



Case Report / Olgu Sunumu

Unusual complication of endostapler use in video-assisted thoracoscopic surgery

Video yardımcı torakoskopik cerrahide endostapler kullanımına bağlı sıra dışı komplikasyon

H. Volkan Kara , İsmail Sarbay , Nurlan Alizade , Akif Turna 

Department of Thoracic Surgery, Istanbul University Cerrahpaşa Medical Faculty, Istanbul, Turkey

ABSTRACT

Video-assisted thoracoscopic surgery is becoming more popular in thoracic surgery practice. Use of endostaplers is mandatory for anatomical video-assisted thoracoscopic surgery resections. In this article, we present an unusual complication related to use of endostapler, which, to our knowledge, may be the first reported in the literature.

Keywords: Complication, postoperative, stapler, uniportal, video-assisted thoracoscopic surgery.

Video-assisted thoracoscopic surgery (VATS) has become popular in thoracic surgery practice.^[1] Compared to lobectomy via thoracotomy, VATS lobectomy may cause less postoperative pain, shorter chest tube duration, shorter length of hospital stay, lower morbidity, and may even improve survival in patients with early-stage non-small cell lung cancer.^[2] Bronchial stapling was first reported in the 1960s.^[3] As staplers became more sophisticated, their use has been widely accepted and regarded as a safe procedure.^[4] Although VATS is supported by the frequent use of staplers, only a few papers have been published concerning stapling failure or adverse events.^[5-7] In this article, we present an unusual complication related to use of endostapler, which, to our knowledge, may be the first reported in the literature.

CASE REPORT

A 61-year-old male patient was diagnosed as adenocarcinoma of lung located in the left lower lobe. The preoperative mediastinal and distant metastatic

ÖZ

Video yardımcı torakoskopik cerrahi göğüs cerrahisi pratiğinde daha popüler hale gelmektedir. Endostaplerlerin kullanımı anatomik video yardımcı torakoskopik cerrahi rezeksiyonlarında zorunludur. Bu yazıda, literatürde ilk defa bildirildiğini düşündüğümüz, endostapler kullanımı ile ilişkili sıra dışı bir komplikasyon sunuldu.

Anahtar sözcükler: Komplikasyon, ameliyat sonrası, stapler, uniportal, video yardımcı torakoskopik cerrahi.

staging evaluation revealed cT₂N₀M₀ disease, while so surgical resection was planned. We performed uniportal VATS left lower lobectomy in our standardized fashion using a single 4 cm incision performed at the fourth intercostal space. Just after the inferior pulmonary vein closure using vascular stapler, the vein nearly totally dehisced with considerable amount of bleeding (>500 mL). The area of the vessel where bleeding occurred was repaired with 4/0 polypropylene running sutures with the help of atraumatic thoracoscopic clamp. The rest of the surgery was uneventful and the resection was completed. The formal counting for surgical instruments and gauzes were approved by the table and circulating nurse before closure. The patient was transferred to the clinic postoperatively and had a posteroanterior chest X-ray as he arrived to his bed as our routine early follow-up. In the evaluation of the X-ray, there was a suspicious metallic object located in the left hemithorax (Figure 1a). In the primary check, nothing was found in the outer surface of the hemithorax. The metallic shape and size of the object

Received: June 03, 2018 Accepted: September 17, 2018 Published online: April 24, 2019

Correspondence: H. Volkan Kara, MD. İstanbul Üniversitesi Cerrahpaşa Tıp Fakültesi, Göğüs Cerrahisi Anabilim Dalı, 34098 Fatih, İstanbul, Turkey.
Tel: +90 212 - 414 33 27 e-mail: volkan_kara@yahoo.com

Cite this article as:

Kara HV, Sarbay İ, Alizade N, Turna A. Unusual complication of endostapler use in video-assisted thoracoscopic surgery. Turk Gogus Kalp Dama 2019;27(2):251-253

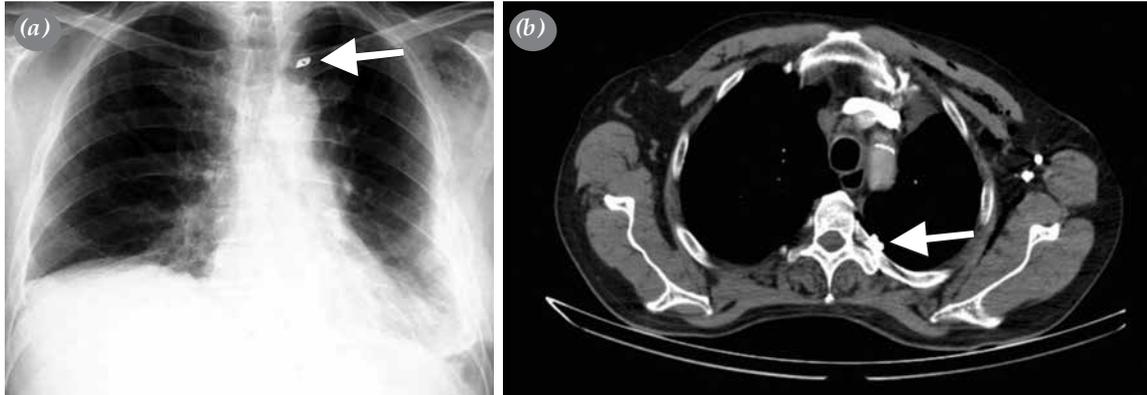


Figure 1. (a) Postoperative chest X-ray showing a metallic object located in left hemithorax (arrow). (b) Computed tomography verifying metallic object in posterior left hemithorax (arrow).

was new and unknown for us. We ordered an urgent computed tomography and the metallic object was noted on the scans (Figure 1b). A 2-cm metallic part of one of the endostapling devices was found to be missing on careful examination of used stapler-loads (Figure 2). The patient was informed about the situation and he agreed to undergo surgery again to remove the object. There was a short session of explorative uniportal VATS using the same incision. The object was located at posterior hemithorax covered with a small hematoma (Figure 3a). It was removed from the

pleural space easily (Figure 3b). The postoperative period was uneventful and the patient was discharged on the third day of the second surgery. The patient has been doing well without any problem for 15 months. A written informed consent was obtained from the patient.

DISCUSSION

Despite standardized use of endoscopic staplers that are accepted as safe devices, some unexpected incidents may occur.^[5-7] Understanding the safety issues

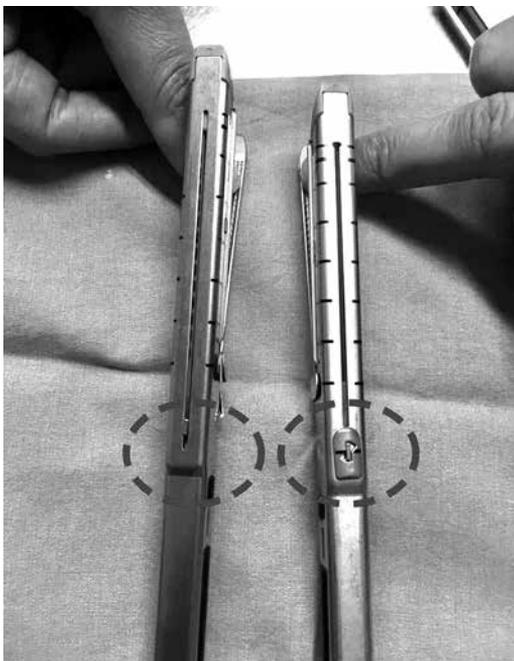


Figure 2. Two-cm metallic part of endostapling device that was missing (circled).

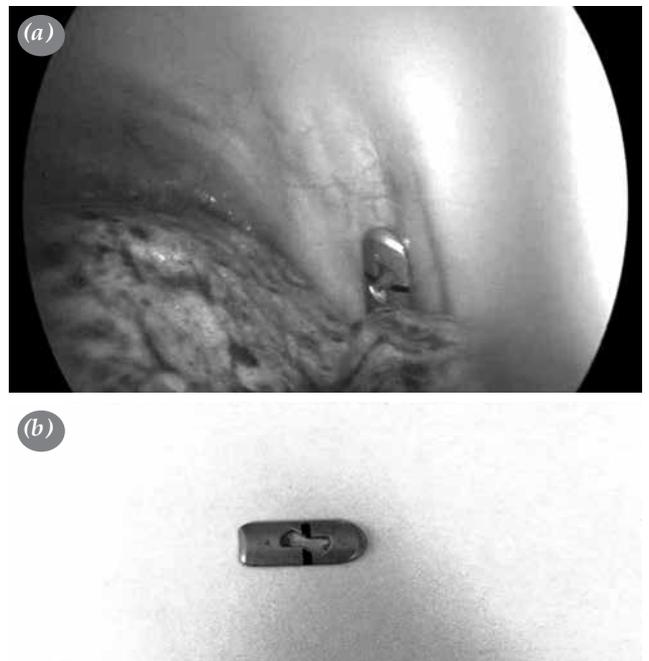


Figure 3. (a) Intraoperative view of endostapling device part in thoracic cavity. (b) Endostapling device part after removal.

and possible problems regarding the use of endoscopic devices is of utmost importance. We successfully managed two stapling device problems that occurred in the same patient. First problem was a totally opened lower pulmonary vein that was successfully repaired, while the second was the dislocation of a metallic element of the stapler. The metallic piece was removed using the same (uniportal) approach. The stapling device was regular, undamaged, and used for the first time. This broken metallic part which fell into the pleural space was confirmed to be fixed to the body of the device. This information was approved by the manufacturer and the device was delivered to them for further technical investigation. According to the literature and the manufacturer's feedback, such a complication had never been reported. After falling into the pleural space, the object may have been either hidden in a distal point of the cavity and moved to its place during repositioning the patient in operating room or covered with a small clot which hid it on the thoracic wall.

Explorative visualization as well as counting surgical instruments and gauzes are routinely performed before closure in each VATS as a surgical principle. Methodologies including Six Sigma that strive to achieve perfect quality^[8] may be adopted as a quality principle for surgeries to prevent such structural problems.^[8,9]

This case should remind us about the importance of double-checking the integrity of the used stapling devices during surgery. All team members in the operating room including the circulating nurse should be aware of the necessity to check such details to prevent any event that may require an additional surgery.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

REFERENCES

1. Onaitis MW, Petersen RP, Balderson SS, Toloza E, Burfeind WR, Harpole DH Jr, et al. Thoracoscopic lobectomy is a safe and versatile procedure: experience with 500 consecutive patients. *Ann Surg* 2006;244:420-5.
2. Whitson BA, Groth SS, Duval SJ, Swanson SJ, Maddaus MA. Surgery for early-stage non-small cell lung cancer: a systematic review of the video-assisted thoracoscopic surgery versus thoracotomy approaches to lobectomy. *Ann Thorac Surg* 2008;86:2008-16.
3. Amosov NM, Berezovsky KK. Pulmonary resection with mechanical suture. *J Thorac Cardiovasc Surg* 1961;41:325-35.
4. Weissberg D, Kaufman M. Suture closure versus stapling of bronchial stump in 304 lung cancer operations. *Scand J Thorac Cardiovasc Surg* 1992;26:125-7.
5. Yano M, Iwata H, Hashizume M, Shigemitsu K, Adachi K, Tokui T, et al. Adverse events of lung tissue stapling in thoracic surgery. *Ann Thorac Cardiovasc Surg* 2014;20:370-7.
6. Yano M, Takao M, Fujinaga T, Arimura T, Fukai I, Ota S, et al. Adverse events of pulmonary vascular stapling in thoracic surgery. *Interact Cardiovasc Thorac Surg* 2013;17:280-4.
7. Gossot D, Merlusca G, Tudor A, Boudaya MS, Radu C, Magdeleinat P. Pitfalls related to the use of endostaplers during video-assisted thoracic surgery. *Surg Endosc* 2009;23:189-92.
8. Wasden ML. High-reliability principles must be tied to value-based outcomes. *Front Health Serv Manage* 2017;33:26-32.
9. Mason SE, Nicolay CR, Darzi A. The use of Lean and Six Sigma methodologies in surgery: a systematic review. *Surgeon* 2015;13:91-100.