

## Professor Takashi Suda: innovation keeps you growing

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The First Shanghai Lung Cancer Symposium was held successfully in Shanghai, China from 6<sup>th</sup> November to 8<sup>th</sup> November 2015. In this symposium, world-known experts were gathering together in this symposium discussing about the progress on personalized medicine under multidisciplinary team of lung cancer. This time, *Journal of Visualized Surgery (JOVS)* Editorial Office has the great honor to invite Prof. Takashi Suda (*Figure 1*), a pioneer of robotic surgery for lung cancer, to have an interview with us, sharing his perspectives on personalized medicine as well as his personal experience as a thoracic surgeon.

***JOVS:*** *In your speech during the Shanghai Lung Cancer Symposium, you talked about the minimally invasive surgery for lung cancer—right upper lobectomy. Would you like to share with us what kind of message would you like to deliver through this interesting speech?*

**Prof. Suda:** The topic given to me was video-assisted thoracoscopic surgery (VATS) for cancer of the right lung. There are several variations of VATS. These can be broadly divided into two types: VATS in which the surgeon only looks at the monitor projecting images from the endoscope and hybrid VATS in which the surgeon primarily observes the surgical field under direct vision and uses monitor images only as a secondary reference. VATS also includes robot-assisted thoracoscopic surgery and uniportal VATS, which has become increasingly popular in recent years.

One of the benefits of thoracoscopic surgical procedures is that it enables the appropriate positioning of a camera scope to view sites such as the posterior aspect of vessels that cannot be viewed during thoracotomy. Other benefits include the option for magnification and the fact that it allows finer manipulation because the forceps can be secured with the use of the port as a fulcrum. Furthermore, another benefit is that the endoscopic image is displayed on the monitor so that assistants and nurses can see the visual field with the surgeon.

To operate safely and with high precision, the assistant



**Figure 1** Dr. Takashi Suda, MD, is a specialist in thoracic surgery. He is a pioneer of robotic surgery for lung cancer in Japan. Currently, Dr. Suda is an Associate Professor in the Department of General Thoracic Surgery at Fujita Health University Hospital located in Toyoake, Japan.

inserts 1–2 of these tools and applies traction to the lung to expand the visual field. It is important for the surgeon to use both hands during dissection. For example, if a surgeon inadvertently uses the left hand to apply traction, it would not be possible to perform a highly precise surgery because only the right hand would be available for this task. On another note, when using a two-dimensional (2D) monitor during thoracoscopic surgery, an understanding of the three-dimensional (3D) structures is difficult and the angle of forceps entry is limited. This is a disadvantage because it restricts dissection and suturing along a natural plane.

We started performing robot-assisted surgery from 2009. The advantages of this technique are the true 3D imaging with binocular vision and the high procedural accuracy and maneuverability afforded with the use of multi-articulated forceps. In particular, multi-articulated forceps in the thoracic cavity may be used to dissect along a natural plane; this is a major advantage compared with conventional

VATS, in which tools can be directly operated. On the other hand, the disadvantages of robot-assisted surgery include being unable to depend on the sense of touch and the increased cost of medical treatment.

The number of reports on single-port lobectomy has been increasing in recent years. For single-port surgery, it is important to select appropriate tools. In this method, we operate with both hands, so we use grasping forceps that have a flexed tip. Although the surgeon's hands are close together during the procedure, the vascular sheath can still be grasped. However, it is possible to insert a stapler in only one direction during right upper lobectomy. To enable smoother stapler insertion, sequential dissection is performed, starting from the superior vascular bronchi, followed by interlobar dissection. Videos of single-port lobectomies at other hospitals show that dissection is commonly performed with one hand, which often compromises the precision of surgery compared with that of conventional three-port VATS. Although this surgery can be adequately performed by an experienced surgeon, manipulation remains a challenge due to the fact that the surgeon's hands are in close proximity to each other during the procedure. In the future, we hope for improvements in the tools used for single-port lobectomy.

During this symposium, I have presented the procedure of right upper lobectomy and mediastinal lymphadenectomy by surgical techniques that are currently in use: conventional three-port VATS, robot-assisted surgery, and single-port VATS. An understanding of the advantages and disadvantages of each approach is essential for the selection of an appropriate approach based on the case.

**JOVS:** *The theme of this symposium is personalized medicine under multidisciplinary team of lung cancer. Would you like to share with us the status of multidisciplinary team of lung cancer in Japan? In your daily practice, how to encourage or achieve successfully multidisciplinary cooperation between different department, like surgeons, oncologists, radiologists and so on?*

**Prof. Suda:** At all hospitals throughout Japan, I recommend the establishment of a tumor board conference, during which members of the team can exchange opinions, collaborate, investigate, and understand cancer symptoms, conditions, and treatment plans. These would cover numerous activities in addition to case studies, such as

enrollment and the survey of chemotherapy regimens; the creation of internal control manuals; internal cancer enrollment; and cancer counseling and support centers in outpatient chemotherapy departments and survey participation in therapeutic and clinical experiments. Once a month, at our hospital, we conduct the tumor board conference where pulmonologists, thoracic surgeons, radiologists, radiation therapy specialists, medical oncologists, pathologists, palliative care department members, nurses, pharmacists, medical safety divisions, social workers, and administrative staff gather and perform case studies. I believe that the gathering and discussion of as many professionals as possible are important.

**JOVS:** *Personalized medicine is quite a hot topic this year. Would you like to tell us your perspective on this concept? What do you think is its main point?*

**Prof. Suda:** The individualization of therapy is an extremely interesting field. Currently, treatments are being primarily individualized in diagnostic drugs such as chemotherapy and immunotherapy, but it is also becoming increasingly relevant in the field of surgery as well. For example, what should be performed as standard surgery in very elderly patients with lung cancer? What should be performed as reduction surgery? Should they undergo chemotherapy? There are major individual differences among patients and no fixed guidelines. Large-scale clinical trials are important, but clinical research tailored to individual cases is equally important. Going forward, I believe that it will become important to individualize treatment from a holistic perspective, including aspects such as the patient's personality and occupation.

**JOVS:** *We know that you are a pioneer in the robotic surgery of lung cancer. Based on your experience, would you like to share with our young surgeons some advices on achieving an excellent robotic surgery?*

**Prof. Suda:** I believe that experience in VATS is important to safely introduce robot-assisted surgery in the field of thoracic surgery. There are many surgical techniques specific to endoscopic surgery employed when performing robot-assisted surgery. If surgeons can perform surgery for lung cancer using VATS, I believe that it is relatively easy to move to introducing robot-assisted surgery. As the

discovery of new surgical procedures that require the use of a robot system in the future has been predicted, it is important for us surgeons to be sufficiently experienced in VATS to be able to adapt to this, even if our hospitals have yet to implement the use of a robot system.

***JOVS:** Other than the advices, we're also quite interested in your early experience as a thoracic surgeon. Would you like to share with us some interesting or unforgettable stories? What encourage you to be who you are now?*

**Prof. Suda:** Individual professionals vary and have unique processes of developing and mastering skills. If we simply imitate others, we will be unable to surpass them despite our best efforts. To date, we have accumulated the following achievements. In 2004, we started performing VATS lobectomy using our original method. In 2006, we developed a method of performing VATS extra pleural pneumonectomy. In 2009, we performed the first robot-assisted surgery for lung cancer in Japan. In 2012, we developed single-port thymectomy using a subxiphoid approach. Most recently, in 2015, we developed trans-subxiphoid robotic thymectomy. A challenge on innovations, such as these, is that they always require a great deal of courage; however, they have always rewarded me in my work that followed. I also believe that taking on these challenges has allowed and will always allow me to keep growing.

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***JOVS:** In this year's American Colleague of Surgeons (ACS), an interesting question was posted on a board—what do you love about surgery? Here we would like also like to ask—what do you love about surgery?*

**Prof. Suda:** Surgeons must strive to offer their patients the latest and best surgery in routine practice. As for surgical techniques, I believe that no method will ever be considered to be perfect. Therefore, I am always in search for a better surgical technique and will take great delight in knowing that the surgical techniques that I have developed will be beneficial to patients. I feel that surgery is so fascinating precisely because it requires continuous efforts for improvement.

***JOVS:** Thank you for your precious time!*

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None.

### **Footnote**

*Conflicts of Interest:* The author has no conflicts of interest to declare.

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