

EIGENMODES AS A FUNCTION OF ADDUCTION IN EXCISED HEMILARYNX EXPERIMENTS

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Ex-vivo hemilarynx experiments allow the visualization and quantification of the three-dimensional dynamics of the medial surface of the vocal fold. For three excised human male larynges, the vibrational output was investigated along the vocal fold surface using the method of empirical eigenfunctions. This analysis disclosed a balanced vertical-lateral oscillation pattern, producing the characteristic, alternating, convergent-divergent shape change of the glottal duct during phonation. This oscillatory pattern became stronger as a function of glottal adduction. In terms of yielding efficient phonation, our results suggest that a balanced vertical-lateral oscillatory pattern of the vocal folds may be more important than even the periodicity of the oscillations.