Thoracoscopic retrieval of intra-parenchymal foreign body of lung

Viraj Borgaonkar · Vijay Borgaonkar

Received: 1 September 2009 / Accepted: 7 January 2010
© Association of Surgeons of India 2010

Abstract Thoracoscopy is an innovative procedure. We have retrieved intraparenchymal lung foreign body by thoracoscopy. Intraoperative imaging by ‘C’ arm facilitated the procedure. Thoracoscopy is a therapeutic option of choice for projectile thoracic injuries, provided patient is hemodynamically stable.

Keywords Thoracoscopy · Foreign body · VATS

Introduction

Video-assisted thoracoscopic surgery (VATS) has become an accepted approach to the diagnosis and treatment of pleural effusions, recurrent pneumothoraces, lung biopsies, lobectomy, resection of bronchogenic and mediastinal cysts, esophageal myotomy and intra-thoracic mobilization of esophagus [1, 2, 3].

We have applied our experience of VATS in retrieval of foreign body from lung parenchyma.

Metallic foreign bodies, such as bullets, retained in the chest typically do not need to be removed unless they are greater than 2 cm in length. In cases of asymptomatic patients, most authors do not recommend the removal of these objects. Such foreign bodies are usually surrounded by fibrous tissue and are therefore innocuous. The decision of whether or not to remove the foreign body is based on comparing the risk involved in allowing the foreign body to remain in the body with that involved in trying to remove it.

Surgical technique

A 26-year-old male came with history of penetrating projectile injury with some metal object in right side of chest while he was working in factory. The entry point was at nipple. Chest pain was the only complaint at the time of admission. His vitals were stable and routine blood investigations within normal limits. Chest x-ray suggested foreign body size of 2×1 cm in lower zone with no evidence of hemothorax or pneumothorax (Fig. 1). CT thorax was done which suggested 1.4×1 cm foreign body in anterior segment of right upper lobe causing lung laceration of 4 cm (Fig. 2).

V. Borgaonkar · V. Borgaonkar
Department of Oncosurgery,
Seth Nandalal Dhoot Hospital,
Aurangabad, India

V. Borgaonkar (✉)
E-mail: drvirajb@yahoo.com

Fig. 1 X-ray chest PA view showing foreignbody

Fig. 2 Showing entry wound in lung

6 hrs after admission patient developed tachypnoea and there was reduced air entry on affected side hence decision for operative intervention was taken. Considering the experience of basic thoracoscopic procedures decision to remove foreign body by thoracoscopic approach was taken.

Procedure

Procedure was performed under GA. Patient was given left lateral position. One 10mm camera port at 6th intercostal

space in posterior axillary line was taken and two 5mm operating ports were taken.

There was evidence of approximately 50ml of hemothorax.

Lung laceration could be seen on anterior side of upper lobe (Fig. 3). This was the entry point of metal projectile in lung parenchyma. With the help of C-arm and delicate thoracoscopic instrumental manipulation intra-parenchymal foreign body was localized and retrieved (Fig. 4). Lung laceration was sutured with vicryl 3–0. Sutured laceration was checked for air leak and complete expansion of all lobes of right lung observed (Fig. 5). As no air leak was evident, 28 Fr inter-costal drain kept through camera port and other ports were closed.

Patient made an uneventful recovery. ICD was removed on 3rd post-operative day and he was discharged on 5th post operative day.

Fig. 3 Showing foriegn body extraction

Fig. 4 Retrieved foreign body

Fig. 5 Sutured lung parenchyma

Patient is making regular follow up visits and doing well.

Results

Thoracoscopic retrieval of intra-thoracic foreign body is safe and effective technique in stable patients. Effective use of real time c-arm intra-operatively is crucial in exact localization of foreign body avoiding unnecessary parenchymal trauma.

Hence we recommend this technique in future cases provided surgeons have knowledge of basic thoracoscopic procedures.

Discussion

For use in cases of trauma, video-assisted thoracoscopy is considered a safe procedure.

Thoracoscopy is a novel procedure. Post operative morbidity is quite low in VATS as compared to thoracotomy. Currently, its use is contemplated when there is a need to remove an intrathoracic foreign body [4].

Only a few studies have addressed the use of video-assisted thoracoscopy for the removal of intrathoracic foreign bodies. This is a safe and less invasive method that, in the acute phase of the trauma in hemodynamically stable patients, allows the removal of the foreign body from the pleural cavity under direct viewing. In addition, it reduces the number of complications, the degree of postoperative pain, and the length of hospitalization. It can be safely used for the removal of various types of foreign bodies, such as catheters, wires, needles, nails, glass, and bullets. When it is necessary to convert to a thoracotomy, it is possible to determine the correct location, size, and extent of the

incision according to the position and the type of foreign body [4].

Computed tomography is important in the preoperative evaluation. One group of authors used video-assisted thoracoscopy to remove four intrathoracic foreign bodies. Of those, three were located in the pleural cavity: a bullet; a grenade fragment; and a Kirschner wire that had migrated to the pleural cavity. The fourth foreign body was a bullet free in the pericardial sac.

Some researchers believe that the ease and practicality of video-assisted thoracoscopy, as compared with thoracotomy, should not be used as the principal argument in favor of the removal of intrathoracic bullets [4, 6].

There are also reports about the successful thoracoscopic management of a 10-cm-long tear of the esophagus after gastroscopy or debridement in cases of mediastinitis in children after foreign body ingestion [7, 8].

Conclusion

The finding of a foreign body free in the pleural cavity is rare, and the question of whether removal is indicated or not is controversial. Currently, we consider that, with the use of video-assisted thoracoscopy, the early removal in stable patients, before the foreign bodies are engulfed by the surrounding tissues, is easy, simple, and practically risk-free.

Reference

1. Brown WT (1994) Atlas of Video Assisted thoracoscopic surgery. Philadelphia, WB Saunders
2. Lewis RJ (1993) Video Assisted thoracoscopic surgery. Chest Surg Clin North Am 3:2
3. Mack MJ, Scruggs GR, Kelly KM, et al. (1997) Video assisted thoracoscopic surgery : has technology found its place ? Ann Thorac Surg 64:211
4. Williams CG, Haut ER, Ouyang H, Riall TS, Makary M, Efron DT, et al. (2006) Video-assisted thoracic surgery removal of foreign bodies after penetrating chest trauma. J Am Coll Surg. 202(5):848–852
5. Lang-Lazdunski L, Mouroux J, Pons F, Grosdidier G, Martinod E, Elkaim D, et al. (1997) Role of videothoracoscopy in chest trauma. Ann Thorac Surg 63(2):327–333
6. Potaris K, Mihos P, Gakidis I (2005) Role of video-assisted thoracic surgery in the evaluation and management of thoracic injuries. Interact Cardiovasc Thorac Surg 4(4):292–294
7. Collins C, Arumugasamy M, Larkin J, Martin S, O'Sullivan GC (2002) Thoracoscopic repair of instrumental perforation of the oesophagus: first report. Ir J Med Sci 171:66
8. Peng L, Quan X, Zhongzheng J, Ya G, Xiansheng Z, Yitao D, Zhengtuan G, Baijun Z, Xinkui G, Xuanlin W (2006) Videothoracoscopic drainage for esophageal perforation with mediastinitis in children. J Pediatr Surg 41:514–517