

THORACOSCOPIC ANTERIOR APPLICATIONS TO THE SPINE

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Video-assisted thoracoscopic surgery (VATS) has been used by thoracic surgeons since 1991 to resect pulmonary lesions. As far as we know VATS has not been commonly used for spinal deformities. In this study we describe the application of using video assisted thoracoscopic surgery (VATS) to release the discs for rigid scoliosis and Schuermann kyphosis, thoracic vertebral corpectomies for spinal fractures, drainage of the thoracic abscess.

5 patients were treated with VATS surgery. 3 patients that two had rigid right thoracic scoliosis and 1 had Schuermann kyphosis were underwent thoracoscopic surgery and anterior disc release were done. Another patient that had spinal tuberculosis at thoracic 7-8-9 level and paravertebral abscess formation was operated and drainage of the abscess were done by using VATS. The last patient with thoracic 7-8 burst fracture were operated and thoracic corpectomy was applied.

In many ways VATS is superior to standard thoracotomy, a small thoracotomy incision is needed. This technique reduces operative morbidity, hospitalization time. More work is needed especially in the design of instrumentation, application of the instruments.

Key Words: Thoracoscopic resection, video-assisted thoracoscopic surgery.

INTRODUCTION

The use of endoscopy for managing surgically treated disease has gained popularity in many fields. A recent report at the society of Thoracic surgeons by Landreneu et al (2, 5) has demonstrated basic technical concepts and intercostal approach strategies. They also reported that postoperative pain was reduced, early shoulder girdle function was improved and hospital stay was shortened when compared to patients undergoing thoracotomy (1, 5). This surgical procedure allows good visualization, permits relatively easy manipulation and dissection of delicate anatomic structures through the use of high resolution endoscopes and specially designed instruments introduced to the body cavities through small openings along the body wall (1, 2, 3, 4, 5).

BASIC OPERATIVE SETUP

1. General anesthesia.
2. Double-lumen endotracheal tube.
3. 0 degree rigid thoracoscope.
4. High resolution video-monitor.
5. Long curette, long scalpel, vascular clip applicator, pituitary forceps, long rongeur, lung retractor.
6. Endoscopic suction irrigation hand piece, long endoscopic scissors, long cauterizing endoscopic scissors.

SURGICAL PRINCIPLES

1. The body is positioned in the lateral decubitus position with the left side up and the arms supported on pillows placed against the chest.
2. Thoracoscope must be placed 2 or 4 segments below or above the lesion in the mid-axillary line and 10 mm. trocar is placed through the incision and secured in place.
3. Lung retractor must be placed at the lesion level so that an endoscopic lung retractor could be advanced into the thoracic cavity under endoscopic guidance and the lung retracted toward mediastinum.
4. After a disc space is chosen on which to perform the procedure, a third 1 cm. intercostal incision is placed adjacent to the first two and close to dorsal side.
5. Under endoscopic visualization, along handled scissor was introduced through the third incision into the cavity and parietal pleura overlying the disc is incised. A long periosteal elevator and curette is employed to scrape the pleura and periosteum from the disc space and adjacent vertebral end-plates.

INDICATIONS OF THORACOSCOPIC SURGERY

1. Biopsy of spinal tumors.
2. anterior release of the spinal deformities.
3. anterior decompression of the spine fractures.
4. anterior discectomy.
5. drainage of the abscess formation.
6. anterior fusion.

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CONTRA-INDICATIONS OF THORACOSCOPIC SURGERY

1. pleural symphysis.
2. the inability to tolerate single lung ventilation.
3. severe or acute respiratory insufficiency.
4. high air-way pressures with positive pressure ventilator.

RELATIVE CONTRAINDICATIONS

1. previous tube thoracostomy.
2. previous thoracotomy.

MATERIAL AND METHOD

5 patients underwent thoracoscopic surgery. There were 3 female and 2 male. The mean age was 15.5 years (9-30).

3 patients that 2 had severe rigid idiopathic scoliosis and 1 had Schuermann kyphosis underwent multiple levels anterior disc release.

The other patient that had spinal tuberculosis at thoracic 7-8-9 and paraspinal abscess underwent drainage and debridement of the paraspinal abscess.

The last patient was 30 year old woman who had thoracic 7-8 burst fracture underwent thoracoscopic corpectomy.

Intraoperative bleeding was controlled with electrocautery.

RESULTS

Post operative narcotics were required for average of 2 days. No one undergoing VAT spinal surgery required intercostal or epidural analgesia. Average operating time was 2 hours. Intraoperative bleeding was minimal. There were no cases of post-thoracotomy pain syndrome. No patients complained of thoracic pain following their surgery.

DISCUSSION

A number of thoracic procedures including sympathectomy, lung biopsies and resection have been carried out using VATS in thoracic surgery. In many ways, VATS is superior to standard thoracotomy. It reduces the size of incision, avoids the need for a large rib resection or spreading of the intercostal space

(1, 2, 3, 4, 5). We also conclude that VAT in thoracic spinal surgery reduces postoperative pain, shortens hospital stays, decreases morbidity (1, 2, 3). This study shows us that a number of thoracic spinal procedures including; biopsy of spinal tumors, anterior release of the spinal deformities anterior decompression of the spine fractures, anterior discectomy, drainage of the abscess formation, anterior fusion can be accomplished safely.

Work on thoracoscopic spinal surgery is only beginning, but we believe that with the development of improved equipment such procedures can be performed safely. The ability to insert stabilizing instrumentation may also be possible. Additional work is needed whether this technique as good or better than the current techniques. Video assisted thoracoscopic surgery offer potential benefit of reduced morbidity for patients with a number of thoracic spinal problems.

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