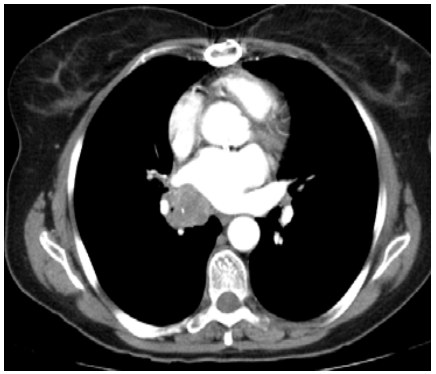
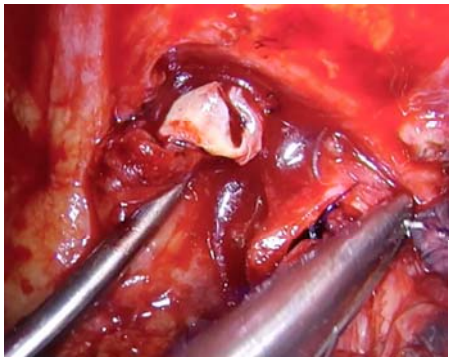
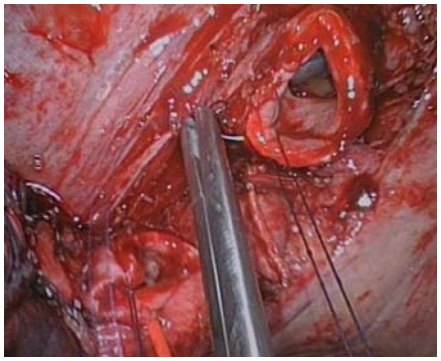
SINGLE-PORT VATS LOBECTOMY

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Minimally Invasive Thoracic Surgery Unit (UCTMI)
Thoracic Surgery and Lung Transplantation Department
Coruña University Hospital
Coruña, Spain

AATS/STS General Thoracic Surgery Symposium
Becoming a Master Thoracic Surgeon
Toronto, Sunday 27th April 2014

- NO DISCLOSURES

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The most dangerous phrase in the language is "we've always done it this way."

The begining…

ELSEVIER

European Journal of Cardio-thoracic Surgery 40 (2011) e21–e28

EUROPEAN JOURNAL OF CARDIO-THORACIC SURGERY

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

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Received 9 January 2011; received in revised form 17 February 2011; accepted 22 February 2011; Available online 31 March 2011

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 31th 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 193.8 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

Keywords: Thoracoscopy/VATS; Lobectomy; Lung cancer surgery; Surgical approach

Uniportal VATS

Non intubated surgery 2014

Double sleeve 2014

PA Resection & Reconstruction 2013

Sleeve Resection 2013

Pneumonectomy 2012

Segmentectomy 2012

Lobectomy 2011

Pericardial Window & Mediastinal LN bx 2006

Pleurodesis 2005

Wedge resection 2004

Pleural diseases 2003

Sympathectomy 2002

Masters of Cardiothoracic Surgery

Double sleeve uniportal video-assisted thoracoscopic lobectomy for non-small cell lung cancer

Diego Gonzalez-Rivas, Maria Delgado, Eva Fieira, Ricardo Fernandez

Single-port video-assisted thoracoscopic lobectomy with pulmonary artery reconstruction

Diego Gonzalez-Rivas*, Maria Delgado, Eva Fieira and Lucia Mendez

Department of Thoracic Surgery, Coruña University Hospital, Coruña, Spain

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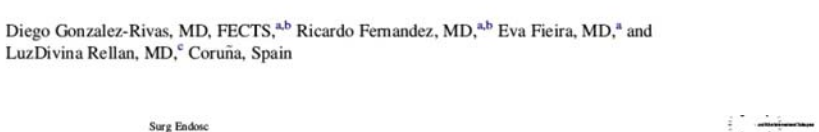
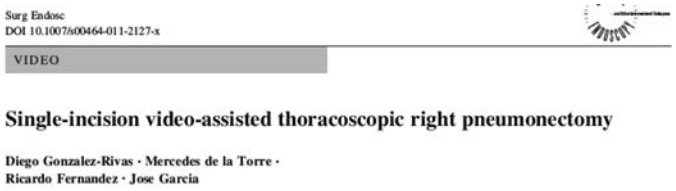


Uniportal video-assisted thoracoscopic bronchial sleeve lobectomy: First report

Diego Gonzalez-Rivas, MD, FECTS,[a,b] Ricardo Fernandez, MD,[a,b] Eva Fieira, MD,[a] and LuzDivina Rellan, MD,[c] Coruña, Spain



Surg Endosc
DOI 10.1007/s00464-011-2127-x

VIDEO

Single-incision video-assisted thoracoscopic right pneumonectomy

Diego Gonzalez-Rivas · Mercedes de la Torre · Ricardo Fernandez · Jose Garcia

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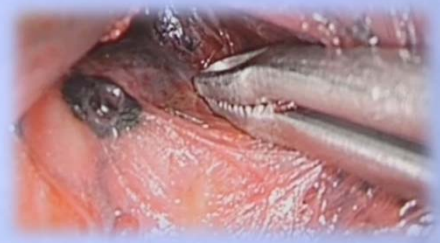
Uniportal Advantages

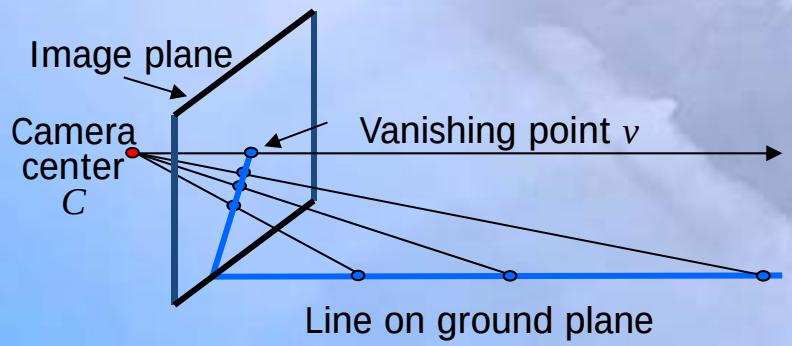
Ergonomy

Direct view



Geometry

$$\begin{bmatrix} a & b & c \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = 0, \vec{l} \cdot \vec{p} = 0$$



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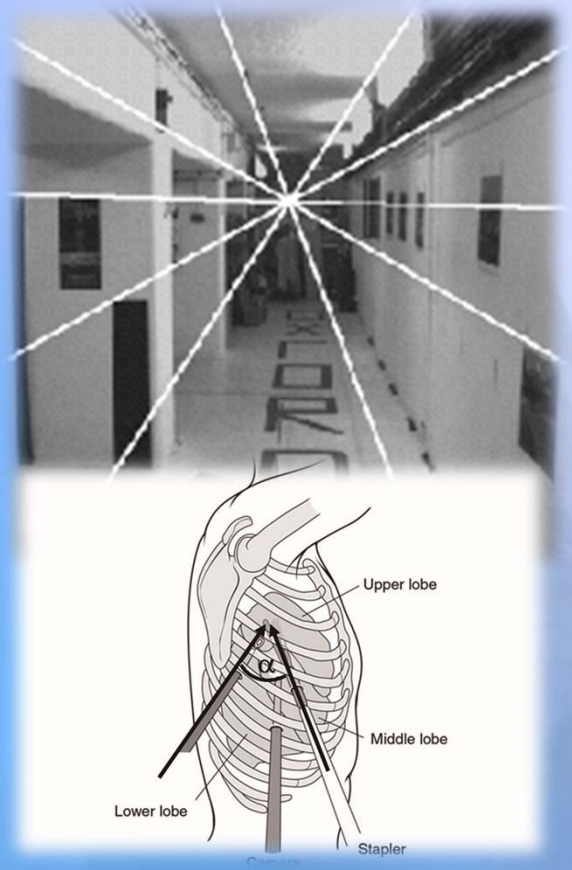
Uniportal better?
Mathematic and physical demonstration

Absence of dihedral or torsion angle

Direct view



SURGICAL TECHNIQUE

Geometrical Characteristics of Uniportal VATS

Luca Bertolaccini[1], Gaetano Rocco[2], Andrea Viti[1], Alberto Terzi[1]

[1]Division of Thoracic Surgery, S. Croce e Carle Hospital, Cuneo, Italy; [2]Division of Thoracic Surgery, National Cancer Institute - Pascale Foundation, Naples, Italy

ABSTRACT In terms of accuracy and efficacy Uniportal Video-Assisted Thoracic Surgery (VATS) resections are comparable to standard VATS. In standard three-ports VATS, the geometric configuration of a parallelogram generates interference with the optical source, creating a plane with a torsion angle not favorable on the flat two-dimensional vision of currently available monitors. The potential advantages of single-port VATS approach include not only the one intercostal space incision (reduction of postoperative pain) but also a translational approach of VATS instruments along a sagittal plane. Accordingly, the Uniportal approach enables VATS instruments to draw two parallel lines on the plane, bringing them to approach the target lesion from a caudo-cranial perspective thus achieving a projective plane. As a consequence, taking advantage of the unique spatial features specific to uniportal VATS, the surgeon is enabled to bring the operative fulcrum inside the chest to address the target lesion in a fashion similar to open surgery.

KEY WORDS Single access thoracoscopy; three access thoracoscopy; minimally invasive thoracic surgery; geometry

J Thorac Dis 2013 Apr 07. doi: 10.3978/j.issn.2072-1439.2013.04.06

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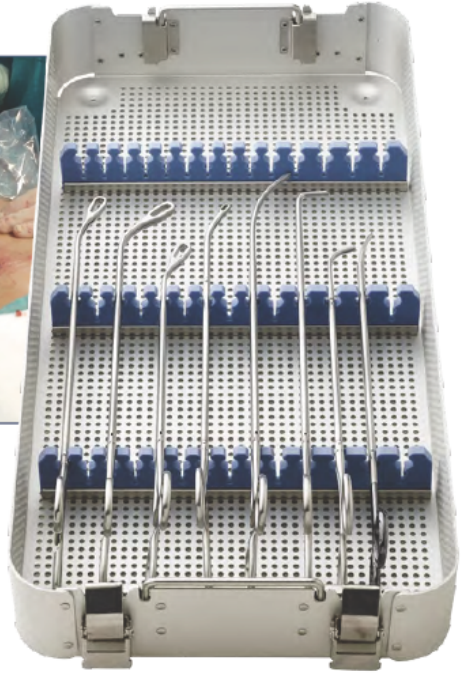
No trocar: less compression to the nerve

2-3 ports
-More comfortable for assistant
-Camera lean on trocar

Single incision
-More uncomfortable for assistant
-Camera is suspended,no trocar

Uniportal / Single-Incision Scanlan® VATS Instruments

As recommended by Diego Gonzalez-Rivas, MD, FECTS



Uniportal (single-incision) VATS surgery "Avoiding the trocar improves the instrumentation and minimizes the compression of the intercostal nerve"
Dr. Gonzalez-Rivas

"Although uniportal video-assisted thoracoscopic (VATS) lobectomy can be performed with conventional instruments, the use of specially adapted conventional material (such as instrumentation with both proximal and distal articulations) seems to be more fitted for successful single-port lobectomy."[1]

1 Gonzalez-Rivas D, Fernandez R, et al. Thoracoscopic lobectomy through a single incision. Multi-Media Manual of Cardiothoracic Surgery published online 16 March 2012.

Information on Uniport VATS Surgery at the UCTMI (Unidad de Cirugía Torácica Mínimamente Invasiva) Dr. Gonzalez-Rivas website: http://www.videotoracoscopy.com/

Photo courtesy of Dr. Gonzalez-Rivas

This technique description is made available to the healthcare professional to illustrate a possible treatment for an uncomplicated procedure. The preferred treatment is that which addresses the unique needs of the individual patient.

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Uniportal VATS lobectomy: technical aspects

- Double-port and anterior thoracotomy
- Utility incision: 3-5 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**
- Upper lobes: Artery first, then vein.
- Vascular clips (click aV), curved-tip staplers

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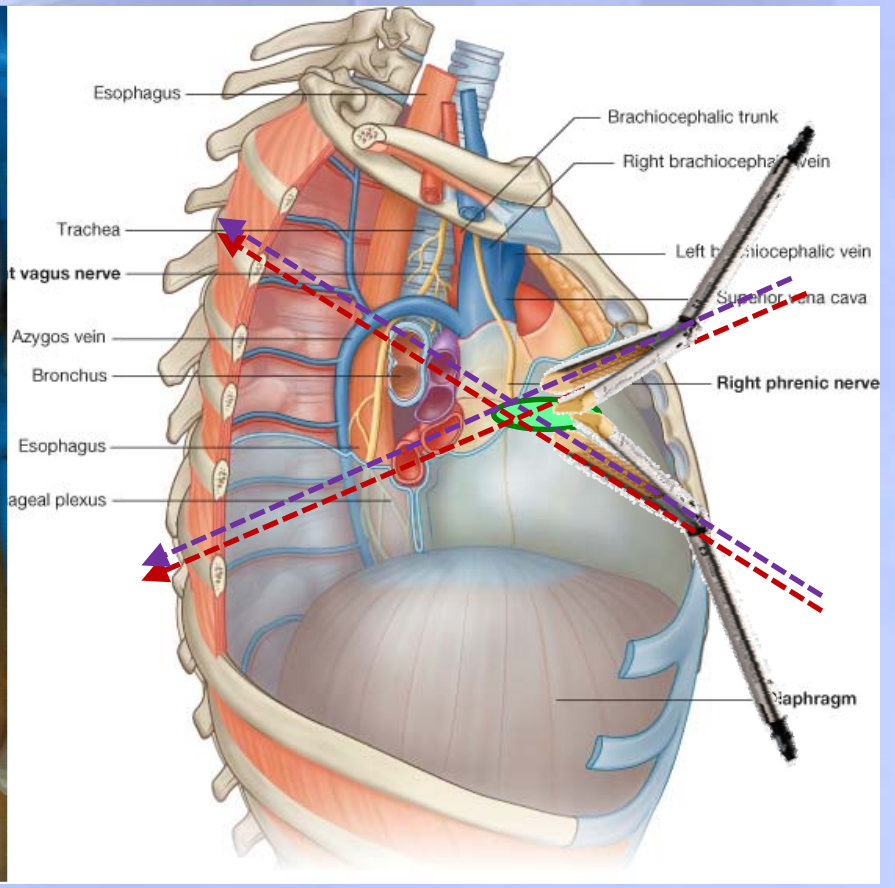
Incision: fifth intercostal space



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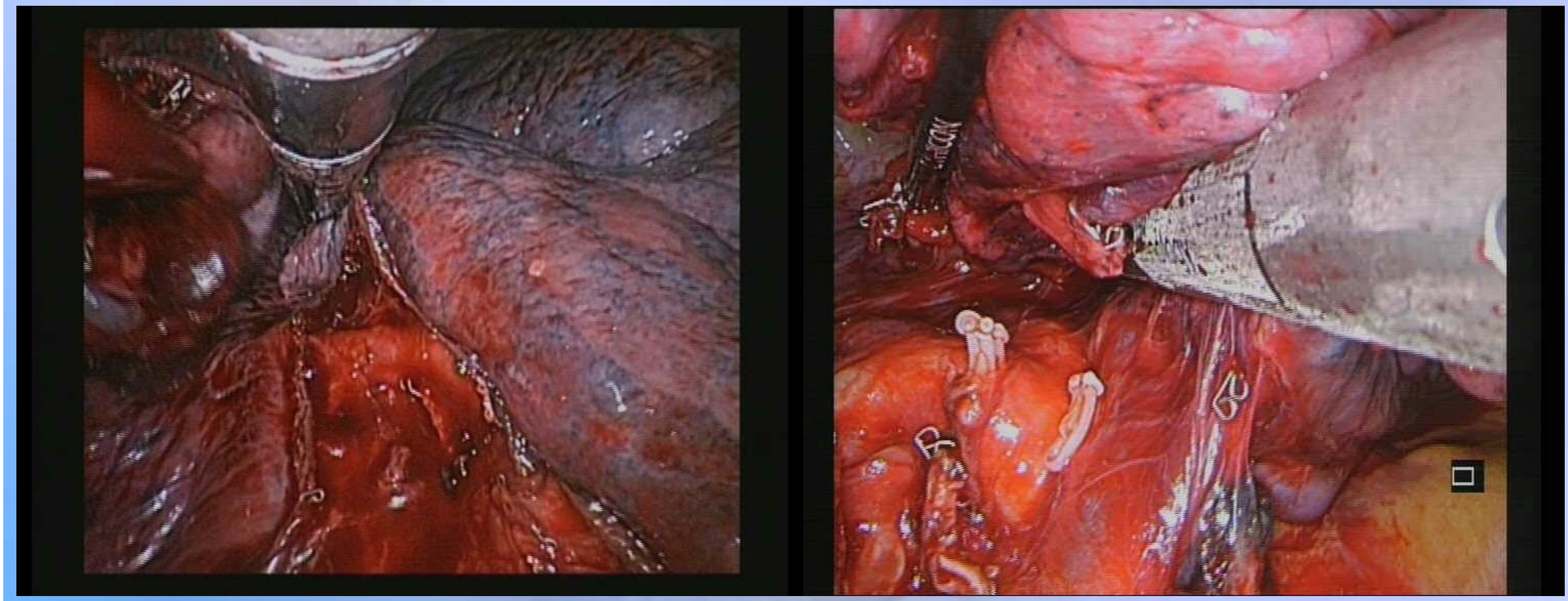
Minor fissure-Camera down



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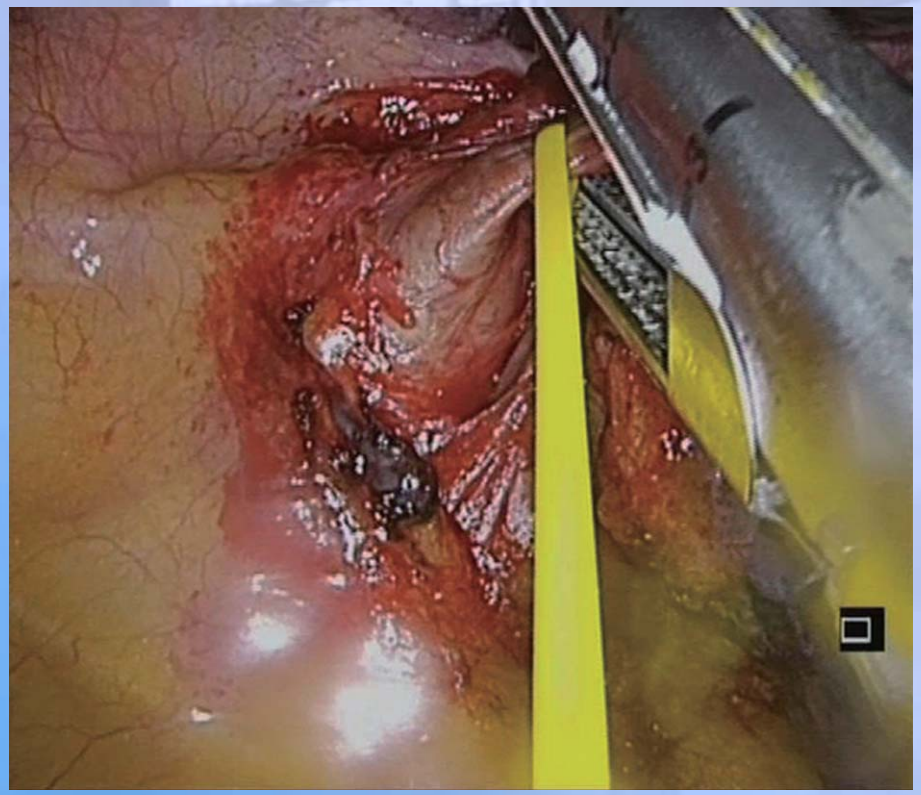
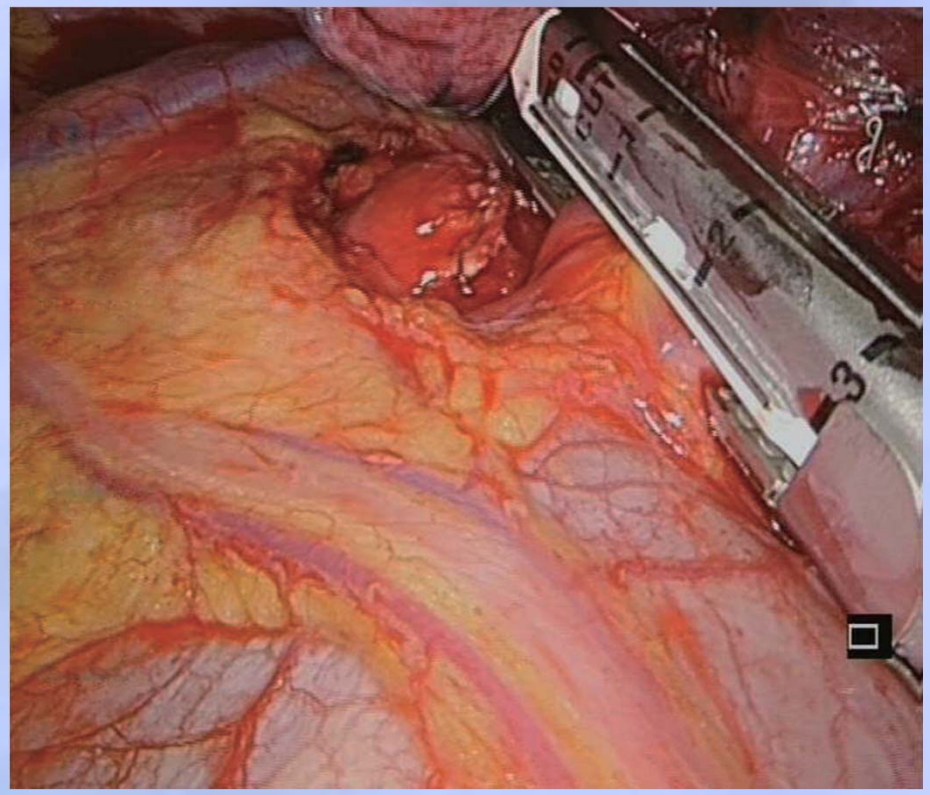
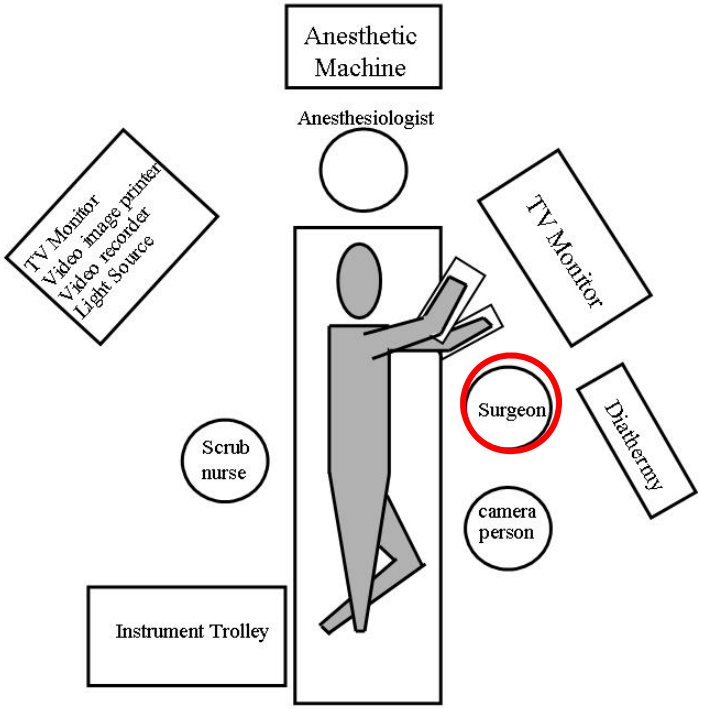
Superior Pulmonary Vein

Divide the upper arterial truncus first.

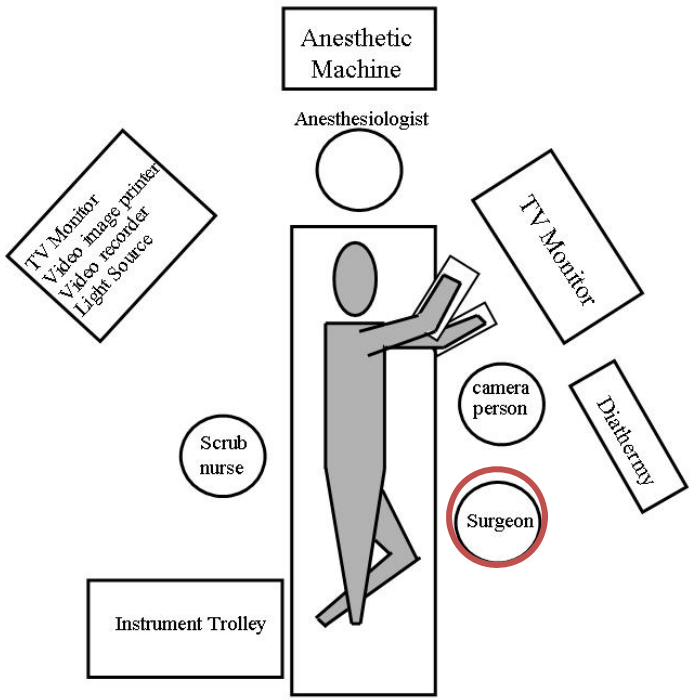




Surgeon and assistant



Surgeon Cranial



Surgeon Caudal

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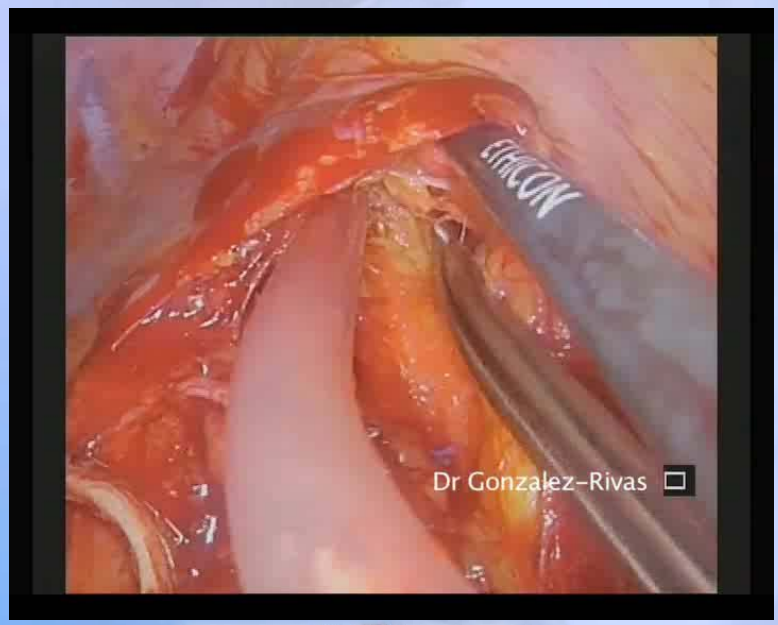
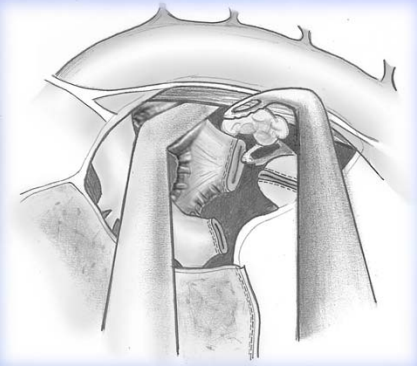
Lymph node dissection

Paratracheal



Subcarinal



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Uniportal Video-Assisted Thoracoscopic Lobectomy: Two Years of Experience

Diego Gonzalez-Rivas, MD, Marina Paradela, MD, Ricardo Fernandez, MD, Maria Delgado, MD, Eva Fieira, MD, Lucía Mendez, MD, Carlos Velasco, MD, and Mercedes de la Torre, MD

Department of Thoracic Surgery, Minimally Invasive Thoracic Surgery Unit (UCTMI), and Department of Cardiac Surgery, Coruña University Hospital, Coruña, Spain

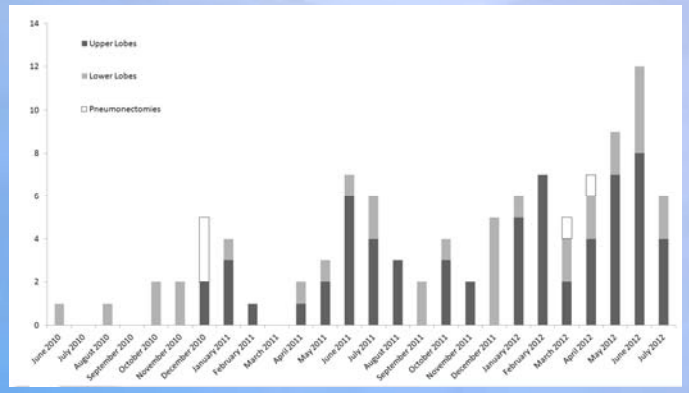
Background. A video-assisted thoracoscopic approach to lobectomy varies among surgeons. Typically, 3 to 4 incisions are made. Our approach has evolved from a 3-port to a 2-port approach to a single 4- to 5-cm incision with no rib spreading. We report results with single-incision video-assisted thoracic major pulmonary resections during our first 2 years of experience.

Methods. In June 2010, we began performing video-assisted thoracoscopic lobectomies through a uniport approach (no rib spreading). By July 12, 2012, 102 patients had undergone this single-incision approach.

Results. Of 102 attempted major resections, 97 were successfully completed with a single incision (operations in 3 patients were converted to open surgery and 2 patients needed 1 additional incision). Five uniportal pneumonectomies were not included in the study. We have analyzed early outcomes of successful uniportal lobectomies (92 patients studied). Right upper lobectomy was the most frequent resection (28 cases). Mean surgical time was minutes (range, 60–310 minutes), mean number of lymph nodes was 14.5 ± 7 (range, 5–38 nodes), and mean number of explored nodal stations was 4.6 ± 1.2 (range, 3–8 stations). The mean tumor size was 2.8 ± 1.5 cm (0–6.5 cm). The duration of time a chest tube was in place was days and the median length of hospital stay was days. There were complications in 14 patients; no perioperative 30-day mortality was reported.

Conclusions. Single-incision video-assisted thoracoscopic anatomic resection is a feasible and safe procedure with good perioperative results, especially when performed by surgeons experienced with the double-port technique and anterior thoracotomy.

(Ann Thorac Surg 2013;95:426–32)



To April 2014 :
365 Uniportal VATS lobectomies
Conversion rate 2%
(>900 uniportal resections)

IS UNIPORTAL THORACOSCOPIC SURGERY A FEASIBLE APPROACH FOR ADVANCED STAGES OF NON-SMALL CELL LUNG CANCER?

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Objectives

Coventional 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 uniportal 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 uniportal 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

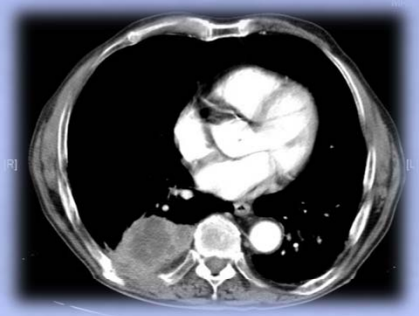
Results

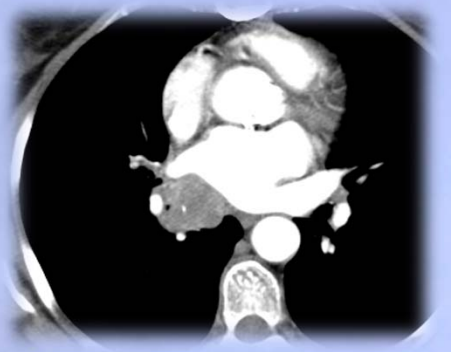
A total of 130 cases were included: 87 (A) vs 43 (B) patients (conversion rate 1.1 vs 6.5%, p=0.119). Mean global age was 64.9 years and 73.6% were man. The patient demographic data were similar in the two groups.

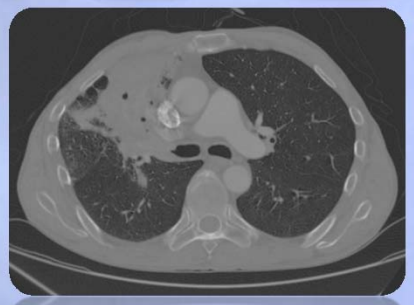
Upper lobectomies (A,56 vs B,24patients) and anatomic segmentectomies (A,4 vs B,0) were more frequent in group A while pneumonectomy was more frequent in B (A,1 vs B,6 patients).Surgical time was longer (144.8±41.6 vs 183.2±48.9, p<0.001), and median number of lymph nodes (14 vs 16, p=0.004) were statistically 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 uniportal VATS lobectomy of advanced stage tumors are ongoing.







Masters of Cardiothoracic Surgery

Single incision video-assisted thoracoscopic anatomic segmentectomy

Diego Gonzalez-Rivas[1,2]

[1]Department of Thoracic Surgery, Coruña University Hospital, Coruña, Spain; [2]Minimally Invasive Thoracic Surgery Unit (UCTMI), Coruña, Spain
Correspondence to: Diego Gonzalez-Rivas, MD, FECTS. Department of thoracic surgery, Coruña University Hospital, Xubias 84, 15006, Coruña, Spain. Email: diego.gonzalez.rivas@sergas.es.

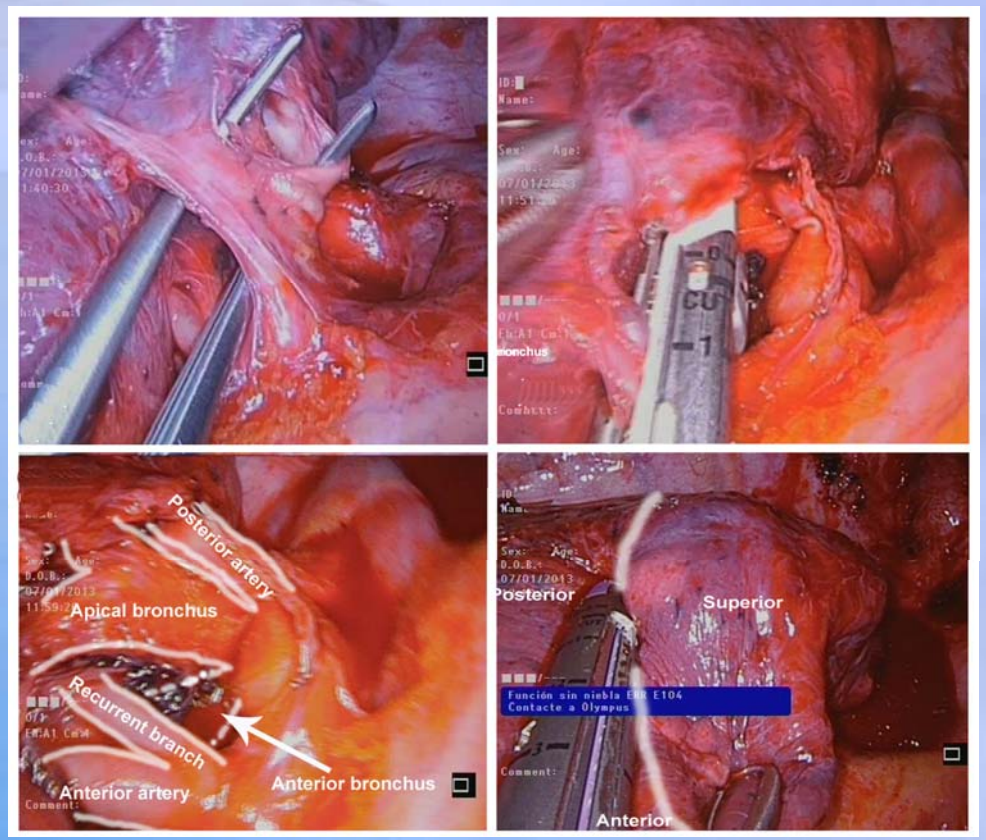
UNIPORTAL VATS

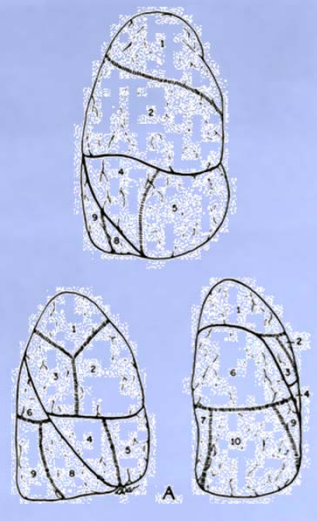
Uniportal video-assisted thoracoscopic anatomic segmentectomy

Diego Gonzalez-Rivas[1,2], Lucia Mendez[1], Maria Delgado[1], Eva Fieira[1], Ricardo Fernandez[1,2], Mercedes de la Torre[1,2]

[1]Department of Thoracic Surgery, Coruña University Hospital, Coruña, Spain; [2]Minimally Invasive Thoracic Surgery Unit (UCTMI), Coruña, Spain

J Thorac Dis 2013;5(S3):S226-S233. doi: 10.3978/j.issn.2072-1439.2013.07.45





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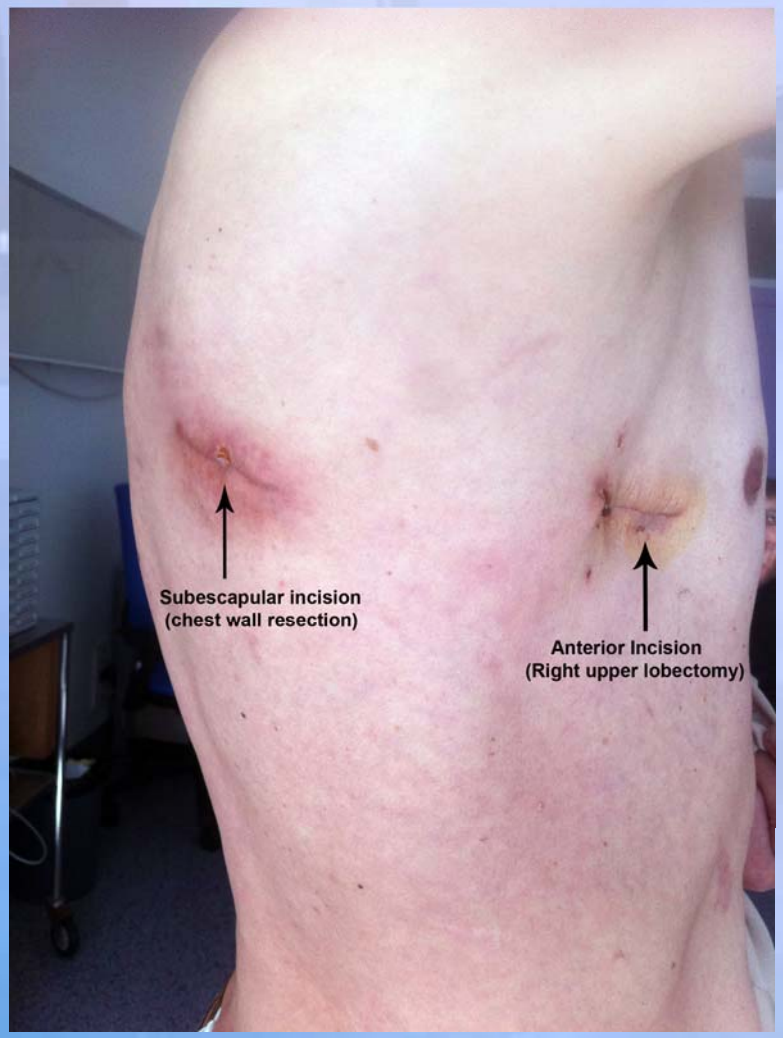
Single-port VATS lobectomy and chest wall resection



SINGLE INCISION THORACOSCOPIC RIGHT UPPER LOBECTOMY WITH CHEST WALL RESECTION BY POSTERIOR APPROACH

Gonzalez-Rivas et al. Innovations. Vol 8 (1). Jan 2013

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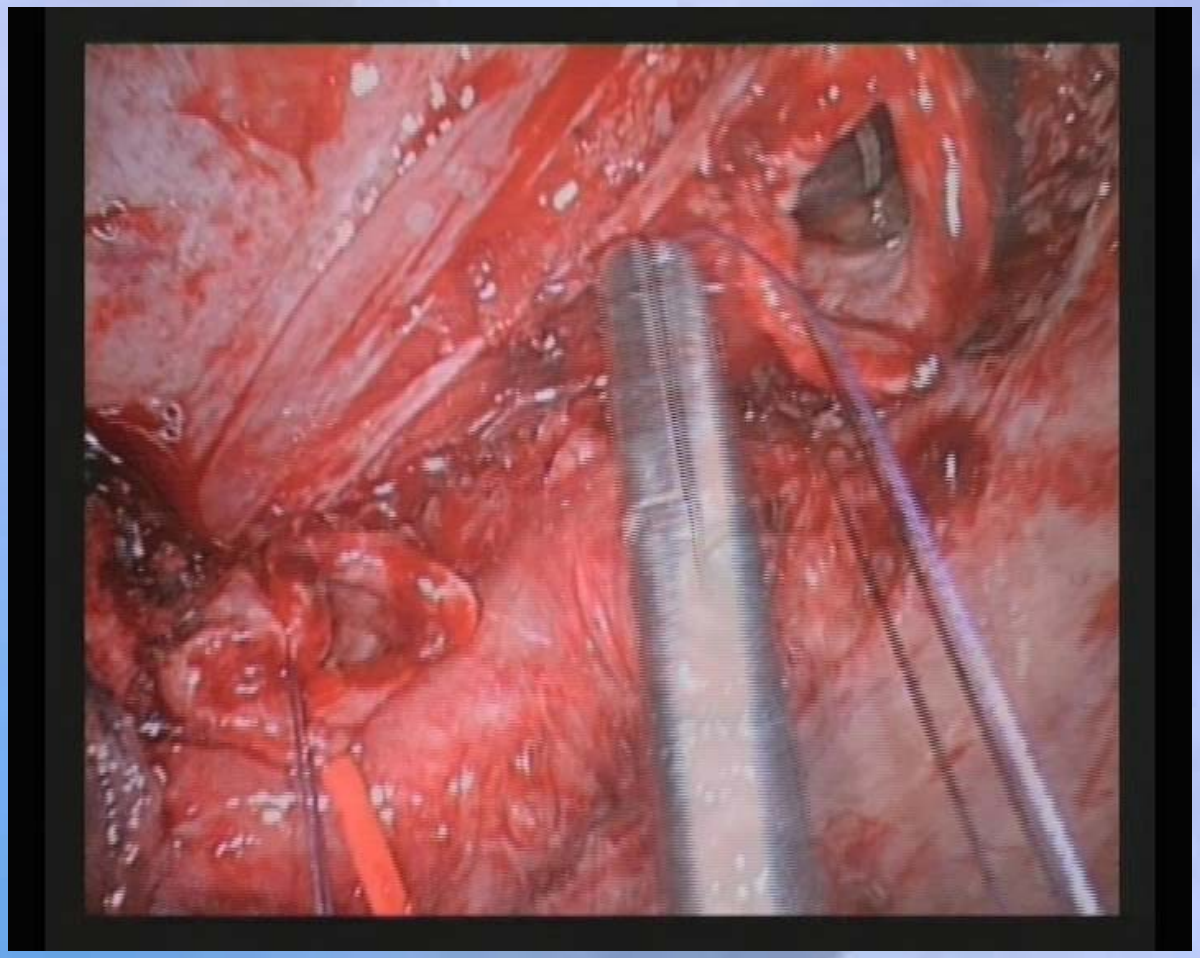
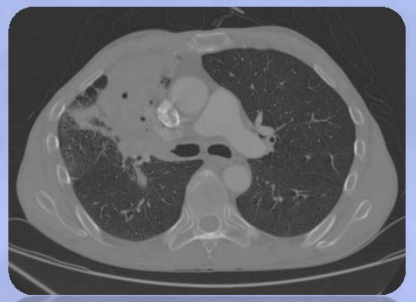
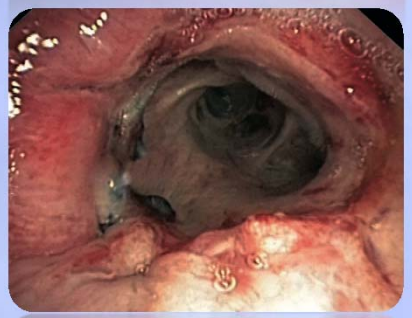
UNIPORTAL VIDEO-ASSISTED THORACOSCOPIC BRONCHIAL SLEEVE LOBECTOMY: FIRST REPORT.
Gonzalez-Rivas et al. Journal of Thoracic and Cardiovasc. 2013;145(6):1676-7







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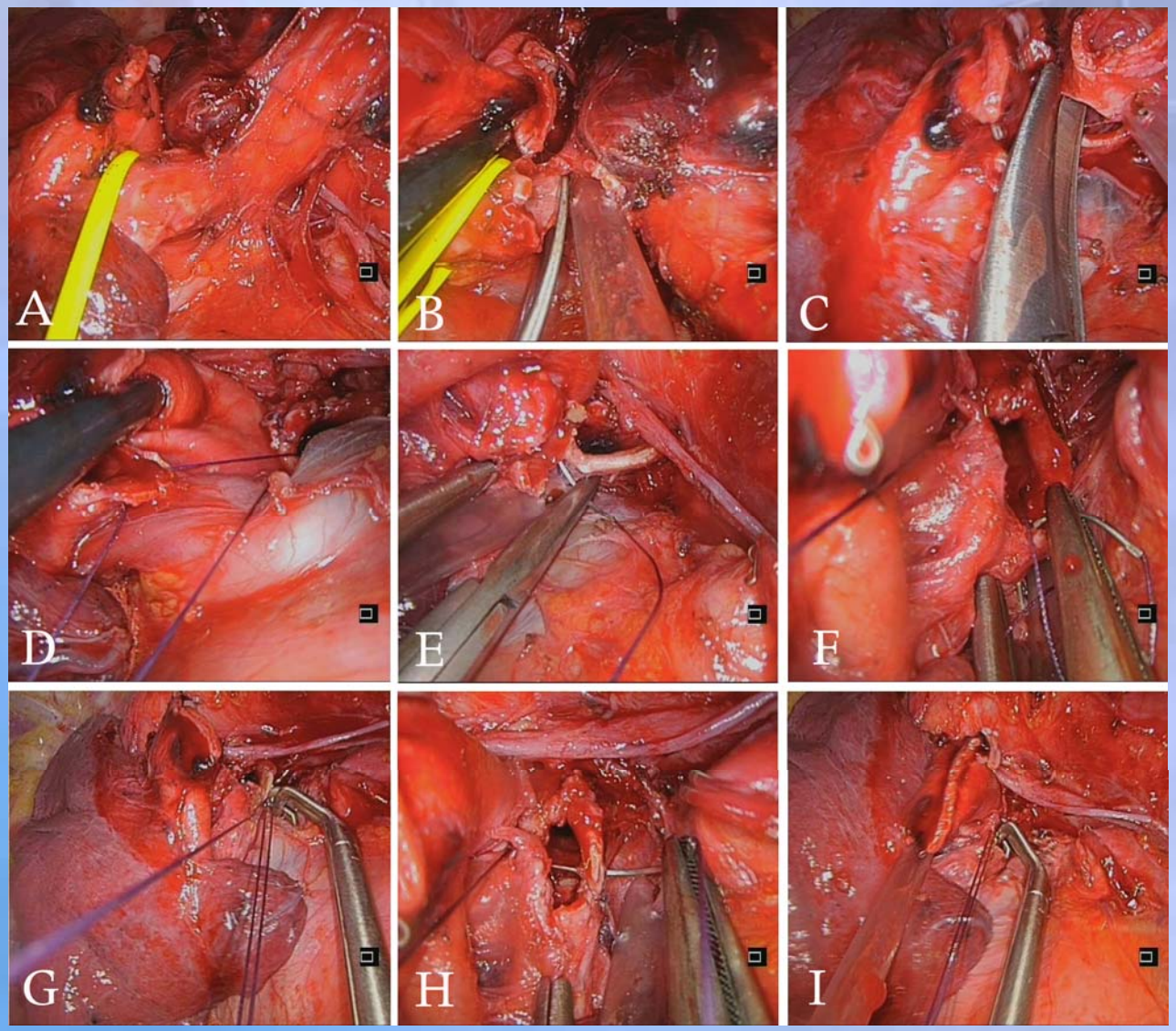
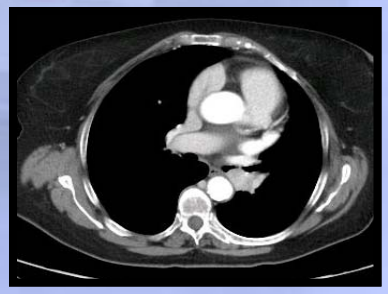
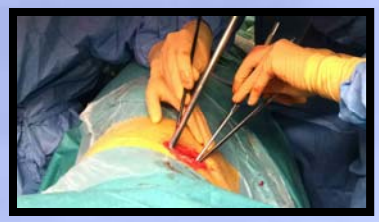
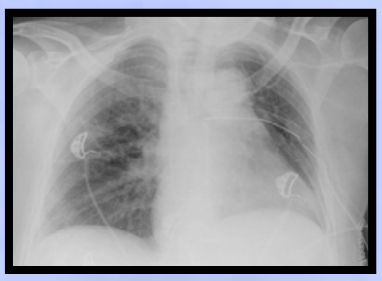
LEFT LOWER SLEEVE LOBECTOMY BY UNIPORTAL VIDEO-ASSISTED THORACOSCOPIC APPROACH. Gonzalez-Rivas et al. Interact Cardiovasc and Thorac Surg. 2014 Feb;18(2):237-9. doi:10.1093/icvts/ivt441









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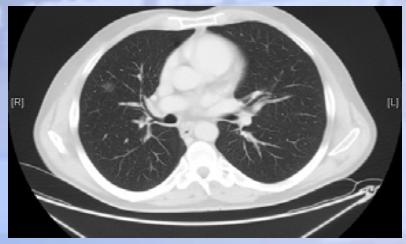
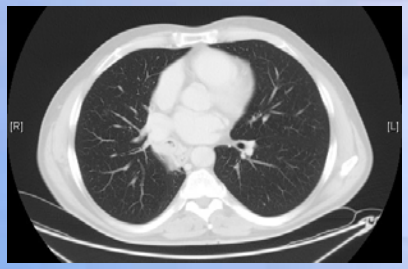
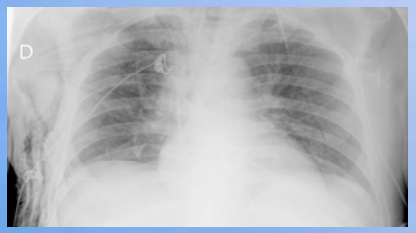
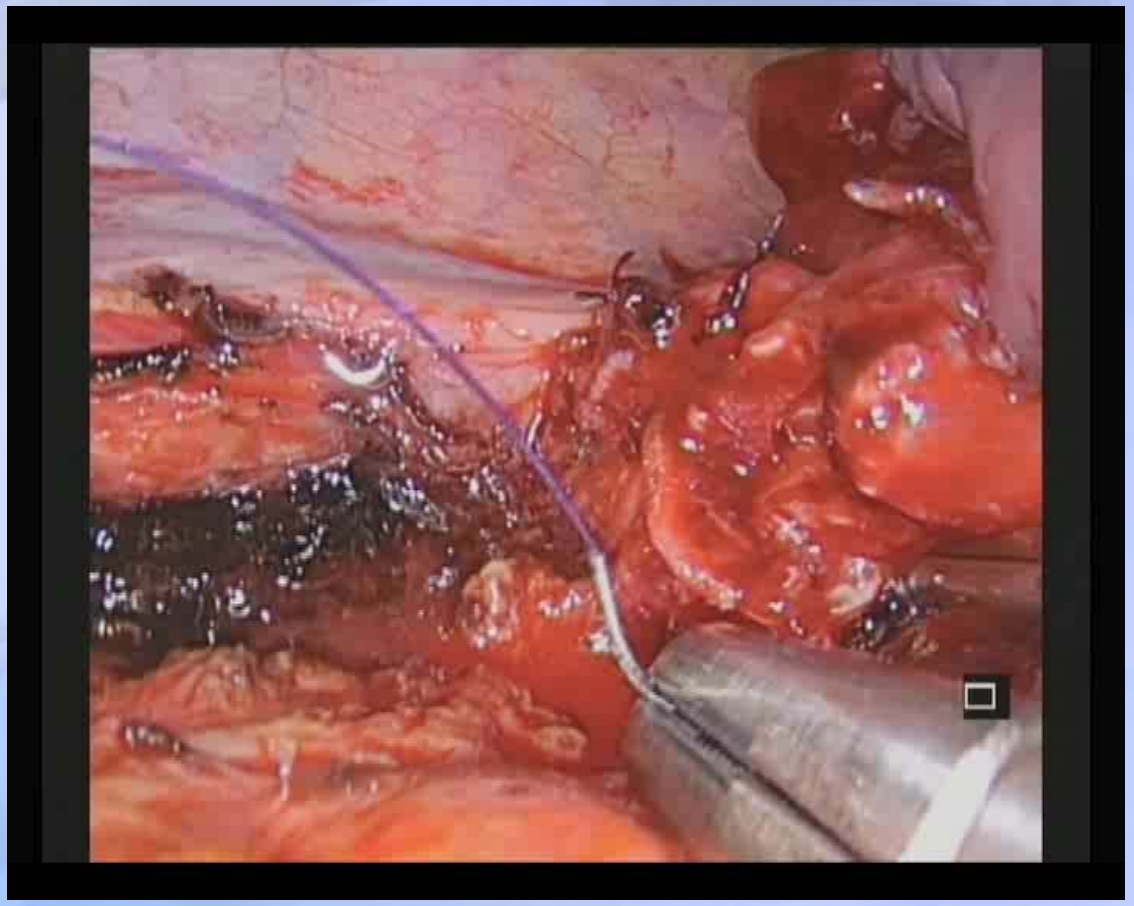
Sleeve reconstruction RUL segmental bronchus to main bronchus after bilobectomy (RLL-ML)









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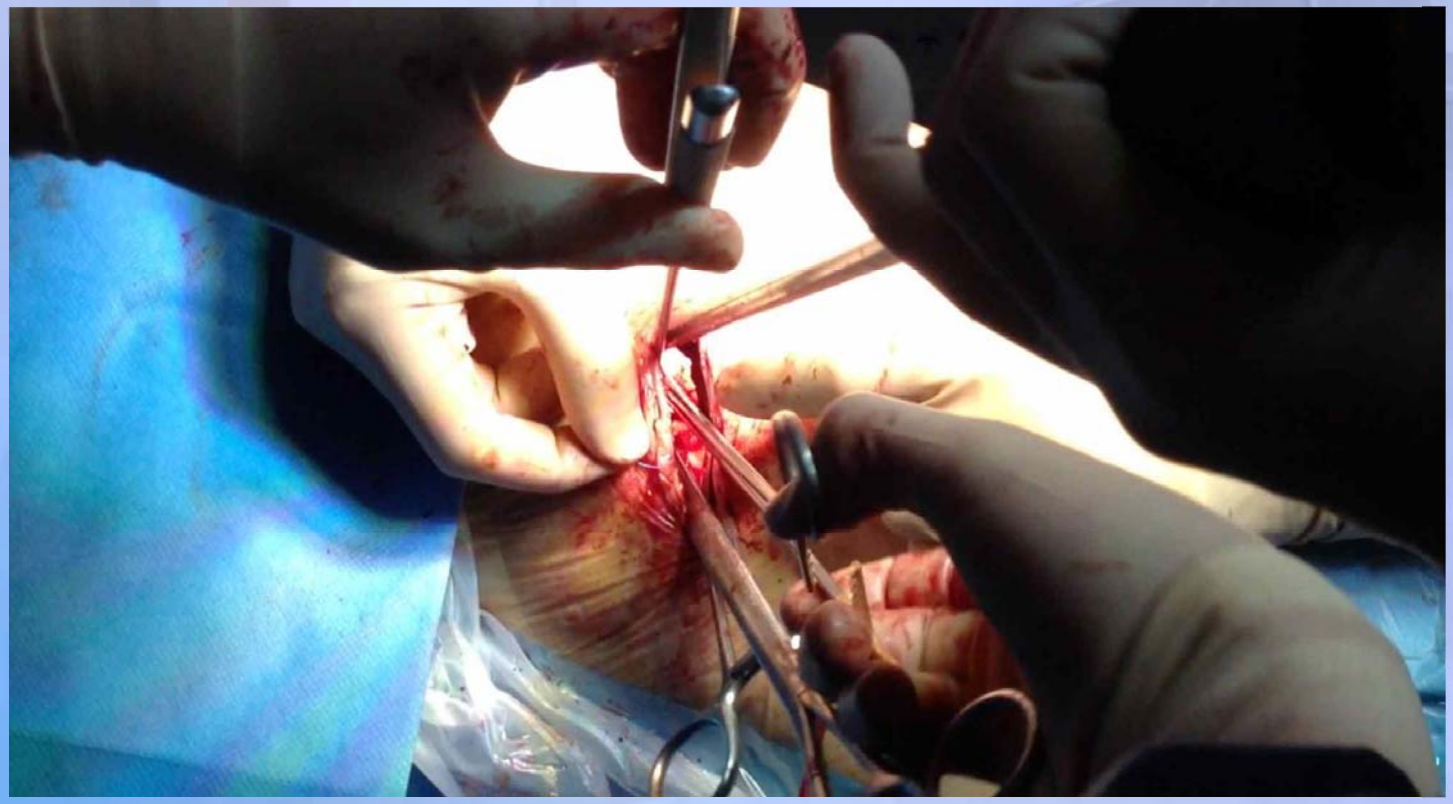
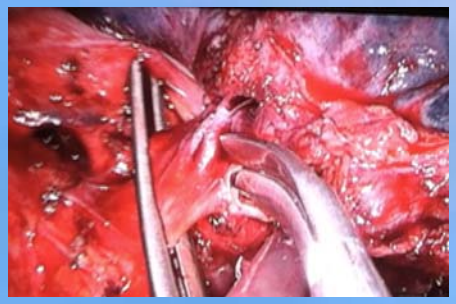
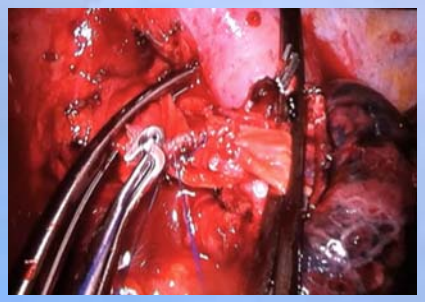
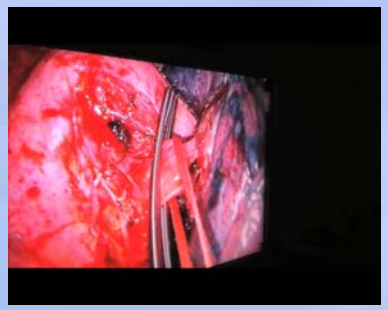
Single-port video-assisted thoracoscopic lobectomy with pulmonary artery reconstruction. Gonzalez-Rivas et al. Interact CardioVasc and Thorac Surg (2013) 1–3. doi:10.1093/icvts/ivt3402013.









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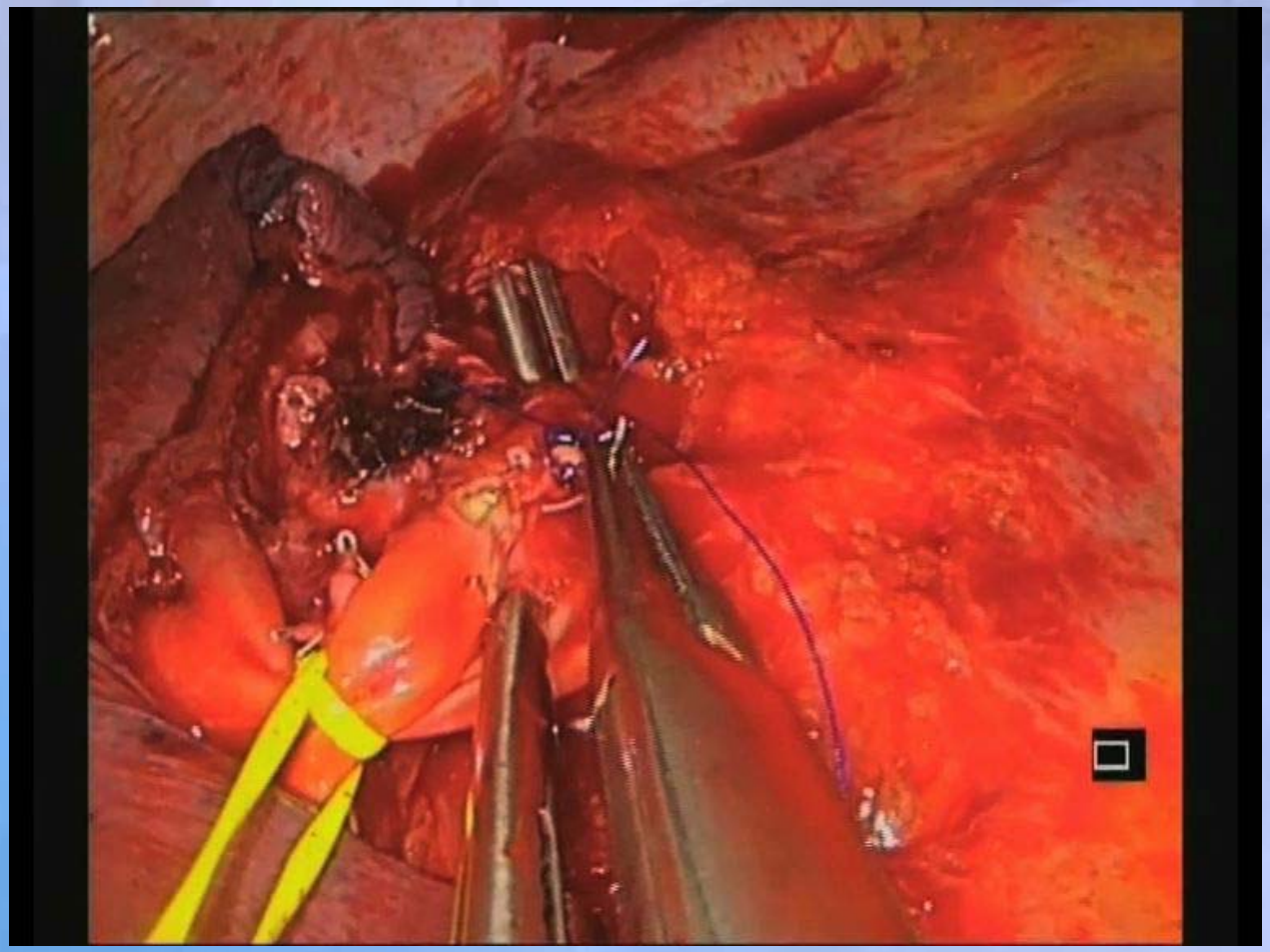
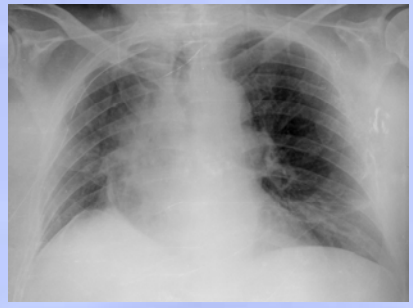
Double Bronchovascular reconstruction after bilobectomy





4 years experience
Bleeding control

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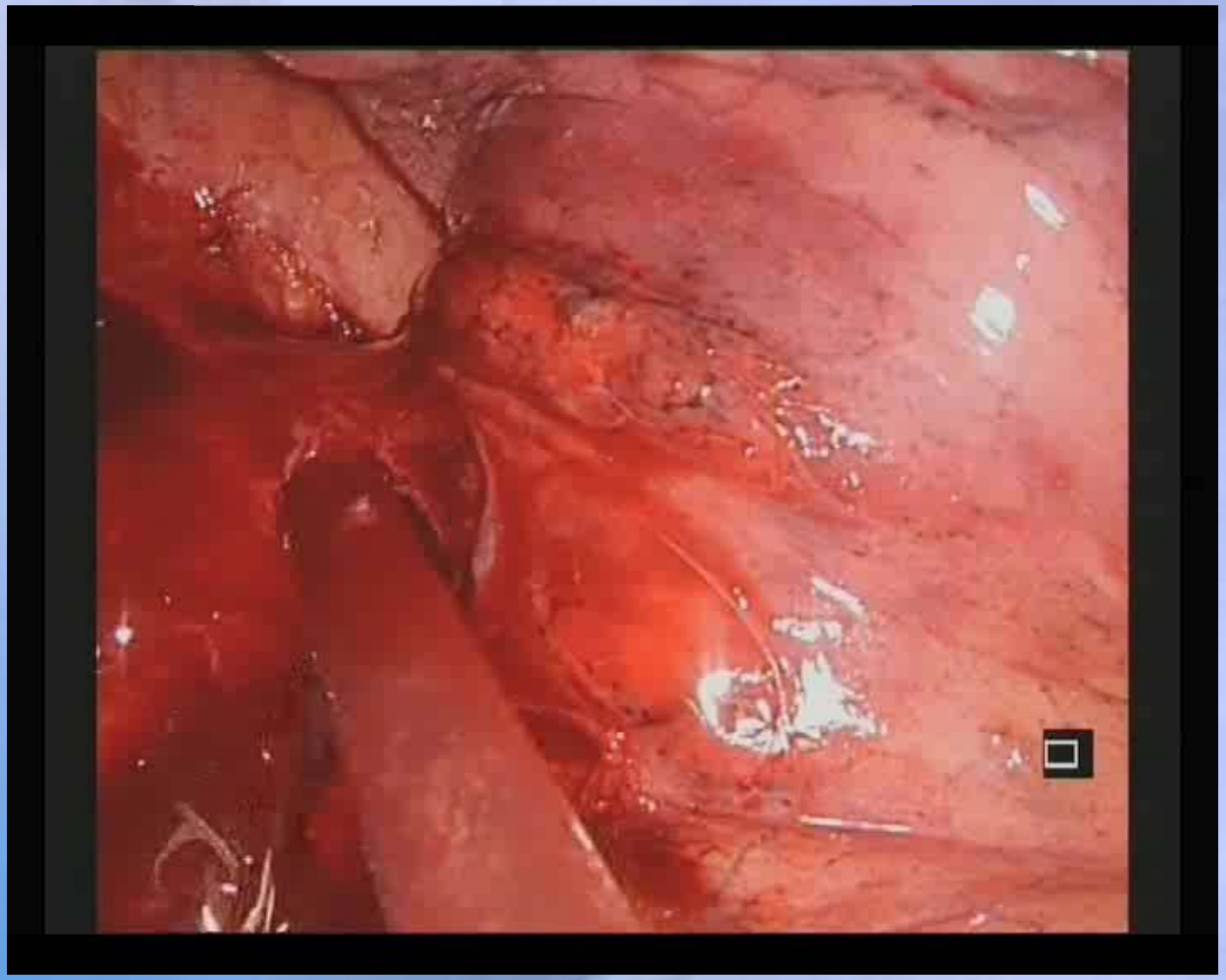

NELSON MANDELA 1918-2013

Masters of Cardiothoracic Surgery

Double sleeve uniportal video-assisted thoracoscopic lobectomy for non-small cell lung cancer

Diego Gonzalez-Rivas, Maria Delgado, Eva Fieira, Ricardo Fernandez

Department of Thoracic Surgery, Coruña University Hospital, Coruña, Spain

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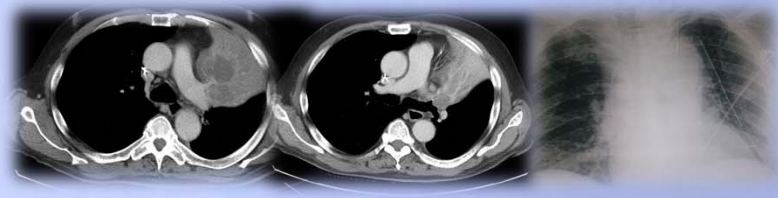
Email: diego.gonzalez.rivas@sergas.es.



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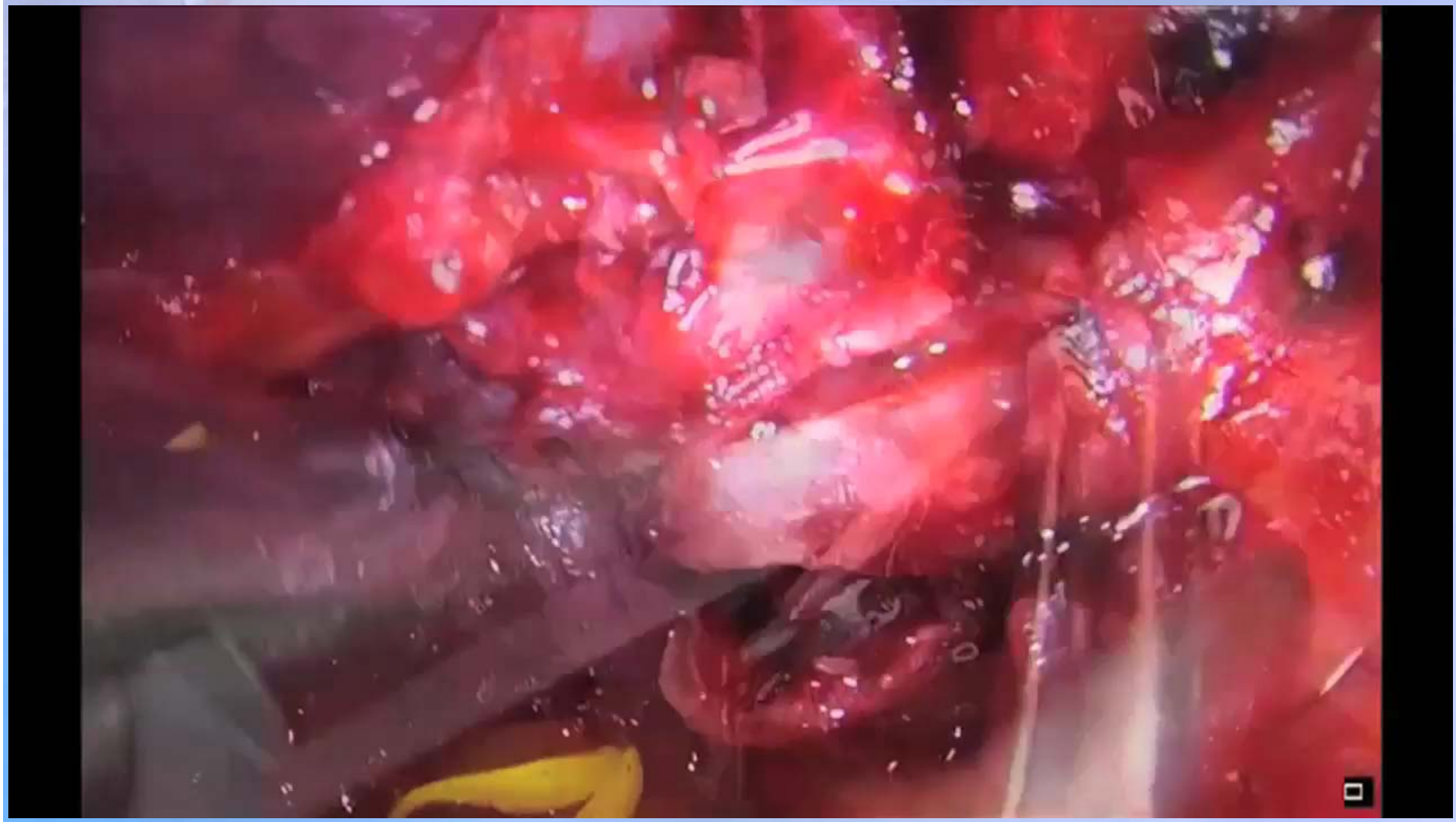

Gonzalez-Rivas D, Delgado M, Fieira E, Fernandez R. Double sleeve uniportal video-assisted thoracoscopic lobectomy for non-small cell lung cancer. Ann Cardiothorac Surg 2014 Apr 11. doi: 10.3978/j.issn.2225-319X.2014.03.13

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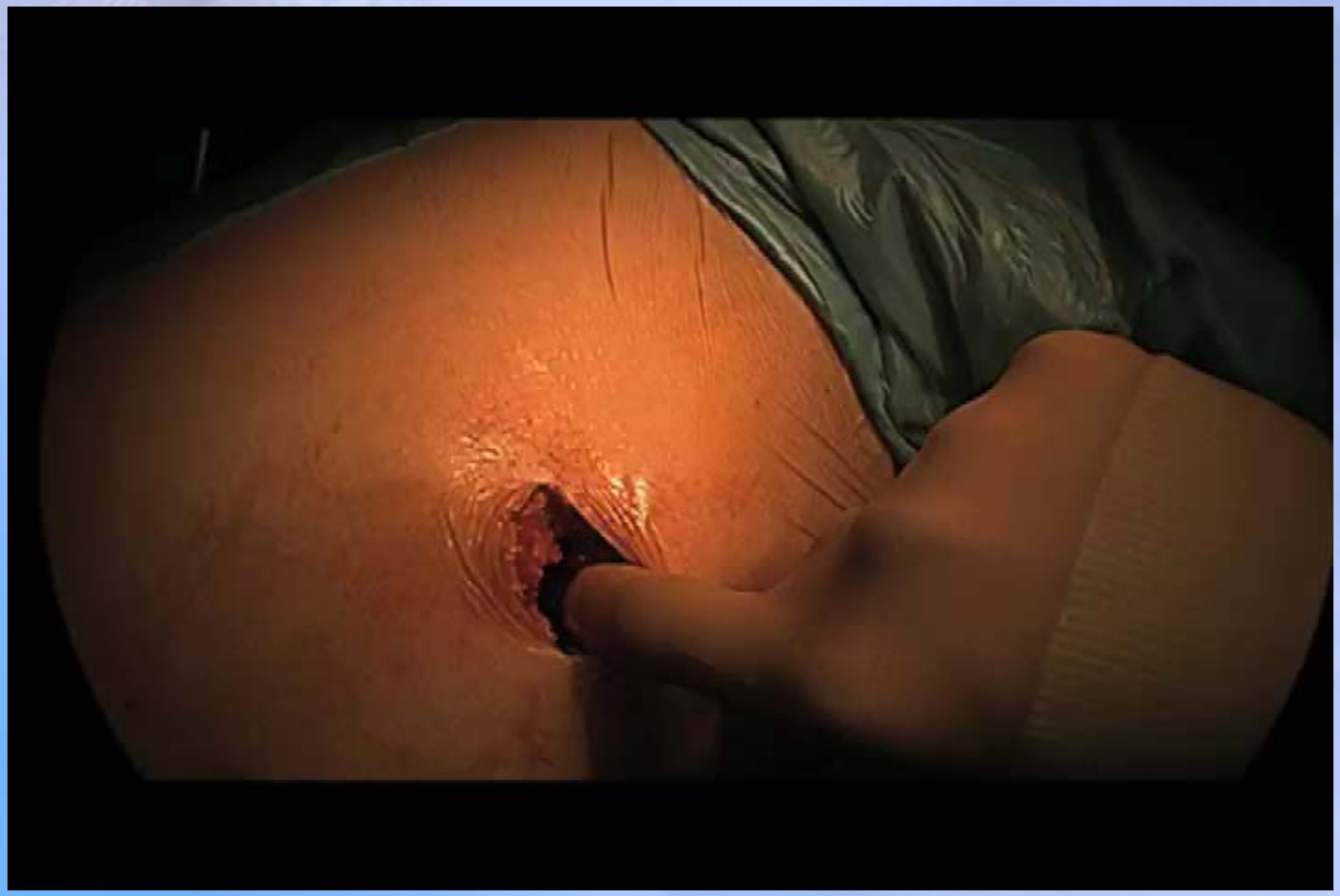
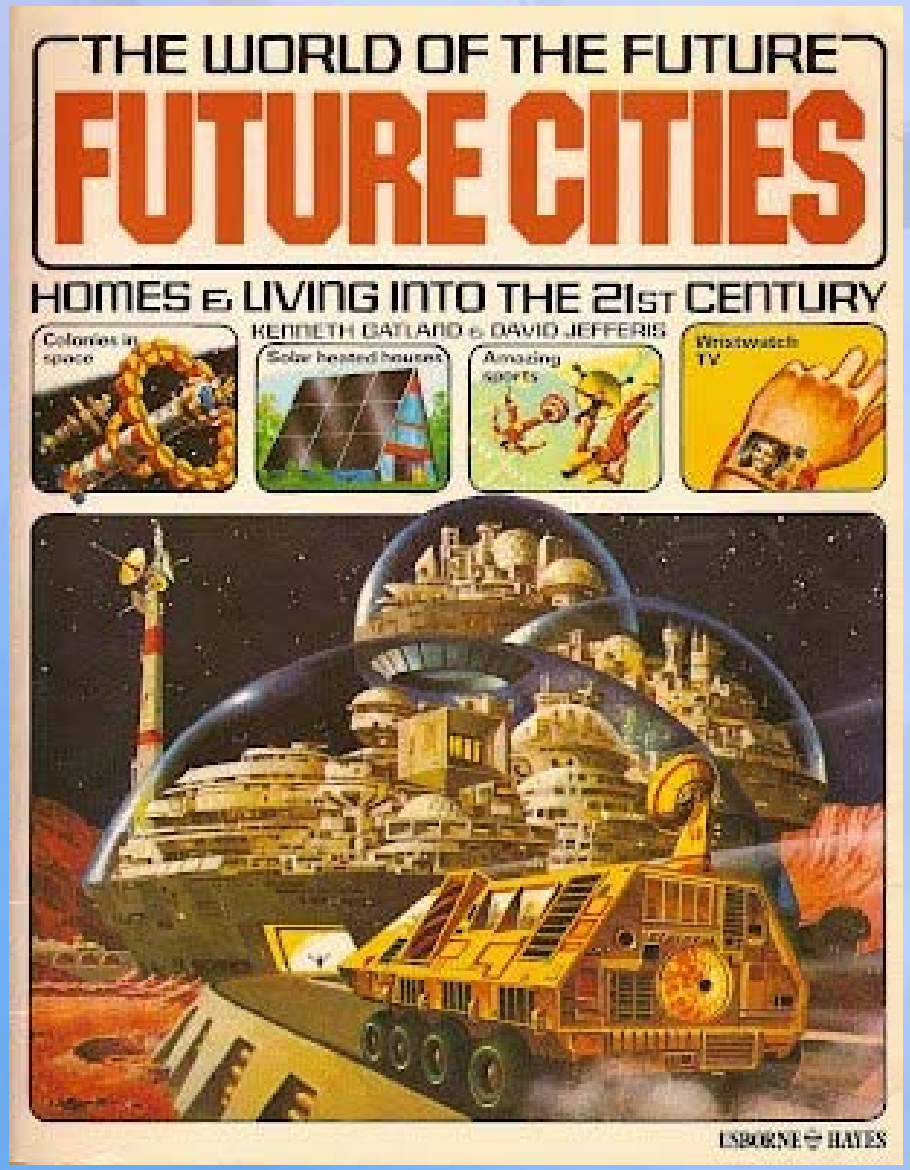
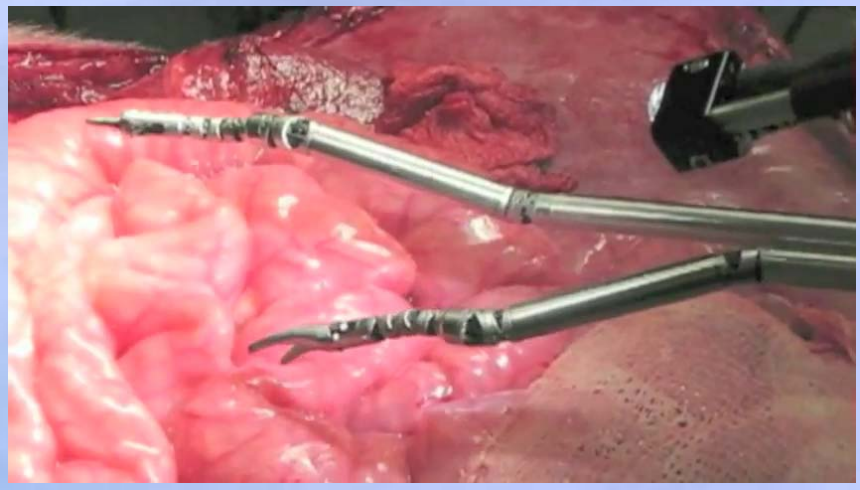
Single port lobectomy with spontaneus ventilation
The less invasive major pulmonary resection!



NO intubation
NO epidural
NO vagus blockade
NO urinary catheter
NO central vein

How will be the future?





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"Intelligence is the ability to adapt to change."

Stephen Hawking

KEEP CALM AND THINK UNIPORTAL

THANKS

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