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**Case Report**

# Lessons learnt from uncommon events during robotic assisted minimally invasive oesophagectomy

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## ABSTRACT

Esophagectomy is the mainstay treatment for cancer of the esophagus. Over the last two decades robotic assisted minimally invasive oesephagectomy (RAMIE) have become increasingly popular in esophageal surgery. We present a rare complication of an air leak following RAMIE. Our patient underwent a robotic assisted total esophageal mobilization, lymph node dissection transthoracically for a lower oesophageal tumour. He developed persistent air leak and needed oxygen support. Following which thoracoscopic bullectomy was done, lung was successfully re-inflated. To the authors' knowledge, this rare complication has only handful cases reported in the medical literature; other surgeons should be made aware of this problem.

**Keywords:** Oesophagectomy, Air leak, Lung

## INTRODUCTION

Oesophageal cancer remains a significant global health concern, and surgical resection, such as oesophagectomy, is a common treatment option. Robotic assisted minimally invasive oesephagectomy (RAMIE) has emerged as an effective minimally invasive approach.[1] However, one of the potential complication is the development of postoperative air leaks, which can lead to various adverse outcomes.[2] We present a rare case report of a patient who experienced an air leak following RAMIE.

## CASE REPORT

63-year-old, male, hypertensive, addicted to tobacco and cigarette for 15 years, came with complaints of dysphagia to solid for 2-3 months. On upper gastrointestinal endoscopy found to have ulceroproliferative growth at 30-35 cm, biopsy was suggestive of poorly differentiated squamous cell carcinoma so diagnosed as case of cancer of lower third of esophagus, underwent neoadjuvant concurrent chemotherapy and radiotherapy. Partial response was seen on reassessment contrast enhanced computed tomography (CT) scan of thorax and upper abdomen. Another finding seen is paraseptal emphysema in both lungs, predominantly upper lobes.

Patient underwent robotic assisted total esophageal mobilization, lymph node dissection transthoracically and rest of surgery was done in supine position. Patient was shifted to surgical intensive care unit on elective ventilator support. Minor air leak was seen in right intercostal tube drain (ICD). Major airway injury which is known complication after RAMIE was ruled out by normal diagnostic bronchoscopy on post-operative day (POD) 1. Hence, a trial of observation was given. On POD 5, in view of persistent air leak and need of oxygen support, contrast enhanced CT scan of thorax was done for evaluation, but

site of air leak not seen as entire right lung was collapsed. Air leak persisted till POD 7 and patient was still in need of oxygen support.

**Figure 1: Bulla present at apex of lung.**

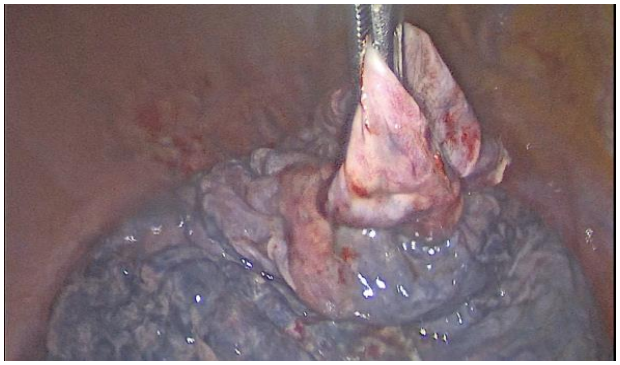

**Figure 2: Bullectomy in progress.**

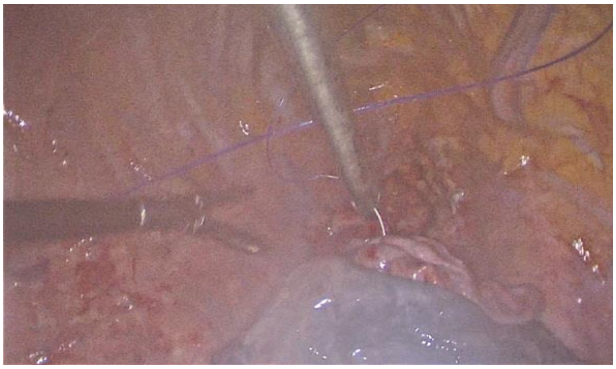

**Figure 3: Repair of bulla with intracorporeal prolene.**

Hence operative video was reassessed, to know any cause of air leak. It was noted that, at the end of thoracic part of dissection, there was only partial inflation of lung and bullae seen at apex of lung as shown in Figure 1. So decision was taken to go ahead for thoracoscopic bullectomy. Thoracoscopic bullectomy was done and repaired with prolene 3-0 intra corporeal sutures as shown in Figures 2 and 3 cordially. As soon as repair was done, lung expanded. Post operatively air leak stopped and patient got discharged. Follow up, chest radiograph at 2 months was showing expanded lung.

## DISCUSSION

The prompt and timely identification of air leaks during thoracoscopic surgeries is essential for effective management.[3] Initial management of minor air leaks usually involves conservative measures. If conservative measures fail, surgical intervention becomes necessary.[4] Air leaks following robotic-assisted oesophagectomy, although relatively uncommon, are important complications that require prompt diagnosis and appropriate management.[5]

Frequently observed pulmonary issues after oesophagectomy encompass displaced chest drains, tracheobronchial injury, parenchymal air leakage, anastomotic leaks, lung collapse, pneumonia, and pulmonary thromboembolism.[6] A persistent flow of air through a chest tube or the development of surgical emphysema on the face and neck in the early postoperative phase may indicate the presence of major airway leak. It should be evaluated by bronchoscopic examination, to rule out major tracheo bronchial tree injuries before assessing with thoracoscopy.[7]

Air leak is rare complication after minimal invasive oesophagectomies. Some of the rare scenarios explained the potential complications of massive pneumothorax due to use of corrugated rubber drain in neck. Potential reasons for major air leaks reported are corrugated rubber drain, ruptured bulla, ICD, parenchymal injuries, tracheobronchial tree injuries.[8] The presence of a substantial and continuous air leak through a chest tube and lung collapse in early postoperative period typically suggests an airway injury, which if recognized can be repaired with minimal access surgery.[9]

Video-assisted thoracoscopic surgery (VATS) can be used as a safe, feasible and effective procedure in patients presenting with persistent air leak due to bullous lung disease. Thoracoscopic diagnosis usually confirms the presence of bullous lung disease in 40% of cases. VATS guided bullectomy is one of favoured approach.[10] To minimize the potential of barotrauma events peak inspiratory pressure ventilator settings should be managed accordingly.[11]

## CONCLUSION

In our case, the patient's condition was successfully managed through a combination of timely surgical intervention after conservative measures failed. Lessons learnt are thorough preoperative evaluation for identification of bullous lung disease, optimum ventilator settings during and after surgery to avoid barotrauma, intraoperative early recognition of cause of collapsed lung.

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