SINGLE-PORT VATS
Advanced cases

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Masters of Minimally Invasive Thoracic Surgery
Waldorf Astoria, Orlando, September 19-21, 2013
To improve is to change; to be perfect is to change often.

-Winston Churchill
Advantages

- Ergonomics
- Direct view
- Geometry

\[
\begin{bmatrix}
  a & b & c \\
  x & y & z
\end{bmatrix} = 0, \vec{l} \cdot \vec{p} = 0
\]
Uniportal better?
Mathematic and physical demonstration

- Absence of dihedral or torsion angle

Coventional Triangulation makes a forward motion of VATS camera to the vanishing point. It’s a volume Packaged. This create a new optical plane with genesis of dihedral or torsion angle not favorable wit standard two-dimension monitors. Instruments inserted parallel to videothoracoscope mimic inside the chest maneuvers performed during open surgery.

Luca Bertolaccini, Physic and thoracic surgeon
Naples, 26 Oct 2012- Uniportal VATS meeting
Previous experience..

Video-assisted thoracic surgery lobectomy: 3-year initial experience with 200 cases

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Abstract

Objective: To analyse the evolution of the video-assisted thoracoscopic (VATS) approach for lobectomy and results during the first 3 years of program. Methods: From 1st July 2007 to 31st July 2010 we carried out 200 lobectomies by VATS. In February 2009 we started performing VATS lobectomies with only 2 incisions. We have analyzed both annual and overall outcomes regarding type of approach, conversion rate, surgical time, lymphadenectomy and overall survival. Results: Distribution of the cases per year were as follows: first-year 32, second-year 65, third-year 103. Overall conversion rate was 14.5% (first-year 25%, second-year 20%, third-year 7.8% \( p = 0.017 \)). Surgical approach was: 4 ports (1 case), 3 ports (99 cases, 100% in first-year), 2 ports (99 cases, 80% in third-year), single-port (1 case, third-year) Mean surgical time in successful VATS was 183.8 min (210.8 first-year, 207.9 second-year, 181.1 third-year; \( p = 0.011 \)), mean number of lymph nodes were 11.9 (9.3 first-year, 10.1 second-year, 13.9 third-year; \( p = 0.003 \)) and mean explored stations was 4.2 (3.6 first-year, 3.8 second-year, 4.5 third-year; \( p < 0.001 \)). Globally median chest tube duration was 3 days. Median length of stay was 4 days. The disease-free survival at 30 months was 85% for Stage I patients and 62% for non-stage I patients. Conclusions: As we gain more experience over time, with more cases performed each year and less invasive approaches, results improve in terms of less surgical time and more extended lymphadenectomies. Furthermore, we have observed a clear evolution in our surgical approach to a less invasive 2-port approach. In selected cases we have implemented the single-port lobectomy.

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Keywords: Thoracoscopy; VATS; Lobectomy; Lung cancer surgery; Surgical approach
Uniportal VATS lobectomy: technical aspects

- Previous double-port experience
- Utility incision: 4-5 cm (5th ie)
- No rib spreading, no trocar
- **Lung exposure, move the table**
- **Direct visualization target tissue**

- One screen, 30 degree, 1 or 2 surgeons
- Camera: posterior part of incision
- **Bimanual instrumentation, coordination**
- Artery first, then vein.
- Vascular clips
IS UNIPORTAL Thoracoscopic Surgery A Feasible Approach FOR Advanced Stages Of Non-Small Cell Lung Cancer?

Objectives

Conventional video-assisted thoracoscopic (VATS) lobectomy for advanced lung cancer is a feasible and safe surgery in experienced centers. The aim of this study is to assess the feasibility of uniporal VATS approach in the treatment of advanced NSCLC and compare the perioperative outcomes with early-stage tumors.

Methods

From June-2010 to December-2012, we performed 163 uniporal VATS major pulmonary resections. Only NSCLC cases were included in this study. Patients were divided in two groups: A, early stage and B, advanced cases (> 5 cm, T3 or T4 tumors, or tumors requiring neoadjuvant treatment). A descriptive, prospective and retrospective study was performed, comparing perioperative outcomes obtained in both groups.

Results

A total of 130 cases were included: 87 (A) vs 43 (B) patients (conversion rate 1.1 vs 6.5%, p=0.119). Mean global age was 64.9 years and 73.6% were man. The patient demographic data were similar in the two groups.

Upper lobectomies (A, 56 vs B, 24 patients) and anatomic segmentectomies (A, 4 vs B, 0) were more frequent in group A while pneumonectomy was more frequent in B (A, 1 vs B, 6 patients). Surgical time was longer (144.8±41.6 vs 183.2±48.9, p<0.001), and median number of lymph nodes (14 vs 16, p=0.004) were statistically higher in advanced cases. Median number of nodal stations (5 vs 5, p=0.165), days of chest tube (2 vs 2, p=0.098), HOS (3 vs 3, p=0.072), and rate of complications (18.6 vs 16.3%, p=0.075) were similar in both groups. A total of 77.4% of patients (A) and 36.6% (B) were classified as stage I after pathological examination. One patient died on the 58th postoperative day.

Conclusions

Uniportal VATS lobectomy for advanced cases of NSCLC is a safe and reliable procedure that provides perioperative outcomes similar to those obtained with early stage tumors. Further analyses of survival for uniporal VATS lobectomy of advanced stage tumors are ongoing.
Single-port video-assisted thoracoscopic lobectomy with pulmonary artery reconstruction

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Abstract

Despite the advances in video-assisted thoracoscopic surgery (VATS), vascular reconstruction of the pulmonary artery (PA) is still infrequently performed by thoracic surgeons because of the technical difficulties and the increased operative risk during thoracoscopy. The few published reports have been performed by using 3–4 incisions. We present the first report of a pulmonary artery reconstruction procedure performed by a single incision VATS technique. A 75-year-old man was operated on by the thoracoscopic approach through a single 4-cm incision with no rib spreading. The postoperative recovery was uneventful.

Keywords: Thoracoscopic/video-assisted thoracoscopic surgery • Minimally invasive surgery • Pulmonary artery reconstruction • Vascularplasty • Video-assisted • Pulmonary artery reconstruction • Surgical technique

Single-Incision Thoracoscopic Right Upper Lobectomy With Chest Wall Resection by Posterior Approach

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Abstract: Lobectomy requiring chest wall resection is usually performed by thoracotomy, but thanks to the advances in the field of thoracoscopic surgery, this procedure can be performed by video-assisted thoracoscopic surgery (VATS). Recent improvements in surgical devices and previous VATS experience have allowed this complex surgery for advanced stages to be undertaken safely. Most of the thoracoscopic lobectomies with rib resection are performed using three to four incisions. We report a different minimally invasive technique for chest wall resection (minimally invasive posterior approach) and VATS right upper lobectomy (single-incision anterior approach).

Key Words: Single-port VATS lobectomy, Chest wall resection, Rib involvement, Thoracoscopic approach, Chemotherapy (Jornalmed 2013;871-73)

CASE REPORT

A 57-year-old male smoker with chronic obstructive pulmonary disease was admitted to our department for right upper lobe (RUL) adenocarcinoma surgery. Computed tomographic scan revealed a 3.6-cm adenocarcinoma in the RUL with chest wall involvement (Fig. 1A). The findings from the bronchoscopy were normal. After induction chemotherapy, the patient was proposed for surgery.

Video clip is available online.

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From the Department of Thoracic Surgery, Coruna University Hospital
The key is the exposure
Contraindications

- Surgeon discomfort
- Huge tumors
Single incision complex cases

- Huge Extrapulmonary mass
- Nodule Enucleation
- 8cm tumor prior induction chemo
- Strong adhesions-tuberculosis
- N2 cases (chemotherapy)
- Silicotic calcified hilar lymph nodes
- Bronchiectasis
- RUL-Anatomic Segmentectomy
- One or two anatomic segments
- Very Obese patients
- Severe COPD
- Situs inversus lobectomy
- CCAM with bronchial and arterial atresia
- Complex anatomy
Single incision challenging cases

- Pancoast tumor
- Sleeve lobectomy
- Vascular reconstruction
- Atrium involvement
- Post chemo-radiotherapy (>60Gy)
- Pulmonary Sarcoma-V. Cava
- Huge mass
- Chest wall resection
- Completion pneumonectomy
- REVATS (x3)
- Bleeding control
Chest wall resection-RUL after chemo

SINGLE INCISION THORACOSCOPIC RIGHT UPPER LOBECTOMY WITH CHEST WALL RESECTION BY POSTERIOR APPROACH
Single-incision complex cases

REVATS: completion pneumonectomy
Post chemo-radiotherapy left intrapericardial pneumonectomy
Huge Left lower lobe mass: ASPERGILOMA
Sarcoma-Vena Cava affection pre-chemo
Left lower lobe sleeve lobectomy
Atrium involvement
3 years' experience

Bleeding control (clip displacement)
3 years’ experience
Bleeding control (LUL after chemo)
Next Future
Teaching. Wetlab

Next Coruña courses this year

-October 29-30-31
-December 11-12-13
THANKS!!

www.videothoracoscopy.com