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Echoes of Aging: A Clinical Insight into Presbyphonia and Presbyphagia- A Case Series

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ABSTRACT

Background Purpose: Age related changes in combination of voice and swallowing are often unaddressed in geriatric population. The study highlights the coexistence of presbyphonia and presbyphagia. Early diagnosis and providing appropriate intervention strategies can help improve the individual's quality of life. It is important to document such cases for understanding more about the co-occurrence of both conditions and to evaluate the anatomical and physiological changes that can affect voice and swallowing in geriatric population. This comprehensive evaluation that includes a test battery approach can help Speech Language Pathologists to make appropriate referrals and provide adequate need of the hour management for patients having silent struggles in voice and swallowing.

Method: This study presents a 78-year-old female and a 72-year-old male focusing on detailed clinical, perceptual, acoustic, aerodynamic, and endoscopic evaluation presenting with age-related voice and suspected swallowing difficulties.

Results: Findings on perceptual, aerodynamic, acoustic and instrumental analysis were consistent with presbyphonia that included changes in voice quality and vocal endurance with concurrent silent penertration and aspiration of saliva with co-occurrence of presbyphagia.

Conclusion: This highlights the clinical significance of co-occurrence of presbyphagia and presbyphonia emphasizing the importance of assessment and early rehabilitation in elderly patients presenting with laryngeal complaints. Comprehensive evaluation ensures early identification and rehabilitation, targeted therapy, improved quality of life in this population.

Keywords: Presbyphonia; Presbyphagia; geriatric voice; Acoustic analysis

Introduction

Advancing in age leads to gradual deterioration in the neuromuscular, structural, and sensory mechanisms of the laryngeal and pharyngeal systems, resulting in functional decline of voice and swallowing. These age-related universal changes often present clinically as presbyphonia (voice alterations due to aging) and presbyphagia (swallowing difficulties associated with aging). The coexistence often goes unreported, remaining a "silent struggle" for many older adults.

Presbyphagia, referring to age-related changes in the swallowing mechanism, affects the neuromuscular coordination and sensory perception necessary for safe and efficient swallowing [1].

FEES provides an excellent evaluation for individuals with presbyphagia in the geriatric population. Presbyphagia in geriatric populations showed swallowing alterations, mainly characterized by pharyngeal residue, laryngeal penetration, decreased nutritional status and aspiration during swallowing [1]. Recent meta-analytic evidence suggests that presbyphagia affects approximately 30.8% of older adults without disease-related dysphagia, with corrected estimates around **17.3%** when accounting for heterogeneity [2]. Presbyphonia, characterized by age-related changes in the voice, associated with alterations in pitch, loudness, and vocal quality. Meanwhile, prevalence of presbyphonia among older adults with voice disorders is 17.78% [3].

These impairments affect more than voice and swallowing mechanics, associated with a negative impact on the quality of the individual, but also lead to substantial psychological, social, and nutritional consequences in older adults. As the human body undergoes age-related physiological changes across various systems, the voice too experiences notable functional alterations.

Anatomical studies of the aging larynx reveal vocal fold thinning or bowing, reduced mucosal hydration, and calcification of laryngeal cartilages, all contributing to the deterioration of vocal quality [4]. Swallowing studies among elderly individuals show structural, neuromuscular, and mucosal changes in the aging voice, including cartilage stiffening and atrophy of vocal muscles. Studies have reported the presence of vallecular pooling, pharyngeal residue, and silent penetration or aspiration in older adults, even among those without clinically evident swallowing disorders [5].

This case report presents a 78-year-old and a 72-year-old male with complaints of poor voice quality and throat irritation over several months and change in voice for the past one year respectively. Though swallowing complaints were not subjectively reported, instrumental and perceptual evaluations revealed features consistent with both presbyphonia and presbyphagia. This report aims to highlight the complex relationship between aging-related changes in phonation and deglutition, emphasizing the importance of early identification, multidisciplinary assessment, and specific management strategies to preserve to maintain effective vocal function and safe swallowing in older adults. It also enables Speech Language Pathologists' across the globe to embed simple screening to existing geriatric assessments without additional costs.

Case Report

A 78-year-old female was brought to the department with the complaint of poor voice quality and throat irritation for the last 3-4 months. Detailed OPME (Oral Peripheral Speech Mechanism) was done. On examination, the throat and oral cavity appeared normal, with an overhanging epiglottis. The onset of symptoms was gradual, initially beginning with a chronic cough, which later progressed to persistent throat irritation and hoarseness. The patient reported no difficulty in swallowing solids or liquids. The severity of the voice problem remained constant, with no reports of aphonia following prolonged speaking. The patient's daily routine involved frequent loud talking and occasional shouting. Excessive throat clearing was consistently noted in the session. The patient reported normal dietary habits and adequate hydration. The patient denied any significant medical comorbidities such as gastroesophageal reflux, neurological disorders, or recent surgeries.

A 72year-old male presented to the department with the complaint of progressive change in voice for the past one year. Informed consent was obtained prior to assessment. The onset of symptoms was gradual, initially beginning with a chronic cough, which later progressed to change in voice. The patient reported that his voice becomes reduced in loudness during speech, particularly in the morning. The onset of the problem was gradual, initially beginning with a change in voice. The patient reported no difficulty in swallowing of solids or liquids. The patient has a history of allergy to dust and smoke, including exposure to agarbatti smoke. Additionally, he reports alcohol consumption twice a week. Detailed OPME (Oral Peripheral Speech Mechanism) was done.

Materials and Method

This study focuses on two case study analysis of geriatric individuals presenting with voice disorders. This study focuses on detailed clinical, perceptual, acoustic, aerodynamic, and endoscopic evaluation of two elderly individuals presenting with age-related voice and suspected swallowing difficulties. A 78-year-old female with complaints of progressive hoarseness and throat irritation, and a 72-year-old male, who presented to the department with a chief complaint of progressive change in voice for the past year, were evaluated. Both participants provided informed consent prior to the assessment. No history of neurological, respiratory, gastrointestinal, or surgical conditions affecting voice or swallowing was reported. A test battery approach was carried out. A comprehensive case history was collected, emphasizing onset, associated symptoms, vocal habits, dietary patterns, hydration levels, and medical history.

A detailed OPME was conducted to assess the structure and function of the oral articulators. Perceptual analysis of voice was conducted using the GRBAS Scale [7], evaluating Grade (G), Roughness (R), Breathiness (B), Asthenia (A), and Strain (S). Voice quality, loudness, phonatory effort, and overall severity were noted during sustained phonation, reading tasks, and conversational speech. Subjective perceptual analysis using the Voice Handicap Index (VHI) [8] was used to measure the impact of voice disorder on patient's quality of life. The participant rated functional, emotional, and physical aspects of her voice difficulties. The total score was interpreted according to standardized severity categories. Aerodynamic evaluation included:

Maximum Phonation Duration (MPD) for sustained vowels /a/, /i/, and /u/. The patient was instructed to take a deep breath through the nose and sustain phonation for the vowel as long as she could. The maximum duration the patient can sustain was noted.

s/z/ ratio was done to assess phonatory efficiency and glottal control. The patient was instructed to take in a deep breath through the nose and phonate the sound /s/ as long as she could. Similarly, for /z/ was also carried out.

Acoustic parameters were obtained through PRAAT software [9]. To ensure reliable and accurate acoustic analysis, the recordings were carried out under standardized conditions. The sample was collected in a quiet, soundproof room to minimize the background interference. A high-quality microphone was positioned at a fixed distance to maintain consistency across the recordings. Participants were instructed to sit comfortably and to produce speech samples at a comfortable pitch and loudness. Recordings were saved in WAV file format with an adequate sampling rate. The following acoustic parameters were analyzed using Praat software, including Fundamental frequency (F0/Pitch), Jitter, Shimmer, Intensity etc., and helped to document swallowing-related voice changes.

Instrumental evaluation using FEES (Flexible Endoscopic Evaluation of Swallowing) by AMBU 10 was also carried out to directly visualize swallowing safety, airway protection and residue in the individual. The procedure focused on laryngeal structure visualization, presence of residue (vallecular and pyriform), epiglottic inversion, laryngeal closure, penetration or aspiration. Observations were documented based on standard FEES protocols. An informed consent was obtained from the patient to conduct FEES procedures. Every approach used in research involving human subjects compiled with equivalent ethical norms

and Helsinki Declaration guidelines [6] and the study was approved by the Father Mullers Ethical Committee, India on 28.01.2026 Ref. No. FMIEC/CCM/051/ 2026.

Results

Ageing can affect all the structures involved in swallowing, which leads to presbyphagia. This includes poor dentition and limitations in mastication, delayed swallowing reflex, larger pharyngeal area, reduced muscle strength, reduced hyolaryngeal excursion and reduced salivary production [2]. For case (1), OPME findings revealed a highly positioned uvula with no other structural abnormalities. Perceptual voice analysis using the GRBAS scale showed G3, R3, B0, A0, S0, indicating severe grade and roughness, with no breathiness, asthenia, or strain along with soft loudness and hoarse voice quality noted. The Voice Handicap Index (VHI) scores were 45, indicating moderate voice handicap. Aerodynamic measures show Maximum phonation duration /a/=20 sec, /i/=19 sec, /u/=13 sec and s/z ratio 0.8 sec indicating reduced phonation intensity. Acoustic analysis done using PRAAT software showed mildly elevated jitter and shimmer, reduced intensity, and lower harmonic-to-noise ratio, consistent with presbyphonic changes. Flexible Endoscopic Evaluation of Swallowing (FEES) was done and the results revealed vallecular and post-pyriform pooling of saliva, arytenoid cartilage inflammation, incomplete epiglottic closure, and silent penetration of saliva suggestive of presbyphagia. Signs of presbyphagia and presbyphonia were noted, with vocal cord bowing but no phonatory gap.

For case 2, OPME findings revealed reduced IOBP with no other structural abnormalities. Perceptual voice analysis using the GRBAS scale showed G2, R1, B2, A2, S1, indicating moderate grade, mild roughness, moderate breathiness, moderate asthenia, and mild strain, along with soft loudness and hoarse voice quality noted. The Voice Handicap Index (VHI) scores were 17, indicating mild voice handicap. Aerodynamic measures show Maximum phonation duration /a/=14 sec, /i/=12 sec, /u/=11 sec, indicating reduced respiratory and phonatory skills and the s/z ratio could not be assessed. Acoustic analysis done using PRAAT software showed elevated jitter and shimmer, reduced intensity, and lower harmonic-to-noise ratio, consistent with presbyphonic changes. Flexible Endoscopic Evaluation of Swallowing (FEES) was done, and the results revealed bilateral vocal fold nodules and edematous vocal folds, oropharynx and epiglottis. Phonatory gap and occasional false vocal fold adduction were present. Small oropharynx and hypopharynx structures and clove-shaped epiglottis were viewed. The presence of vocal fold nodules and edematous vocal folds indicates that factors other than normal ageing may be contributing to the condition.

Table1: Results of acoustic analysis done using PRAAT

Parameters	Case1 Values (Female)	Female Normative	Case2 Values (Male)	Male Normative
Mean F0	152 Hz	160–210 Hz	163.097 Hz	120–150 Hz
Intensity	64 dB	65–75 dB	64 dB	65–75 dB
Jitter	2.50%	0.5–1.5%	0.49%	0.5–1.5%
Shimmer	7.20%	3–6%	5.69%	3–6%

Discussion and Conclusion

The present case highlights the complex interrelationship between age-related changes in the voice and swallowing mechanism, manifested as presbyphonia and presbyphagia in geriatric population representing male and female. While the patients primarily presented with complaints of hoarseness and change in voice quality, instrumental assessment revealed uncovered subtle swallowing inefficiencies, indicating the subclinical coexistence of both conditions. Such complaints are commonly reported by older adults across cultures and are often overlooked.

These cases highlight the importance of comprehensive voice and swallowing evaluation in elderly individuals presenting with only voice complaints. Voice and swallowing share common anatomical and neuromuscular mechanisms, age- related changes of the laryngeal and pharyngeal systems can simultaneously affect vocal quality and swallowing efficiency. From a health care perspective, these are missed symptoms for early identification of a functional decline. This study was to bring about evidence noted on a patient who depicted a simple exasperating cough which usually goes unnoticed. Hence, the article contributes to global health practice by presenting a real world, implementation- focussed case on how a test- battery approach can be employed within existing health systems. Incorporation of routine voice and swallowing screening into national geriatric health policies can facilitate early identification and prevention of functional decline. Furthermore, the assessment is feasible and impactful across diverse health systems, such as community-based geriatric services, where early screening and preventive intervention can significantly reduce long-term morbidity. Thus, making clinical knowledge impactful and supports person-centered ageing care globally.

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