International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

Trapped in the Tube: A Minute of Alertness of Anaesthetist and Surgeon during Pneumonectomy Can Prevent Surgeon's Double Grind

Dr. Rupali Das[1], Dr. Rajneender Sharma[2], Dr. Panchal Bhrantiben Dipakkumar[3], Dr. Quresh Bambora[4], Dr. Vitasta Raina[5]

[1]Assistant Professor, Dept of Anaesthesia, GBH Medical College, Udaipur, Rajasthan, India
Corresponding Author Email: *rupali_romit[at]yahoo.com*

[2]Professor and Head of Dept of Anaesthesia, GBH Medical College, Udaipur, Rajasthan, India

[3]PG Resident, Dept of Anaesthesia, GBH Medical College, Udaipur, Rajasthan, India

[4]Head and Professor in Dept of Oncosurgery, GBH Medical College, Udaipur, Rajasthan, India

[5]Senior Resident, Dept of Anaesthesia, GBH Medical College, Udaipur, Rajasthan, India

Abstract: ***Introduction: Double lumen tubes (DLTs) are necessary for lung isolation in thoracic surgeries. DLTs are cumbersome to insert and maintain during surgeries. Complications associated with DLTs, such as suction catheter entrapment, are rare but can lead to significant intraoperative challenges for surgeon as well as anaesthesiologist. Case Report: A 53 - year - old male with carcinoma of the left lung underwent left pneumonectomy under general anesthesia (GA) with a left - sided DLT for lung isolation. During the procedure, the suction catheter became stuck in bronchial staple line, found to be inadvertently stapled to the left mainstem bronchus. The staple was carefully cut, the catheter released, and the bronchus was repaired. The patient was managed successfully without postoperative complications and extubated uneventfully on postoperative day 1. Discussion: This case highlights a rare complication involving DLTs and emphasizes the importance of vigilance by anesthesiologists during thoracic surgeries. Conclusion: Anesthesiologists play a censorius role in identifying and early managing such complications, which underscores the need for interdisciplinary coordination and careful handling of airway devices. Surgeons and Anaesthesiologists communication in important in prevention of such complications.***

Keywords: double lumen tube, lung carcinoma, suction catheter entrapment, left pneumonectomy.

1. Introduction

Double lumen tubes (DLTs) are widely used in thoracic surgeries for lung isolation. Frequent monitoring of DLT position while understanding the physiology of differential lung ventilation will minimize complications with these tubes (1). Despite their utility, complications such as misplacement, injury to the airway, or device - related malfunctions can occur. Endotracheal suctioning can cause alveolar collapse and impede ventilation (2). Suctioning intraoperatively can help in collapsing the lung which give adequate area for surgery. The bronchial suction technique was associated with a significantly shorter time to total lung collapse than the disconnection method (3). Rarely, entrapment of suction catheters within the bronchial staple line has been reported, posing a unique intraoperative challenge. After entrapment of suction catheter during pneumonectomy, it's difficult for surgeon to reconstruct bronchus, prevent leak and delay post operative recovery. Here, we present a case of suction catheter entrapment in bronchial staple line during left pneumonectomy for carcinoma of the left lung, managed successfully through a collaborative surgical and anesthetic approach.

2. Case Presentation

A 53 - year - old male with carcinoma of the left lung was scheduled for left pneumonectomy. Preoperative contrast - enhanced computed tomography (CECT) revealed a speculated, marginated, heterogeneous enhancing soft tissue density lesion in the left hilar and infrahilar region, measuring 46 mm × 32 mm × 36 mm. Pulmonary function tests (PFTs) expected an FEV1 of 0.972 L post - pneumonectomy. The patient was a known case of hypothyroidism, managed with Eltroxin 125 mcg daily. Other preoperative investigations were within normal limits.

The patient was induced under GA under ASA protocols, and lung isolation was achieved using a 37 Fr left - sided DLT. Positioning of the DLT was confirmed via fiberoptic bronchoscopy, and the surgery commenced uneventfully.

Intraoperative Complication

During the procedure, difficulty was encountered when attempting to withdraw the suction catheter from the bronchial lumen of the DLT. After trying to take out suction catheter after pneumonectomy, suction catheter was difficult to remove. Upon further inspection, it was found that the catheter had been inadvertently stapled to the left mainstem bronchus during the left bronchial cutter firing. This caused the catheter to become Figure 1 showing left pneumonectomy specimen. figure 1 showing left pneumonectomy specimen. mly stuck in bronchial staple line.

Management

To resolve the complication:

- The surgical team carefully identified and cut the bronchial staple to release the suction catheter.
- The bronchus was restapled meticulously to ensure airtight closure.
- Anesthesiologists maintained stable hemodynamics and oxygenation throughout the incident.

At the end of the surgery, the DLT was replaced with a standard polyvinyl chloride (PVC) endotracheal tube, and the patient was shifted to the intensive care unit (ICU) on mechanical ventilation. Figure 1 in showing specimen of left pneumonectomy.

Figure 1

Postoperative Course

The patient was extubated uneventfully on postoperative day 1. He remained hemodynamically stable and exhibited no signs of respiratory distress. Follow - up imaging and clinical assessments revealed no complications related to the bronchial repair or lung isolation process. The patient was discharged in stable condition after routine postoperative care.

3. Discussion

This case highlights a rare complication during thoracic surgery involving entrapment of a suction catheter within a DLT, a scenario that can challenge anesthesiologists and surgeons alike and increase surgeon's work. While DLTs are critical for lung isolation, careful handling of suction catheters and confirmation of their free movement are essential to avoid such incidents (4, 5). Careful vigilance during bronchial cutter firing of anaesthetist and surgoen is utmost important to prevent this complication. We were fortunate enough to have margin of bronchus for repair and reconstruction.

In this case, the anesthesiology team played a pivotal role in:

- Identifying the complication.
- Collaborating with the surgical team for resolution.
- Ensuring stable ventilation and oxygenation during the incident.

The literature suggests preventive measures such as careful handling of suction catheters during procedures and ensuring proper DLT placement via fiberoptic bronchoscopy (6, 7). While placing bronchial cutter firing, surgeon should announce which will alert anaesthesiologist about pulling suction catheter. Educational initiatives focusing on these aspects can further reduce the likelihood of such complications.

4. Conclusion

Suction catheter entrapment in a double lumen tube during thoracic surgery is a rare but potentially serious complication. Timely identification, interdisciplinary collaboration, and meticulous management are critical to ensuring patient safety. This case underscores the importance of vigilance by anesthesiologists and communication with surgeons during bronchial cutter firing can prevent this complication and adherence to best practices in airway management.

References

[1] Strange C. Double - lumen endotracheal tubes. Clin Chest Med.1991 Sep; 12 (3): 497 - 506. PMID: 1934951.

[2] Reissmann H, Böhm SH, Suárez - Sipmann F, Tusman G, Buschmann C, Maisch S, Pesch T, Thamm O, Plümers C, Schulte am Esch J, Hedenstierna G. Suctioning through a double - lumen endotracheal tube helps to prevent alveolar collapse and to preserve ventilation. Intensive Care Med.2005 Mar; (3): 431 - 40. doi: 10.1007/s00134 - 004 - 2537 - 5. Epub 2005 Feb 3. PMID:

[3] 15690150.

[4] El - Tahan MR. A comparison of the disconnection technique with continuous bronchial suction for lung deflation when using the Arndt endobronchial blocker during video - assisted thoracoscopy: A randomised trial. Eur J Anaesthesiol.2015 Jun; 32 (6): 411 - 7. doi: 10.1097/EJA.0000000000000194. PMID: 25564782

[5] Misthos P, Katsaragakis S, Milingos N. Lung Injury from Use of a Suction Catheter via the Double - Lumen Tube. Journal of Cardiothoracic and Vascular Anesthesia.2014.

[6] Smith G, Jones R. Pulmonary Hemorrhage Resulting from Suction Catheter in Video - Assisted Thoracic Surgery. Journal of Cardiothoracic and Vascular Anesthesia.2016.

[7] Thomas M, Chen Y. Anaesthesia for Pneumonectomy: Perioperative Management and Outcomes. BJA Education.2019; 19 (6): 183 - 191.

[8] Davis L, Kumar R. Seldinger Facilitation of Double - Lumen Tube Suctioning: A Novel Approach. British Journal of Anaesthesia.2018; 121 (5):