Case report - Esophagus

Thoracoscopic removal of a transesophageal ingested mediastinal foreign body

Oskar Rückbeil, Jens Burghardt, Klaus Gellert

Department of Surgery, Sana Klinikum Lichtenberg, Fanningerstrasse 32, 10365 Berlin, Germany
Department of Surgery, Evangelisch-Freikirchliches Krankenhaus Rüdersdorf, Seebad 82/83, 15562 Rüdersdorf, Germany

Received 16 April 2009; received in revised form 31 May 2009; accepted 4 June 2009

Abstract

Transesophageal migration of a foreign body into the mediastinum in human adults is rare. This event can result in life-threatening situations and is associated with a high mortality rate. Only a few case reports of thoracoscopic removal of a foreign body in adults have been published so far. The authors describe the case of a successfully performed thoracoscopic approach to remove an ingested needle from the mediastinum posterior of a 69-year-old patient. The authors are discussing why, in similar cases, removal of the foreign body should be performed and they describe the preliminary conditions for this method. A video file is attached.

Keywords: Foreign body; Thoracoscopy; Esophageal perforation/transmigration

1. Introduction

In literature there are very few case-reports of successful management of rare mediastinal injuries, such as foreign body ingestion or iatrogenic complications [1, 2]. If the endoluminal approach is not possible, the thoracoscopic approach is a realistic alternative to thoracotomy. This is the first report of successful thoracoscopic removal of a transesophageal ingested needle from the mediastinum in an adult.

2. Case report

A 69-year-old female patient suffering from dysphagia and retrosternal pain for six days was brought into the emergency department. During the initially performed chest X-ray a metallic foreign body was detected. The detailed past medical history revealed that she did eat strawberries six days before her hospitalization and her symptoms started soon afterwards. She also mentioned that five days before admission a nuclear MR-tomography of the lumbar spine had been performed because of chronic pain in the lumbar region.

The computed-tomography confirmed a 22-mm-long metallic foreign body placed in sagittal direction above the bifurcation of trachea between the esophagus and aortic arch (Figs. 1 and 2). The subsequent esophagoscopy showed no perforation site or any pathologic results. Hence we decided to remove the foreign body by minimal invasive surgery. The latest blood parameters showed no signs of infection.

3. Surgical technique

A right side thoracoscopy with 3-trocars (Karl Storz GmbH & Co. KG, Germany) was performed. The patient was placed in a lateral position, double-lumen tube (Broncho-Cath, Mallinckrodt Medical, Ireland) and a nasogastric tube were inserted and the operation took place under thoracotomy stand-by. A 5-mm trocar was inserted in the fifth intercostal space posterior axillary line, a 10-mm trocar in the fourth intercostal space in the anterior axillary line and another one for the 30°-optic (Richard Wolf GmbH, Germany) in the dorsal midaxillary line in the seventh intercostal space. After opening the parietal pleura, the azygos vein had to be separated directly behind the insertion of the right superior intercostal vein to reach the region of interest (Video 1). To separate the vein a surgical stapler armed with a white magazine (Endopath Vascular, Ethicon Endo-Surgery GmbH, Germany) and PDS-clips (Tyco Healthcare GmbH, Germany) were used.

Supported by intra-operative fluoroscopy we found a waved metallic needle on the left side paraesophageal. The successful removal was now possible.

Intra-operatively the external esophagus showed, six days after the transmigration of the needle, a decent hematoma but no perforation hole. Because there were no signs of infection we decided to sew the pleura by Lahodny suture.

At the end of the operation a chest tube was placed.

Acknowledgements

The authors wish to thank Dr. H. Schramm for his excellent assistance in the operating room.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Conflict of interest

The authors declare that they have no conflict of interest.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

Case Report

Fig. 1. Computed tomography axial plane – the foreign body as a thin line in sagittal direction between aorta and esophagus.

Fig. 2. Computed tomography coronal plane – foreign body as a white spot on the left side of tracheal bifurcation.

Video 1. On the right side you see the collapsed lung, on the left the costal arches; video starts with the separation of the ayzygos vein with a surgical stapler, the parietal pleura is already opened; 8–14 s: esophagus placed between the two PDS-clips under the opened parietal pleura, on the anatomical left side of esophagus you see a decent hematoma; 14–25 s: finding and removal of the waved needle which is placed between left side of esophagus and aorta; Lahodny suture of the parietal pleura.

Total duration of the operation was 42 min including fluoroscopy. The postoperative course was unspectacular and the patient was discharged six days after the operation.

4. Comment

Symptoms of unconscious ingested foreign bodies are unspecific. The typical sites of perforation are pretended by anatomic characteristics. Often, as reported in this case, perforation happens at the height of the second narrowness of esophagus.

A transesophageal migrated mediastinal foreign body may cause numerous complications such as mediastinitis, abscess, esophago-aortic or tracheoesophageal fistula and death. Sometimes the event of ingestion is asymptomatic but the history together with the troubles caused by the complications lead to the necessary investigations [3].

We assume that the MR-tomography that had been performed one day after ingestion caused a migration of the metallic needle from the esophagus wall to the mediastinum. A confirmation through the past medical history was not possible because the symptoms existed before and after the MR-tomography.

None of the previous reports about thoracoscopic removal of foreign bodies describes the removal of an ingested needle in adults [3, 4].

We recommend the removal of metallic foreign bodies from the mediastinum because of the serious complications they may cause and the possibility of migration by e.g. magnetic powers. The insertion of a nasogastric tube is recommended as it simplifies the dissection of the esophagus. Intra-operative fluoroscopy should be available to locate the foreign body if it is not visible.

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 [2, 5]. Hence if technical and personnel preliminary conditions are met the thoracoscopic approach is a safe and less-invasive alternative to thoracotomy, even in complicated situations.

References


