

Posterior tracheal wall leading to life-threatening obstruction of tracheostomy tube

Sanjay Singhal, S. Kiran¹, Avinash Das²

Department of Respiratory Medicine, Command Hospital (Central Command), Lucknow, Uttar Pradesh, Departments of ¹Anaesthesiology and Critical Care, and ²Ear, Nose and Throat, Command Hospital (Eastern Command), Kolkata, West Bengal, India

Access this article online

Website: www.avicennajmed.com

DOI: 10.4103/2231-0770.114125

Quick Response Code:



ABSTRACT

This is a case report of a 28-year-old male patient with severe traumatic brain injury and Glasgow coma scale score = 8: E2 M5 V_T, who required a tracheotomy for airway protection. On day 5, a surgical tracheotomy was performed with size 8 tracheostomy tube (TT). On the 4th day of post-tracheostomy, he developed a sudden onset respiratory distress while on T-piece. Immediate fiber optic bronchoscopy revealed almost a complete closure of TT due to posterior tracheal wall indrawing into the TT with every inspiratory effort.

Key words: Life-threatening, trachea, tracheostomy

INTRODUCTION

Tracheostomy tube (TT) obstruction can be a potentially life-threatening complication. Partial occlusions of the TT secondary to the posterior tracheal wall are common; however, life-threatening obstruction is not reported until now. We are reporting a case of complete TT obstruction by posterior tracheal wall leading to life-threatening emergency.

CASE REPORT

A 28-year-old male patient with severe traumatic brain injury (diffuse axonal injury with cerebral edema on magnetic resonance imaging) was admitted to the intensive care unit (ICU) in unconscious state Glasgow coma scale = 8: E2 M5 V_T with endotracheal tube *in situ*. In ICU, he was placed on mechanical ventilation (MV). Because of persistent poor neurological status, on the 5th day, a surgical tracheostomy was carried out with standard portex TT of 8.0 mm internal diameter. He was given daily intermittent spontaneous breathing trial by T-piece. On the 4th day of post-tracheostomy while the patient was on T-piece, he developed sudden tachypnea and tachycardia. With each inspiration and expiration an audible sound like vocalization was heard from inside the TT, which was heard despite fully inflated cuff. He was immediately placed on

MV, which showed high peak inspiratory pressures (PIP) >40 cm H₂O with every inspiratory effort. Positive pressure ventilation with Bain circuit was also not possible. Suction of the tracheostomy tube was carried out, which could be negotiated up to the carina with no secretions being aspirated. However, the high PIP with spontaneous inspiration did not subside and the audible sound continued. Immediate fiber optic bronchoscopy revealed indrawing of the posterior tracheal wall into the TT with each inspiratory effort causing almost complete closure of TT. This was causing a flap such as mechanism leading to audible sound and the high PIP. Ventilation with Bain was also not possible due to indrawing of the posterior tracheal wall and blockage of the TT during patient's own inspiration. Immediately, TT was removed over a bougie and replaced with 7.5 mm cuffed TT. Post-insertion, fiber optic bronchoscopy revealed patent tracheal lumen, PIP dropped and audible sound vanished. Inspection of TT cuff revealed elliptical deformity of the cuff leading to the lumen of TT facing posterior tracheal wall and deep inspiratory efforts lead to the indrawing of the posterior wall into the lumen causing airway blockade.

DISCUSSION

TT obstruction can be a potentially life-threatening complication and may result from thick secretions, blood

Address for correspondence: Dr. Sanjay Singhal, Department of Respiratory Medicine, Command Hospital (Central Command), Lucknow - 226 003, Uttar Pradesh, India. E-mail: drsanjaysinghal79@yahoo.co.in

clots, passage of the tube into a paratracheal soft-tissue plane or by the positioning of the orifice of the tube against the tracheal wall.^[1] The partial occlusion of the TT secondary to the posterior membranous portion of the trachea and the lateral tracheal wall encroaching on the distal lumen are potentially more common in obese patients.^[1] Elliptical deformity of the cuff may be the etiology of TT facing posterior tracheal wall and deep inspiratory efforts lead to the indrawing of the posterior wall into the lumen causing airway blockade. Trotter *et al.*^[2] recently reported that 57% of patients with the standard TT (tapered distal end) were found to have occlusion of >25% of the TT and furthermore, 41% of patients with the TT had >40% occlusion. This partial

occlusion of TT accentuate with increases in intra-thoracic pressure.^[2] However, life-threatening TT obstruction secondary to posterior tracheal wall is not reported until now as per the literature search.

REFERENCES

1. Feller-Kopman D. Acute complications of artificial airways. *Clin Chest Med* 2003;24:445-55.
2. Trotter SJ, Ritter S, Lakshmanan R, Sakabu SA, Troop BR. Percutaneous tracheostomy tube obstruction: Warning. *Chest* 2002;122:1377-81.

Cite this article as: Singhal S, Kiran S, Das A. Posterior tracheal wall leading to life-threatening obstruction of tracheostomy tube. *Avicenna J Med* 2013;3:48-9.

Source of Support: Nil, **Conflict of Interest:** None declared.

Author Help: Online submission of the manuscripts

Articles can be submitted online from <http://www.journalonweb.com>. For online submission, the articles should be prepared in two files (first page file and article file). Images should be submitted separately.

1) **First Page File:**

Prepare the title page, covering letter, acknowledgement etc. using a word processor program. All information related to your identity should be included here. Use text/rtf/doc/pdf files. Do not zip the files.

2) **Article File:**

The main text of the article, beginning with the Abstract to References (including tables) should be in this file. Do not include any information (such as acknowledgement, your names in page headers etc.) in this file. Use text/rtf/doc/pdf files. Do not zip the files. Limit the file size to 1024 kb. Do not incorporate images in the file. If file size is large, graphs can be submitted separately as images, without their being incorporated in the article file. This will reduce the size of the file.

3) **Images:**

Submit good quality color images. Each image should be less than **4096 kb (4 MB)** in size. The size of the image can be reduced by decreasing the actual height and width of the images (keep up to about 6 inches and up to about 1800 x 1200 pixels). JPEG is the most suitable file format. The image quality should be good enough to judge the scientific value of the image. For the purpose of printing, always retain a good quality, high resolution image. This high resolution image should be sent to the editorial office at the time of sending a revised article.

4) **Legends:**

Legends for the figures/images should be included at the end of the article file.