

**Critical Review:**

**Is the endoscopic swallowing assessment more sensitive than the videofluoroscopic swallowing assessment at identifying penetration or aspiration in adults with dysphagia?**

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This critical review examines whether the endoscopic swallowing assessment is more sensitive than the videofluoroscopic swallowing assessment at identifying penetration or aspiration in adults with dysphagia. Six studies, all within-subjects designs, are reviewed. Overall, research suggests that endoscopic assessment is a sensitive, reliable method for identifying aspiration or penetration, and evaluating swallowing safety in patients with dysphagia. However, evidence supporting the use of endoscopic over videofluoroscopic assessment is inconclusive, and it is recommended that these methods be used as complimentary, rather than exclusive, tools.

***Introduction***

Videofluoroscopic assessment of swallowing, or the Modified Barium Swallow (MBS), has long been viewed as the ‘gold standard’ of instrumental swallowing assessments. Recently however, evidence has emerged in support of a new assessment technique using nasendoscopy, or Fiberoptic Endoscopic Evaluation of Swallowing (FEES). The MBS captures views of the oral, pharyngeal and esophageal stages of swallowing through radiographic imaging taken while patients trial foods of different consistencies mixed with barium (Madden, 2000). The MBS is conducted in a radiological suite, not at bedside, and relies on the availability of the radiologist and the SLP (Madden, 2000). FEES, on the other hand, enables clinicians to assess the function of the palate, pharynx and larynx through use of a nasolaryngoscope while patients trial foods of different consistencies mixed with food dye (Bastian, 1993).

FEES has gained popularity due to its advantages over the MBS which include conducting this assessment at bedside, the ability to repeat the assessment multiple times due to no exposure to radiation, and its use as a biofeedback tool to help patients develop a safe swallow (Leder, 1998). However, an advantage of the MBS, that FEES does not allow for, is visualization of the oral and esophageal phases of the swallow (Madden, 2000). With these factors in mind, the following studies were conducted with the goal of determining which

about oral intake recommendations. In order to compare assessments on the same swallow, 15 participants underwent assessments simultaneously. Scoring was based on the Penetration Aspiration Scale, an 8-point scale that rates penetration and aspiration based on depth of entry of food into the airway, and whether or not the material is cleared.

Raters in this study were carefully selected and were blinded to participant information and the pairing of FEES and videofluoroscopic recordings. Intra- and interrater reliability were calculated using weighted Kappa. A five-way ANOVA was appropriately used to assess differences in ratings, and patient and examination type were found to have the most significant effect on scores.

Results indicate that the type of assessment does influence judgment of the severity of penetration or aspiration, and therefore these assessments cannot be used interchangeably. When the same swallow was assessed using both tools, Penetration Aspiration Scale scores were significantly higher with FEES. This suggests that penetration and aspiration are rated as more severe when using FEES. However, it is recommended by Kelly et al. (2007) that more research is needed to determine whether one assessment has a more clinically significant impact in terms of predicting the likelihood of aspiration pneumonia.

Strengths of this study include use of FEES and videofluoroscopy simultaneously to assess swallowing function. This was also the only study reviewed that used a standardized scoring method. Selection criteria and reliability measures used for raters of these assessments, and appropriate statistical analysis of the data are also strengths of this study. A limitation of this study is the small sample size and the fact that the sample selected is not representative of the general population of those with dysphagia. There is also no participant selection criteria identified, aside from the fact that they were referred for a swallowing assessment. Based on these limitations and strengths, this study provides a suggestive level of evidence.

**Rao, Brady, Chaudhuri, Donselli, & Wesling (2003)** conducted a prospective pilot study on 11 patients to determine sensitivity and specificity values for laryngeal penetration gs

exposure, can be repeated,

endoscopy. Overall, Madden et al. conclude that endoscopy is as sensitive as videofluoroscopy in detecting aspiration, and shoul

