

ONSET-OFFSET FEATURES IN VOICE DISORDERS OBSERVABLE IN VIDEOKYMOGRAPHY - PILOT STUDY

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Objectives: Previous videokymographic (VKG) study (Švec *et al.* 2007) has identified ten feature categories to systematically map vocal fold vibratory patterns in voice disorders. However, the investigations were limited to sustained phonations. Literature emphasizes the clinical importance of evaluating oscillatory onset and offset phases, as it additionally provides diagnostic information which is not readily observed on sustained phonation alone. This study aims at identifying onset-offset features which can be visually observed in VKG images and used for assessing voice disorders in clinical practice.

Method: A total of 194 clinical VKG images (consisting of onset, sustained and offset segments) from 70 voice disordered subjects (53 females and 17 males; aged between 10-80 years) were retrospectively extracted from the subject video files. From these images, the onset-offset features were identified through visual inspection by comparing and evaluating their vibratory behaviors with corresponding sustained phonations.

Results: Comparing with the sustained phonations, the following onset and offset features were found to provide additional clinical information: (a) left-right time difference in onset (in 12% subjects) and offset (17%) of vocal fold vibrations, (b) left-right time difference in attaining sharpness of lateral peak on onset (13%) and in transition from sharpness to roundedness of lateral peak on offset (19%), (c) asymmetry in shape of medial peak (19%), presence of medial peak aberrations (e.g., double medial peak, 7%) invisible during sustained phonations. and (d) left-right amplitude asymmetry on onset and offset (12%) in presence of symmetrical amplitudes on sustained vibration.

Conclusion: Evaluations of these onset-offset features may assist the clinicians to obtain additional clinical information missed on sustained phonations, and to make inferences pertaining to the suppleness of vocal fold tissue, which may be attributed to the left-right imbalance in the biomechanical characteristics of the vocal fold, thus helping to make a more specific diagnosis.

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