

Uniportal video assisted thoracoscopic surgery thymectomy (right approach)

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Background: Video assisted thoracoscopic surgery (VATS) thymectomy for the management of myasthenia gravis and thymoma has been described and routinely performed. With the advent of single port surgery, uniportal thymectomy has gained popularity as it has the advantages in terms of improved cosmesis, less surgical trauma and financial savings in particularly over robotic thymectomy. The approach demonstrated in this video also negates the problems of sub-xiphoid route in patient with obesity, cardiomegaly, and limitations of instruments manoeuvrability.

Methods: Patient positioned semi-supine with right sided propped up and the ipsilateral arm placed naturally and secured by the side and below the chest wall. Cleaned and draped as for sterile procedure. General anaesthesia and lung isolation achieved with a double lumen endotracheal intubation. A 2.5 cm incision was made at 5th intercostal space, anterior axillary line (lateral to nipple line). Extra small size wound protector was used and CO₂ insufflation was not needed. Instruments utilised in this case were “not new” and used for laparoscopic surgery 2 decades ago. This video demonstrates the simple technique of right uniportal approach to total thymectomy. Safe en bloc dissection of thymus and thymic tumour with surrounding fatty tissue were performed by combination of careful pleura dissection using diathermy, traction and blunt dissection of thymus. Extra caution when dividing thymic vein branches from innominate vein is prudent in all thymic dissection and prevent intra-operative haemorrhage and subsequent conversion to sternotomy or thoracotomy.

Results: In this video, total thymectomy was performed without complication. The specimen was removed through the port and a single chest tube was placed at end of procedure for 1 day. Patient went home uneventfully on day 2.

Conclusions: Right uniportal VATS thymectomy is feasible, and this simple approach should be encouraged and performed by all enthusiastic VATS thoracic surgeons.

Keywords: Uniportal; thymectomy

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Introduction

Minimal invasive thymectomy (MIT) was first introduced in 1992 (1) and over the next two decades, many approaches have been described, extensively analysed and published for the management of myasthenia gravis and thymoma (2-4). MIT can be performed with low morbidity and mortality. In addition, it provides acceptable clinical long term outcome when compared to standard sternotomy approach to the disease. Video assisted thoracoscopic surgery (VATS) approach has since been routinely performed and recognised as the surgery of choice for thymectomy (5,6).

With the advent of single port surgery, uniportal VATS thymectomy has gained popularity as it has the advantages in terms of further improved cosmesis, patient satisfaction, less surgical trauma (7) and financial savings in particularly over robotic thymectomy (8). Transcervical thymectomy has largely been abandoned as the incidence of failure was alarmingly high, as much as 27% in some series. It was attributed to the incomplete clearance of thymic tissues by the trans-cervical approach, resulting in more anticipated re-operations (9). Suda *et al.* reported a uniportal technique using a subxiphoid approach for extended thymectomy in 2012. It provides simultaneous access to both pleural cavities and greatly improved the surgical view by split-lung ventilation with promising short term results (10). Nevertheless, there are limitations to subxiphoid thymectomy and they include patient obesity, cardiomegaly, and decreased manoeuvrability of instruments (11). However, the uniportal approach demonstrated in this video negates the problems of sub-xiphoid route. It is a simple procedure and oncologically feasible for non-invasive, small, intra-thymic and encapsulated thymoma.

Methods

The patient is positioned in about 30 degree semi-supine position, with right side chest propped up by placing a roll under the right shoulder. The ipsilateral arm is placed naturally and secured by the side and below the chest wall on the padded board. This provides adequate surgical field and avoids the potential of arm ischaemia, similar to the preparation for robotic thymectomy. The left arm is held extended on a padded board which allow access to the left side if required.

The right side uniportal approach is preferred by most surgeons, especially when operating in small, female patients, as there is more intra pleural space for instruments manipulation, and with easily identifiable anatomical landmarks such as superior vena cava and phrenic nerve.

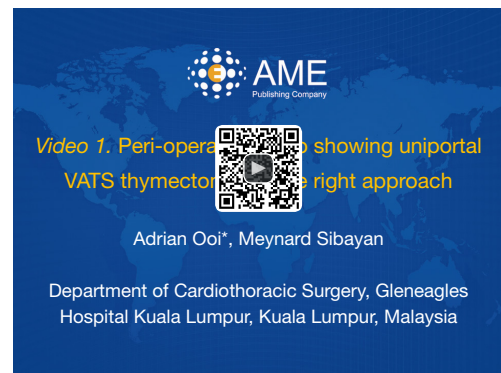


Figure 1 Peri-operative video showing uniportal VATS thymectomy via the right approach (12). VATS, video assisted thoracoscopic surgery.

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The right sided approach is used unless the tumour is located exclusively on the left sided. The operating surgeon, the assistant and the scrub nurse stand on the same side, with the patient vitals monitor and video screen at the opposite side of the table.

Patient is cleaned and draped as for sterile procedure. General anaesthesia and lung isolation achieved with a double lumen endotracheal intubation. A 2.5 cm incision was made at 5th intercostal space, anterior axillary line (lateral to nipple line) without rib spreading. Extra small size wound protector was used and up to four instruments can be accommodated through this single port access. CO₂ insufflation was not needed to collapse the lung.

The instruments utilised in this case of uniportal thymectomy were “not new” and they had been used for laparoscopic surgery two decades ago. They comprised of an endoscope of 10-mm camera 30 degree lens, 5-mm Maryland Dissector, 5-mm Bowel Grasper, 5-mm “Hock” Diathermy, 5-mm Endoscopic Yanker Sucker, Endoscopic “Peanut”, mounted “Peanut Gauze” on Rampley Sponge Holder and endoscopic Liga-clip.

This video (*Figure 1*) demonstrates the simple technique of right uniportal approach to total thymectomy. Phrenic nerve and internal mammary vessels are the landmarks of entering into anterior mediastinal space. Dissection started from the pericardial thymic fat reflection using the Hock Diathermy. It continued inferiorly until the diaphragmatic level and superiorly until the thoracic inlet. Safe en bloc dissection of thymus and thymic tumour with surrounding fatty tissue were performed easily by carefully dissecting the pleura using “Hock” diathermy, and this would

ensure the release of adhesion between thymus and the surrounding structure. The maneuverer in retrieving the thymus comprised of gentle traction using the atraumatic bowel grasper and blunt dissection using the endoscopic or mounted “peanut gauze”.

Extra caution when dividing the thymic vein branches from the Innominate Vein is prudent in all thymic dissection in order to prevent intra-operative haemorrhage and subsequent conversion to sternotomy or thoracotomy. The key is to identify the Innominate Vein position which is not readily visible, usually found at the level of the junction between Internal Mammary vessels and the Superior Vena Cava.

Results

In this video, total thymectomy was performed without complication. The specimen was removed through the port and a single 28 French chest tube was placed through the same incision at end of the procedure for 1 day duration. Patient went home uneventfully on day 2.

Conclusions

Right uniportal VATS thymectomy is feasible. It can be performed with similar morbidity and efficacy as multi-ports VATS thymectomy. Patient could experience possibly even less surgical trauma, naturally needs fewer analgesia, a short hospital stay and satisfactory with better cosmesis. This simple and uncomplicated approach should be encouraged and performed by all enthusiastic VATS thoracic surgeons.

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None.

Footnote

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

Ethical Statement: The work was approved by the ethnical committee. Written informed consent was obtained from the patient for publication. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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