Patients who have a laryngectomy need help adapting to complex changes including managing their airway, speech loss, body image changes, and altered smell and taste.

**Supporting patients following a laryngectomy**

**Keywords:** Laryngectomy/Neck breathers/Airway management

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**In this article...**
- **Definition of laryngectomy**
- **How to manage the airway and stoma**
- **Effects on patients' lifestyle**

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This four-part series on tracheostomy care concludes by reviewing specific issues that affect patients who have undergone a laryngectomy and must breathe through a permanent stoma in their neck. This procedure is irreversible so patients have long-term issues to cope with, such as managing their airway, changes in body image and adapting to loss of their natural speaking voice.

Laryngectomy is a major surgical procedure used to treat cancer of the larynx. Other indications include severe injury to the neck, such as a gunshot wound, or damage to the larynx as a result of radiotherapy (Roth, 2012). Patients should be nursed by staff with appropriate skills and competency, in acute or community care settings. Clinical practice should follow recommendations outlined in the National Confidential Enquiry into Patient Outcome and Death (2014) and National Tracheostomy Safety Project (2013) guidelines.

**Definition**

Laryngectomy is the surgical removal of the larynx (which contains the vocal cords) and the separation of the airway from the nose and mouth. An opening (stoma) onto the surface of the neck is formed and the trachea is connected to it (Fig 1). This is a permanent, irreversible stoma, which leaves patients unable to speak without assistance.

**Pre-operative care**

Laryngectomy is a life-changing procedure, so patients need carefully planned pre- and post-operative care. A pre-operative multidisciplinary team approach enables them to meet the team that will care for them during their hospital stay and after they have been discharged.

Patients will have several pre-operative sessions with a specialist speech and language therapist, who will explain every stage of their post-operative voice restoration and rehabilitation programme. They will also be given the opportunity to meet someone with a laryngectomy, thereby giving them an insight into what life will be like after their surgery. The psychological impact is similar to that experienced by patients with a permanent tracheostomy (Everitt, 2016a).

**Post-operative airway management**

The same principles of tracheostomy care apply to laryngectomy care, particularly in the initial post-operative phase when many patients have a tracheostomy tube in situ (Everitt, 2016a; 2016b; 2016c). However, it is important that staff recognise the differences in airway anatomy, particularly in terms of resuscitation.

The NCEPOD (2014) highlighted that only 45% of hospitals included the resuscitation of people with laryngectomy or tracheostomy (“neck breathers”) in their...
mandatory resuscitation training. Staff need to understand the differences between neck and normal breathing to ensure appropriate action is taken in the event of a cardiac or respiratory arrest; for example, after a laryngectomy patients will need to be intubated via their stoma.

Communication
Reproducing a voice following a laryngectomy requires different strategies to those used for patients with tracheostomy, as expired air cannot be redirected through the upper airway. When the larynx is removed patients are unable to speak, but there are several ways of artificially reproducing voice including:

- Tracheoesophageal puncture (TEP) speaking valves;
- Electrolarynx;
- Oesophageal speech;

Tracheoesophageal puncture (TEP)
For most patients a TEP speaking valve will be fitted during surgery or post operatively. A puncture is made surgically into the tracheoesophageal wall, causing a small fistula in which a valve is inserted. The TEP valve itself does not produce a voice, but patients may need to over-articulate to remove secretions and small food debris that may cause blockages and result in poor voice quality or complete loss of voice.

Electrolarynx
The electrolarynx is a hand-held, battery-operated device that is held against the neck or under the chin and directed towards the base of the tongue. It has a vibrating head that serves as a sound source for speech in a similar way to the vocal cords, which vibrated to produce a voice. Patients may need to over-articulate words to ensure clarity for the listener.

Oesophageal speech
Oesophageal speech is the most difficult communication technique to learn. The patient swallows air into the oesophagus and then pushes it back up while articulating speech sounds to make a voice. Oesophageal voice used to be the main method of communication for patients after laryngectomy but advances in technology mean use of it is less common.

Technology
Recent technological developments mean there is now a vast array of communication applications available; as a result, patients are routinely asked if they are able to use or access a laptop or tablet, particularly during the first 10-14 days after laryngectomy when communication using a TEP valve may not be possible.

Humidification
Artificial humidification is vital to maintain the patency of the stoma, as the nose and mouth are no longer attached to the trachea. A number of devices can be used to do this, including humidification bibs (Everitt, 2016c). Many patients may also require regular sodium chloride 0.9% nebulisers, particularly in the morning to aid removal of secretions, before using other humidification aids such as the heat and moisture exchange (HME) cassette and base plate that fit over the stoma to filter and moisten inspired air (Fig 4). Many hospitals discharge patients with a portable nebuliser or travel nebuliser, which they can use as required; this is essential for patients

Other devices such as keyboard-based communication aids can be used and may be available from the speech and language therapists in hospitals.

Stoma care
Patients with a tracheostomy tube in place after laryngectomy will usually have it removed within 24-48 hours of surgery. The stoma site will have sutures, so removal depends on the suture material used, as well as local policy and consultant guidance.

Once the tracheostomy tube has been removed patients can begin to care for their stoma – initially with the support of staff; this involves using an adjustable mirror and light source such as a pen torch or adjustable desk lamp.

The stoma edges and surrounding skin are cleansed using gauze and sodium chloride 0.9%; tweezer-type forceps can be used to remove dried respiratory secretions, which form crusts inside and around the edges of the stoma. This should be done at least twice a day and more frequently if required. Cavilon barrier cream may be used around the stoma edges and surrounding skin to provide a barrier to secretions and protect the skin.

When their stoma has healed, patients can use a variety of different stoma aids such as a stoma button (Fig 2) and laryngectomy tube (Fig 3) in the initial post-operative phase to stop the stoma shrinking and give it a good shape.

These devices must be changed and cleaned daily, or more frequently if required; patients and carers should be taught how to do this by a head and neck specialist nurse or speech and language therapist. Ward staff should also be trained in the use of the different laryngectomy devices so they can continue to teach and support patients throughout their stay.

FIG 1. ALTERED ANATOMY POST LARYNGECTOMY

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
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<tbody>
<tr>
<td><strong>Pharynx</strong></td>
<td><strong>Pharynx</strong></td>
</tr>
<tr>
<td><strong>Epiglottis</strong></td>
<td><strong>Epiglottis</strong></td>
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<tr>
<td><strong>Vocal cords</strong></td>
<td><strong>Vocal cords</strong></td>
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<tr>
<td><strong>Larynx</strong></td>
<td><strong>Larynx</strong></td>
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<tr>
<td><strong>Trachea</strong></td>
<td><strong>Trachea</strong></td>
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<tr>
<td><strong>Oesophagus</strong></td>
<td><strong>Oesophagus</strong></td>
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</tbody>
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Air flows through nose and mouth for breathing and speech
Air flows through opening in neck for breathing
who are unable to use base plates and HMEs due to post surgery/radiotherapy soreness or swelling. Nebulisers should be given positioned directly over the stoma using a tracheostomy mask.

Suction
Suctioning should not be used routinely. Patients should be encouraged to cough and clear their secretions via the stoma; where necessary a yankaur suction catheter can be used to remove secretions on coughing from the stoma. Deep suctioning is only recommended to clear secretions if the patient is having difficulty because of an ineffective cough and requires further stimulation.

Patients and carers should be taught to use suction. Most hospitals discharge patients with a suction machine and necessary attachments to use as required and for emergency clearance of the stoma.

Swallowing
Patients are nil by mouth for approximately 10 days after surgery to allow tissue to heal where the larynx has been removed. A contrast swallow assessment is performed to highlight any areas where fluid/food leakage could occur and cause healing to be delayed. If problems are identified, patients continue to be nil by mouth and their swallow is re-assessed at a later date.

When the patient is allowed to eat and drink, diet and fluids should be gradually introduced. Some patients may experience weight loss and so nutrition assessment is vital pre- and post-operatively.

Sensory changes
Patients’ sense of smell and taste are altered as air no longer travels through the nose or mouth, but they can improve their sense of smell using the “polite yawn” technique. This requires them to yawn with the mouth closed, enabling them to draw in air through the nose so they can smell. Another benefit of this technique is that it can improve the sense of taste as this is partly dependent on smell.

Washing and bathing
Showering bibs and guards can protect the airway while patients shower, bathe or wash their hair. They will need to learn to use these devices safely.

Physical changes
Patients find it difficult to lift heavy objects after laryngectomy, as they are unable to hold their breath or to strain and bear down. Given these respiratory limitations, it is also important for them to have a balanced/fibre-rich diet to prevent constipation – if there is increased risk of constipation due to analgesics or other medications, laxatives should be prescribed.

Body image is also directly affected by the presence of the stoma in the same way as it is for patients with a permanent tracheostomy (Everitt, 2016a).

Discharge planning
Discharge planning should commence pre-operatively where possible to ensure appropriate discharge plans are made; patients should be involved in these discussions. Discharge documentation should provide:
» A summary of the patient’s surgery and continuing care needs;
» Clear guidance on care for the stoma;
» Contact information for the head and neck team.

Laryngectomy bags with mirrors, torches, disposable bags and wipes, and emergency equipment should also be supplied along with details of how to obtain more supplies.

Community or agency staff should be taught and competent in all aspects of daily and emergency laryngectomy care before the patient’s discharge (NTSP, 2013).

References

ARTICLES IN THE SERIES
● Part 1: Caring for patients with a tracheostomy, 11 May
● Part 2: Temporary tracheostomy and weaning, 18 May
● Part 3: Permanent tracheostomy, 25 May