Voice Improvement in Patients with Functional Dysphonia Treated with the Proprioceptive-Elastic (PROEL) Method

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Summary: The objective of the study was to analyze the outcome of the proprioceptive-elastic (PROEL) voice therapy method in patients with functional dysphonia (FD). Fifty-two patients with FD were involved in the study; they were composed of three subgroups of patients with (1) FD without glottal insufficiency (n = 28), (2) FD and glottal insufficiency (n = 9), and (3) FD, glottal insufficiency, and vocal nodules (n = 15). A multidimensional assessment protocol including videolaryngostroboscopy; maximum phonation time; perceptual evaluation of dysphonia with the Grade, Instability, Roughness, Breathiness, Asthenia, and Strain (GIRBAS) scale; and 10-item version of the Voice Handicap Index was conducted before and after 15 sessions of voice therapy. All voice therapy sessions were conducted by the same speech-language pathologist. The comparison between voice assessment before and after voice therapy with the PROEL method in patients with FD, in all the three subgroups, revealed a statistically significant improvement in periodicity and the mucosal wave in the laryngostroboscopy, maximum phonation time, GIRBAS scale scores, and VHI-10.

Voice of patients with FD improved after treatment with the PROEL method. Further studies are needed to analyze the efficacy of the PROEL method with randomized double-blind clinical trials using different methods for voice therapy. At present, the PROEL method represents an alternative tool for the speech pathologist to improve voice in patients with FD.

Key Words: Functional dysphonia–Voice therapy–Multidimensional voice assessment–Proprioceptive-elastic method–Hoarseness.

INTRODUCTION

Functional dysphonia (FD) is a group of voice disorders that occur in the absence of structural or neurological laryngeal diseases. FD is related to vocal behavior, leading to negative habits and inadequate voice use.[1] Minor tissue changes, such as vocal fold nodules, that are direct results of vocal misuse or trauma to vocal folds by phonatory behavior can also be considered in the FD group.[2]

FD represents a significant health problem if we consider that more than 50% of voice disorders are considered functional.[1–3] The literature on FD has shown the efficacy of voice therapy for this voice behavior.[2,4,5] In particular, a systematic review with a meta-analysis of three randomized clinical trials has shown evidence of voice therapy effectiveness.[2] Nonetheless, it is common clinical experience that some patients with FD are resistant to existing common voice therapy approaches. The need for novel approaches continues. A new voice therapy method based on a multidimensional rationale was developed by Alfonso Borragán and published in Spain in 1999[6] and later in Italy in 2008.[7] The purpose of the current study is to prospectively analyze vocal improvement using this method in a prospective trial.

The specific aim of the study is to analyze, through a multidimensional diagnostic protocol, the impact of the proprioceptive-elastic (PROEL) method for treating patients with FD. The importance of the study lies in the fact that there is no evidence of the efficacy of the PROEL method. Unlike previously developed voice therapy methods for FD, the PROEL method combines a multidimensional approach. The method uses communication with the receptors of the phonatory organ in a language that is precise and includes pressure, vibration, temperature, and stretching. Another example of a multidimensional approach in the treatment of vocal disorder is found in Pedrosa.[8]

Clinical evidence of the PROEL method's efficacy supports its use in everyday clinical practice. Thus, the PROEL method could be an additional method for FD voice therapy. Furthermore, it could also be used with patients whose voice disorders have not improved with other methods.

The PROEL method

Figure 1 is a diagram of the input parameters to the PROEL method. The fundamental goals of the PROEL method are to rebalance the phonatory system by eliminating muscle tension in an attempt to seek greater elasticity in the body. Freeing the body of muscle tension in turn produces greater elasticity of the phonatory system. Greater elasticity leads to the generation of more agile movements with less exertion of energy and effort.[9] The voice is conceptually the product of an elastic system and, hence, seeking elasticity is equivalent to taking the system to its maximum ecological state (better adjustment, finer tuning). In addition, it is necessary to generate energy to obtain a voice

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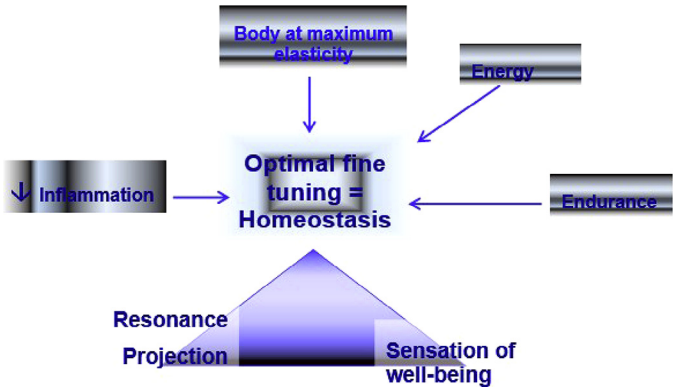

FIGURE 1. Diagram of the input parameters to the PROEL method.

that is heard well (with resonance) even from a distance (good vocal projection) and one that responds to individual daily overloads, in a system with a bare level of inflammation. Vocal production should always convey to others the sensation of well-being.

It is not a method that is specific to the treatment of only one pathology, but rather, a method that uses a holistic approach to help improve a patient's dysphonia.

Through stimulation of the receptors of the phonatory system, vocal positions, body postures, and movements, patients with dysphonia rapidly and unexpectedly change their voice and produce a voice with less vocal effort and acoustically closer to normality.[7] For example, if we place our body in a state of imbalance, a flexion of 10°, taking the body to a position similar to the Leaning Tower of Pisa (Figure 2),[10] produces a change in the voice that is emitted with much less effort. Changes in the voice achieved through practical activities (as opposed to trying to explain unnecessary theoretical explanations to the patient) are the keystone of the therapeutic procedure.

To be effective, the technique must be repeatable and reproducible as many times as required. Therefore, to permit the imprint of a correct speech signal model to be stored at the brain level, the maneuvers we carry out are few and are repeated in the same patient during the therapy sessions.[11]

The PROEL method seeks to achieve healthy vocal production through the discovery of spontaneous and concrete proprioceptive sensations, postures, and movements. This technique generates immediate changes in the voice that improve vocal quality and reduce effort and phonatory fatigue.

The PROEL method was formalized by Borragán[7] and has been divided into five phases that progress as follows:

1. Control of vocal risk factors
2. Vocal proprioceptive awareness
3. Elimination of the mechanisms of stress, tension, and muscular stiffness
4. Projection and resonance of the voice
5. Research into the feeling of freedom and well-being.

The results obtained with this method offer supportive evidence of a valid treatment technique not only from the viewpoint of the therapist but also from that of the patient. Nevertheless, there are no data available on the efficacy of the PROEL method in patients with FD. This lack of data is therefore the reason for this research study.

FIGURE 2. Distension by means of instable balance: Leaning Tower of Pisa posture.

MATERIALS AND METHODS

Study design and approval

This prospective single group pretest/posttest study compared the voice quality of patients before and after the use of the PROEL method voice therapy through a multidimensional protocol in a group of 52 patients with voice disorders. Written informed consent was obtained for each enrolled patient. Patients who were recruited understood the information that the researchers gave them, and agreed to participate without any compensation. The study was carried out according to the Declaration of Helsinki and approved by the Institutional Review Board.