobectomy 2011
Surgical data

- N=224
- Conversion rate: 2.1%
- Chest drain time: 1 (1-30) days
- In-hospital stay: 3 (1-38) days
- Operating time: 100 (40-210) min.
- Bleeding: 50 (5-1300) ml.
VATS lobectomy 2011

Complications

- Prolonged air leak > 7 days: 10.7%
- Pneumonia: 5.3%
- Atrial fibrillation: 3.6%
- Empyema: 2.7%
- Chylothorax: 0.9%
- Myocardial infarction: 0.4%
- Recurrent nerve paralysis: 0.4%
- Pseudo-obstruction: 0.4%
- Redo bleeding: 2.2%
- Transfer to another unit: 1.8%
- Readmission rate: 10.4%
- 30 day mortality: 0%
Lung Cancer Screening and Video-Assisted Thoracic Surgery

René Horsleben Petersen, MD, * Henrik Jessen Hansen, MD, * Asger Ørksen, MD, DrMSct, †
and Jesper Holst Pedersen, MD, DrMSct *

<table>
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<tr>
<th>Lung Cancer Stage</th>
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<td>VATS rate</td>
<td>84%</td>
<td>50%</td>
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DLCST, Danish Lung Cancer Screening Trial; NSCLC, non-small-cell lung cancer; SCLC, small-cell lung cancer; VATS, Video-Assisted Thoracic Surgery.
Conclusions: Lung Cancer CT Screening seems to facilitate the use of Video Assisted Thoracic Surgery (VATS) in the treatment of lung cancer with an 84% VATS rate (95% confidence interval: 67%-93%) in our data. Furthermore all benign nodules (12%) could be removed by VATS.

Learning thoracoscopic lobectomy

- With careful selection of patients, VATS lobectomy can be taught safely in a surgical institution experienced in VATS lobectomies.
- The surgical outcome for the training consultant was acceptable.
- He did spend more time in the OR and that should be taken into account.

No extensive experience in open procedures is needed to learn lobectomy by video-assisted thoracic surgery

Lars Konge, René Horsleben Petersen, Henrik Jessen Hansen and Charlotte Ringsted

Abstract

OBJECTIVES: Lobectomies done by video-assisted thoracic surgery (VATS) result in fewer complications and less pain and save total costs compared with the traditional approach. However, the majority of procedures are still performed via open thoracotomies, because VATS lobectomy is considered difficult to learn, requiring experience in open surgery, and causing complications in the initial phase of the learning curve. The aim of this study was to describe a training model appreciating patient safety during training and to explore the initial learning curve for a trainee rather inexperienced in open surgery.

METHODS: A trainee who had performed 14 lobectomies by thoracotomy was enrolled in a training programme at a high-volume VATS centre. The training model included courses and simulations followed by the selection of suitable patients operated on during close expert supervision. Data regarding time, a variety of quality indicators and complications were collected prospectively and compared with experts' performance.

RESULTS: Over 12 months, 29 of 214 VATS lobectomies were performed by the trainee. Twice, the supervisor had to finish the procedure due to technical difficulties. None of the operations were converted to open thoracotomy. Compared with experts, the trainee operated significantly slower [median 120 (range 74–160) vs 100 (range 42–255) min, P = 0.04]; had similar perioperative bleeding [median 100 (range 10–500) vs 50 (range 5–2500) ml, P = 0.79]; had earlier chest tube removal [median 1 (range 1–6) vs 2 (range 1–32) postoperative days, P < 0.001]; and reduced hospital stay [median 3 (range 1–10) vs 4 (range 1–41) days, P < 0.001]. Twenty-three (79%) patients had no complications, while 2 had atrial fibrillation. Pneumothorax after chest tube removal, incisional infection, prolonged pain and need for pleuracentesis were each seen once.

CONCLUSIONS: With thorough preparation of trainees and training on selected patients under close supervision, the learning curve can be overcome with good results even if the trainee has limited prior experience in open surgery.
Preparation for VATS Lobectomy

- 100 VATS minor
- Shift from a muscle sparring postero-lateral to a muscle sparring anterior thoracotomy
- Attend courses in VATS lobectomy
- Visit clinics with experience in VATS lobectomy
- Choose one method and stick to it
- Stepwise introduction

# VATS in Denmark 2011

## 8.5.7 Table Torakotomitype

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5 year survival
22nd European Conference on General Thoracic Surgery

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Copenhagen, Denmark
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