Prof. Kostas Papagiannopoulos: six key points of technique for pulmonary segmentectomy

Received: 01 December 2018; Accepted: 13 December 2018; Published: 17 December 2018.
doi: 10.21037/vats.2018.12.04
View this article at: http://dx.doi.org/10.21037/vats.2018.12.04

Editor's note

Lung cancer is the leading cause of cancer death among men and women in the world. Fewer than 15% achieve a 5-year survival. The vast majority (85%) present with advanced disease, although stage I patients may have a 5-year survival approaching 70%. R0 resection remains the standard treatment of choice for patients with clinical stages IA, IB, IIA, and non-T3N0 stage IIB NSCLC. Some controversies exist regarding the choice of procedure and technique that will meet surgical oncologic principles: conservative resection as a definitive alternative to lobectomy or pneumonectomy, or segmental resection, SBRT and so on.

Prof. Kostas Papagiannopoulos (*Figure 1*), the past President of European Society of Thoracic Surgery (ESTS) and board member of the journal *Video-Assisted Thoracic Surgery* (*VATS*), has rich clinical experience of treating lung cancer. VATS have a great honor and pleasure to interview Prof. Papagiannopoulos with some controversial questions that many Chinese young thoracic surgeons are concerned about.

Figure 1 Prof. Kostas Papagiannopoulos.

Expert's introduction

Mr. Kostas Papagiannopoulos is a Senior Consultant Thoracic surgeon and a Senior Honorary Lecturer at St. James's University Hospital in Leeds, UK.

He completed his cardiothoracic speciality studies in Cape Town, South Africa. He developed early a specific interest in pathology of the lungs and oesophagus. He further enhanced his experience with two Thoracic fellowships in Royal Brompton Hospital, London, UK and Leuven, Belgium under the supervision of Professors Peter Goldstraw and Tony Lerut.

He was successfully appointed as a Consultant Thoracic surgeon in Leeds General Infirmary and then at St. James's University Hospital in Leeds UK in 2001. He has been appointed as Lead Clinician of the Department and has served on this role for over 10 years. He has also spearheaded the development of several programs including the minimally invasive Thoracic Surgery program since 2006 with over 2000 VATS lobectomies.

Mr. Papagiannopoulos was the Treasurer of the European Society of Thoracic Surgeons and a member of the executive Committee since 2009. He is also a member of the ESTS school of Thoracic Surgery. He is the past President of the European Society of Thoracic Surgery [2017–2018].

He is a member of several International Societies and a reviewer on peer reviewed Journals. He has published several papers with over 400 citations and has lectured on numerous International meetings and educational events.

Interview

VATS: Recently several studies indicated the survival rate of stereotactic body radiotherapy (SBRT) is very close to surgery in early stage NSCLC patients, how do you think the normative consensus on SBRT?

Prof. Papagiannopoulos: SBRT has been traditionally

used in early lung cancers on patients who were deemed medically unsuitable for surgical treatment, and we are seeing an improvement of dose related and proton/carbon ion treatments which promise improved outcomes in managing local disease and local recurrence. But most studies performed so far, if carefully dissected, show superior results in histologically proven early cancers with surgery compared to SBRT in overall survival with comparable morbidity.

VATS: Compared with surgery, what are the shortcomings of SBRT in NSCLC? What are the unique advantages of surgery in early stage NSCLC?

Prof. Papagiannopoulos: SBRT have three shortcomings as: (I) SBRT results come from studies on patients who had a small percentage of histological confirmation; (II) no adequate lymph nodal staging is available in patients who undergo SBRT; (III) we still have issues in identifying patients with micro metastases and therefore we see SBRT failures due to distant recurrences.

SBRT though will never manage distant disease and only the combination with systemic treatment might prove beneficial for some patients. So I still think minimally invasive surgery for early cancers remains the gold standard for *patients who have the physiology to undergo surgical treatment and wish to take surgery as treatment. We need also to remember that current improvements in pre intra and postoperative management of surgical patients have produced acceptable and low morbidity and mortality even in patients with marginal physiology*.

VATS: In your opinion, is preoperative PET scan necessary for choosing methods of lymph node dissection?

Prof. Papagiannopoulos: There are three ways described forms of lymphadenectomy, PET scan, histological type of cancer and upper or lower lobe topography of tumor will influence the type of lymphadenectomy to be performed:

(I) Systematic lymph nodal dissection;
(II) Lymph node sampling and;
(III) Lobe specific lymphadenectomy.

In modern practice, all patients with confirmed or suspected cancer should undergo staging with PET scan. We know from studies that PET scan has a good negative predictive value and therefore a negative PET is quite sensitive and no further staging is required. A positive PET scan requires pre-operative histological staging either with EBUS or mediastinoscopy.

VATS: When lymph node sampling compared with systematic lymph nodal dissection in IA stage NSCLC surgery, which way may increase patients' survival rate?

Prof. Papagiannopoulos: We have entered the era of immunotherapy and therefore several of these patients might eventually be offered adjuvant immunotherapy, so I think the detailed lymph nodal dissection offers additional benefits: (I) provides an appropriate postoperative final histological staging; (II) offers the opportunity to pick up unsuspected N1 and N2 disease and provide patients with adjuvant treatments with improved prognosis.

Although in small studies in patients with early cancer systematic lymph nodal dissection offers equal overall survival and disease free survival with lobe specific lymphadenectomy, lymph node sampling remains controversial and until further evidence is available lymph node sampling should be discouraged.

VATS: We know you and your team have done a lot of brilliant work of lung segmental resection, would you please share with us your valuable experience of determination of intersegment plane in lung segmental resection?

Prof. Papagiannopoulos: Several techniques have been described thus far in an attempt to identify intersegmental planes. I cannot say that anyone is superior to the others but allow me to offer my own thoughts in this subject:

(I) Whatever technique used, the surgeon should be well trained in the lung anatomy and its identification on CT scans with 3D reconstruction/ planes;
(II) The correct identification of intersegmental planes has two potential benefits: (i) provide appropriate resection margins; (ii) provide possible "equal" anatomical lymphatic barriers similar as when a lobectomy is performed.
(III) The intersegmental planes can be developed often by following hilar structures. The dissection of the pulmonary artery branches with respect of the sheath and alveolar disruption offers a natural envelope identifying segmental planes.
(IV) The bronchial anatomy should then be followed and the resection margins should follow planes laterally to the bronchial tree margins.

(V) More is better than less therefore multi segmental resections are preferable if any doubts arise regarding adequate margins.
(VI) It is also preferable to utilize techniques of diffusion i.e., ICG or methylene blue rather than techniques of differential inflation. Malignancies generally metastasize through lymphatics and not alveoli.

VATS: You and your team have completed some great clinical studies of multicenter, what is the most critical part of the execution process?

Prof. Papagiannopoulos: There is no doubt that modern clinical practices need to be guided by guidelines and evidence in the medical literature structured by treatment protocols which contain to a large extend common sense and individualized plans for all patients. A successful clinical study needs four key points:

(I) Patient accrual remains an issue in research and development in the Western world. Large cohort studies are riddled with recruitment issues as well as standardization issues.
(II) Recruitment might not be as challenging as it looks in the Asian continent but standardization remains a challenge.
(III) Appropriate data collection, validation and scrutiny are the most important issues. The only way to excel in performing studies is presence of appropriate databases with data base managers and available such online platforms for clinicians.
(IV) The biggest challenge often is strict and efficient follow up of patients involved in studies. Medics in vast geographical areas need not much man power but more importantly remote connectivity with patient populations were distance and cultural diversities become a hurdle for collection of accurate and correct data sets.

doi: 10.21037/vats.2018.12.04
Cite this article as: Jia Z, Wang MJ. Prof. Kostas Papagiannopoulos: six key points of technique for pulmonary segmentectomy. Video-assist Thorac Surg 2018;3:48.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the editorial office, *Video-Assisted Thoracic Surgery*. The article did not undergo external peer review.

Conflicts of Interest: The author has completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/vats.2018.12.04). Molly J. Wang reports that she is a full-time employee of AME publishing company (publisher of the journal).

Ethical Statement: The author is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

(Interviewer: Zhuoqi Jia, The First Affiliated Hospital of Xi'an Jiaotong University; Science Editor: Molly J. Wang, VATS. vats@amegroups.com)