Case Report

Removal of a needle from the pleural space by video-assisted throracoscopy: An unusual encounter in practice

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ABSTRACT

Video-assisted thoracoscopy (VATS), a minimally invasive surgical technique, has assumed a major role to play in the diagnosis and treatment of certain pleural and pulmonary parenchymal diseases. It is gaining popularity and being increasingly used in the management of thoracic trauma, thoracic surgeries, and pleural diseases. Another rare indication for its use, which is less reported in the literature, is the removal of retained intrathoracic foreign bodies. We report a case highlighting the use of VATS for the removal of retained sewing needle from the pleural cavity of a hemodynamically stable patient, thus evading the need for thoracotomy.

KEY WORDS: Foreign body, pleural sac, video-assisted thoracic surgery

INTRODUCTION

Penetrating wounds of the chest often result in retention of injury causing metallic foreign bodies in the pleural cavity. Pins and wires commonly used in the treatment of fractures or dislocations around the shoulder joint or clavicle are the most commonly seen foreign bodies in the pleural space.[1]

Metallic foreign bodies retained in the chest do not need to be removed unless >2 cm in length.[2] Many surgeons do not recommend removal of these foreign bodies in asymptomatic patients. The indications for removal are defined by the precise location of the foreign body, the sharpness of the object, associated symptoms, and the risks involved with retention in pleural space such as hemothorax, pneumothorax, pulmonary contusion, subcutaneous emphysema, pneumomediastinum, and chronic complications, i.e., lung abscess, empyema, clotted hemothorax, and aortic pseudoaneurysm.[1] However, some patients can develop significant psychological problems where the removal is justified. Video-assisted thoracoscopy (VATS) is a well-established technique in the armamentarium of the thoracic surgeons and interventional pulmonologists for the removal of retained foreign bodies from the pleural space. The trauma surgeons have less favorably adopted minimally invasive techniques and yet to gain its hold in developing countries, which accounts for 80% of worldwide trauma cases.

CASE REPORT

A 19-year-old male adolescent, working in a flower market, chronic ethanolic and smoker with history of intravenous drug abuse, presented with right-sided chest pain and low-grade fever for the past 10 days. There was no history of chest trauma, cough, or breathlessness. A complete evaluation revealed a sewing needle situated in the pleural cavity of the hemithorax.

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examination of the respiratory system did not reveal any abnormality, clinically. The patient maintained normal oxygen saturation and was hemodynamically stable.

His hematological and biochemical investigations were normal. Chest radiograph (posteroanterior and right lateral view) revealed a sewing needle in the right side of the chest [Figure 1] that was confirmed by computed tomography scan [Figure 2].

Considering the gravity of the clinical condition, we decided to remove the needle from the pleural space with the aid of VATS as it is a sharp foreign body and mandates removal. The patient was placed in the left lateral decubitus position. Under general anesthesia, a double-lumen endotracheal tube was placed and single-lung ventilation was done. VATS was performed using 30° endoscope through two standard ports at the seventh intercostal space along the right mid-axillary line and the third intercostal space along the right anterior axillary line. The 9-cm metallic sewing needle was clearly visualized impregnated in the right parietal pleura [Figure 3] and retrieved through forceps after thorough dissection with bipolar electrocautery. The needle was very soft and the eye of the needle broke during removal, making it all the more challenging to carefully localize and remove the broken piece. The patient was hemodynamically stable postoperatively, and an intercostal drain was placed for 48 h after the procedure. Postoperative recovery was uneventful; the patient was discharged on the 4th postoperative day. He is being followed up regularly in the outpatient department and doing well. In view of rarity and associated complexity, we thought of sharing our experience gained from this case. We discussed with the patient regarding sharing of this information in the scientific platform. Patient gave consent to publish the case report.

**DISCUSSION**

Jacobeus introduced thoracoscopy in the early 20th century as a treatment for pulmonary tuberculosis that was limited after the mid-20th century with the advent of chemotherapy. Currently, VATS plays a major role in the diagnosis and treatment of pleuroparenchymal diseases. The primary advantage of VATS over thoracotomy is less morbidity and mortality, shorter duration of hospitalization,[4,5] lesser cost, better control of postoperative pain and lung expansion, lesser time to resume normal activities, and shorter chest tube duration time.[4,5]

There are two different techniques for thoracoscopy though the terms are often used interchangeably – VATS and medical thoracoscopy.

Medical thoracoscopy is generally performed with conscious sedation and local anesthesia; it primarily serves as a diagnostic tool rather than for intervention. Performed by pulmonologists through a single incision. VATS is performed under general anesthesia with the patient selectively intubated for single-lung ventilation. Multiple
punctures are made in the chest wall through which the thoracoscope and surgical instruments are introduced.

VATS in thoracic trauma includes management of retained hemothorax and persistent pneumothorax, evaluation of diaphragm in penetrating thoracoabdominal injuries, evacuation of post-traumatic empyema, control of ongoing bleeding in hemodynamically stable patients and rarely for retrieval of foreign bodies, traumatic chylothorax, and rib resections.\[^6\] The standard, accepted approach to a patient with an impalement injury in whom the foreign body remains in situ is to stabilize the object until removal under circumstances in which any vascular injury can be controlled.\[^7\] Only single case reports have been published, the largest being a series of four cases in 3 years. Another group of authors also used VATS to remove two fragments of glass, the larger one being 3.5 cm in length from the pleural cavity.\[^8\] Recently, a similar case has been reported where a metal needle was removed through medical thoracoscopy.\[^9\]

Liu et al.\[^10\] were the first to publish a case of thoracoscopic removal of foreign body from the pleural space in two cases: one was a metal fragment and the other a broken pin.

Our case had few special features. The patient was unaware of the presence of a needle and asymptomatic. The patient attribute the presence of the needle probably to a scuffle with his friends under the influence of alcohol. He presented with complaints of vague chest pain. The exact duration of its presence was unknown and is assumed to be silently present within the pleural cavity for many years as the needle was very pliable. In this case, VATS had to be done diligently by an expert in the field for the careful and complete removal of such pliable needles.

The main contraindication of VATS in trauma patients is hemodynamic instability where an open surgery would be prudent. One should always be prepared to convert VATS into open thoracotomy wherever the situation demands.

Even though thoracoscopy had been initiated for trauma cases two decades ago, it is yet to gain momentum in developing countries like India due to various reasons such as lack of infrastructure and availability of trained surgeons in minimal access surgery, patient overload in trauma centers, and financial constraints.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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