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Broken Synthetic Tracheostomy Tube Presenting As Tracheobronchial Foreign Body-A Case Report

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Abstract: *Fractured tracheostomy tube and resulting airway obstruction presenting as foreign body in the tracheobronchial tree is a rare and a life threatening complications if prompt interventions are not made. Few cases of fractured tracheostomy tube in the tracheobronchial tree have been reported in the literature till date most of them are of the metallic varieties. We are reporting a rare case of fractured synthetic tracheostomy tube presenting as lower trachea and right main bronchus foreign body in ENT emergency department in Gauhati Medical College and Hospital.*

I. Introduction

Different varieties of foreign bodies in the tracheobronchial tree have been reported in the literature but a fractured tracheostomy tube presenting as one is rare. Tracheostomy is a common airway procedure for life support although safe late complications like trachecutaneous fistula, tracheoesophageal fistula, tracheal stenosis are known to occur. Fractured trachesotomy tube is a rare late complication. Prompt diagnosis and interventions are a must in such circumstances. In our case we are reporting a post radiotherapy patient with synthetic tracheostomy tube using for 4 months presenting as a foreign body in lower trachea and right main bronchus.

II. Case Report

A 65 year old male patient presented in ENT emergency department, GMCH on 26th august,2015 with stridor and respiratory distress following aspiration of fractured synthetic tracheostomy tube while changing of the tube by his wife at his residence. Detailed history revealed the patient underwent 60 cycles of radiotherapy at CMC, Vellore for carcinoma left PFS in 1999. After a period of 14 years patient presented with respiratory distress for which he underwent emergency tracheostomy on 1st May, 2015 at NECHRI, Assam. Detailed work up showed residual disease in the left PFS extending to the PCR. Histopathological examination of the tissue from left PFS revealed squamous cell carcinoma.he then underwent 2nd cycle of external beam radiotherapy (from 22nd may,2015-23rd june,2015) along with oral chemotherapy (tab.GEFITINIB 250 mg). He was then on the synthetic tracheostomy tube for the last 4 months and his family members did regular cleaning and changing of the tube till the incident happened. On ENT examination – ear, nose throat were normal. On indirect laryngoscopy B/L vocal cords were mobile and a growth was seen in left PFS extending to the PCR. On auscultation of chest there was reduced air entry on right side and wheezing was present. CT scan thorax was done on emergency basis and revealed displaced tracheostomy tube in the lower trachea, right main bronchus and bronchus intermedius. There was evidence of air trapping in the right middle and lower lobe. For securing the airway another synthetic tube was put. In consultation with CTVS department of GMCH rigid bronchoscopy under general anesthesia was attempted but due to impaction of the tube it could not be removed. Then right posterolateral thoracotomy with right bronchotomy was performed under general anesthesia and the broken tube was retrieved. The right bronchus repaired using prolene and chest tube drainage was given. Systemic intravenous antibiotics were given. Chest tube was kept for 10 days. Post operative chest x-rays was done and chest pathologies were not found. The patient is on chest physiotherapy and recuperating uneventfully.

III. Discussion

A number of complications of tracheostomy have been described but fracture of tracheostomy tube is rare. Bossoe and Boe (1960) reported the first case of fracture of the tracheostomy tube. In India, Maru Y.K. et al (1978) reported the first case. Most cases reported are of metallic type tube fracture. Alvi and Zahtz found 11 cases of non synthetic and 12 cases of synthetic tube fracture. Gupta in 1987 reported 9 case series of fractured tracheostomy tube over a period of 8 years.

Tracheostomy tube can be of metallic variety (silver, copper, zinc latest being stainless steel variety), poly vinyl chloride or silicon. Traditional metallic tubes can be used for prolonged period after repeated washing and boiling (causing mechanical stresses and early erosion, Bowdler and Emery 1984) and they are prone to corrosive actions of alkaline tracheal secretions so likely for fracture. The reaction of the alkaline tracheal secretions with the copper in the German Silver tube resulting in green deposits and erosion of the metal was described as "season cracking" by Bossoe and Boe (1960). The modern stainless steel tubes are less corrosive and thus less prone to fracture. A number of predisposing factors are present. The weak points of the tracheostomy tube are the junction between the tube and the neck plate, the distal end of the tube and the fenestration site. The junction between the tube and the neck plate fracture being the most common. Okafor (1983) reported fracture of an outer tube within 14 days and attributed to defective manufacture. Prolonged usage leads to wear and tear of the tube. It may be due to mechanical (suctioning, cleaning, repeated removal) or chemical stress (alkaline trachebronchial secretions, corrosive reactions). The fracture of the tracheostomy tube in our patient was most likely due to prolonged wear and tear as evident by the thickened and fragile surface of the tube. Modern tracheostomy tubes are made from PVC (a material that becomes softer when coming in contact with body temperature) or silicon which is soft by nature and unaffected by body temperature. Use of these tubes may aid in prevention of fracture.

The most common sites where fractured tracheostomy tubes are dislodged are the trachea and the right main bronchus and in our case too, the fractured tube was lodged in the lower trachea and the right main bronchus. The fractured tracheostomy tubes dislodged in the tracheobronchial tree may produce acute or chronic respiratory symptoms. Air hunger and dyspnoea are the common presenting symptoms in acute phase as evident in our case too. In most cases diagnoses is obvious by detailed history, chest X-ray (more useful in metallic tube), CT scan thorax in our case. Therapeutic rigid bronchoscopic removal is the mainstay of treatment since a larger foreign body usually not retrievable with a flexible bronchoscope. In our case thoracotomy and then bronchotomy was performed as rigid bronchoscopy failed.

IV. Conclusion

Best way to minimize this complication is to properly train the patients in home tracheostomy care and to adequately stress the importance of regular follow up and repeated change off tracheostomy tube. Surgeon should check for any manufacturing defects or signs of wear and tear before inserting the tube. Prolonged tracheostomy tube usage beyond recommended period should be discouraged.

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