Swallowing After Extubation: What to Know and What to Look For

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INTRODUCTION

In the US alone, over 15 million patients require oral intubation every year (Turner et al., 2020). Intubation is a traumatic procedure and can have a significant impact on the ability to swallow. These symptoms often go unaddressed. The SLP has an important role to play in recognizing, evaluating, and treating dysphagia in this population.

BACKGROUND

Oral intubation is the act of inserting an endotracheal tube (breathing tube) through the mouth and larynx and into the lungs. In the ICU, it is used to mechanically ventilate the lungs after respiratory failure. The incidence of dysphagia varies widely depending on the study (Zuercher et al., 2019), but it is thought that about half of patients experience some level of dysphagia (Brodsky et al., 2017).

WHO GETS DYSPHAGIA?

Most patients who undergo endotracheal intubation will acquire some level of laryngeal injury (Brodsky et al., 2017). The risk of dysphagia will increase depending on the process, duration, and frequency of intubation as well as the underlying medical conditions (Brodsky et al., 2017; Wallace & McGrath, 2021; Yang et al., 2020; Zuercher et al., 2019). Patients who are at the highest risk include those with:

- Extended intubation (longer than 48 hours)
- Multiple intubations
- Elderly and/or frail patients

(Beduneau et al., 2020; Brodsky et al., 2017; El Gharib et al., 2019; Marvin et al., 2018; Marvin, 2022; Megarbane et al., 2010; Scheel et al., 2015).

Other risk factors associated with dysphagia status post-extubation include:

- Cardiopulmonary status
- Stroke
- Neurological impairment
- Tube feeding
- Gastroesophageal reflux disease (GERD)

(McIntyre et al., 2021; Zuercher et al., 2019).

Dysphagia may also be exacerbated by factors associated with medical complexity, including:

- Cognitive deficits
- Medication (e.g., neuromuscular blocking agents or sedatives)
- Sepsis

(Gelbard et al., 2014).

Dysphagia resolves spontaneously for most patients, but those with higher risk may experience severe and/or persistent dysphagia (Beduneau et al., 2020; Marvin, 2022).
WHAT ARE THE SIGNS?

The most common signs of injury after extubation include edema (swelling) and erythema (redness), particularly in the interarytenoid space (Brodsky et al., 2017). Other possible signs include:

- Ulcerations
- Granuloma/granulation tissue
- Vocal paralysis/paresis
- Glottic and subglottic stenosis
- Subglottic edema
- Arytenoid dislocation
(Brodsky et al., 2017; Wallace & McGrath, 2021).

The most common signs of injury to look for at the bedside are:

- Vocal dysfunction (e.g., stridor, vocal fatigue, hoarseness)
- Throat pain
- Dysphagia
(Brodsky et al., 2017; Wallace & McGrath, 2021).

Signs of dysphagia may include:

- Difficulty coughing, clearing secretions, and protecting the airway
- Laryngeal desensitization and silent aspiration
- Disuse atrophy of the pharyngeal muscles
(de Cavalho et al., 2012; McIntyre et al., 2021; Wallace & McGrath, 2021).

HOW SHOULD I EVALUATE MY PATIENT?

Identifying the risk of dysphagia early and accurately is important as mismanaged dysphagia can lead to increased risk of:

- Aspiration
- Pneumonia
- Reintubation
- Mortality
- Feeding tube dependence
(Brodsky et al., 2017; Hongo et al., 2022; Macht et al., 2011; Marvin, 2022; Wallace & McGrath, 2021).

Unfortunately, the research does not clearly support any one approach for identifying the risk of laryngeal injury and aspiration at the bedside and more research is needed in this area (Perren et al., 2019). Currently, the best practice is to refer for a flexible endoscopic evaluation of swallowing (FEES) or, if a FEES is not possible, a modified barium swallow study (MBSS).

WHEN TO EVALUATE

Swallowing may be assessed as early as one hour after extubation (Leder et al., 2019), however, significant spontaneous recovery is expected in the first 24 hours (Marvin et al., 2018). In the event that an SLP cannot be consulted (e.g., evening or weekend hours), a screening protocol may be utilized to prevent unnecessary NPO status or feeding tube placement and may reduce the risk of aspiration and pneumonia (Brodsky et al., 2017; Hongo et al., 2022; Macht et al., 2011; Marvin, 2022; Wallace & McGrath, 2021).
DYSPHAGIA SCREENS

One of the most widely used tools is the Yale Swallow Protocol which has been validated for a number of diverse acute and subacute populations (Suiter & Leder, 2007; Suiter et al., 2014; Zimmerman et al., 2020). It has been further modified to fit the clinical context for patients after extubation by Johnson et al., 2018. Further, the Gugging Swallow Screen for the ICU (GUSS-ICU) is also directly purposed for patients after extubation (Christensen, 2017). However, because of the high risk for laryngeal injury and silent aspiration, nothing can substitute the accuracy of assessment and the breadth of information acquired from direct visualization of the airway via FEES (Brodsky et al., 2017; Marvin et al., 2018; McIntyre et al., 2021; Scheel et al., 2015). If an immediate instrumental study is not available, a clinical swallow evaluation should be administered.

CLINICAL SWALLOW EVALUATION

While the accuracy of clinical swallow evaluation may be limited given the high risk of silent aspiration (Lynch et al., 2017), the use of a strict and thorough protocol during the swallow evaluation may increase this accuracy significantly. For example, the Mann Assessment of Swallowing Ability (MASA) takes a comprehensive approach to accurately identify risk of dysphagia, aspiration, and pneumonia in a variety of patient populations (Okuni & Ebihara, 2022). Specifically for patients after extubation, Moss et al., 2020 used a decision tree (not yet validated) which significantly increased the accuracy of aspiration risk detection. These are the five factors that were considered:

1. Duration of intubation
2. Water swallow test
3. APACHE II score (estimates ICU mortality)
4. Vocal quality
5. Admitting diagnosis

TREATMENT

One of the simplest and cheapest ways we can reduce dysphagia-related risk is by promoting adequate oral care, which is well documented in dysphagia management in general (Gupta, 2016; Munro et al., 2018; Munro & Baker, 2018; Son et al., 2020; Zimmerman et al., 2020), and may be particularly beneficial for patients after extubation (Wu et al., 2019). Proper oral care as recommended by the American Association of Critical-Care Nurses (AACN) includes brushing at least twice a day and moisturizing every 2-4 hours (Sarangi, 2021).

Pharyngeal strengthening exercises have been found to be useful in improving swallowing function, such as with effortful swallow and Mendelsohn maneuver (El Gharib et al., 2019), however, high-quality research is limited in this domain. Respiratory muscle strength training (RMST) may also be considered given positive outcomes on airway protection and swallowing function (Hutcheson et al., 2017; Sapienza et al., 2011). The SLP should target the specific limitations of the patient as identified in an instrumental study to use appropriate compensatory strategies, exercises, and modifications.
LARYNGEAL INJURY MANAGEMENT

If a laryngeal injury is suspected, an immediate referral should be made to ENT to assess and manage appropriately. In the event of vocal fold dysfunction, a medialization injection has significant benefits on cough and swallow function (Reder et al., 2020). Other options to be considered for a variety of laryngeal injuries include:

- Steroids
- Reflux management
- Stenosis dilation
- Voice therapy

(Brodsky et al., 2017).

CULTURAL CONSIDERATIONS

The research cited in this paper incorporates data on a wide variety of patient populations from all over the world. The specific patient populations studied can be found within each cited paper. Due to a knowledge gap and inconsistencies in practice internationally, a limited number of facilities are assessing and managing dysphagia after extubation adequately (Spronk et al., 2022). Further, unaddressed dysphagia after extubation can lead to significant handicaps in eating and drinking, communication, and community engagement (Brodsky et al., 2017). The SLP must be culturally sensitive and take into account the patient’s expectations, preferences, and values in order to provide an appropriate plan of care. Medical SLP Collective members may consider reviewing the resources available in the Cultural Considerations section of the resource library and may also benefit from participation in the Diversity Collaboration Committee for further guidance and support.

CONCLUSION

The SLP has an important role to play in the management of dysphagia after extubation. By appropriately identifying the disorder, assessing risk, and managing the condition, we can reduce the risk of a number of dysphagia-related complications.

HOW TO REFERENCE THIS RESOURCE:

REFERENCES


REFERENCES


REFERENCES


