"La Chirurgia Ibrida"

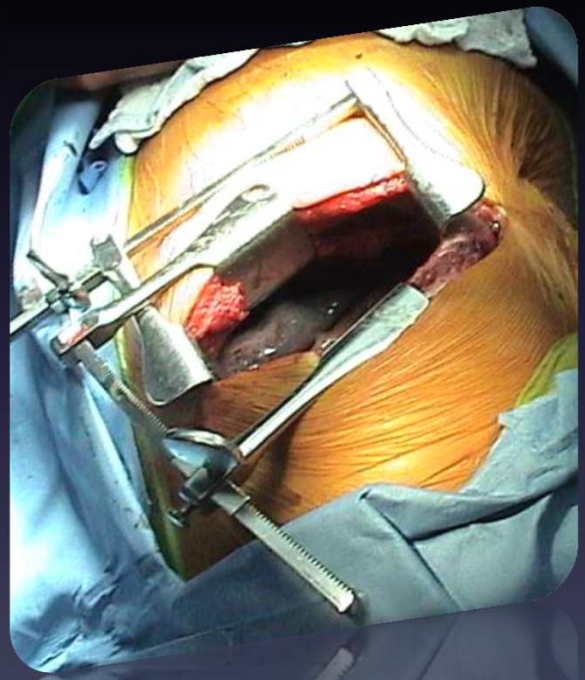
Achille Lococo

DEFINIZIONE:

"Hybrid Surgery"

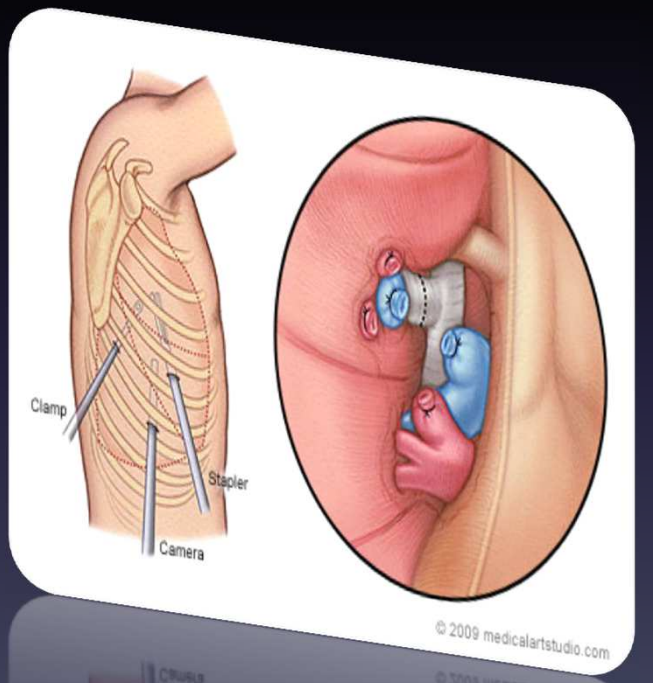
Minitoracotomia anterolaterale muscle sparing Video Assistita

OPEN SURGERY



HYBRID SURGERY

V.A.T.S



A parità di radicalità oncologica, intendiamo una tecnica chirurgica "a metà strada" tra quella tradizionale e quella della VATS-lobectomy.

Definizione di " Chirurgia ibrida"

Questa tecnica rientra in quella che viene definita come "MITS" (Minimally Invasive Thoracic Surgery). Tema affrontato con l'analisi della Letteratura più recente ed i risultati di una survey internazionale messa a punto dalla ESTS con il supporto di CTSnet.

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Thorac Surg Clin. 2008 Aug;18(3):235-47. doi: 10.1016/j.thorsurg.2008.06.002.

The variability of practice in minimally invasive thoracic surgery for pulmonary resections.

Rocco G[1], Internullo E, Cassivi SD, Van Raemdonck D, Ferguson MK.

Author information

Abstract

Thoracic surgeons participating in this survey seemed to have clearly indicated their perception of VATS major lung resections, in particular VATS lobectomy. 1. The acronym VATS as a short form of "video-assisted thoracic surgery" was the preferred terminology. 2. According to the respondents, the need or use of rib spreading served as the defining characteristic of "open" thoracic surgery. 3. It was most commonly suggested that VATS lobectomy is performed by means of two or three port incisions with the addition of a minithoracotomy or access incision. 4. Rib spreading (shearing) was not deemed acceptable as part of a strictly defined VATS procedure. 5. Although there was no general consensus, respondents suggested that the preferred approach for visualization in a VATS procedure was only through the video monitor. 6. Although minimally invasive procedures for lung resection are still mainly being used for diagnostic and minor therapeutic purposes, young surgeons seemed to be more likely to recommend VATS lung surgery for major pulmonary resections than their more senior colleagues. 7. The survey confirmed that the use of the standard posterolateral thoracotomy is still widespread. Almost 40% of the surgeons claimed to use the standard posterolateral thoracotomy for more than 50% of their cases

invasive approaches for major pulmonary resections, however, is already well within sight. Given the results of the ESTS survey supporting a stepwise teaching process leading to VATS lobectomy, hybrid and minimally invasive open lung resections (discussed elsewhere in this issue) collectively defined as MITS may serve as starting point in this process to expand the appropriate use of VATS lobectomy in the modern thoracic surgical practice.

of minimally invasive thoracic surgical practice. 11. Any lack of popularity of VATS lobectomy was presumed to be caused by several equally important factors. Resistance to change by more senior surgeons ranked highly among younger surgeons, however, as an explanation for the slow adoption of this technique. Senior surgeons. however, seemed to focus their attention on the steep learning curve of VATS lobectomy. In addition, surgeons from middle- to low-income countries recognized certain financial and logistic difficulties as major determinants of the lack of popularity of VATS lobectomy. 12. Most surgeons thought that robotic thoracic surgery represented an evolution of VATS. Nevertheless, almost 30% did not think current robotic methods meet the criteria for minimally invasive surgery. More than 90% of the participants stated that they did not perform robotic thoracic surgery. This was reportedly because of costs. but also because of the fact that robotic approaches have not yet demonstrated a distinct advantage over nonrobotic VATS procedures. 13. It was suggested that in every unit or department there should be at least one surgeon with a specific interest and capability in VATS lobectomy. The younger surgeons. however, seemed to envisage more widespread competency being optimal. 14. Most suggested that training in VATS lobectomy be done in a stepwise fashion starting from the classical open technique. Older surgeons wanted to see this as an extracurricular activity following completion of the current training curriculum rather than included in the traditional training program. In the opinion of the thoracic surgeons taking part in this survey, pulmonary resections not performed according to these standards could not be called VATS procedures but should be included within the MITS category at large, along with other diagnostic and therapeutic interventions. In addition, the survey confirmed that the time-honored muscle-dividing thoracotomy is still widely used. The opportunity for a progressive move toward the routine use of less invasive approaches for major pulmonary resections, however, is already well within sight. Given the results of the ESTS survey supporting a stepwise teaching process leading to VATS lobectomy, hybrid and minimally invasive open lung resections (discussed elsewhere in this issue) collectively defined as MITS may serve as starting point in this process to expand the appropriate use of VATS lobectomy in the modern thoracic surgical practice.

Potenziali vantaggi Clinici della "VATS"

- < trauma tissutale
- < complicanze
- < tempo di ospedalizzazione
- < dolore
- < perdite ematiche
- + veloce rientro alla vita ordinaria
- Migliore qualità di vita
- Migliore ottimizzazione della chemioterapia adiuvante

Letteratura

GENERAL THORACIC SURGERY

Thoracoscopic lobectomy is associated with lower morbidity than open lobectomy: A propensity-matched analysis from the STS database

Subroto Paul, MD,[a] Nasser K. Altorki, MD,[a]
David H. Harpole, MD,[c]
Thomas A. D'A

GENERAL THORACIC SURGERY:
The Annals of Thoracic Surgery CME Program is located online at http://cme.ctsnetjournals.org. To take the CME activity related to this article, you must have either an STS member or an individual non-member subscription to the journal.

Thoracoscopic Lobectomy Facilitates the Delivery of Chemotherapy after Resection for Lung Cancer

Rebecca P. Petersen, MD, MS, DuyKhanh Pham, MD, William R. Burfeind, MD, Steven I. Hanish, MD, Eric M. Toloza, MD, PhD, David H. Harpole, Jr, MD, and Thomas A. D'Amico, MD

Department of Surgery, Division of Thoracic Surgery, Duke University Medical Center, Durham, North Carolina

ELSEVIER

European Journal of Cardio-thoracic Surgery 18 (2000) 7–11

EUROPEAN JOURNAL OF CARDIO-THORACIC SURGERY

www.elsevier.com/locate/ejcts

Early and long-term complaints following video-assisted thoracoscopic surgery: evaluation in 173 patients☆

Uz Stammberger, Carmen Steinacher, Sven Hillinger, Ralph A. Schmid, Thomas Kinsbergen, Walter Weder*

Division of Thoracic Surgery, University Hospital, Rämistrasse 100, CH-8091 Zürich, Switzerland

GENERAL THORACIC SURGERY:
The Annals of Thoracic Surgery CME Program is located online at http://cme.ctsnetjournals.org. To take the CME activity related to this article, you must have either an STS member or an individual non-member subscription to the journal.

Video-Assisted Thoracoscopic Lobectomy Is Less Costly and Morbid Than Open Lobectomy: A Retrospective Multiinstitutional Database Analysis

Scott J. Swanson, MD, Bryan F. Meyers, MD, Candace L. Gunnarsson, EdD, Matthew Moore, MHA, John A. Howington, MD, Michael A. Maddaus, MD, Robert J. McKenna, MD, and Daniel L. Miller, MD

CHEST Original Research

LUNG CANCER

In-hospital Clinical and Economic Consequences of Pulmonary Wedge Resections for Cancer Using Video-Assisted Thoracoscopic Techniques vs Traditional Open Resections

A Retrospective Database Analysis

John A. Howington, MD, FCCP; Candace L. Gunnarsson, EdD; Michael A. Maddaus, MD; Robert J. McKenna, MD; Bryan F. Meyers, MD, FCCP; Daniel Miller, MD; Matthew Moore, MHA; John A. Rizzo, PhD; and Scott Swanson, MD

Is Video-Assisted Thoracic Surgery Lobectomy Better? Quality of Life Considerations

Todd L. Demmy, MD, and Chukwumere Nwogu, MD

Department of Thoracic Surgery, Roswell Park Cancer Institute, Buffalo, New York

5 graduali "Passaggi Evolutivi" dalla "Open" alla "RATS"

2000 2003 2010 2012 2015

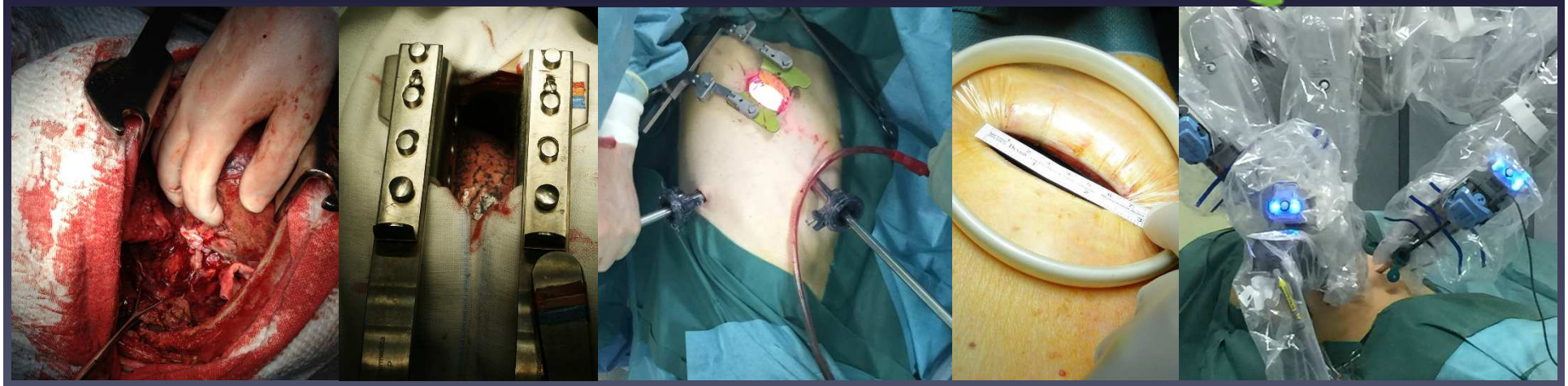
SUTURATRICI POWERED
OTTICHE 3D

OPEN

HYBRID SURGERY

VATS

RATS



La nostra esperienza

"Hybrid Surgery"

2001

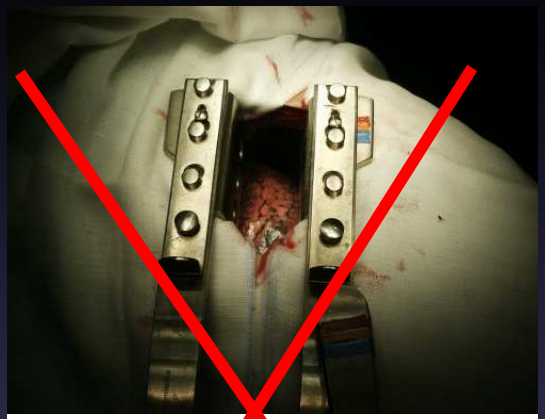
2003

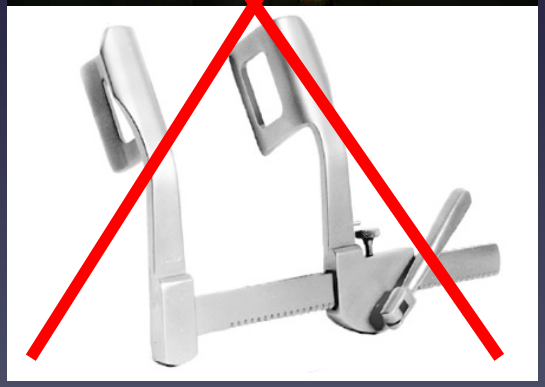
2003: minitoracotomia anterolaterale video-assistita muscle-sparing

La nostra esperienza

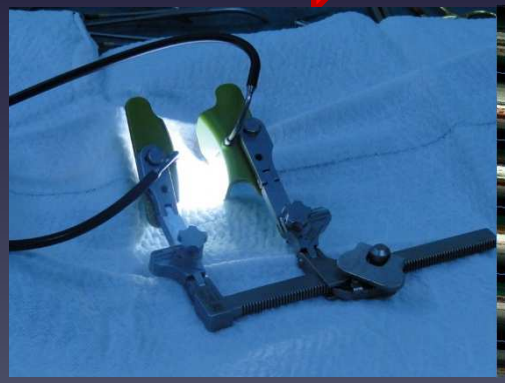
"Hybrid Surgery"

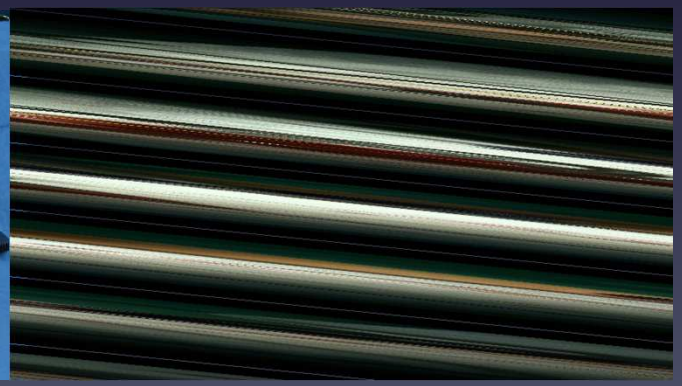
2003





2010



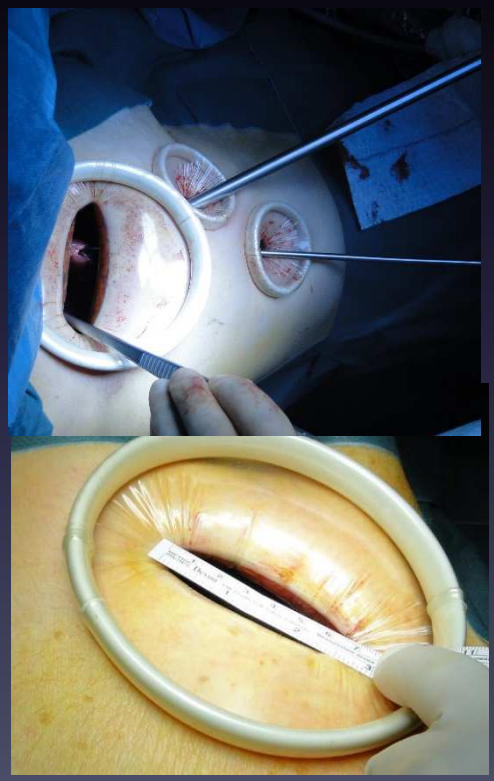


2010: divaricatore costale articolabile illuminato

La nostra esperienza

"Hybrid Surgery"

2012



2012: distrattore ALEXIS "O"

La nostra esperienza

"Hybrid Surgery"

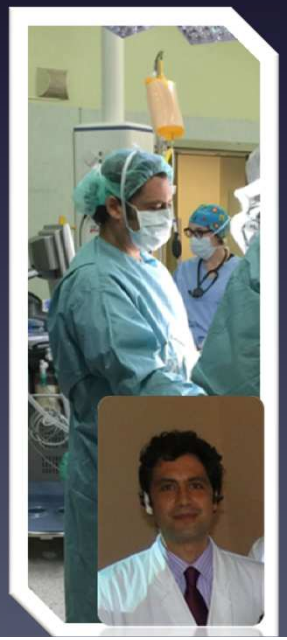
EVOLUZIONE DALLA «VATS» ALLA «RATS»

ESPERIENZA DI CHIRURGIA ROBOTICA SU ANIMALI CON ALTRO DEVICE ROBOTICO

2010

2014

2015



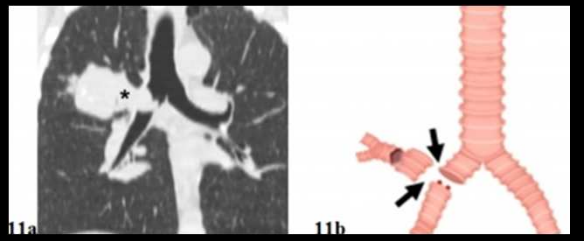
Sistema Da Vinci

2015

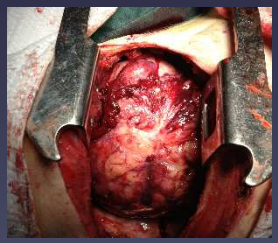
Ha senso ancora parlare di "Hybrid Surgery"

Limiti della VATS

- Stadi oncologici più avanzati



- Presenza di tenaci aderenze pleuroparenchimali
- Scissure incomplete (?)
- Linfoadenectomia adeguata (?)
- Lesioni voluminose



- Adeguata learning curve del chirurgo

NEW TECHNOLOGY

Hybrid Video-Assisted Thoracic Surgery-Robotic Minimally Invasive Right Upper Lobe Sleeve Lobectomy

Thomas Schmid, MD, Florian Augustin, MD, Gerhard Kainz, MD, Johann Pratschke, MD, and Johannes Bodner, MD

Clinic of Visceral, Transplant and Thoracic Surgery, Department of Operative Medicine, Innsbruck Medica Austria; and Department of Internal Medicine, Bolzano County Hospital, Bolzano, Italy

Purpose. Video-assisted thoracoscopic (VATS) lobectomy has been demonstrate safe and feasible. However, only a few reports exist on minimally invasive lobectomy. In most of these, bronchial anastomoses were accomplished in an open technique through a minithoracotomy. We report on a combined robotic and approach for a true minimally invasive right upper sleeve lobectomy. To our know is the first report of this kind.

Description. A 30-year-old female patient presented with a low grade neuroen tumor occluding the orifice of the right upper lobe bronchus. A complete mi invasive right upper sleeve lobectomy was performed. Dissection and individual co

Hybrid Surgical Approach of Video-Assisted Minithoracotomy for Lung Cancer*

Significance of Direct Visualization on Quality of Surgery

Morihito Okada, MD, PhD; Toshihiko Sakamoto, MD, PhD; Tsuyoshi Yuki, MD; Takeshi Mimura, MD; Kei Miyoshi, MD; and Noriaki Tsubota, MD, PhD

Study objectives: **Controversy regarding the most suitable surgical approach for treating malignancies of the lung is a matter of continuous discussions. "Complete" video-assisted thoracic surgery (VATS) that is performed using only the vision of a monitor is generally limited to lung resections of minimal difficulty. With the great interest in minimally invasive techniques for treating various pathologies, we have widely applied an integrated surgical approach that combines muscle-sparing minithoracotomy (incision, 4 to 10 cm) and video assistance using mainly direct visualization of the lung resection, which we have called *hybrid VATS*. The aim of this study is to evaluate the usefulness of hybrid VATS.**

Design: **Retrospective single-center study.**

Interventions: **From January 1998 to October 2004, 405 of 678 lobectomies (60%) and 165 of 226 segmentectomies (73%) were performed for primary lung cancer using hybrid VATS.**

Results: **Bronchoplasty was performed in 93 of the 678 patients (14%) who underwent lobectomy and in 11 of the 226 patients (5%) who underwent segmentectomy. Hybrid VATS was utilized in 33% of sleeve lobectomy procedures and in 27% of sleeve segmentectomy procedures. The mean (± SD) surgical time using hybrid VATS was 164 ± 48 min for lobectomy and 158 ± 35 min for segmentectomy, and the mean blood loss was 166 ± 120 and 109 ± 80 mL, respectively. There was one operative mortality (0.2%) secondary to cardiogenic shock. Postoperative complications developed in 11% of patients with p-stage IA disease after undergoing hybrid VATS, in contrast to 19% of patients after undergoing open thoracotomy. The prognosis of patients treated by hybrid VATS was equivalent to that obtained with open thoracotomy.**

Conclusions: **Minithoracotomy combined with video support that is performed predominantly via direct visualization is a secure, integrated, minimally invasive approach to performing major resection for lung cancer, including atypical procedures such as bronchoplasty. This hybrid VATS can be an acceptable and satisfactory option whenever the performance of complete VATS is considered to be challenging.** ***(CHEST 2005; 128:2696–2701)***

Key words: lung cancer; surgery; thoracotomy; video-assisted thoracic surgery

Abbreviation: VATS = video-assisted thoracic surgery

European Journal of Cardio-Thoracic Surgery 41 (2012) 888–892
doi:10.1093/ejcts/ezr150 Advance Access publication 20 December 2011

ORIGINAL ARTICLE

Feasibility of hybrid thoracoscopic lobectomy and en-bloc chest wall resection†

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Department of Surgery, Division of Thoracic Surgery, Duke University Medical Center, Durham, NC, USA

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Received 29 June 2011; received in revised form 29 August 2011; accepted 1 September 2011

Abstract

OBJECTIVES: Lobectomy with an en-bloc chest wall resection is an effective but potentially morbid treatment of lung cancer invading the chest wall. Minimally invasive approaches to lobectomy have reduced morbidity compared with thoracotomy for early stage lung cancer, but there is insufficient evidence regarding the feasibility of hybrid thoracoscopic lobectomy chest wall resection. We reviewed our experience with an en-bloc chest wall resection and lobectomy to evaluate the outcomes of a hybrid approach using thoracoscopic lobectomy combined with the chest wall resection where rib spreading is avoided.

METHODS: All patients who underwent lobectomy and en-bloc chest wall resection with ribs for primary non-small cell lung cancer from January 2000 to July 2010 were reviewed. Starting in April 2003, a hybrid approach was introduced where thoracoscopic techniques were utilized to accomplish the pulmonary resection and a limited counter incision was used to perform the en-bloc resection of the chest wall, avoiding scapular mobilization and rib spreading. Preoperative, perioperative and outcome variables were assessed using

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Tumori. 2015 Sep 30;0(0):0. doi: 10.5301/tj.5000430. [Epub ahead of print]

VATS lobectomy combined with limited Shaw-Paulson thoracotomy for posterolateral Pancoast tumor.

Rosso L[1], Nosotti M[1], Palleschi A[1], Tosi D[1].

Author information

Abstract

PURPOSE: Several techniques have been proposed for the challenging surgical resection of Pancoast tumors. We describe a hybrid approach that combines video-assisted thoracic surgery (VATS) lobectomy and limited Shaw-Paulson thoracotomy.

METHODS: We report a case of Pancoast tumor in a 57-year-old man, staged as cT3N0M0, that was treated with induction chemoradiotherapy prior to the hybrid surgical approach. After thoracoscopic pleural cavity inspection, an upper right VATS lobectomy by a 3-port standard approach was performed. The chest wall was resected through a limited paravertebral incision, allowing the extraction of the lobe together with the rib segments. The posterior chest wall defect was repaired with a synthetic patch.

RESULTS: The postoperative period was uneventful and the pain never exceed a score of 3 on a visual analogue scale. Pathological examination revealed nonvital tumor cells in the specimen (ypT0N0M0). The patient is disease free at 6 months' follow-up.

CONCLUSIONS: With this approach we experienced excellent access to both the apical and hilar structures. Further experiences are needed to validate the role of VATS lobectomy in the multidisciplinary management of posterior Pancoast tumor.

VATS, OPEN OR HYBRID ?

CONFRONTO TRA LE DIVERSE TECNICHE

Parametri	VATS	MINI-TORACOTOMIA VIDEO-ASSISTITA	TORACOTOMIA POSTERO-LATERALE
Invasività	+	++	+++
Visione Intraoperatoria	+++	+++	++
Palpazione	+	++	+++
Uso di strumenti Convenzionali	+	++	+++
Estrazione pezzo	+	++	+++

La nostra esperienza

"Hybrid Surgery"

VANTAGGI

- POSSIBILITA' DI OPERARE STADI ONCOLOGICI PIU' AVANZATI
- AGGREDIRE LESIONI TUMORALI DI DIMENSIONI MAGGIORI
- IN CASI SELEZIONATI POSSIBILITA' DI ESEGUIRE RICOSTRUZIONI BRONCHIALI E VASCOLARI
- LISI DI TENACI ADERENZE
- IN CASI SELEZIONATI RESEZIONE PARZIALE COSTALE

La nostra esperienza

"Hybrid Surgery"

VANTAGGI CLINICI
(MINITORACOTOMIA ANTERIORE V-A)

RIDUZIONE DEI TEMPI OPERATORI

RIDOTTA PERDITA EMATICA

ESPETTORAZIONE EFFICACE

RIDUZIONE DEL DOLORE

BUONA DINAMICA RESPIRATORIA

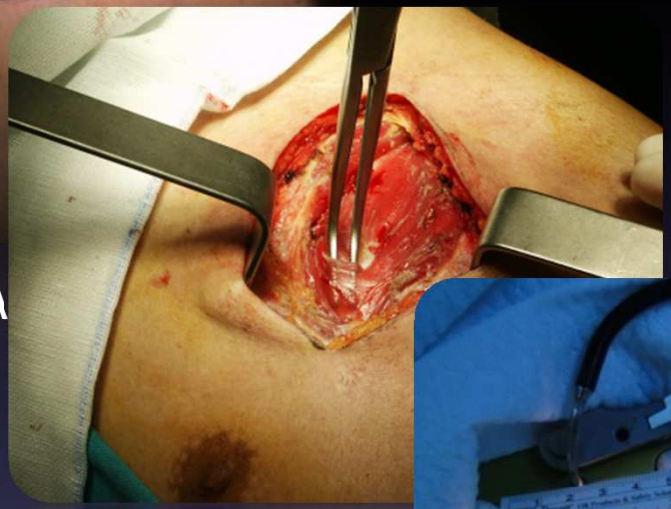
RIDOTTA MORBILITA' E MORTALITA'

RIDUZIONE DEGENZA POST-OPERATORIA

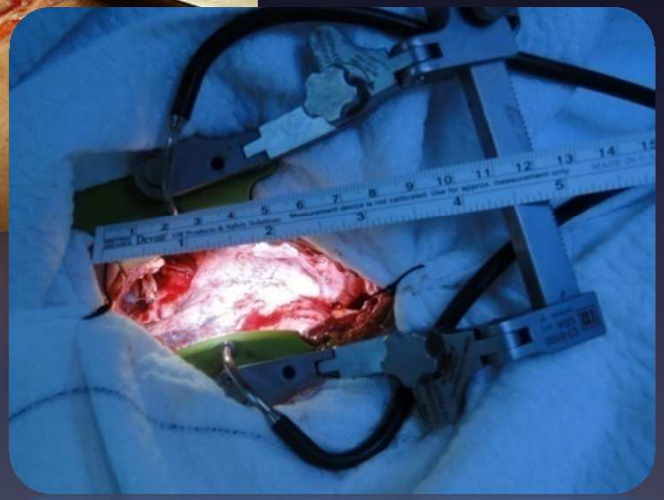
La nostra esperienza

"Hybrid Surgery"

LUNGHEZZA TAGLIO (~ 5 cm)



RISPARMIO MUSCOLI (non sezionati, solo divaricati)



DIVARICATORE (apertura graduale , max 4-5 cm)

RETRATTORE ALEXIS «anello di congiunzione»

La nostra esperienza

"Hybrid Surgery"

La minitoracotomia anteriore V-A è stata per la nostra esperienza un anello di congiunzione alla VATS lobectomy…

Art of Operative Techniques

Video-assisted thoracoscopic lobectomy using a standardized three-port anterior approach - The Copenhagen experience

Henrik J. Hansen, René H. Petersen

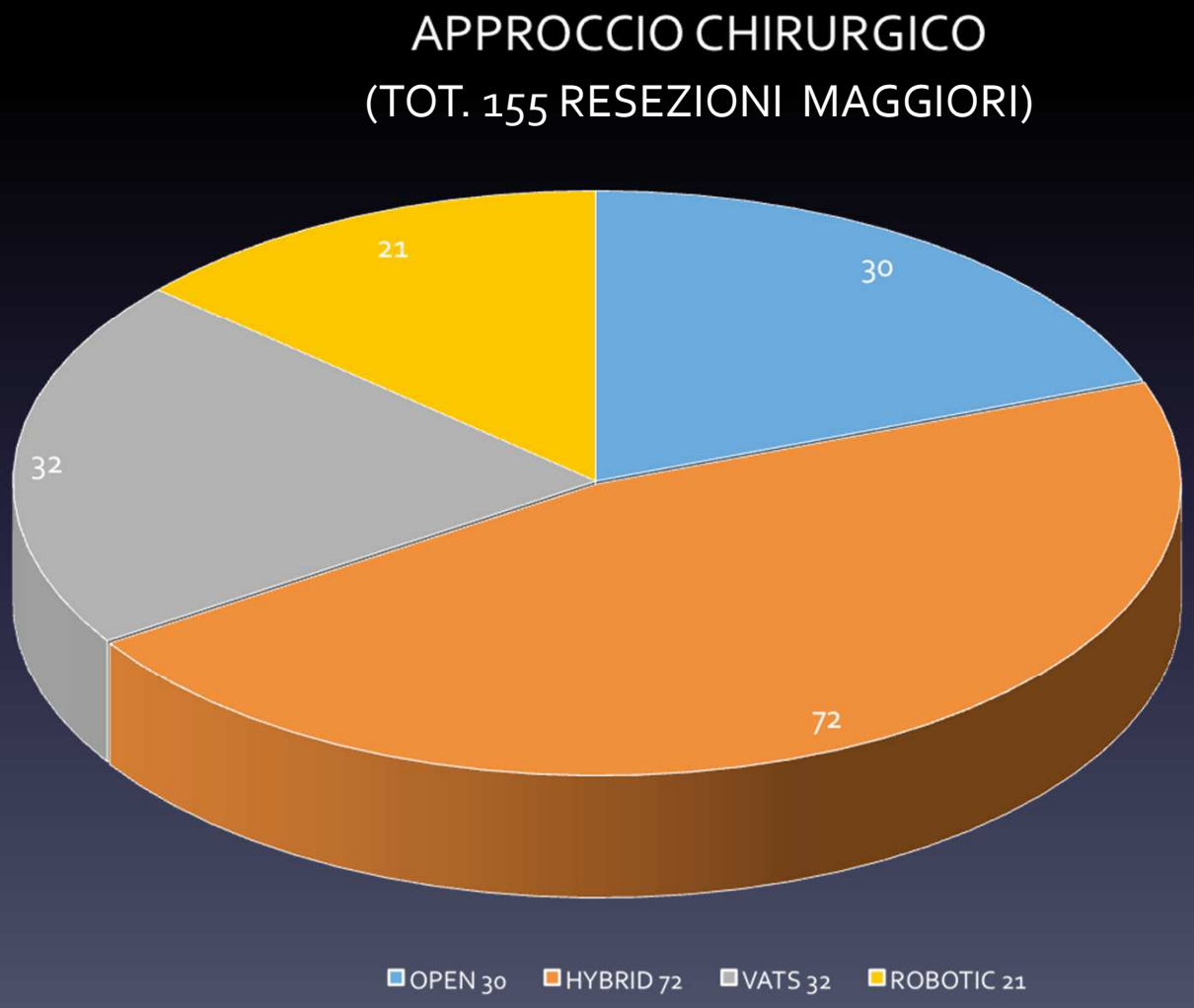
Department of Cardiothoracic Surgery 2.15.2, Rigshospitalet, Copenhagen University Hospital, Denmark
Corresponding to: Henrik J. Hansen, MD. Department of Cardiothoracic Surgery 2.15.2, Rigshospitalet, DK 2100 Copenhagen O, Denmark. Tel: +45 3545 2906; Fax: +45 3545 2182. Email: henrik.jessen@rh.regionh.dk.

La nostra esperienza

"Hybrid Surgery"

Nella formazione dei giovani chirurghi questo nostro approccio potrebbe essere utile anche come learning curve al fine di eseguire la VATS lobectomy «in sicurezza» senza dover passare necessariamente per la fase «OPEN».

Casistica degli ultimi 12 mesi



CONCLUSIONI

- LA FORMAZIONE DEL CHIRURGO MODERNO DEVE ESSERE «A TUTTO TONDO» MA NECESSARIAMENTE DEVE ABBRACCIARE LA FILOSOFIA DELLA "MININVASIVITA'".
- RIMANGONO A NOSTRO PARERE INDICAZIONI PRECISE ALLA CHIRURGIA MININVASIVA.

CONCLUSIONI

- IL PERCORSO EVOLUTIVO VERSO LA MININVASIVITA' E' DIFFERENTE
- PENSIAMO CHE IL NOSTRO APPROCCIO IBRIDO (MINITORACOTOMIA ANTERIORE V-A) POSSA ESSERE UN ANELLO DI CONGIUNZIONE TRA LA OPEN E LA VATS MA CON UNO SGUARDO RIVOLTO ALLA RATS CHE POTREBBE CONQUISTARE LO SCENARIO DEL DOMANI.

GRAZIE