How we use SYNAPSE 3D

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SYNAPSE 3D is an image-assisted simulation software program that is useful for thoracic surgeons. Image-assisted simulation software is likely to be regarded as follows: “I have to ask a radiology technologist how to use the software,” or “I am not familiar with the usage of this kind of computer system.” However, we regard SYNAPSE 3D as a very user-friendly device that can be easily used by surgeons. Anyone can operate the device within 10 min because the actual use of the device is performed along the flow of the device’s operating system. The device is equipped with various options. Surgeons are likely to enjoy learning to use the device by themselves.

Below, we will introduce the actual use of the “Lung Analysis Scope” and “Lung Analysis Resection” options, which are part of the SYNAPSE 3D program, in a real-world setting, at our facility.

The “Lung Analysis Scope” option has the following two main uses:

1 Determination and simulation of lymph node puncture using endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA)

EBUS-TBNA has emerged as a minimally invasive diagnostic technique in recent years. In many hospitals, it is used for assessment of tumors involving the mediastinal and hilar lymph nodes or of tumors that abut the trachea and bronchi prior to performing mediastinoscopy. EBUS-TBNA is a useful, minimally invasive modality. However, owing to the steep learning curve for this technique, its use in inexperienced facilities or for initial testing may not yield the expected results. This constraint can be overcome by three-dimensional reconstruction of the target lesion. At our facility, young surgeons often create virtual images using SYNAPSE 3D before proceeding to bronchoscope examination. Moreover, the device can be used for educational purposes.

An example is shown in Figure 6. In Figure 6A (preoperative), it is expected that two small pulmonary branches (white arrow) must be treated when we consider the resection line of the interlobar part of the pulmonary artery. The display can change only the pulmonary arteries to hide pulmonary veins (Figure 6B) by one click and the white dotted line shown represents the resection line for the pulmonary artery. In addition, it is also possible to display only the bronchi by h