

Multiparametric Assessment of Voice Quality and Quality of Life in Patients Undergoing Microlaryngeal Surgery—Correlation Between Subjective and Objective Methods

Anna Rzepakowska, Ewelina Sielska-Badurek, Ewa Osuch-Wójcikiewicz, and Kazimierz Niemczyk,
Warszawa, Poland

Summary: The aim of the study was to estimate voice defect and the quality of life deterioration in patients with different laryngeal pathologies qualified for microsurgery treatment. The results of videolaryngostroboscopy (VLS), perception, aerodynamics, acoustics, Dysphonia Severity Index, Voice Handicap Index (VHI), and the World Health Organization Quality of Life Scale Brief Version before microsurgery were analyzed. There were 151 patients enrolled in the study. There were 86 patients in group 1 (benign lesions), 34 in group 2 (pre-malignant conditions), and 31 in group 3 (malignant neoplasms). Significant differences were found in the mean values of VLS between group 1 and group 3 ($P = 0.001$), maximum phonation time between group 1 and group 2 ($P = 0.001$), and between group 2 and group 3 ($P = 0.04$), men's fundamental frequency between group 1 and group 2 ($P = 0.03$), and between group 1 and group 3 ($P = 0.01$), and shimmer between group 1 and group 3 ($P = 0.01$). The correlation between the methods was analyzed, and there was a strong to moderate correlation between VLS and perception ($r = 0.57$ – 0.73) in group 1 and group 2. The jitter and shimmer correlated moderately with perception in group 1: grade of hoarseness (G) ($r = 0.52$ and $r = 0.57$, respectively), breathiness (B) ($r = 0.58$), and asthenia (A) ($r = 0.57$ and $r = 0.53$, respectively). In group 3, the strongest correlation was observed between maximum phonation time and phonation quotient and G ($r = 0.52$; 0.58), B ($r = 0.54$; 0.55), and strain (S) ($r = 0.63$; 0.72). The VHI results and life quality outcomes were not significantly different between the groups. The VHI did not correlate with any voice measure method.

Key Words: Voice quality–Dysphonia Severity Index–Larynx microsurgery–Acoustic voice assessment–Quality of life.

INTRODUCTION

Exposure to the risk factors of larynx organic pathologies is increasing in modern world. Stress, incorrect pattern of voice use, esophageal reflux, and active and passive smoking contribute to the formation of both benign and malignant larynx lesions.¹ Non-malignant pathologies like Reinke edema, granulomas, and vocal nodules are usually first treated with voice therapy supported by antireflux drugs if necessary.² In cases of resistance to these methods of treatment, microsurgery is advised. If the pre-malignant and malignant lesions are diagnosed, they may be cured at the defined stages with microsurgery procedures. There is no universally applicable standard protocol of voice evaluation before the applied treatment. In the United States, there is no standardized protocol for voice assessment.³ Otherwise, the European Laryngological Society proposed the minimum panel of investigations that should be performed before surgical treatment to enable comparison and reference of the results of different studies.⁴ There is no doubt that the appropriate voice quality is highly desirable in the modern world. It plays an important role both in social contacts and in professional life, and has also significant cultural aspects. The pathologies of the larynx handicap

voice quality in different rates, depending on the diagnosis, and also the patient's individual sensibility. Even insignificant voice deficiency can be very important for voice professionals and contribute to deterioration in their activity. These complexities of the conditions for vocal production and the impact of voice quality on daily life are the reasons why voice assessment should be particularly accurate, detailed, and multidimensional before planning the treatment, especially based on surgical methods.^{3,4} Both objective (acoustic, aerodynamic, Dysphonia Severity Index [DSI]) and subjective (videolaryngostroboscopy [VLS], perception, Voice Handicap Index [VHI]) methods of voice evaluation should be used. Furthermore, in some laryngeal pathologies, there is also an observed discrepancy between the medical assessment and self-rating by patients.

In most of the papers, the results of selected acoustic, aerodynamic, or VHI measures in patients with narrow range of laryngeal pathologies are usually presented and analyzed.^{2,5-9} There are very little reports concerning detailed voice quality evaluation, especially connected with life quality assessment and performed on a wide range of laryngeal lesions.^{10,11} The aim of the study was to examine the preoperative acoustic, aerodynamic, voice quality of life, and laryngeal imaging results of patients with different lesions who were taken to surgery, either because they failed voice therapy or the recommended primary treatment was excision. The results may serve as a reference and comparison for other studies.

MATERIALS AND METHODS

The approval of the University of Warsaw Bioethics Committee was obtained for the study protocol, and each patient

Accepted for publication April 19, 2017.

The authors declare no conflict of interest.

From the Department of Otolaryngology, Medical University of Warsaw, Warszawa, Poland.

Address correspondence and reprint requests to Anna Rzepakowska, Department of Otolaryngology, Medical University of Warsaw, Ul. Banacha 1a, 02-097 Warszawa, Poland.
E-mail: arzepakowska@wum.edu.pl

Journal of Voice, Vol. ■■■, No. ■■■, pp. ■■■-■■■
0892-1997

© 2017 The Voice Foundation. Published by Elsevier Inc. All rights reserved.

<http://dx.doi.org/10.1016/j.jvoice.2017.04.016>

before enrollment to the project was informed and signed the consent.

Subjects

In this prospective, nonrandomized study, 151 consecutive and unselected patients (age range: 19–81 years, mean age: 57.3 years) with larynx pathology admitted to our department and planned for microsurgery treatment were included. Only patients with Reinke edema and vocal fold nodules were previously treated with voice therapy for at least 3 months, and in cases with symptoms of gastroesophageal reflux disease proton pump inhibitors were also ordered. The histopathologic examination results were used to divide the population into groups: group 1—benign laryngeal lesions (86 patients); group 2—precancerous conditions of laryngeal mucosa: mild and moderate dysplasia within the leukoplakia or chronic hypertrophic laryngitis (34 patients); and group 3—malignant neoplasms (31 patients). **Table 1** presents the structure of patients enrolled in the study.

Subjective evaluation

Visual perceptual rating by the clinician

Each patient before the surgical treatment was assessed through a multidimensional protocol. The clinical diagnosis was based on VLS examination, which was performed by one of the two laryngologists or voice specialists blinded to patients' history and interpreted independently by each of them. In each patient during the VLS, both vocal folds were evaluated: mobility, regularity and symmetry, mucosal wave, and glottal closure. The vocal fold mobility as well as mucosal wave were described as normal, limited, or absent. The glottal gap was diagnosed as longitudinal, dorsal, oval, hourglass-shaped, or irregular. The symmetry and regularity of vocal fold vibration were described as symmetrical and simultaneous and not simultaneous. The amplitude of vibration was normal, decreased, or absent.

In cases of patients with large-sized lesions or compensatory glottal closure of ventricular folds, there was inability of assessment of mucosal wave, glottal closure, amplitude, regularity, and symmetry of vocal folds on VLS, and this was stated in the protocol. Presentation of the results of VLS contains the percentage proportion of each assessed function. For the parameters described on both vocal folds the maximum of 100% was calculated for left and right size together. While calculating the correlation of VLS, the descriptive results of examination were transfigured on points, then summed for each patient. Our evaluation system was adapted from the protocol of the European Laryngological Society for preoperative microlaryngeal surgery assessment with VLS, and we modified it with a scoring scale.⁴ The scores were as follows: 0 for each listed feature: normal mobility, present mucosal wave, regular glottal gap, simultaneous and symmetrical vibration, and normal amplitude; 1 for each feature: limited mobility, limited mucosal wave, dorsal glottal gap and not simultaneous vibration, and decreased amplitude; 2 for each feature: absent vocal fold mobility and mucosal wave, oval, hourglass-shaped, irregular glottal gap, absent amplitude, and in each case of inability of assessment. The scores were summed for each patient, and the minimum possible to achieve score was 0 and indicated the best condition of laryngeal function; the maximum was 16 in case of severe deterioration of each examined function of glottis on VLS. In case of divergent assessment, consensus was reached on the reinterpretation of the video examination by both doctors.

Auditory perceptual rating by the clinician

Perception of each patient was evaluated by the same two specialists on the basis of GRBAS scale proposed by Hirano, where G in general refers to the perceived grade of hoarseness, including all components of voice; R is roughness, which means the instability of voice intensity and frequency; B is breathiness,

TABLE 1.
Diagnosis, Age, and Sex (F, Female; M, Male) of Patients With Laryngeal Pathologies Enrolled to the Study

Diagnosis	Number	F/M	Average Age (Years)	Age Range (Years)
All patients	151	72/79	57.4	19–81
Benign lesions (Group 1)	89	61/28	53.6	19–81
Reinke edema	36	30/6	38.0	31–42
Polyps	12	6/6	48.58	26–74
Granulomas	8	2/6	54.63	46–80
Vallecular cysts	8	5/3	54.5	37–67
Vocal fold cysts	5	4/1	40.8	24–63
Ventricular cysts	8	4/4	60.25	37–81
Vocal nodules	3	3/-	38.0	31–42
Papillomatosis	6	4/2	49.67	19–66
Vocal fold paresis	3	3/0	62.0	57–70
Premalignant conditions (Group 2)	34	7/27	59.3	39–74
Vocal fold leukoplakia	14	4/10	62.36	52–74
Chronic laryngitis	20	3/17	57.1	39–69
Malignant neoplasms (Group 3)	31	6/25	65.9	54–81
Vocal fold carcinoma (Tis, T1)	19	4/15	65.7	54–81
Laryngeal carcinoma (T ≥2)	12	2/10	66.33	54–77

The values for all patients and for each analysed group (group 1, group 2, group 3) are in bold.

Download English Version:

<https://daneshyari.com/en/article/7533266>

Download Persian Version:

<https://daneshyari.com/article/7533266>

[Daneshyari.com](https://daneshyari.com)