



STUDY OF CLINICAL PROFILE OF OROPHARYNGEAL DYSPHAGIA USING FIBEROPTIC ENDOSCOPIC EVALUATION OF SWALLOWING (FEES) TECHNIQUE

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ABSTRACT

In elderly, dysphagia and its consequences have a marked effect on quality of life. Patients with oropharyngeal dysphagia shows various structural and functional alterations. Fiberoptic Endoscopic Evaluation of Swallowing (FEES) is now widely accepted method for assessment of swallowing. This study was undertaken to know the prevalence of swallowing disorders and also assess anatomical and physiological changes seen in oropharyngeal dysphagia cases. **Methods:** A cross sectional study was conducted in the tertiary care hospital from January 2019 to June 2020. All patients underwent FEES examination using flexible fiberoptic nasopharyngoscope. Anatomy and physiology of the pharynx, and larynx was assessed. Presence of oropharyngeal secretions, penetration, aspiration, residue, and spontaneous swallowing was observed. **Results:** In 37 patients of Oropharyngeal dysphagia mean age was 53.56 years with male preponderance (73%). In our study, oropharyngeal, laryngopharyngeal and supraglottic growth (40.54%) was the most common cause of oropharyngeal dysphagia, followed by LPR (18.9%) and neurological disorders (18.9%). In 37 patients examined 43.24% cases had secretions, 40.5% cases showed penetration, 35.1% cases showed aspiration. **Conclusion:** The most common cause of oropharyngeal dysphagia was oropharyngeal, laryngopharyngeal and supraglottic growth and was more frequently seen in elderly patients. FEES can be used as screening procedure and gives complete assessment of pharyngeal phase of swallowing.

KEYWORDS : Oropharyngeal dysphagia; FEES; aspiration**INTRODUCTION:**

Oropharyngeal dysphagia is difficulty in swallowing because of anatomical or physiological abnormalities in oropharynx which is due to various etiologies.¹

Dysphagia is a common symptom which is a consequence of another health condition. Based on limited data, the prevalence of dysphagia in the general population is estimated to be 20% and over the age of 60 years it is estimated to be 50%.²

The consequences of dysphagia like aspiration, recurrent chest infection, malnutrition and dehydration leads to poor quality of life. In patients with structural disorders of upper aerodigestive tract, neuromuscular discoordination and depressed sensorium there is risk of pulmonary aspiration, which is a serious cause of morbidity and mortality.³

A clinical swallowing examination performed is insufficient due to its poor validity and reliability. Therefore, additional instrumental assessment of dysphagia is an absolute necessity.⁴ Fiberoptic endoscopic evaluation of swallowing (FEES) is a well-tolerated and safe method for the objective assessment of swallowing. It can achieve complete assessment of the pharyngeal phase of swallowing. It can also be used to help educate patients and family members about their problem and help in improved decision making and better compliance with recommendations.

Based on these considerations, we can prospectively estimate the proportion of different causes of oropharyngeal dysphagia, evaluate organic and functional alterations in structures involved in oropharyngeal dysphagia cases using Fiberoptic Endoscopic Evaluation of Swallowing (FEES) technique.

MATERIALS AND METHODS:

It is the cross-sectional study in which patients presenting with oropharyngeal dysphagia of any cause between the age group of 20 to 65 years to the Department of Otorhinolaryngology at tertiary care hospital from January 2019 to June 2020 were evaluated using FEES. The oropharyngeal dysphagia patients with respiratory distress were excluded from the study.

All patients underwent FEES examination as out-patient procedure in sitting position using flexible fiberoptic endoscope introduced transnasally. They were explained about the procedure and written consent was taken. The nasal surface of soft palate, base of the tongue, pharynx, and larynx were observed. Presence of oropharyngeal secretions, pooling and spontaneous swallowing was observed (Figure 1). Then the patients were given tea spoon sized portions of 3 different consistencies of food (milk, banana, and biscuit). The findings of FEES were recorded and evaluated as per the protocol given by ASHA (American speech and hearing association).

Data collected during study was recorded in MS Excel 2016 and analysed. It is represented in the form of descriptive statistics (frequencies, mean and percentages) and graphically.

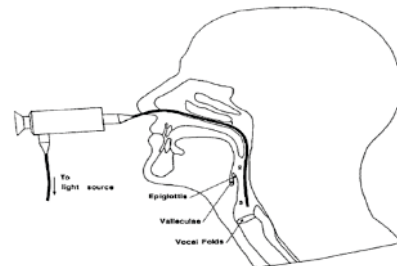


Figure 1: Diagram showing FEES procedure being performed.

RESULTS:

A total of 37 oropharyngeal dysphagia patients underwent examination using FEES. In our study, results and observations were discussed under the following parameters:

Age And Gender Distribution:

The mean age group was 53.56 years. Out of 37 patients, 27 (72.9%) were male and 10 (27.02%) were female.

Distribution Of Various Aetiologies Of Oropharyngeal Dysphagia:

In our study, the most common cause of oropharyngeal dysphagia were oropharyngeal, laryngopharyngeal and supraglottic growth (15 patients; 40.54%). Other causes were neurological dysphagia (7 patients; 18.9%) and laryngopharyngeal reflux disease (7 patients; 18.9%). Less common causes were unilateral vocal cord palsy, post radiotherapy, bilateral vocal cord palsy, globus pharyngeus and chronic obstructive pulmonary disease (Table 1).

Table 1: Distribution of various aetiologies of oropharyngeal dysphagia.

Aetiology of oropharyngeal dysphagia	Number of cases	Percentage (%)
Laryngopharyngeal reflux	7	18.9
Supraglottic growth	4	10.8
Pyriiform fossa growth	4	10.8
Base of tongue growth	3	8.1
Vallecula growth	3	8.1
Post cricoid growth	1	2.7
Post radiotherapy	2	5.4
Stroke	4	10.8
Parkinson's disease	2	5.4

Brain tumour	1	2.7
Unilateral vocal cord palsy	3	8.1
Bilateral vocal cord palsy	1	2.7
Globus pharyngeus	1	2.7
Chronic obstructive pulmonary disease	1	2.7

Distribution Of Various Anatomical Changes In Oropharyngeal Dysphagia Cases:

A) Surface Anatomy:

22 cases (59.4%) out of 37 patients showed surface anatomical changes. The changes seen were growth, erythema and or oedema in oropharyngeal region.

B) Secretions:

16 cases (43.2%) showed secretions in either pyriform fossa or vallecula or in both. Out of 16 cases, 11 cases (68.75%) had penetration of secretions and 6 cases (37.5%) had aspiration of secretions.

C) Velopharyngeal Closure:

Velopharyngeal closure was complete in 33 cases (89.1%) and 4 cases (10.81%) showed incomplete closure.

D) Base Of Tongue Retraction:

8 cases (21.6%) had reduced base of tongue retraction.

E) Pharyngeal Wall Movement Pathology:

7 cases (18.9%) showed reduced movement of pharyngeal wall.

F) Vocal Cord Closure:

6 cases (16.21%) had incomplete vocal cord closure.

G) Laryngeal Closure:

The laryngeal closure was incomplete in 8 cases (21.6%).

Distribution Of Various Physiological Changes In Oropharyngeal Dysphagia Cases:

A) Premature Spillage:

The premature spillage was seen in 7 cases (18.91%).

B) Timing Of Swallowing:

The delayed swallowing was seen in 5 cases (13.51%).

C) Penetration:

15 cases (40.5%) in our study showed penetration for food bolus. Penetration for liquids was seen in all 15 cases (100%), for liquid and semisolids was seen in 13 cases (86.6%) and for liquids, semisolids and solids was seen in 10 cases (66.6%).

D) Aspiration:

13 cases (35.1%) showed aspiration of food bolus (Figure 2). Aspiration for liquids was observed in all 13 cases (100%) and for semisolids was seen in 5 cases (38%).

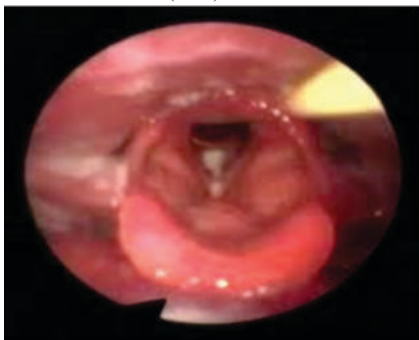


Figure 2: Aspiration of food bolus is shown in the picture.

DISCUSSION:

Swallowing is one of the most frequent activities and a vital primary function to ensure adequate nutrition and hydration.⁵ In case of oropharyngeal dysphagia, the oral preparatory, oral and/or pharyngeal phases of swallowing are afflicted. Dysphagia may lead to malnutrition, aspiration and potentially life-threatening pulmonary complications such as aspiration pneumonia. Furthermore, quality of life of patients with dysphagia is impaired.⁶

For adequate management of oropharyngeal dysphagia, a thorough

morphological and functional diagnostic procedure is needed to evaluate the swallowing. FEES was introduced by Langmore et al (1988).⁷ FEES with sensory testing was first described by Aviv et al (1998).⁸ This dynamic diagnostic method allows evaluation of the oropharyngeal swallow. It allows the direct visualization of the upper aerodigestive tract and reveals even subtle morphological or functional findings.

This study was conducted to determine the proportion of different causes of oropharyngeal dysphagia and to visualize and analyse the anatomical and functional oropharyngeal findings in patients with oropharyngeal dysphagia using FEES.

We found the male preponderance and the mean age was 53.56 years. Oropharyngeal, laryngopharyngeal and supraglottic growth (40.54%) was identified as most common cause of oropharyngeal dysphagia in our study. Neurological dysphagia (18.9%) and LPR (18.9%) were 2nd most common causes. In a population based study by Wilkins et al. dysphagia was common in patients with reflux (30%).⁹

We found the penetration of secretions was commonly seen in cases with pyriform fossa growth. The aspiration of secretions was more commonly seen in cases of neurological diseases (50%). A study conducted by Joseph Donzelli et al showed patients with higher laryngeal secretion levels tend to demonstrate laryngeal penetration and aspiration more often.¹⁰ A study conducted Murray et al also showed that presence of secretions was associated with aspiration.¹¹

The oropharyngeal, laryngopharyngeal and supraglottic growth were most common aetiology for penetration and aspiration. All cases with penetration showed effective cough (73.3%) except neurological disorder cases. Most of the cases (92.3%) showed aspiration with effective cough except for one case of stroke who showed aspiration without cough (silent aspiration). We also found that there was delay in the timing of swallowing, reduced pharyngeal wall movement and premature spillage in cases with neurological disorders.

Evaluation of oropharyngeal dysphagia patients using FEES have various advantages like direct visualization of nasopharynx, oropharynx and hypopharynx and one can evaluate both motor and sensory components of swallowing. The limitations of FEES are loss of view (whiteout) during the swallow due to pharyngeal constriction around the endoscope lens and limited ability to estimate quantity of aspiration.

CONCLUSION:

The FEES is a well-tolerated and safe screening procedure. It is a useful, reliable, cost effective and efficient procedure for diagnosis and categorizing oropharyngeal dysphagia patients. It can be performed bedside, is repeatable, allows evaluation of both motor and sensory component of oropharyngeal swallowing and permits assessment of airway protection.

With the help of FEES, we were able to visualize the pharyngeal and laryngeal structures and identify anatomical alterations and/or physiological changes in patients with oropharyngeal dysphagia. The most common cause of oropharyngeal dysphagia in our study was oropharyngeal, laryngopharyngeal and supraglottic growth, which was more frequently seen in elderly patients.

REFERENCES:

1. Jeri A. Logemann. Oropharyngeal dysphagia and nutritional management. Clinical Nutrition and Metabolic Care 2007;10:611–614.
2. Abdulmalik S, Gregory N Postma. In-Office evaluation and management of dysphagia. Otolaryngol Clin N Am 2019;52:577-587.
3. Gert Hafner, Andreas Neuhuber, Sylvia Hirtenfelder, Brigitte Schmedler, Hans Edmund Eckel. Fiberoptic endoscopic evaluation of swallowing in intensive care unit patients. Eur Arch Otorhinolaryngol 2008;265:441–446.
4. Rainer Dziejwas, Jörg Glahn, Christine Helfer, Guntram Ickenstein, Jochen Keller, Christian Ledl, Beate Lindner-Pflegelhar, Darius G. Nabavi, Mario Prosielg, Axel Riecker, Sriramya Lapa, Sönke Stanschus, Tobias Warnecke1 and Otto Busse. Flexible endoscopic evaluation of swallowing (FEES) for neurogenic dysphagia: training curriculum of the German Society of Neurology and the German stroke society. Dziejwas et al. BMC Medical Education 2014;85:1006-1015.
5. Garliner D. Myofunctional therapy in dental practice: abnormal swallowing habits, diagnosis-treatment. Bartel dental book 1974.
6. Ekberg O, Hamdy S, Woisard V, Wutge-Hannig A, Ortega P. Social and psychological burden of dysphagia: its impact on diagnosis and treatment. Dysphagia 2002; 17:134146.
7. Langmore SE, Schatz K, Oslen N. Fiberoptic endoscopic endoscopic examination of swallowing safety: a new procedure. Dysphagia 1988;2:216-219.
8. Aviv JE, Kim T, Sacco RL, Kaplan S, Goodhart K, Diamond B, Close LG. FEEST: a new bedside endoscopic test of motor and sensory components of swallowing. Ann Otol Rhinol Laryngol 1998;107:378-387.

9. Wilkins T, Gillies RA, Thomas AM, Wagner PJ. The prevalence of dysphagia in primary care patients: a Himes Net Research Network study. *J Am Board Fam Med* 2007; 20:144-150.
10. Donzelli J, Brady S, Wesling M, Craney M. Predictive value of accumulated oropharyngeal secretions for aspiration during video nasal endoscopy evaluation of the swallow. *Ann Otol Rhinol Laryngol* 2003; 112:469-475.
11. Murray J, Langmore SE, Ginsberg S, Dostie A. The significance of accumulated oropharyngeal secretions and swallowing frequency in predicting aspiration. *Dysphagia* 1996; 11(2):99-103.