Brazilian Journal of
OTORHINOLARYNGOLOGY
www.bjorl.org

EDITORIAL

The fascinating study of human vocal folds☆

O fascinante estudo das pregas vocais humanas

The speech, the primary means of communication used by human beings, was only possible, among other factors, thanks to the phylogenetics of the larynx. This trend has also enabled the extremely fine control of vocalization, a fact that we can perceive mainly when listening to the voices of talented singers. All these processes are due to complex mechanisms, but the initial stage of vocal production is a purely mechanical phenomenon, directly dependent on a proper vocal fold vibration.

Hirano, in 1974, proposed the cover-body complex theory of phonation, whereby the mucosal lining moves over a relatively stationary body, consisting of vocal ligaments and muscles.[1] This observation was made possible by the histological study of the human vocal fold, which exhibits a layered structure with differential distribution of cellular and extracellular components. This arrangement has a direct relation with the biomechanical properties that allow the vibratory behaviour of vocal folds.[2]

Despite some important trials on the ultrastructure of vocal folds of foetuses and children, much remains to be understood about their development.[3,4] In a recent trial, a layered ultrastructure in the vocal folds of foetuses in the last gestational trimester, qualitatively similar to that of adults, was identified;[5] this finding allowed the inference of an existence of the vocal ligament even before birth. The importance of a deep knowledge of the structure of the normal human vocal fold and of the characteristics of its development may have an implication in everyday clinical practice, because this knowledge will guide our decision-making process, such as drug therapies, surgical treatments and, even, in a not so far future, the possibility of gene therapy in the treatment of the most varied changes.

Thanks to the excellence and insight of past masters who, even with few resources studied the larynx, we can understand the physiology of speech and, based on that knowledge, to carry out our current therapeutic approaches. However, despite all the technological apparatus that allowed the advances of medicine, there is still much to learn about the anatomy and ultrastructure of the vocal folds, especially from paediatric patients, that are still in development .

References

1. Hirano M. Morphological structure of the vocal cord as a vibrator and its variations. Folia Phoniatr Logop. 1974;26:89-94.
2. Gray SD. Cellular physiology of the vocal folds. Otolaryngol Clin North Am. 2000;33:679-97.
3. Sato K, Hirano M, Nakashima T. Fine structure of the human newborn and infant vocal fold mucosae. Ann Otol Rhinol Laryngol. 2001;110:417-24.
4. Hartnick CJ, Rehbar R, Prasad V. Development and maturation of the pediatric human vocal fold lamina propria. Laryngoscope. 2005;115:4-15.
5. Nita LM, Battlehner CN, Ferreira MA, Imamura R, Sennes LU, Caldini EG, et al. The presence of a vocal ligament in fetuses: a histochemical and ultrastructural study. J Anat. 2009;215:692-7.

Domingos Hiroshi Tsuji[a], Luciana Miwa Nita Watanabe[b,*]

[a] *Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo (USP), São Paulo, SP, Brazil*
[b] *Unidade de Broncoesofagologia, Hospital de Base do Distrito Federal, Brasília, DF, Brazil*
E-mail: nitamiwa@gmail.com (L.M.N. Watanabe).

☆Please cite this article as: Tsuji DH, Watanabe LMN. The fascinating study of human vocal folds. Braz J Otorhinolaryngol. 2014;80:98.

1808-8694/$ - see front matter © 2014 Associação Brasileira de Otorrinolaringologia e Cirurgia Cérvico-Facial. Published by Elsevier Editora Ltda. All rights reserved.
DOI: 10.5935/1808-8694.20140022