GCTAB Column

Uniportal video-assisted thoracoscopic lobectomy for lung cancer

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Abstract: Great advances have been made in the multi-port video-assisted thoracoscopic surgery lobectomy in the recent two decades. However, only five years passed a more minimally surgery, namely uniportal video-assisted thoracoscopic lobectomy, was launched. Accumulating experience and exploration are being performed in most of the medical centres and hence we summarize the experience of uniportal video-assisted thoracoscopic lobectomy in our operation group.

Keywords: Video-assisted thoracic surgery (VATS); lobectomy; lung cancer

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Introduction

In the recent two decades, the multi-port (2–4 ports) video-assisted thoracoscopic surgery (VATS) lobectomy (1-3) have made great progresses. Though the same long-term survival rate, VATS lobectomy is associated with more minimal surgery wound, less postoperative pain, less perioperative blood loss, less surgery time, less impaired lung function, less operative complication, quick recovery, and better quality of life when compared with traditional open surgery for lung cancer (2,3). However, the more minimal invasive technique for lobectomy is always the goal of thoracic surgeons. Gonzalez firstly reported uniportal VATS for lobectomy and lymph node dissection in 2011 (4), making the VATS lobectomy to a new high level. There is only one incision in uniportal VATS and all surgery instruments enter the operative field via it. Several factors such as the interference of each instruments and limited operative range of activity make it difficult for VATS lobectomy.

Under the continuous and great endeavor of thoracic surgeons, uniportal VATS lobectomy has been widely used in the world (5-7). However, more experience and exploration about uniportal VATS surgery are still needed. Therefore, we summarize the experience of uniportal video-assisted thoracoscopic surgery lobectomy from Dec 2014 in our group.

Operative techniques

After general anesthesia, double-lumen endotracheal intubation, lateral position, and one-lung ventilation collapse, a 3–5 cm incision was performed between anterior axillary line and posterior axillary line. 3–5 cm incision is usually in the 4th intercostal space when upper lobectomy, and is in the fifth intercostal space while middle or lower lobectomy.

Right upper lung resection: lung fissure→the posterior right upper pulmonary branch→the right upper lobe bronchus→the anterior right upper pulmonary branch→the right superior pulmonary vein (*Figure 1*).

Left upper lobectomy: lung fissure→the left pulmonary segments artery→the left lung bronchus→the left pulmonary vein (*Figure 2*).

Left and right lower lobectomy: lung fissure→the lower pulmonary artery→the lower lung bronchus→the lower lung vein→the lower pulmonary ligament [*Figure 3* (L), *Figure 4* (R)].

Lymph node dissection [*Figure 5* (2R, 4R), *Figure 6* (5L, 6L), *Figure 7* (7L), *Figure 8* (7R)]→thoracic drainage catheter tube→and then suture.

Figure 1 Right upper lung resection (8).
Available online: http://www.asvide.com/articles/1025

Figure 2 Left upper lobectomy (9).
Available online: http://www.asvide.com/articles/1026

Figure 3 Left lower lobectomy (10).
Available online: http://www.asvide.com/articles/1027

Figure 4 Right lower lobectomy (11).
Available online: http://www.asvide.com/articles/1028

Figure 5 Lymph node dissection (2R, 4R) (12).
Available online: http://www.asvide.com/articles/1029

Figure 6 Lymph node dissection (5L, 6L) (13).
Available online: http://www.asvide.com/articles/1030

Figure 7 Lymph node dissection (7L) (14).
Available online: http://www.asvide.com/articles/1031

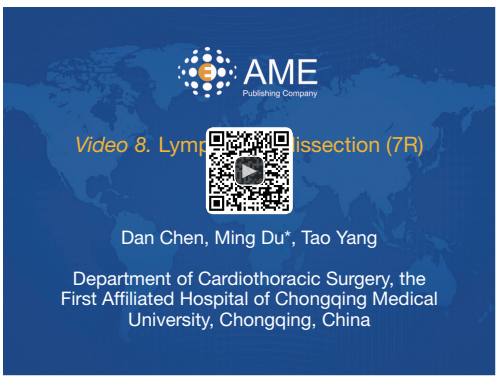

Figure 8 Lymph node dissection (7R) (15).
Available online: http://www.asvide.com/articles/1032

Comments

Compared with multi-port VATS lobectomy, uniportal VATS lobectomy could decrease the chest injury, postoperative pain, and postoperative paresthesia (16-18). In our surgery process, the thoracoscope was in the behind and the surgery instruments in the front of the port, decreasing the interference of surgery instruments and making it convenient to observe and operate.

Because the incision was forward, processing vessels or bronchus with the linear stapler was interfered by tissues behind the target organ, making the thoracoscopic lobectomy a difficulty. In our surgery process, lung resection substantially was start from back to front for upper lung lobe and middle lobe and from top to bottom for the lower lung lobe. This procedure solved the problem, reduced the difficulty of the surgery, and increased the reproducibility of this method. In summary, the similar perioperative clinical outcomes could be found in multi-port VATS and uniportal VATS lobectomy (19).

Conclusions

Uniportal VATS lobectomy is believed to be safe, feasible and easily replicable.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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