

**Title:** Acoustic and Aerodynamic Comparison of Vocal Dynamics in Parkinson's Disease and Vocal Fold Atrophy

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**Objectives:** Often diagnoses of vocal fold atrophy and PD occur simultaneously, which confounds prior research that ascribes vocal symptoms unitarily to PD. This study sought to describe differences between patients with vocal fold atrophy alone and patients with PD plus vocal fold atrophy.

**Study Design:** Retrospective, single-blinded, cross-sectional study.

**Methods:** 21 patients diagnosed with both PD and vocal fold atrophy (PD+atrophy) and 21 age and gender matched patients diagnosed with vocal fold atrophy alone underwent clinical voice testing at the UPMC Voice Center. Acoustic and aerodynamic measures were taken from the sentence "how hard did he hit him?" and the Rainbow Passage.

**Results:** CPP was significantly higher in the PD+atrophy group ( $M = 5.57$  dB) compared to the atrophy alone group ( $M = 4.27$  dB),  $p = 0.003$ . Average phonatory airflow was lower in the PD+atrophy group ( $M = 141$  mL/sec) compared to atrophy alone ( $M = 200$  mL/sec),  $p = 0.013$ .

**Conclusions:** Lower average phonatory airflow in the PD+atrophy group could imply decreased respiratory driving force due to PD, and may indicate respiratory bradykinesia contributing to vocal symptoms. The vocal symptoms traditionally described in PD may not be entirely attributed to PD but rather vocal fold atrophy.