Introduction: The goal of the current study was to compare the quality of esophageal speech and voice to videofluoroscopic features of the esophagus and pharyngoesophageal (PE) segment.

Methods: The speech and voice characteristics of 30 laryngectomized patients were rated by 5 speech-language pathologists. Based on these ratings, patients were divided into 3 categories: fluent (n = 9), moderately fluent (n = 10) and nonfluent (n = 11). Videofluoroscopy of the PE region was then performed during both swallowing and voice production.

Results: An insufflation test and percutaneous pharyngeal plexus block were required in 9 patients to determine the etiology of poor esophageal voice production. The strongest videofluoroscopic indicators of nonfluent speakers were: (1) small or absent air reservoir and (2) lack of a vibrating PE segment. Fluent speakers presented with shorter PE segments (1.17 mm) compared to moderately fluent speakers (17.1-29.9 mm).

Conclusions: Perceptually, fluent speakers presented with a predominantly rough vocal quality. In contrast, moderately fluent speakers presented with a tense quality. In addition, stoma blast noise was reduced in fluent speakers. Videofluoroscopic findings highly correlated with the quality of esophageal speech.

Keywords: Evaluation, Fluoroscopy, Voice quality, Esophageal speech, Rehabilitation

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