

Minimally invasive Ivor-Lewis esophagectomy for esophageal cancer with right aortic arch

Jeremy Linson, Michael Latzko, Bestoun Ahmed, Ziad Awad

Department of Surgery, University of Florida College of Medicine, Jacksonville, FL 32209, USA

Correspondence to: Michael Latzko, MD. University of Florida College of Medicine - Jacksonville, 653 West 8th St., Jacksonville, FL 32209, USA.

Email: Michael.latzko@jax.ufl.edu.

Abstract: Right aortic arch (RAA) is a rare congenital vascular abnormality in which the aorta descends in the right thorax and encircles the esophagus. Historically, esophagectomy for patients for RAA is done through a left thoracotomy as exposure and mobilization of the esophagus is difficult through a right thoracotomy. A 73-year-old male was found to have an esophageal adenocarcinoma. Endoscopic ultrasound showed a T3N0 lesion in the lower third of the esophagus. PET CT demonstrated a circumferential lesion without evidence of distant disease or involved lymph nodes and a RAA which was not associated with congenital heart disease or symptoms. The patient received neo-adjuvant chemoradiation (50.4 Gy) with carboplatin and paclitaxel. Minimally invasive Ivor-Lewis esophagectomy (MIE) utilizing conventional right thoracoscopy was done. Esophageal mobilization, transection and mediastinal lymph node dissection was performed through anteriorly placed trocars, thereby avoiding the right side descending aorta that is lying anterior and to the right of the esophagus. In this video we demonstrate MIE utilizing right thoracoscopy. Total operative time was 250 minutes and the patient was discharged home on post-operative day 8. Final pathology showed complete pathological response, with 0/22 involved lymph nodes and uninvolved surgical margins. Minimally invasive esophagectomy has been reported to deliver superior outcomes to the open approach. MIE can be performed in selected patients with RAA, and herein we demonstrate a minimally invasive option for the treatment of distal esophageal cancer in patients with RAA. To our knowledge this is the 1st reported case in the English literature utilizing this approach in patient with RAA.

Keywords: Esophageal cancer; laparoscopy; esophageal surgery

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Introduction

Right aortic arch (RAA) is a rare congenital vascular abnormality in which the aorta descends in the right thorax and encircles the esophagus. Historically, esophagectomy for patients for RAA was performed in an open fashion, through a left thoracotomy as exposure and mobilization of the esophagus can be difficult through a right thoracotomy (1-3).

Case presentation

A 73-year-old male was found to have an esophageal

adenocarcinoma. Endoscopic ultrasound showed a T3N0 lesion in the lower third of the esophagus. PET CT demonstrated a circumferential lesion without evidence of distant disease or involved lymph nodes and a RAA which was not associated with congenital heart disease or symptoms. The patient received neo-adjuvant chemoradiation (50.4 Gy) with carboplatin and paclitaxel. Minimally invasive Ivor-Lewis esophagectomy (MIE) utilizing conventional right thoracoscopy was done. Esophageal mobilization, transection and mediastinal lymph node dissection was performed through anteriorly placed trocars, thereby avoiding the right side descending aorta that is lying anterior and to the right of the esophagus.



Figure 1 Minimally invasive Ivor-Lewis esophagectomy for esophageal cancer with right aortic arch (6).

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Utilization of a Penrose drain around the esophagus is helpful in manipulating and retracting the esophagus to facilitate dissection. Total operative time was 250 minutes and the patient was discharged home on post-operative day 8. Final pathology showed complete pathological response, with 0/22 involved lymph nodes and uninvolved surgical margins.

Discussion

Our review of the literature demonstrated 30 cases of esophageal cancer resection in patients with RAA confirming the rarity of this entity (1-3). The preferred approach to this disease process was always thought to be through a left sided thoracotomy usually with the addition of a sternotomy to facilitate an adequate lymph node dissection. Minimally invasive esophagectomy has been reported to deliver superior outcomes to the open approach (4,5). In this video (*Figure 1*) we demonstrate our technique for MIE utilizing right thoracoscopy for this patient with a distal esophageal adenocarcinoma and a RAA.

Conclusions

MIE can be performed in selected patients with RAA, and herein we demonstrate a minimally invasive option for the treatment of distal esophageal cancer in patients with RAA. To our knowledge this is the 1st reported case in the English literature utilizing this approach in a patient with RAA.

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None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Informed Consent: Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images.

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