Case Report

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Lost and Found! Broken Tracheostomy Tube in Situ

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Abstract

Fracture of tracheostomy tube is a rare complication. We are reporting a unique case of a broken tracheostomy tube in a patient who had recently undergone tracheostomy and was being gradually weaned in the Intensive Care Unit (ICU). The detached portion of tracheostomy tube was lodged within the trachea and was timely retrieved by the anesthetist. There is limited literature on such occurrences. Nearly all reports highlight this complication in chronic users with metallic tubes. Prompt bedside diagnosis and effective instantaneous management circumvented a more grave and fatal complication of serious respiratory compromise by further migration of the severed tracheostomy tube into bronchus.

Keywords: Broken Tracheostomy Tube; Fractured Tracheostomy Tube; Foreign Body Trachea.

Introduction

Tracheostomy is done as a routine procedure in Intensive Care Units (ICU), in patients requiring prolonged mechanical ventilation. Dislodgement of the tracheostomy tube is a seldom reported complication. The fractured segment acts as a tracheobronchial foreign body [1,2,3]. However, here we present a unique case of tracheal tube detachment from the flange and the separated tube lying in the tracheal lumen causing respiratory compromise. This was a complex and unpredictable presentation which required meticulous handling and was eventually successfully managed within few minutes.

Case Report

A fifty year old male underwent excision of tumor in right lateral ventricle of brain. Patient was shifted after surgery to ICU for further monitoring due to slight obtundation in consciousness following extubation. Postoperative Non Contrast Computer Tomography (NCCT) of head showed intraventricular bleed, extradural hematoma and pneumocephalous. He was reintubated later the same day due to deteriorating Glasgow Coma Score (GCS) and kept sedated. Keeping in mind the prolonged recovery course and unimproving GCS, the patient was tracheostomised on day three, with cuffed Polyvinyl Chloride (PVC) tracheostomy tube size 8.0 and this was followed by gradual weaning.

After uneventful weaning over a few days, the patient was on pressure support mode of ventilation (FiO_2 0.4, PS/PEEP 10/5) on day five. Suddenly he presented with tachypnea, tachycardia, diaphoresis and paradoxical pattern of breathing. Pulse oximetry showed oxygen saturation (SpO_2) of 91%. Local examination revealed a broken tracheostomy tube with only flange of tracheostomy tube visible outside. The broken portion of tracheostomy tube could not be visualized. The cuff inflation line was the only connection between the two pieces (Figure 1).

Patient was immediately taken on bag and mask ventilation with 100% oxygen via face mask interface. Attempts were made to pull out the fragmented part of tracheostomy tube stuck in the trachea by tugging the cuff inflation line with minimal traction for fear of breakage and complete loss of connect with the dislodged segment (Figure 2). ENT surgeons were immediately notified. Meanwhile, to reach the proximal end of the tube, digital exploration through tracheal stoma was tried by the anesthetist.

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The cuff was deflated to allow mobility. Patient vitals were being monitored throughout. Ultimately, the stomal incision was extended by ½-1cm and skin and subcutaneous tissue retracted with a tracheostomy hook. The tracheostomy tube was caught hold by a forcep and pulled out (Figure 3). A new tracheostomy tube of size 8 was inserted through the stoma and ventilation reinitiated after confirming tube position.

Fig. 1: First inspection: broken flange disconnected from tracheostomy tube

Fig. 2: Attempt to retrieve broken segment in situ by tugging cuff inflation line

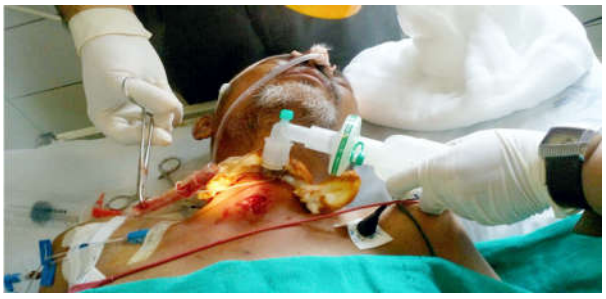

Fig. 3: Broken tube pulled out after exploration of tracheal stoma using forceps

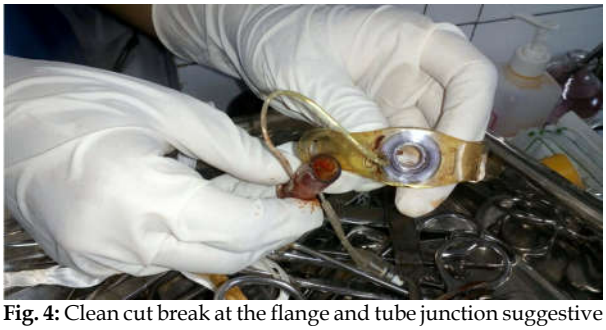

Fig. 4: Clean cut break at the flange and tube junction suggestive of manufacturing flaw

Discussion

All the previously reported cases of fractured or detached tracheostomy tube from neck flange were in chronic users [2,4,5,6]. In the present case the airway compromise occurred acutely on the fifth post tracheostomy day in ICU. To the best of our knowledge, this acute presentation, in an adult with a PVC tube is a lone occurrence. Even the first case of fractured PVC tracheostomy tube, reported in 1978 by Sood was seen after five years of chronic use with repeated boiling for sterilization [4]. Mostly, metallic tubes have been found to be the culprits presenting later as tracheobronchial foreign body [1,2,7]. A retrospective study done by Parida *et al* in eight pediatric patients with similar dislodgement of fractured tracheostomy tube segment were noted with longstanding use [5]. Out of these, in three children plastic tubes had been used. Similarly, Piromchai *et al* summarized several previous case reports which depicted three cases with displaced fragmented PVC tubes but these were also seen on long term use in children [8].

Various causes have been incriminated till date, e.g.- manufacturing flaw [2,3,5,6,7], erosion on chronic use [2,4,5], mechanical stress due to neck movement [7], corrosive damage due to repeated boiling or sterilization [4,5,6].

Further probing and examination of this severed tracheostomy tube as well as other available tracheostomy tubes revealed a weak or unstable flange and tube junction strongly suggestive of manufacturing flaw [Figure 4].

Timely management can avert complications like further slipping of broken tracheostomy tube, fatal respiratory compromise due to tube block, trauma and bleeding with complete loss of airway.

Conclusion

This life threatening complication warrants routine pre-use check of tracheostomy tubes. Secondly, an advisory should be issued regarding manufacturing of tracheostomy tubes in a single piece as it will ensure better safety and eliminate such risks [2,6]. Suturing of the flange to the skin should also be done religiously to reduce traction and torsion motion at the junction.

Despite all preventive measures if this complication occurs, removal should be done according to the location of the migrated detached tube. If the tube lies in the trachea and proximal end is visible just below

the stoma, pulling out the tube gently by inflation line can be tried. Surgical exploration through the stoma under direct vision is an alternative technique [3,5,7]. ENT surgeons should be informed immediately as removal using rigid bronchoscopy under general anesthesia through the stoma is the best way to manage in case the tube migrates further into the bronchus [3,5].

References

1. Bassoe HH, Bo8e J. Broken tracheotomy tube as a foreign body. The Lancet. 1960; 275(7132):1006–7
2. Majid AA. Fractured silver tracheostomy tube: a case report and literature review. Singapore Med J. 1989 Dec; 30(6):602–4.
3. Pawar VG, Chavan SS, Deshmukh S, Tuljapure A, Kedari A, Babu MS. A rare case of foreign body (detached portex tracheostomy tube) in the bronchus: case report. J Evid Based Med Healthc. 2015 Oct 5; 2(40):6843–6.
4. Sood RK. Fractured tracheostomy tube. J Laryngol Otol. 1973; 87(10):1033–4.
5. Parida PK, Kalaiarasi R, Gopalakrishnan S, Saxena SK. Fractured and migrated tracheostomy tube in the tracheobronchial tree. Int J Pediatr Otorhinolaryngol. 2014 Sep; 78(9):1472–5.
6. Bhattacharjee N. Fractured tracheostomy tubes: 3 case reports. Bangladesh Med Res Counc Bull. 1994; 20(1):8–11.
7. Bhargava SK, Bhat N, Bhargava KB. Broken tracheostomy introducer-an unusual tracheobronchial foreign body. Vol. 107. Cambridge Univ Press; 1993.p.463–464.
8. Piromchai P, Lertchanaruengrit P, Vatanasapt P, Ratanaanekchai T, Thanaviratananich S. Fractured metallic tracheostomy tube in a child: A case report and review of the literature. J Med Case Reports. 2010; 4:234.