Prof. Harvey Pass: segmental resection or lobectomy in stage IA NSCLC?

Received: 13 December 2017; Accepted: 30 December 2017; Published: 21 January 2018.
doi: 10.21037/shc.2017.12.09
View this article at: http://dx.doi.org/10.21037/shc.2017.12.09

Editor's note

The 20th National Continuing Medical Education Forum in General Thoracic Surgery and the 9th Thoracoscopy Workshop organized by Tongji University Affiliated Shanghai Lung Branch Hospital was held in Shanghai from 17–18 November 2017. The first day of the event involved surgery demonstrations covering electromagnetic navigation, 17 thoracoscopic surgeries and a variety of minimally invasive surgical approaches. The second day featured approximately 50 keynote speeches regarding the latest advances in thoracic surgery. A team of domestic and foreign experts assembled to spark new thoughts and ideas through a series of active academic exchanges.

We were honored to have invited Prof. Harvey Pass from New York University (NYU) Langone Medical Center to share with us his thoughts on the best procedure in stage IA NSCLC, clearing away lymph node, as well as a number of controversial topics in the field of thoracic surgery (*Figure 1*).

Expert introduction

Prof. Harvey Pass, MD, has entered his 4th decade of contributing to the fight against thoracic malignancies, including mesothelioma and lung cancer.

Prof. Pass moved his base of operations from the National Cancer Institute (NCI) in Bethesda, Maryland, to the Karmanos Cancer Institute in Detroit, to his current home at NYU. But his focus has remained the same. At each stop he has studied mesothelioma and lung cancer, looking for answers, raising awareness, treating patients, extending lives—offering hope where once there was none.

He is currently the director of the Thoracic Surgery Division at NYU Medical Center, leading its Early Detection Research Network Biomarker Discovery Laboratory for Mesothelioma funded by NCI.

Interview questions

SHC: In your opinion, which surgical approach in stage IA NSCLC is better: segment resection or lobectomy?

Prof. Pass: My own feelings are that we should wait for the randomized trials from the United States and Japan. But I personally have already adapted segmentectomy as my preferred approach for patients who have ≤2 cm lesions that have minimal, meaning less than 25% solid disease in the ground glass opacities (GGO), the part-solid nodule, and if you can perform a segmentectomy with completely negative margins. The apical-posterior, left upper lobe trisegments, basilar segments of the lower lobes, superior segments of the lower lobes, possibly anterior segments of the right upper lobes are I would say, good places for a segmentectomy, and I prefer that because it preserves function. If the patients are going to recur with another primary lung cancer in the future, there are still candidates because you can preserve lung function.

SHC: Is it necessary to do a systematic lymph node dissection or only lymph node sampling in stage IA NSCLC? Could segment resection retain more lung function?

Prof. Pass: I think that the topic on lymph node sampling or dissection is controversial. There are certain famous thoracic surgeons, specifically from Japan, who feel that a selective lobar or nodule sampling or dissection is alright. In the United States, no matter whether we do a segmentectomy or lobectomy, although the data really doesn't show that a sampling is any different from a complete dissection, I think it's important that you should do a complete nodule dissection if you can. The key thing is you need to be able to look at each of the lymph node-bearing areas in the mediastinum. This means that on the right side, you need to look at 2, 4, 7, 8, 9, and if there is a 3, you need to take that too. On the left side, you need to

Figure 1 AME Editor, Prof. Harvey Pass, and Dr. Zhuoqi Jia.

really look at 5, 6, 9 as well as 7. For me, I have not adapted selective nodule dissection with regards to lobar specific. I'd try to do a lymph node dissection but the majority of my cases are with lymph node sampling and I don't think at this point we have data shows that it makes a difference. With regards to pulmonary function preservation, I do believe there is some sparing of pulmonary function if you do segmentectomy as opposed to a lobectomy. However, there have been some studies that show that the long-term pulmonary function may not be much different. My own feeling is that it depends on how much the segment occupies. A patient who has a trisegmentectomy of the left upper lobe may indeed have some loss of function because you're taking three segments. However, a patient who has a superior segmentectomy where you have only a portion of the lobe taken, that's a less amount of lung tissue taken. Those patients may not have a deficit in the pulmonary function. I believe that studies show that in the long term, there is a preservation of lung function with segmentectomy. But that also is an intermediate point for the JCOG study, which is the randomized study of lobectomy versus segmentectomy.

SHC: In your opinion, is it necessary to clear away bilateral laryngeal nerve lymph node for middle-lower esophageal cancer?

Prof. Pass: That's a very interesting question for an American surgeon. Except for Prof. Altorki and some others who are really experts in esophageal resection, I don't believe that the extensiveness in lymph node dissection or it being bilateral or worrying about the recurrent laryngeal nerve is something we deal with in the United States. It's not a standard thing in my opinion. Do I think it makes a difference? Potentially for whether the patient needs further therapy, but I personally do think such an aggressive approach is not standard in the United States.

SHC: Do you have any tips from your experience to share with surgeons on how they can prevent recurrent laryngeal nerve injury?

Prof. Pass: I think that the important thing is if you are going to do dissection around the recurrent laryngeal nerve, number one you need to use a no-touch technique, and you can do that by using your instruments, especially a sucker and lifting instead of pulling. You should be very careful about retraction, because retraction in the neck or down in the chest is going to cause nerve injury. Frankly, when I do dissection either for lung cancer or esophageal cancer around the recurrent laryngeal, I use blunt dissection and I don't use the electrocautery. I use those techniques when I'm trying to identify the recurrent laryngeal nerve and try to preserve it.

SHC: Minimally invasive esophagectomy has been widely accepted for its reliability and safety, how do you think about the advantage and deficiency of robot-esophagectomy?

Prof. Pass: That's an excellent question. I think that we're just getting the numbers to be able to compare minimally invasive esophagectomy to robotic esophagectomy. However, there really has not been a standardized trial where you compare, head-to-head by randomization, robotic esophagectomy versus minimally invasive esophagectomy that was popularized by Dr. Luketich from Pittsburg. I've discussed this with Dr. Cerfolio, who is one of the world's experts on this, and he has talked about the difficulty of the robotic esophagectomy specifically in the abdomen. My own feeling is that the minimally invasive esophagectomy that has been described from Pittsburg in which you use a laparoscopic approach to dissect and free up the stomach is quicker. In terms of post-operative discomfort, it's as good if not better than robotic esophagectomy. I think for the thoracic surgeon who is not comfortable with doing minimally invasive esophagectomy himself using the belly, in the United States you can actually have your friends who do gastric bypass or obesity operations mobilize the stomach very quickly for you and the thoracic surgeon can work on the chest, and the whole operation can proceed

quickly. I think with regards to the thoracic aspect of the operation that is evolving robotically. Indeed, it may be an advantage to be able to have a three-dimensional view in the chest and being able to do the anastomosis. But leak rates, time in the hospital, post-operative complications are things that we need to consider, and we really need to have a standardized, randomized trial to be able to answer that question.

SHC: Does robotic surgery decrease complications of esophagectomy and progress free survival?

Prof. Pass: I don't think there are any data that will tell you there is a difference in progress free survival at this point for robotic esophagectomy versus minimally invasive esophagectomy. It depends on who is reporting and what they're reporting as to what the complications are. I think that Dr. Cerfolio feels that while it may appear to be decreasing, when you start out with robotic esophagectomy, there may be more complications. I think that's an unanswered question at this point, specifically with the long-term follow-ups. Hopefully with the numbers that come, and with one center doing both operations maybe, at least at a single center, you could compare minimally invasive to robotic with regards to complications, long-term survival, those sorts of issues.

SHC: Which clinical study of mesothelioma do you expect the most information from?

Prof. Pass: I think we might need a lot of studies on mesothelioma. Unfortunately, we don't have a lot of those. We have had meetings in the United States to say what are the most important questions need to be looked at. I think that we need to look at the issue of post-operative radiation therapy, specifically in pleurectomy decortication, because in the United States, we really have shifted from extrapleural pneumonectomy to lung sparing. We spare the lung instead of taking the lung, the diaphragm, and the pericardium like we used to. We think that lung sparing operation patients do better in terms of complications and long-term survival. That means we're taking earlier patients with less bulk disease, so what are the questions? We'd love to have a study where we compare early stage disease, extrapleural pneumonectomy versus pleurectomy decortication, but that study will never be done. However, for pleurectomy decortication, which is the operation that is being used increasingly in the United States, I think we need to know what to do after the operation. Do we do chemotherapy or specialized, intensity-modulated radiation therapy after the operation? These are some of the questions we need to answer.

SHC: What do you think is the future of mesothelioma when it comes to immunotherapy?

Prof. Pass: That's a very hot topic. Right now we know that immunotherapy works best for patients who have many mutations. It turns out that mesothelioma does not have that many mutations. However, there have been at least four studies now looking at the use of checkpoint inhibitors in immunotherapy for mesothelioma. There have been dramatic responses, but the number of responses is not as high as what you see in squamous cell lung cancer or adenocarcinoma. I think we need more time to be able to see how long the patients live after immunotherapy. There are other types of immunotherapies called CAR-T (chimeric antigen receptor T-cell) where there are also promising data, but that is still experimental, there is also mesothelium-based therapy, and for all those, we will have to wait for the final results.

SHC: Could you share your experience in the treatment of multiple pulmonary cancer with Chinese thoracic surgeons? Do you have any new findings in this field?

Prof. Pass: I think that the biology of patients who have multiple lung cancers is very different in patients who have one dominant lung cancer. I think that with patients who have multiple lung cancers, it depends on when they get multiple lung cancer, if they are synchronized at the same time. If they are different, then there may be separate primaries and they need to be resected as such, and handled as stage I. I think that patients who have been resected and developed a second primary later on also do well. For me, the management of multiple lung cancers, if you have small lung cancer, and it is a GGO, and it has minimal solid component, you should absolutely be thinking of lung preservation. You should handle those differently than the other lung cancer that may be larger and has more of a solid component. You may not be able to handle that with either a wedge or a segmentectomy. That may require a lobectomy or a bisegmentectomy, but the rest of those, if they are presented at the same time, need to be handled with either

Figure 2 Prof. Harvey Pass: segmental resection or lobectomy in stage IA NSCLC (1)?
Available online: http://asvidett.amegroups.com/article/view/22427

wedge or stereotactic body radiation therapy (SBRT), or cryoablation. But in my opinion, you must preserve as much lung tissue as possible, so that the patients can be treated with systemic options later on.

SHC: What made you interested in becoming a surgeon in this field? Do you have any suggestions for young surgeons?

Prof. Pass: When I became a thoracic oncologist, it was in the 1980s. At that time, cardiac surgery was the leader. I found that my talents were best in thoracic surgery, and I was very fortunate to not only be able to do thoracic surgery in the NCI in Bethesda, but I could also combine that with the study of lung cancer and mesothelioma. That's what really drove me, in other words, something unique in the 1980s, where there weren't a lot of thoracic oncologists. It allowed me to do something that other people hadn't done.

For young people who are now thinking of thoracic surgery, there are so many options and technical things that have evolved that they can learn now. They can learn how to do endobronchial ultrasound (EBUS), electromagnetic bronchoscopy, VATS and uniportal VATS. They can learn how to do intraoperative new things, such as using fluorescent dyes, where you can see where to cut the lung. There is a whole wealth of new things that are happening that a young thoracic surgeon would be excited about. But a young thoracic surgeon must also be careful because we are treating a lot of patients who have lung cancer screening. These are small nodules and your radiation oncology friends and interventional pulmonology friends feel that maybe you can just radiate or ablate those and not have to operate. I think that setting up an opportunity for young aggressive thoracic surgeons to participate in ongoing trials that are very important to answer: is surgery or radiation or cryoablation best? Or do you have to combine those in certain patients? So it is a very exciting time for young thoracic surgeons to participate not only in the science, but in the trials to answer questions.

SHC: Thank you.

For more details, please check out the interview video (*Figure 2*).

Acknowledgments

On behalf of the editorial office of *Shanghai Chest* (SHC), we would like to extend our gratitude to Prof. Pass for sharing his opinions with us. Special thanks to Dr. Zhuoqi Jia from The First Affiliated Hospital of Xi'an Jiaotong University for his assistance and guidance in the interview.
Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the Editorial Office, *Shanghai Chest*. The article did not undergo external peer review.

Conflicts of Interest: Both authors have completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/shc.2017.12.09). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are 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.

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(Science Editors: Silvia Zhou, Bella Poon, SHC, shc@amegroups.com)

doi: 10.21037/shc.2017.12.09
Cite this article as: Zhou S, Poon B. Prof. Harvey Pass: segmental resection or lobectomy in stage IA NSCLC? Shanghai Chest 2018;2:4.