

Review Article

False tract during tracheostomy tube insertion: a review

Manish Munjal¹, Jaspinder K. Dhillon², Shubham Munjal^{1*}, Anjali Tyagi¹, Parunithi¹, Rohit¹, Susan¹, Shivendu¹, Diksha Goyal¹, Geetanjali¹, Biven¹

¹ENTHNS Christian Medical College, Ludhiana, Punjab, India

²Santosh Medical College and Hospital, Ghaziabad, Uttar Pradesh, India

Received: 13 July 2026

Revised: 20 September 2026

Accepted: 21 September 2026

*Correspondence:

Dr. Shubham Munjal,

E-mail: manishmunjal30@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Tracheostomy a surgical intervention, emergency or elective in non-ambulatory and upper airway compromised individuals. The utility of this procedure is twofold i.e. tracheo-bronchial toilet in the former and mechanical ventilation by bypassing the upper respiratory tract, in the latter. The simple surgery is sometimes fraught with unexpected complications and consequent significant morbidity and mortality. The likelihood is more so in the pediatric age group, where the trachea is pencil thin almost equal vent to the carotids in its diameter. Incorrect insertion of tracheostomy tube with, a consequent false tract and thereby a mal-positioned ventilation circuit, is a malady with likelihood of untoward consequences and thereby significant morbidity and mortality. This review highlights the utility of appropriate technique, early recognition, and remedial interventions in these false tracheostomy tracts. The etiology, diagnosis, complications and medical or surgical management with recent advances in prevention and treatment strategies shall be emphasized upon.

Keywords: Tracheostomy, False tract, Complication, Airway management, Tracheostomy tube insertion

INTRODUCTION

Tracheostomy is a routine surgical intervention in the critically ill bedridden and in the cervical airway compromised subjects. It serves the purpose of bronchial toilet and mechanical ventilation in the former, and as an upper respiratory bypass in the latter. Innocuous it may appear but there is probability of unexpected risks with significant morbidity and mortality.¹

The commonest situation reported widely is the creation of a false passage, observed on insertion of the tracheostomy tube, in a plane superficial to the trachea or through the tracheal wall, i.e. into the anterior mediastinum or the subcutaneous tissues.² Often it may lie lateral to the trachea on either side.

REVIEW OF LITERATURE

A false tract is an abnormal passage created during tracheostomy tube insertion, with consequent airway compromise and potential catastrophic complications.

The likely etiologies are, a keyhole or limited dissection, tracheostomy tube insertion without proper visualization, anatomical variations e.g., obesity, cervical spine abnormalities), prior neck surgeries or neck included in earlier radiations and when tracheal intervention undertaken as an emergency procedure in a restless gasping individual.³⁻⁵

The entity is diagnosed clinically by inability or difficulty in ventilating post tracheal cannulation, totally absent or reduced breath sounds on auscultation of either chest

flanks; and later a subcutaneous emphysema, develops either in the operation theater or in the post-operative recovery suite.⁷ A additional diagnostic modalities that can be adopted in situations where there is high index of suspicion, are the non-invasive plain radiographs of the neck and chest, postero-anterior and lateral views and the Ct imaging studies. The invasive tracheo-bronchoscopy too can be resorted to in case of doubtful placement.⁸

The likely complications of erroneous insertion are pneumothorax, pneumomediastinum, subcutaneous emphysema, airway obstruction and infection.⁹⁻¹³

MEDICAL-SURGICAL MANAGEMENT

The aim of management is immediate recognition and correction of the wrong insertion.¹⁴ The airway is stabilized with trans-oral endotracheal intubation or reinsertion of tracheostomy tube, surgical exploration and reinsertion if need be.^{15,16}

DISCUSSION

The likely predisposing cause in the development of a false tract during tracheostomy is a thick and swollen mucosa of the trachea and the friable soft tissues in its vicinity.¹⁷ The incidence of “false tracts” in open surgical tracheostomy and percutaneous dilatational tracheostomy is approximately 11 and 160 per 10,1000 respectively.¹⁸

The following SOPs- “special operating procedures” are suggested to avoid this malady of a false path while regaining a lost airway by trans-cervical tracheal cannulation.

Flexible fiber optic bronchoscopy, gastric tube/Ryle’s tube, pulp of index finger palpation of tracheal stoma and insertion of a venturi/jet ventilation or airway exchange (JVAE) catheter through the endotracheal tube before surgical incision and tracheal access via the laterally attached bronchoscope port.^{19,20}

In percutaneous tracheostomy “light wands are employed widely.²¹ They may even be used in revision open tracheostomy to quickly trace the trachea wherever the cervical anatomy is distorted by neoplasia, radiation or prior false tracts revision tracheostomy.²²

commonly used fingertip tracheal and endotracheal tube palpation technique, to locate the tip of the tracheal tube is often misleading usually in subjects with thick and short necks.²¹

False tract formation is a preventable complication with proper technique and attention to anatomical landmarks.²³ Recent advances in technology, such as ultrasound-guided tracheostomy and bronchoscopy-assisted insertion, have reduced the incidence of false tracts.^{23,24}

Appropriate technique, early detection, and timely intervention do significantly reduce morbidity and mortality.^{25,26}

CONCLUSION

False tract during tracheostomy tube insertion is a serious complication that requires prompt recognition and management. Proper technique, early detection, and intervention can significantly reduce morbidity and mortality

ACKNOWLEDGEMENTS

Authors would like to thank to Ms. Shipra office secretary, Mr. Sandeep, Mr. Sanjiv, Mr. Disney, Ms. Daisy and Ms. Yogita ENT staff for the infrastructure provided in the ENT OT and OPD.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. Umstot R, Samantha D, Umstot E, Area SA, Richmond BK, Jarrouj A. Ten-year review of tracheostomy techniques and related complications. *The American Surgeon*™. 2024;90 2):225-30.
2. Pershad AR, Peña M, Zalzal H, Pena M. Reducing the Morbidity Associated with Incorrect Pediatric Tracheostomy Tube Placement: A Quality Improvement Initiative. *Cureus*. 2025;17(4):e81619.
3. Rajajee V, Fletcher JJ, Rochlen LR, Jacobs TL. Real-time ultrasound-guided percutaneous dilatational tracheostomy: a feasibility study. *Crit Care*. 2011;15(1):R67.
4. Singh S, Herth FJ, Shah PL, Gompelman D. Bronchoscopy in intensive care. *Interventional pulmonology European Respiratory Monogram*. *Europ Respiratory J*. 2017;29-48.
5. Dempsey GA, Morton B, Hammell C, Williams LT, Smith CT, Jones T. Long-term outcome following tracheostomy in critical care: a systematic review. *Crit Care Med*. 2016;44 3):617-28.
6. Lubianca JF, Castagno OC, Schuster AK. Complications of tracheostomy in children: a systematic review. *Braz J Otorhinolaryngol*. 2022;88 6):882-90.
7. Lin KT, Kao YS, Chiu CW, Lin CH, Chou CC, Hsieh PY, et al. Comparative effectiveness of ultrasound-guided and anatomic landmark percutaneous dilatational tracheostomy: A systematic review and meta-analysis. *PLoS One*. 2021;16 10):e0258972.
8. Ji Y, Fang Y, Cheng B, Li L, Fang X. Tracheostomy timing and clinical outcomes in ventilated COVID-19 patients: a systematic review and meta-analysis. *Crit Care*. 2022;26 1):40.

9. Ferro A, Kotecha S, Auzinger G, Yeung E, Fan K. Systematic review and meta-analysis of tracheostomy outcomes in COVID-19 patients. *Brit J Oral Maxillofac Surg.* 2021;59(9):1013-23.
10. Ren B, Bao Y, Lin H, Tang B, Chen B, Zhang K. Ultrasound-guided percutaneous dilatational tracheostomy versus landmark- and bronchoscopy-guided techniques in critically ill patients: a systematic review and meta-analysis of randomized controlled trials. *Front Med Lausanne.* 2026;13:1818411.
11. Romero CM, Cornejo R, Tobar E, Gálvez R, Luengo C, Estuardo N, et al. Fiber optic bronchoscopy-assisted percutaneous tracheostomy: a decade of experience at a university hospital. *Revista Brasileira de Terapia Intensiva.* 2015;27(2):119-24.
12. Bharadwaj S, Kamath S. Airway management in neuroanesthesia. *The Airway Manual: Practical Approach to Airway Management.* 2023;571-91.
13. Andrabi B, Naqvi SM, Rehman SU. Navigating Airway Management in Post-tracheostomy Patients: A Case Report and Review of the Literature. *Cureus.* 2025;17(9):e92996.
14. Ahmed Ha, Naglaa M, Ahmed Ye, Mohamed Wa. Ultrasound guided percutaneous tracheostomy versus conventional tracheostomy: Technique and outcome. *Med J Cairo University.* 2021;89(9):1669-78.
15. Rana S, Pendem S, Pogodzinski MS, Hubmayr RD, Gajic O. Tracheostomy in critically ill patients. In *Mayo Clinic Proceedings.* Elsevier. 2005;80(12):1632-8.
16. Singh S, Herth FJ, Shah PL, Gompelman D. Bronchoscopy in intensive care. *Interventional pulmonology European Respiratory Monogram.* *Europ Respiratory J.* 2017;29-48.
17. Windsor HM, Shanahan MX, Cherian K, Chang VP. Tracheal Injury Following Prolonged Intubation 1. *Aust N Zeal J Surg.* 1976;46(1):18-25.
18. Durbin Jr CG. Early complications of tracheostomy. *Respiratory Care.* 2005;50(4):511-5.
19. Marelli D, Paul A, Manolidis S, Walsh G, Odum JN, Burdon TA, et al. Endoscopic guided percutaneous tracheostomy: early results of a consecutive trial. *J Trauma Acute Care Surg.* 1990;30(4):433-5.
20. McGuire G, El-Beheiry H, Brown D. Loss of the airway during tracheostomy: rescue oxygenation and re-establishment of the airway. *Canad J Anesth.* 2001;48(7):697-700.
21. Addas BM, Howes WJ, Hung OR. Light-guided tracheal puncture for percutaneous tracheostomy. *Canad J Anaesthesia.* 2000;47(9):919-22.
22. Agrò F, Salvinelli F, Gherardi S, Casale M. The lightwand: a useful aid in the difficult tracheostomy. *Canad J Anaesthesia.* 2002;49(9):1000-1.
23. Ojo A. Complications after tracheostomy: literature review Doctoral dissertation, Vilnius Universitetas. 2025.
24. Wen D, Yang X, Liang Z, Hu Y, Wang S, Zhang D, et al. Effectiveness of ultrasound-guided versus anatomical landmark-guided percutaneous dilatational tracheostomy: a systematic review and meta-analysis. *BMC Anesthesiol.* 2025;25(1):211.
25. Kaur N, Lewis S, Jenkinson H, Keegan C, Misra N, Neequaye S, et al. Management of major thoracic trauma: a narrative review. *Anaesthesia.* 2026.
26. Ji Y, Fang Y, Cheng B, Li L, Fang X. Tracheostomy timing and clinical outcomes in ventilated COVID-19 patients: a systematic review and meta-analysis. *Crit Care.* 2022;26(1):40.

Cite this article as: Munjal M, Dhillon JK, Munjal S, Tyagi A, Parunithi, Rohit, et al. False tract during tracheostomy tube insertion: a review. *Int J Otorhinolaryngol Head Neck Surg* 2026;12:853-5.