



ORIGINAL ARTICLE

# The value of bedside tests in dysphagia evaluation



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## KEYWORDS

Bedside tests;  
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**Abstract** Bedside tests are important predictor of aspiration during swallowing and they are the most widely used tests. Fiberoptic Endoscopic Evaluation of Swallowing (FEES) is one of the important tests for dysphagia evaluation. The aim of this work is to answer the question, what is the value of bedside tests in comparison to the results of FEES among our population.

*Objective:* To assess the value of bedside tests in comparison with FEES.

*Patients and methods:* 74 patients were presented to phoniatics clinic for the assessment of swallowing difficulties during the period from May 2011 to August 2013. They were 47 males and 27 females with a mean age of 52 years and range between 20 and 91 years.

Aspiration correlates were assessed using bedside tests (water swallow test, pulse oximetry and gag reflex). FEES was performed to most of the patients to detect sensitivity and specificity in comparison with bedside tests.

*Results:* Dysphagia was recorded in 56% of the patients. Bedside tests showed 73% sensitivity and 68% specificity when correlated with FEES. Moreover combination of voice change and choking/cough results in sensitivity of 86.5% and specificity of 75.2%.

*Conclusion:* Bedside tests are highly sensitive and specific for the detection of dysphagia. Combination of choking/cough and change of voice as parameters of aspiration compared with FEES showed high sensitivity and specificity.

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## 1. Introduction

Dysphagia is a symptom that refers to pain, difficulty or discomfort during the progression of the bolus from the mouth to the stomach. From an anatomical standpoint dysphagia may result from oropharyngeal or esophageal dysfunction and from a pathophysiological standpoint from structure-related or functional causes.<sup>1</sup>

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Oropharyngeal dysphagia can be caused by a variety of diseases such as stroke, postirradiation, reflux and cricopharyngeal muscle dysfunction. Dysphagia has significant impacts on patients' life quality, life expectancy, and economic burden. Early detection of swallowing difficulty as aspiration of ingested materials is important because of the hazards of chest infection, malnutrition and airway obstruction. The evaluation of swallowing disorders and their rehabilitative modalities is an important topic. The benefit to the patient, in terms of improvement in quality of life, cannot be underestimated. Many studies<sup>2-5</sup> have attempted to assess the utility and efficacy of various methods used to tackle the problem with varying degrees of sensitivity and specificity.

Bedside tests might be used to identify patients with oropharyngeal dysphagia and to identify those who are at risk of aspiration. During bedside testing, the clinical indicators of dysphagia included abnormal volitional cough, abnormal gag reflex, dysphonia, dysarthria, cough after swallow, and voice change after swallow.<sup>6</sup>

Teismann et al.<sup>5</sup> stated that, up to 30% of older patients with dysphagia present with aspiration, half of them without cough (silent aspiration), and 45%, oropharyngeal residue.

Fiberoptic Endoscopic Evaluation of Swallowing (FEES) is one of the important tests for evaluation of the anatomy of the pharynx and larynx and assessment of the process of swallowing.<sup>3,4</sup> FEES was developed and popularized by Langmore<sup>23</sup> and modified by Flaksman et al.<sup>24</sup> It has proved to be a significant tool in the assessment of the pharyngeal stage of the swallow process. Numerous studies<sup>25-28</sup> have highlighted its utility in visualization of the larynx and diagnosis of aspiration. They reported that FEES became the procedure of choice as it allows direct visualization of these structures without the risk of radiation. Also they stated that FEES is an easy, efficient and reliable method to evaluate the swallowing status in stroke patients, moreover, in combination with good bedside clinical examination and swallow exercises, it can be a good tool in assessing patients with post-stroke dysphagia. Post-stroke rehabilitation and prevention of aspiration pneumonia can be effectively done with the help of FEES.

### 1.1. Aim of the work

The aim of this work was to assess the value of various types of bedside tests in comparison with FEES to evaluate aspiration. This may help in easy, rapid and accurate diagnosis of aspiration during swallowing, hence better management.

## 2. Patients and methods

74 patients with different diagnostic entities were presented to the phoniatic clinic King Fahd Hospital- Jeddah (Tertiary Care Centre) between May 2011 and June 2013 for the assessment of swallowing troubles as presence or absence of aspiration and possibility of weaning from nasogastric tube (NGT) or percutaneous endoscopic gastrostomy (PEG). They were 47 men and 27 women. The patients were evaluated according to the following procedures.

### 2.1. General examination

The patients were observed for the degree of consciousness, cooperation, verbal, oral apraxia and articulation. Patients who cannot obey verbal orders, markedly impaired degree of consciousness, with receptive aphasia or with significant apraxia were excluded from the study.

32 patients were initially on NGT, 11 patients were on PEG tubes, 13 patients were on both NGT and tracheostomy tubes and 18 patients were on oral feeding.

### 2.2. Clinical systematic examination

Bedside evaluation of swallowing was done which included initial assessment of cognitive status, gag reflex, voluntary cough and throat clearing. If the above steps were possible, assessment of saliva was done.

*Saliva assessment:* According to Corinna et al.<sup>7</sup>

Spontaneous swallowing of saliva and swallowing frequency were assessed. If it is proved impossible to control and swallow saliva, the examination was terminated.

*Water swallow test:* According to.<sup>8-10</sup>

The patient was examined in the sitting position or in 45 degrees. Some patients were examined in the recumbent position because of difficult positioning. The patient was given 5 ml of water, and when the patient could tolerate that amount of water, he/she was given 20 ml followed by 50 ml of water (thin fluid) and assessed for cough/choking during or after swallowing, wet or weak cough after swallowing. Also the patient was asked to produce sustained vowel /a/ before and after swallowing of water and voice change after swallowing was observed and recorded.

### 2.3. Pulse oximetry

According to Zaidi et al.<sup>11</sup> pulse oximetry was done for the patients before starting FEES and for 5 min after the test and results were recorded. 3% or more reduction in oxygen saturation was considered positive test.

### 2.4. Fiberoptic Endoscopic Evaluation of Swallowing (FEES)

All patients who passed saliva test were tested by FEES. Digital Swallowing Workstation by KayPENTAX was used. The patient was seated for FEES in the sitting position (whenever possible) However, in some cases, this was not possible, instead, a semi-upright position on the bed was adopted. The flexible fiberoptic laryngoscope was inserted transnasally into the pharynx. It provided detailed information about the anatomy of the nose, pharynx and larynx. Sensation could be tested by touching the tip of the endoscope to various areas of the larynx and reflex adduction of the vocal folds or reflex cough and choking were observed. Different food consistencies as fluids (water), semisolids (thick juice/yoghurt) and solids (piece of biscuits or bread), mixed with blue dye, were used to evaluate swallowing. The salient findings noted were residue, penetration and aspiration into the larynx.

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