

CASE REPORT

Case report: robotic thoracic surgery of posterior mediastinal mass

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SUMMARY

We report a 39-year-old male with accidental findings of posterior mediastinum mass at right superior aspects, located at T2 with close proximity to trachea, superior vena cava, azygos vein, right subclavian artery and oesophagus. Apart from intermittent right shoulder pain, there was no other significant symptom. He opted for conservative management initially, given the benign nature and proximity to important structures. We postulated that robotic approach will be of advantage for this particular case which was successfully performed with uneventful recovery. This case illustrated the advantages of robotic-assisted surgery, compared to conventional VATS in otherwise potentially difficult case to undertake.

INTRODUCTION

Minimal invasive surgery in thoracic surgery including VATS (Video Assisted Thoracoscopic Surgery) has been progressively expanded and improved for the last decade. More complex cases had been performed with less, that is to single port thoracic surgery. Development of new VATS instruments ensure better outcome to for the patient. However, major restriction remains. Sensory information is restricted to a two-dimensional image, moreover effector instruments have limited manoeuvrability due to the rigid shaft axis fixed to the thoracic wall by the entry trocar. Robotic surgery as the most recent and advanced technology provide 3-D video imaging, robotic camera-holders, telemanipulated flexible effector instruments and tactile feedback.¹ Such advances making more cardiothoracic surgeon are to quickly learn robotic surgery.² STS (Society of Thoracic Surgeons) Database reflects that as a steadily increasing number of robotic assisted thoracic surgery are being performed.³

We report here a 39-year-old male in whom had an incidental findings of right mediastinal mass since 2014 during work up for renal calculi. CT Scan showed heterogenous soft tissue mass in the posterior superior aspect of mediastinum measuring 4.0x3.7x5.7 cm. It was positioned at the right paratracheal region, with the most superior margin at the level of T2 and extending below just above the carina with clear plane between the trachea, superior vena cava, azygos vein, right subclavian artery and oesophagus. (Figure 1) Due to the benign nature of the mass, there was no surgical intervention offered to the patient by other centres.

Another factor was the close proximity of the mass to important structures. He developed intermittent right shoulder pain since one year ago, otherwise there was no other significant symptoms. Repeat CT Scan showed no new changes.

Histology from EBUS (Endobronchial Ultrasound) and FNAC (Fine Needle Aspiration Cytology) revealed no malignant cells. In view of the existing symptoms, patient requested for surgical intervention. He opted for robotic surgery mass excision.

OPERATIVE SURGERY

Patient was positioned in full lateral decubitus after double lumen endotracheal tube placed. 1st port inserted at the mid axillary line at 7th ICS (Intercostal Space). 5mm camera used for exploration and guidance to insert the subsequent ports. The 2nd port was placed 8 cm posterior to 1st port at the 8th ICS. 4th port inserted, 4cm from the spinal process at 8th ICS. The 3rd port was placed in between 2nd and 4th ports, approximately 8cm apart on same ICS. The assistant port was placed between 1st and 2nd port at 9th ICS. The robot (Si Da Vinci System, Intuitive) then docked over the patient. A bipolar dissector was placed in arm 1. A 0-degree camera was used and placed on the 2nd arm. The Cardier forceps was placed in arm 3. The 4th arm used for lung retraction. The assistant port was utilised for suction, delivery (cigar sponge, retrieval bag etc) and additional instruments were used if needed (Figure 2).

The procedure started by dissecting the pleura. Combination of blunt and sharp dissection was performed using bipolar dissector, assisted by cardier forceps facilitate to mobilise the mass. The azygos nerve identified and preserved. Careful dissection around the oesophagus, trachea and superior vena cava was done to avoid any injury.

The mass was then freed and ready to be placed in an endo bag, then delivered through the assistant port. After undocking of the robot, an apical chest drain sized 28Fr was placed prior to routine wound closure. The procedure completed in 60 minutes duration. Blood loss was clinically not significant.

The chest drain was removed after 8 hours post-surgery. The recovery was uneventful. He has had no more right shoulder

pain and was allowed for discharged on the following day. The final histology described as Castleman's Disease. He was referred to a haematologist for further management.

DISCUSSION

To our knowledge, this is the first of thoracic surgery to be performed using robotic platform in Malaysia. Articulated instruments more than standard thoroscopic devices and enhanced view allowed the procedure to be performed safely as the minimal invasive approach. The similar mass which was located at superior part of posterior mediastinum and surrounded by important structures e.g. superior vena cava, oesophagus, trachea and azygos nerve would be more challenging if performed via conventional open thoracotomy due to limited space and visualisation. Moreover, VATS as a form of minimal invasive surgery can also be restricted by its traditional rigid shaft instruments.⁴ On the other hand, robotic surgery can simplify the procedure with excellent visualisation as surgeon can control the camera themselves. The small and important structures could be identified easily thus minimise the risk of injury. The articulated instruments allow many fine and meticulous movements within small and limited spaces as it was in this patient. Superiority in dissection, visualization and access is evident in a robotic approach, and would be beneficial in selected cases. Recovery is enhanced by minimised the surgical trauma, moreover the cosmetic outcome is undeniably better.

CONFLICT OF INTEREST

The authors have no conflict of interest in the subject matter discussed in the manuscript.

DECLARATION OF PATIENT CONSENT

All appropriate consent was obtained from the patient including the images and other clinical data to be reported here. The patient understand that their name and initials will not be published and due efforts will be made to conceal their identity, however anonymity cannot be guaranteed.

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