Adult acquired carino-oesophageal fistula of malignancy: Anaesthetic considerations

Sir,

Adult tracheoesophageal fistula (TOF) is a rare pathology secondary to malignancy, trauma, pressure-necrosis (endotracheal/tracheostomy tube cuff), infection or iatrogenesis.[1,2] Carcinoma oesophagus is the most common malignancy with 4.7% developing TOF.[3] Management includes oesophageal/tracheal/dual stenting and retrosternal bypass, whereas over-the-scope clipping systems, tissue matrices, endoscopic fibrin-glue and atrial septal closure devices are currently experimental.[4] We describe here a case of a 59-year-old, 40 kg, post-radiotherapy, post-chemotherapy male patient in whom after failed stenting attempts, palliative retrosternal oesophageal-bypass surgery with gastric-conduit reconstruction for metastatic carcinoma oesophagus was successfully performed. The inherent anaesthetic challenges included TOF-isolation to prevent regurgitation and avoiding gas-leak during ventilation.

The patient's effort tolerance and biochemical investigations were within normal limits. Oesophagoscopy revealed an un-negotiable stricture at the 23 cm mark. A nasogastric tube was placed. High-resolution positron emission tomography revealed mid-oesophageal pathology, TOF, conglomerated lymph nodes and distant metastasis. Bronchoscopy confirmed a 25 x 15 mm, round, fistulous carinal opening with three additional 0.5 mm fistulae in the left main bronchus, 2.5-3 cm away from the carina making tracheal stenting a non-viable option. Unsuccessful oesophageal stenting had been attempted elsewhere.

In the operation theatre (OT), under standard monitoring, the head-end was elevated to avert passive regurgitation. Preceding induction, fibreoptic bronchoscopy of the tracheobronchial tree for exact location and size of the TOF and suctioning of secretions was performed under sedation, without ablating spontaneous respiration. A large circular orifice was spotted at the carina (7-o'clock position), through which the greenish-yellow nasogastric tube was visualised traversing the oesophagus [Figure 1]. The fibreoptic bronchoscope (FOB) was advanced into the left bronchus, but other fistulae were too tiny to be visualised with conviction, and hence, it was presumed that they would have an inconsequential effect on ventilation.

Anaesthesia was induced with intravenous fentanyl 2.5 μg/kg, propofol 2.5 mg/kg and succinylcholine 1.5 mg/kg. A left-sided double lumen tube (DLT; 37 Fr Mallenckrodt; fixed at 27 cm) was introduced till the blue bronchial cuff just disappeared through the glottis. The FOB was introduced through the DLT (bronchial lumen) to visualise the carina and advanced into the left main bronchus, carefully avoiding the fistula which was as large as the left main bronchial lumen itself. The DLT was then slid over the FOB and the bronchial lumen positioned in the left main bronchus.[5] The DLT was rotated and manipulated within the left bronchus under FOB-guidance in such

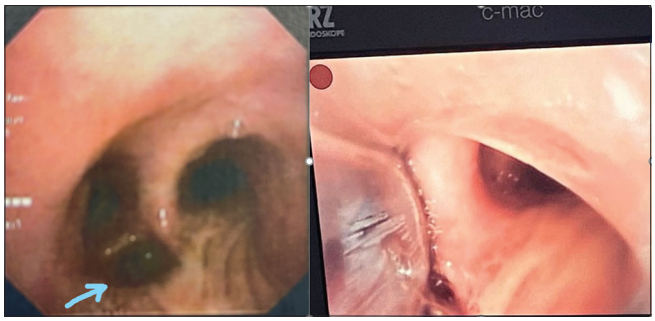

Figure 1: Fibreoptic bronchoscopic view of the carina before (left side) and after (right side) double lumen tube placement. The blue arrow points towards the carino-oesophageal fistula

a way that a major portion of the fistulous opening was blocked by the DLT after bronchial cuff inflation, and simultaneously, the cuff did not herniate to block the right main bronchus [Figure 1]. Surgery proceeded in the supine position and both lungs were ventilated with the DLT *in situ* using pressure-controlled ventilation mode [Figure 2]. Anaesthesia was reversed and the patient was extubated on the OT-table.

Our ventilatory goal was preventing/minimising continuous leak and gastric inflation from the TOF using an appropriate airway device with its cuff placed distal to the tracheobronchial tree aperture of the fistula. A tracheostomy tube can safely bypass TOFs located ≥3 cm cephalad to the suprasternal notch. An awake FOB-guided nasotracheal intubation is essential for bypassing more caudally located supracarinal TOFs.[6] Broncho-oesophageal fistulae necessitate a DLT for lung isolation and ventilation via the opposite bronchus.[2,7] Isolation of carino-oesophageal fistulae is largely unreported. We successfully achieved it by covering the fistulous opening with the bronchial cuff (proximal portion) of an appropriate-sized DLT under fibreoptic guidance. Further, during pressure-controlled ventilation, the anaesthetic gas-flow was directed towards the less-resistant right bronchus. Extended pre-oxygenation and succinylcholine facilitated prompt intubation precluding the requirement of positive pressure ventilation with potential gastric distension. We could visualise the compressed fistulous-opening and bronchial cuff in the same field by advancing the FOB through the tracheal lumen to check position and suction out any regurgitant material from the fistula [Figure 1]. Postoperatively, spontaneous respiration and apposition with the healthy surgically constructed oesophagus helped in preventing fistulous leak/regurgitation. A tailor-made

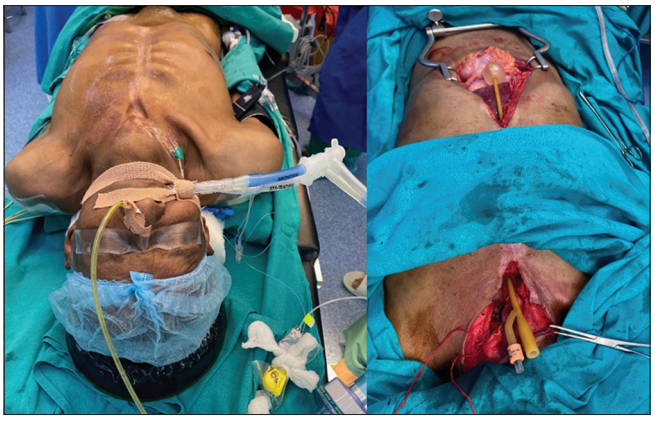

Figure 2: Post-anaesthetic-induction (left side) and intraoperative (right side) images of the patient during retrosternal bypass surgery

ventilatory strategy fathoming the size and site of TOF tempered with a thorough knowledge of the aerodigestive anatomy and lung isolation devices is the cornerstone of the anaesthetic management of such patients.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Shagun B. Shah, Manoj Bhardwaj, Nitesh Goel, Seema Shukla

Department of Anaesthesia and Critical Care, Rajiv Gandhi Cancer Institute and Research Centre, Sec-5, Rohini, Delhi, India

Address for correspondence:
Dr. Shagun B. Shah, H. No: 174, 175 Ground Floor, Pocket 17, Sector 24 Rohini, New Delhi – 110 085, India.
E-mail: drshagun_2010@rediffmail.com

Submitted: 21-Jan-2022
Revised: 13-Feb-2022
Accepted: 28-Mar-2022
Published: 20-Apr-2022

REFERENCES

1. Ladi SD, Kokari AR, Swami S. Anaesthetic management of tracheoesophageal fistula with accidental ingestion of button battery cell. Indian J Anaesth 2019;63:64-5.

2. Diddee R, Shaw IH. Acquired tracheo-oesophageal fistula in adults. Cont Edu Anaesth Crit Care Pain 2006;6:105-8.
3. Choi MK, Park YH, Hong JY, Park HC, Ahn YC, Kim K, *et al*. Clinical implications of esophagorespiratory fistulae in patients with esophageal squamous cell carcinoma. Med Oncol 2010;27:1234-8.
4. Kim HS, Khemasuwan D, Diaz-Mendoza J, Mehta AC. Management of tracheo-oesophageal fistula in adults. Eur Respir Rev 2020;29:200094.
5. Falcetta S, Sorbello M, Di Giacinto I, Donati A. Awake fiberoptic intubation with double lumen tube for severe predicted difficult airways: Could it be feasible with a rigid fiberoptic stylet? Indian J Anaesth 2019;63:323-5.
6. Adate KU, Kale J, Dongare D, Patil K, Yalgudkar H. Airway manoeuvres during anaesthetic management of adult acquired tracheo-oesophageal fistula. Airway 2021;4:128-31.
7. Giquel J, Matadial C, Rodriguez Blanco YF, Martinez-Ruiz R, Nguyen D, Candiotti K. An unusual case of tracheoesophageal fistulae. Case Rep Med 2012;20:1-3.

Access this article online

Quick response code

Website: www.ijaweb.org

DOI: 10.4103/ija.ija_74_22

How to cite this article: Shah SB, Bhardwaj M, Goel N, Shukla S. Adult acquired carino-oesophageal fistula of malignancy: Anaesthetic considerations. Indian J Anaesth 2022;66:302-4.