



A CASE OF SUBCUTANEOUS EMPHYSEMA IN A POST OPERATIVE CORONARY ARTERY BYPASS GRAFT PATIENT UNDERGOING PERCUTANEOUS TRACHEOSTOMY IN INTENSIVE CARE CARDIAC UNIT

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ABSTRACT

percutaneous tracheostomy (PCT) is considered the most widely accepted technique in critical care setting specifically in patients requiring prolonged invasive mechanical ventilation. Although PCT is considered a safe procedure it can lead to certain life threatening complications one of which is massive subcutaneous emphysema. We report a post operative case of coronary artery bypass graft surgery requiring prolonged mechanical ventilation due to repeated aspiration leading to pneumonia. Bedside PCT was done leading to immediate massive diffuse facial and orbital emphysema. We discuss here the recognition and management of such complications.

KEYWORDS : percutaneous tracheostomy, subcutaneous emphysema, bronchoscope, complication

INTRODUCTION

Aspiration induced lung injury is commonly related to frequent or large volume aspiration as well as gastric or oropharyngeal colonization providing the infection source. Patients show acute symptoms such as coughing, choking, shortness of breath, tachypnea, tachycardia. The outcome can be varied widely, either it can remain within the spectrum of normal physiology or it can lead to acute respiratory distress syndrome (ARDS). Indications for intubation are similar to general indications based on general neurologic conditions, degree of hypoxia and hemodynamic instability. Long term ventilation is an indication for tracheostomy to secure an airway and also provide adequate ventilation. Since the introduction of percutaneous tracheostomy in 1957 by Sheldon, it has rapidly progressed and several techniques have been developed for its introduction. It is frequently done in intensive care settings as it carries lesser risk than surgical technique. A PCT done by a well trained operator reduces risk of complication and improves its safety. The use of bronchoscope as an assist device aims to improve its safety but routine use is still controversial. Despite the fact that PCT is a safe procedure it still carries various risks. Minor complications include: self controlled bleeding, accidental extubation, desaturation, decannulation, mild surgical emphysema, and tracheal ring fracture whereas major complications are esophageal perforation, false tracheostomy passage, posterior tracheal wall puncture, massive bleeding and pneumothorax. Subcutaneous surgical emphysema is a rare complication and can occur due to tube misplacement, wall laceration or barotrauma and it is seen that this can be avoided when the procedure is done with bronchoscopic guidance.

CASE DESCRIPTION

We present a post operative case of coronary artery bypass graft surgery, 62 year female patient 150 cms in height and 80 kg weight (BMI 35.5) with chronic kidney disease who was admitted to critical care unit in view of ongoing dialysis and to observe cardiac recovery. Due to long term ICU stay patient had altered mental status and thus had an episode of aspiration after an oral feed, as a result of which she started desaturating. The patient was immediately intubated and was put on mechanical ventilation. Due to worsening chest condition despite broad spectrum antibiotics and use of closed suctioning apparatus, and also due to one episode of airway bleed during hemodialysis the patient was kept intubated. There was also suspicion of ARDS. At day 14 of her admission to the critical care unit, decision of bedside percutaneous tracheostomy was taken. Patient met the criteria for percutaneous tracheostomy. Any underlying vessels or thyroid tissue were ruled out by neck ultrasound with trachea 2 cm depth from the skin. Anesthesia was provided with butorphanol (2mg), along with midazolam (2mg). Ventilation was with 100% oxygen with continuous patient monitoring. The airway was managed well and tracheostomy performed and assisted by

intensive care doctors. Cuffed blue line ultra tracheostomy tube PORTEX 7.0 was used, b/l air entry checked and endotracheal tube withdrawn. The procedure was uneventful with very little bleeding, after a few minutes patient started developing subcutaneous emphysema over the orbital and facial area along with desaturation. Endotracheal intubation was done immediately and on inspection it was noted that a false tract had been developed and that the tube was displaced in the tract which led to this complication. A repeat tracheostomy was done and this time 8.0 size tube was used. Chest auscultation revealed b/l air entry equal, dressing was applied and tube fixed. Patient remained hemodynamically stable and emphysema resolved after 2 days.

DISCUSSION

Bedside PCT is quick, cost effective, easy to perform, has least infection rate and causes less tissue trauma. Since Cigalia et al described the technique of PCT, it was noted that the blind nature of the technique can lead to various complications. Simon et al showed that 29.6% of deaths that are 1 in 600 occur due to airway complications and 31% occurred due to perioperative bleeding. Our patient was fit to undergo the bedside procedure. Alansari et al described the role of ultrasound in making the procedure safe by giving idea about the underlying vessels and landmarks. We could not use the bronchoscopic guidance due to material maintenance. Marelli et al used bronchoscope as an adjunct to PCT to avoid various complications. It confirms mid tracheal insertion and lowers paratracheal insertion as well as posterior wall laceration. Carillo et al conducted a series of 35 patients, out of which 33 were accomplished with bronchoscopic guidance and documented significant savings with the procedure. Only disadvantage reported so far is increased intracranial pressure. Even though there is no consensus for indications for the use of bronchoscope, we still recommend its routine use to assist PCT. In several reports subcutaneous emphysema was due to tracheal wall injury and although the most common cause still remains posterior wall injury other causes like displacement of the tube in subcutaneous tissue are also prevalent and both these can be prevented with the use of bronchoscope as an assist device. In our case we were able to recognize the problem that the tube had been displaced into subcutaneous tissue and had formed a false tract and we could take action immediately that prevented any adverse outcome. The cause of emphysema was not posterior wall laceration and that is the reason we could visually recognize it, had it been posterior wall laceration or esophageal perforation it could only be seen by a bronchoscope and so the use of it is highly recommended.

CONCLUSION

Bedside PCT specially in setting of critical care is a relatively safe and easy option whenever there is need of prolonged ventilation. It is noted that the use of bronchoscope as an assist device can prevent

the complications such as misplacement, displacement, trauma and bleeding. It is also well noted that the use of neck ultrasound to assess the structures prior to the procedure can be really helpful.

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