FAST FACTS AND CONCEPTS #250
TRACHEOSTOMY CARE
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Background Many patients with advanced illness have tracheostomies, which require careful observation and specialized management. Common indications for tracheostomies in patients being seen in palliative care and hospice settings include chronic long-term ventilation, aid with ventilation weaning, and upper airway obstruction (from, for instance, head and neck cancer). A working knowledge of tracheostomy equipment and the basic handling procedures can avoid complications and improve a patient’s comfort.

Tracheostomy Equipment 101 At its most basic level, a tracheostomy appliance consists of a cannula (or tube), cuff, obturator, and ties. The cannula maintains the patency of the stoma and airway, and it facilitates movement of air into the trachea. Tracheostomy cannulas can be cuffed or uncuffed. The inflatable cuff, typically filled with air by a syringe, surrounds a portion of the cannula inside the trachea. The inflated cuff occludes the trachea around the cannula, which allows for increased protection against aspiration and also for greater degrees of positive pressure ventilation. Cuffs require monitoring to maintain a pressure of 20-25 mmHg. Higher pressures can produce tracheal ischemia, mucosal injury, and difficulty swallowing; lower pressures can potentially aggravate aspiration around the cannula (1,2,3). Obturators, usually packaged with new tracheostomy tubes, are inserted into the lumen of the cannula and provide for increased rigidity during placement of the tracheostomy tube. Tracheostomy ties secure the tracheostomy tube to the patient and typically wrap around the back of the patient’s neck.

Complications of Tracheostomy Placement Short-term complications include bleeding from surgical site (~5%), wound infection, subcutaneous emphysema, pneumothorax, tracheostomy tube obstruction, recurrent laryngeal nerve damage, and posterior tracheal wall injury (4, 5). Long-term complications include dysphagia, airway obstruction from secretions, infection, rupture of the innominate artery, tracheo-innominate artery fistula (<0.7%), tracheosophageal fistula, tracheal dilation, tracheal stenosis (1-2%), granuloma formation, and tracheal ischemia and necrosis (4, 5).

Approach to Complications and Emergencies

• Acute Dyspnea. If a patient with a tracheostomy becomes acutely dyspneic, it may be due to partial or complete blockage by retained secretions. Ask the patient to cough and then attempt to suction the tracheostomy in place with a flexible suction catheter. If the tracheostomy stoma and tract is not fully matured, do not attempt to remove the cannula as it may be difficult to re-insert. (3)

• Bleeding. Bleeding from the surgical site is among the most common early complications. Treatments include packing around the edges of the stoma with gauze, correction of coagulopathies, and cautery or suturing of site of bleeding (3,5). Massive pulsatile bleeding may indicate erosion of the innominate artery, which can occur days to weeks after a tracheostomy procedure. This can rapidly lead to airway compromise and/or exsanguination. To minimize bleeding, place a gloved finger in the stoma, feel for a pulsatile mass, and apply forward motion on the backside of the upper border of the sternum thereby compressing the pulsatile artery against the posterior surface of the sternum (6). Other techniques include overinflating the cuff. If the patient’s goals of care allow this, the patient should be transported emergently to the operating room for management (3). See Fast Fact #251 for further details about caring for hemorrhaging patients who do not want further invasive treatments.

• Accidental Decannulation. Don’t panic. Reassure the patient. If the tube has been in place less than 5 days, consider endotracheal intubation if a tracheostomy tract cannot be immediately re-established (5). If the tube has been in place for 5-10 days, the tract should be well formed and should not suddenly close (2). To reinsert the tracheostomy tube, insert the obturator (if applicable) into the cannula. Slowly insert the cannula with obturator into the tracheostomy, following the path of the airway. When reinserting, be mindful of any resistance. If met with resistance, it is possible to create a false passage, and one should reevaluate the entry approach. After insertion, remove the obturator while keeping the cannula in place. Listen for and feel for air movement through the tracheostomy tube and ensure that there is no subcutaneous emphysema, which may indicate improper placement.
If you cannot insert a new cannula and the patient cannot breathe comfortably on their own through the stoma, use a bag-valve mask to ventilate the patient through the upper airway. Ventilate gently to prevent air from escaping through the stoma or carefully occlude the stoma with a gloved hand to maximize oxygenation. Next steps depend on the patient’s current indication for a tracheostomy (airway patency vs. ventilation vs. secretion management) and goals of care. If the patient has a patent airway and is not on a ventilator there may be time to have the patient evaluated by a specialist to replace the cannula. If the patient is ventilator dependent or has an upper airway obstruction, endotracheal intubation and/or emergency transport is indicated.

- **Resuscitation via Tracheostomy Tube.** Treat the patient like patients without tracheostomy, with the following exceptions. Do not remove the tracheostomy. Check that the cannula is patent. Ventilate by using a manual resuscitation bag attached directly to tracheostomy tube. If unable to ventilate, try suctioning. If still unable to ventilate, try to change tracheostomy tube. The last resort is oral intubation.

**Conclusion** Careful discussions with dying patients and their families about options and preferences if there are tracheostomy complications can help prevent chaotic, emergency decisions about urgent transportation, surgeries, or oral intubation.

**References**

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