

## Dysphagia Following Endotracheal Intubation in Critically Ill Patient: Some Insights on Correlations and Measurements

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According to the literature dysphagia frequency following endotracheal intubation is variable, ranging from 44% to the highest frequencies 87%, when studying patients under prolonged intubation (> 48 h). Besides, approximately 50% of those patients will aspirate and developed an aspiration pneumonia. However and due to the heterogeneity of the populations, and the different instrumental assessment from a certain study to the next one, the establishment of a correlation between dysphagia and comorbidities (bronchial aspiration/pneumonia), are extremely difficult.

Several studies had been conducted to find clinical risk predictors [1] to help the clinician, on the patient's selection with indication for full speech pathology assessment (ASHA NOMS). Hence, later complications after extubation could be avoided. However, some key issues should be taken into account for a proper clinical extrapolation. First, on the studies cough appear to be as a reliable clinical predictor, as a result of impaired swallow reflex, due to natural aging process. The problem is that also the cough itself, suffers from the same functional fatigue, related not only with the aging, but also because of the effect of the sedation and analgesia used on the ICU environment. This leads to the cases of the patient, with both impaired functions, the swallow and the cough. Meaning a dramatic limitation for the cough as clinical predictor. In fact recent reports [2] showed, that the cough reflex testing (CRT) tend to overestimate the aspiration risk. Hence suggesting the video endoscopic evaluation of swallowing (VES) use, as a more reliable screening tool for aspiration. Abnormal cervical auscultation findings seems to be another potential clinical predictor for bronchial aspiration. Both healthy and pathological swallowing sounds had been identified with mechanical test devices. But they are skills highly bound to the subjectivity of any sound, requiring a substantial clinical experience to identify properly and so limiting their use, specially on the critical ill, where we can find other causes for abnormal cervical auscultation findings.

Secondly regarding to the relation between duration of orotracheal intubation and dysphagia severity, several studies were conducted on the past, but most of them related with an specific type of patient or condition. Just a few of them analyzed the dysphagia and its outcome on the general ICU ill. Madison, *et al.* [3] showed the association between dysphagia and poor outcomes, including pneumonia, reintubation and death, and considering the dysphagia itself, as a poor outcome independent factor. Other papers, Nguyen, *et al.* [4] on a more specifically approach, studied the correlations in the post-cardiac surgery patients. They noticed an increasing association on prolonged hospital stay, as long as a 45,1% climb on hospital costs. As final disclosure, they suggest the use of dysphagia as a suitable target, for quality and cost assessment. Another paper [5] conducted in Greece, studied 357 patients over a two years time period. Once again reached the same conclusions; increased risk of pneumonia and in-hospital mortality, suggesting early dysphagia assessment and management, in order to tackle poor outcomes on the critical ill patients. Brodsky, *et al.* [6], on their 5-year longitudinal study, focused on this matter on ARDS survivors, specifically the long-term dysphagia consequences. They found the longer ICU stay, the higher risk of dysphagia development. In addition, those patients did recover much slower from dysphagia, when compared with the ones discharged earlier. However some controversies were raised through the Skoretz, *et al.* systematic review [7]. After analyzing 288 papers, they highlighted great limitations on design and risk of bias, evidencing a low overall quality and so demanding, better quality prospective studies to get solid conclusions.

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Finally focusing on diagnostic procedures, Fiberoptic endoscopic evaluation of swallowing (FEES) shows great benefit as a dysphagia test [8].

In summary, dysphagia without any doubt represents a major concern on Critical ill patients, due to their dire relation with poor outcome, high in-hospital stay, mortality and costs. Although still with some controversies, the current researches show enough scientific evidence to support the statement. This means the need to focus on dysphagia, form a wider, deeper and interested way to limit the negative effects on the patients after extubation. Currently, and due to the complex clinical interpretation it seems to be the Fiberoptic endoscopic evaluation of swallowing (FEES) the most reliable diagnostic procedure , when compared with the classic cough reflex testing (CRT).

Further research is deserved to understand and manage the dysphagia and its consequences on the ICU.

### Conflicts of Interest

None.

### Abbreviations

ASHA NOMS: American Speech-Language-Hearing Association National Outcome Measurement System; SOFA: Sepsis-related Organ Failure Assessment score; FEES: Fiberoptic Endoscopic Evaluation of Swallowing; CRT: Cough Reflex Testing; ARDS: Acute Respiratory Distress Syndrome

**Keywords:** *Bronchial Aspiration; Dysphagia, Prolonged Mechanical Ventilation, ASHA NOMS Scores*

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