Case Report

A rare cause of respiratory distress after transthoracic oesophagectomy

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ABSTRACT

Transthoracic oesophagectomy is a standard surgical procedure for oesophageal cancer. Because of thoracotomy and lung handling, perioperative pulmonary complications make such procedures challenging. The issues related to respiratory complications may be predicted and managed accordingly. However, we report two cases of respiratory compromise caused due to a peculiar iatrogenic component.

Key words: Air leak, neck drain, pneumothorax, respiratory distress, transthoracic oesophagectomy

INTRODUCTION

Transthoracic oesophagectomy (TTE) is a standard surgical procedure for oesophageal cancer. Providing anaesthesia for TTE is always a challenge for the anaesthesiologists because of intraoperative need for one-lung ventilation and its associated problems. Post-operative pulmonary complications in the early post-operative period can lead to increased morbidity and mortality. Pulmonary complications can also occur due to surgical issues that may mislead the perioperative team and result in unnecessary and avoidable interventions. We would like to share our experience of two cases that underwent TTE and developed acute respiratory distress in the post-operative period.

CASE REPORTS

Case 1

A 39-year-old woman, known case of oesophageal carcinoma, was scheduled for TTE with extended two-field lymphadenectomy with gastric pull-up with cervical neck oesophago-gastric anastomosis and feeding jejunostomy. She had history of hypertension since 4 years and controlled on amlodipine (10 mg) and atenolol (50 mg). She had also received pre-operative radiotherapy. The anaesthetic management and monitoring were as per institutional protocol and was administered epidural and general anaesthesia. As a part of operative procedure, right intercostal drain (ICD) and corrugated neck drain were placed. The intraoperative period was uneventful. She was shifted to Intensive Care Unit (ICU) for post-operative monitoring and analgesia. Three hours later, she developed respiratory distress and air leak through right ICD. Her oxygen saturation decreased from 97% to 84% over ½ h in spite of oxygen supplementation with Hudson mask. On auscultation, air entry was decreased on the right side and the percussion note was tympanic. She was put on oxygen at 15 L/min through Venturi mask (FiO_2 0.60). Subsequent chest radiograph revealed right pneumothorax despite ICD being *in situ*. Another ICD tube was inserted in the right thorax to relieve pneumothorax. The respiratory distress was only partially relieved and the air leak from the ICD continued. Due to on-going respiratory distress, the patient's trachea was intubated. Fibreoptic

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bronchoscopy was done to rule out airway injury that was also normal. Hence, we suspected air leak from the cervical drain and it was decided to remove the cervical drain and suture the defect. After removal of the cervical drain, the air leak stopped. Chest X-ray showed inflated lungs and patient had symptomatic improvement. The patient was subsequently extubated and shifted to the ward.

Case 2

A 56-year-old man, case of carcinoma mid-oesophagus underwent TTE with extended two-field lymphadenectomy with gastric pull-up and oesophago-gastric anastomosis in neck. He had received pre-operative chemo-radiotherapy. The procedure was done under epidural and general anaesthesia with conventional monitoring. Right ICD and corrugated neck drain were placed. Intraoperative period was uneventful. Patient was shifted to ICU for post-operative management. The patient developed respiratory distress and air leak through right ICD and saturation decreased to 86% despite oxygen supplementation. Air entry was decreased on the right side. Chest radiograph revealed right pneumothorax despite ICD being *in situ*. It was decided to conduct bronchoscopy. Before bronchoscopy, we observed bubbles (air leak) from neck drain site. On removal of corrugated neck drain and resuturing the neck wound, air leak stopped and there was no further respiratory distress. Oxygen saturation improved to 96% over next 30 min. Chest X-ray revealed no pneumothorax and patient was shifted to the ward.

DISCUSSION

Our two cases reveal a rare cause of respiratory distress and air leak in patients who underwent TTE. In these cases, the potential problem of using corrugated neck drain is being emphasised. Slipped chest drains, lung parenchymal injury, tracheobronchial injury are well-documented causes of post-operative air leak and subsequent respiratory distress and pneumothorax. Only two cases of pneumothorax associated with neck drains have been described.[1,2] In both the cases, air leak was seen following transhiatal oesophagectomy. In our cases, air leak and subsequent pneumothorax were seen after TTE. To the best of our knowledge, there is no literature suggesting air leak/respiratory distress following TTE and subsequent improvement after removal of neck drain.

After oesophagectomy, apart from ICD, corrugated neck drain insertion is an acceptable technique. During TTE, pleura were opened and gastric pull-up is done thus creating a communication between thorax and neck. Generally, this is not a problem because the stomach tube seals the communication between the chest and the neck and the negative intrathoracic pressure is not transmitted to the neck. However, in certain situations, the corrugated drain may provide ample space for sucking atmospheric air during patient's spontaneous respiratory efforts which creates negative intrathoracic pressure. This may be equated with similar phenomenon of sucking chest wounds. The performance of extended lymphadenectomy, especially in the upper mediastinum may result in a wider communication between the chest and the neck. The communication between the chest and neck might then transmit negative intrathoracic pressure to the neck. This negative pressure generated at neck allows sucking of atmospheric air through corrugated drains. The size of corrugated drain is also a concern for facilitating pneumothorax. If the defect size is larger than two-third of tracheal diameter, the air will preferential enter through this defect leading to pneumothorax.[1] Use of corrugated neck drain may also precipitate emphysema of neck and thus may compromise the airway as well. The possible causes of post-operative pneumothorax after thoracotomy and oesophagectomy include lung parenchymal leak/injury, bronchopleural fistula, ruptured bullae and malpositioned chest drains. The airway injury (bronchus and lung) during the surgery may lead to continuous air leak through chest drain or cause surgical emphysema of the face and neck.[3] Bronchoscopic evaluation may detect these airway injuries. Furthermore, ensuring the absence of air leak from lung before closure of thoracotomy incision needs to be emphasised.[4] Chest drains may occasionally slip out in the post-operative period which can normally be recognised by identifying the tube fenestrations outside the thorax. In our case, there was no malpositioning of the chest tubes. Air leak from lung parenchymal injury usually settles spontaneously in 1–2 days post-operatively.

CONCLUSION

Corrugated neck drains placed during TTE may be a cause of iatrogenic pneumothorax. This cause is currently not well documented in the medical literature. Alternative drainage systems or avoidance of neck drains may be considered to prevent this complication. We also emphasise on the need for careful monitoring

of respiratory status in patients having corrugated neck drain after TTE.

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REFERENCES

1. Khan MA, Jaunoo S, Prasad A, Tan LC. Persistent air-leak after transhiatal oesophagectomy: A case report. Int J Surg Case Rep 2013;4:388-9.
2. Guthrie G, Moyes L, Forshaw M. An unusual cause of collapsed lung after transhiatal oesophagectomy: A case report. Cases J 2008;1:55.
3. Kannan RR, Mahajan V. Tracheal injury during transhiatal mobilization of the esophagus. J Surg Oncol 1999;71:186-8.
4. Hulscher JB, ter Hofstede E, Kloek J, Obertop H, De Haan P, Van Lanschot JJ. Injury to the major airways during subtotal esophagectomy: Incidence, management, and sequelae. J Thorac Cardiovasc Surg 2000;120:1093-6.

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