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Lessons to Learn

Masked blocked tracheostomy tube

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Abstract Acute airway obstruction often necessitates assisted ventilation. In general, this can be achieved by an endotracheal intubation. Tracheostomy is reserved for total obstruction especially lesions involving oral cavity or oropharynx, or in cases of anticipating failed intubation. It is technically more difficult and consumes more time, instrument and expertise. Complications related to it are disastrous, and mainly to occur in the early post-operative period. In a previously operated neck, and with underlying comorbidities affecting the lung functions, the immediate post-operative complications pertaining to the tubes cannot be underestimated, since at times it could be masked by the symptoms of the comorbidities. Thus, monitoring and prompt intervention must be made readily available.

Keywords: Airway, emergencies, stridor, tracheostomy.

Introduction

Tracheostomy is commonly performed amongst maxillofacial patients. It is required for airway relief, to facilitate approach in major oral surgeries, or in prolonged endotracheal tube ventilation following trauma. Among other indications include acute upper airway obstruction secondary to inflammation such as in Ludwig angina or acute epiglottitis and neck injury. Stridor is the commonest presentation, which necessitates emergency tracheostomy, whilst head and neck neoplasm constitute majority of the indicated cases (Costa *et al.*, 2016). Any complication that might occur during the tracheostomy must be taken into consideration. The commonest events which sometimes could be threatening might involve tubes that were blocked, displaced or pulled out (Mortimer and Kubba, 2016). With the presence of comorbidities, the tube problems can be masked and missed.

Case summary

A 74-year-old man suffering from aortic arch aneurysm, had undergone thyroidectomy more than 10 years ago, presented with sudden onset of stridor for one day prior to the admission. Laryngoscopy showed bilateral vocal cords paresis in median position. An emergency tracheostomy was performed under local anaesthesia. There was minimal bleeding from the cut tissue of the previously operated neck. The breathing improved after tube insertion. Dressings were changed accordingly as it was stained with blood throughout the night.

The patient remained well until the next morning; when he complained of dyspnoea. Pulse oximeter showed 90% saturation. Testing the patency of the tube, there was blow to the cotton wool test applied, indicating a patent lumen. After a gentle suction, the oxygen picked up to 95% but constantly remained at the level. Knowing the history of massive mediastinal mass due to aneurysm, a minimal drop was expected. On the next morning, it desaturated again to 90%. Minimal clot was suctioned out from the tube. Owing to the recurring desaturations and presence of clot at the suction tip, the decision to change to a new tube was made even though it was just 48 hours after procedure. The tip of the tube was 75% blocked with clot (Fig. 1), and the whole-length of the tube was filled with blood (Fig. 2). After the successful change, the saturation picked up to 98% and the patient was comfortable throughout the day onwards.

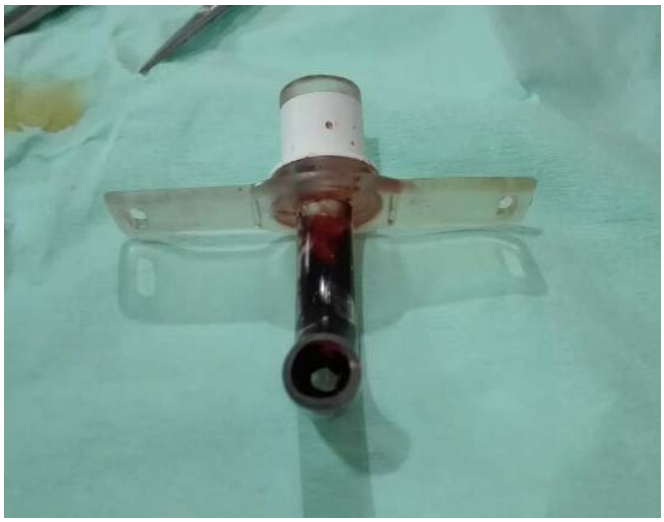

Fig. 1 The tip of the tube was 75% blocked with clot.

Fig. 2 The whole-length of the tube was filled with blood.

Discussion

In a non-violated neck, tracheostomy might be a straight forward procedure. It can be performed even under local anaesthesia because of the direct access to the trachea after retraction of the infrahyoid strap muscles. In the present case, the neck was operated for thyroidectomy more than 10 years prior, and the amount of scarred tissue cannot be underestimated (Mohamad *et al.*, 2015). Haemostasis of a scarred tissue is more difficult as it had lost its normal tissue structure that has contractile elements that is necessary for a good control. Even though intraoperatively the bleeding was minimal, it must be remembered that post operatively the bleeding may occur, because of pain that could increase the blood pressure, and shearing effect of the diathermized tissue, on top of less effective action of scarred tissue haemostasis.

One of the dreaded complications of tracheostomy is tube blockage. In a total occlusion, this can lead to airway embarrassment. Monitoring of good oxygen saturation especially in 24-hour post procedure is required. The diagnosis of the

blocked tube can be masked and delayed if the patient had underlying lung or thorax problems, which may also affect the oxygen saturation. Most of the complications occur in the early post-operative period (Lee *et al.*, 2016). Blockage can be due to accumulation of secretion or in the present case, the blood clot from the bleeding that tracked inside the tracheal lumen. When the patient tried to cough out, the blood sipped into the tube and get hardened onto the wall. To prevent this, especially in a patient who is bedridden and need tracheobronchial toilet, a suction machine is prepared at home before discharge. Alternatively, a double-lumen tube can be used, whereby the caretaker can take out and wash the inner tube regularly to prevent blockage. There is no single significant risk factor that is associated with tube obstruction (Lee *et al.*, 2016).

Changing the tube on day 2 post insertion must be done with great care. This is because the trachea-skin tract is not well formed yet. Thus, a false tract may be created upon reinsertion of the new tube. The rail routing technique can be used to facilitate the changing. Preferably it should be done with the presence of the otolaryngologist in case any prompt exploration of the neck stoma is required.

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