

The Clinician's Turn: Speech Pathology

VOICE PROBLEMS - ASSESSMENT AND MANAGEMENT

Updating one's skills by attending inservices on the management of the person with a voice problem has always been a popular item for most workshops and conference sessions. The new technology which is available to clinicians actively involved with the remediation of vocal disability is awesome. Two programs, one in British Columbia, the other in Quebec, have faced this challenge. Nancy Chan and Linda Rammage give us insight into the complexities which are inherent in vocal disorders and describe the multi-dimensional aspects of their programs.

Questions about specific issues should be addressed to the authors. Comments on this or previous topics, suggestions for future topics should be sent to the co-ordinator:

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This paper will describe aspects of the evaluation, diagnosis and treatment of hyperfunctional voice disorders in an adult population.

All voice patients referred to our department are examined by an otolaryngologist. We have found that being present during this examination has several benefits in addition to the obvious one of obtaining a clear and complete understanding of the appearance and functioning of the laryngeal mechanism. The speech-language pathologist is sometimes able to suggest causal factors which can be treated medically or suspect early neurogenic disorders that may otherwise be missed. Furthermore, a team approach in which the speech-language pathologist participated in the investigative and diagnostic work and in the decision making processes prior to accepting the patient for voice therapy enhances the speech-language pathologist's relationship with both the patient and the physician. Because we work in close proximity to the otolaryngology clinic, it is relatively

easy for the speech-language pathologists to arrange joint appointments for most voice patients.

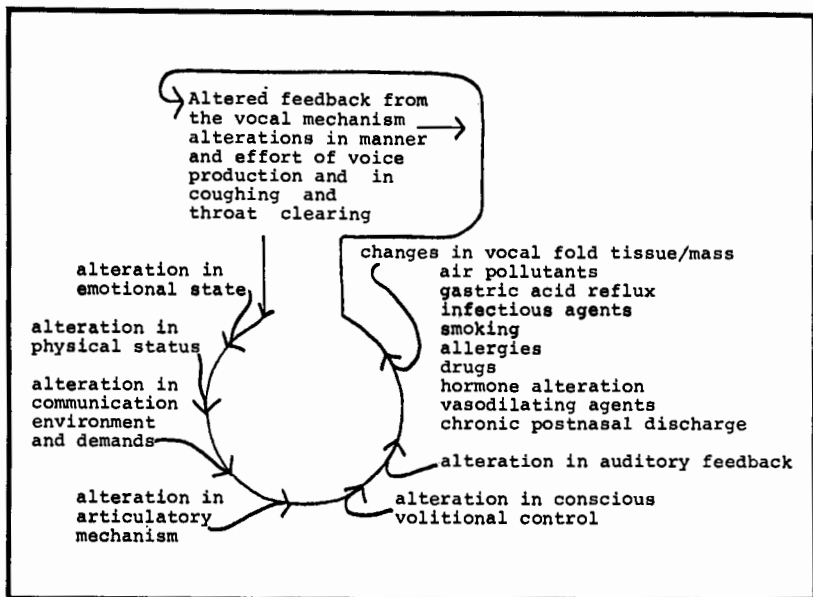
Videofluoroscopy and fiberoptic endoscopy are both available in our hospital, the latter being used routinely during joint assessment of voice patients. Clinicians are becoming increasingly aware of the tremendous advancement which has occurred in recent years in the development of scientific equipment for measuring vocal function. As clinics have access to instruments such as the electroglottograph, the stroboscope, the sound spectrograph and the oscilloscope, and instruments giving aerodynamic measures, our diagnoses will become more accurate and we will be able to demonstrate treatment effectiveness with objective data.

Our initial session with the voice patient alone lasts from one to two hours. Analysis of vocal function includes measurement of speaking pitch, singing range, voice quality, volume and resonance, respiratory adequacy and effort being expended. We enter most of this information

on the Wilson Voice Profile which, along with a permanent tape recording of the voice, provides baselines to be compared with the repeated measures taken during treatment. During this session we continue our investigation of the causal factors involved.

Rather than considering voice disorders to be straight-forward cause (vocal abuse-misuse) - effect (mass-size, approximation change) phenomena, we have found it helpful in understanding the etiology of voice disorders in adults to consider the various possible contributing factors illustrated in a circular model such as this:

CIRCULAR MODEL OF ETIOLOGY OF VOICE DISORDERS



Treatment, then, consists of intervening in the cycle by eliminating all possible relevant causal factors and by changing phonatory behaviour, with the goal of increasing vocal efficiency, that is, achieving the best possible voice with the least effort expended.

Patients may be treated individually or in a group voice therapy program. Sessions include education in the anatomy and physiology of voice production, instruction in care of the voice, and counselling in life style changes. Attempts to modify the vocal fold vibratory pattern may include training in generally decreased vocal effort,

improved tone focus, and greater flexibility of vocal pitch and intensity.

Voice therapy is usually not a long process. Weekly appointments over two to three months result in the criteria for termination being reached, that is, improvement in the baseline measurements including the otolaryngology examination, reduced complaint by the patient of hoarseness or discomfort, and use of the most efficient voice possible.

I have found one of the best sources of information about voice to be the Symposium on Care of the Professional Voice, held annually in New York City

for five days each June. Transcripts of these proceedings are available from the Voice Foundation.

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December 1, 1983.

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Each time I endeavour to explain the workings of the voice to a patient, I am filled with new wonder at the complexity of this mechanism of communication and unique musical instrument. Even at a peripheral level, it is a mammoth task to understand and describe the synthesis of processes which are involved in production of dynamic vocal tones and are synchronized with the continuous articulatory adjustments of speech. Still less well understood, but ultimately basic to any voice production model, is the motivational/emotional level of voice production: often disorders of voice and psychological conflict emerge as inseparable functions. We must consider vocal production to be altogether a neurophysiological, psychological, technical, auditory-acoustic and even musical phenomenon.

Just as vocal production must occur

at all these levels of operation, so surely its function may break down within one or a complex of systems. No one professional discipline is responsible for explaining or treating all the possible etiological factors of a patient's voice disorder. As speech/language pathologists, we are trained to employ our eyes, ears and educated "hunches" to decide which components of pitch, loudness and voice "quality" are malfunctioning, the possible processes involved, and which techniques will facilitate more optimal voice production. But our professional, experiential and ethical limitations often lead us to stop before the voice problem, as it affects the whole person, has been resolved. The most satisfactory solution is coming into practice in a few centres across the continent: an interdisciplinary approach to patient care. I would like to describe the operational aspects of one Voice Clinic, and some of our present goals and biases.

The Voice Clinic of the University of British Columbia in Vancouver presently has on its team an otolaryngologist, a speech/language pathologist, a psychiatrist, a consulting neurologist, a singing teacher consultant and a bio-medical engineer. A standard assessment protocol exists. Each patient referred to the Voice Clinic is interviewed initially by the otolaryngologist and speech pathologist together. During this initial consultation, audio and video-recordings are made for purposes of documentation, viewing by other team members and comparison with further recordings. The video-recording sessions allow the otolaryngologist and speech pathologist to observe and hear evidence of organic pathology in the larynx, and its effect on the phonatory process. In addition, visible signs corresponding to functional components of dysphonias can be identified, for example: ventricular band adduction; bowed vocal cords; posterior glottic chink; hypo- or hyperadduction of the vocal cords; or larynx rise. The complete clinical description may include apparent

relationships between the visible symptoms observed and perceptual audible features of a dysphonia. During video-recording, the validity of facilitation techniques aimed at isolating and reducing the possible functional signs can be assessed. The results are then used as confirmation of the functional diagnosis and may be suggested as a viable starting point for voice therapy. Finally, a consultation between the professionals, and subsequent discussion with the patient result in a decision regarding the most advisable further assessment and/or treatment procedures to be pursued.

A psychiatric evaluation is suggested if sufficient evidence of possible psychological factors are found relating either to etiology or the patient's reaction to his dysphonia. In these cases, further management decisions may be deferred until the team psychiatrist has completed his assessment. Criteria for referral of a Voice Clinic patient for psychiatric evaluation are described in detail in another publication. (1) Neurological evaluation may also be recommended as a result of findings in the history or physical examination and the results are included in final management decisions. Patients who use their voices professionally are particularly susceptible to various forms of dysphonia. In these cases it is advantageous to include in the voice evaluation, consultation with a professional singing teacher regarding vocal technique and other issues relating uniquely to professional voice use. Usually consultation with the other team specialists can be arranged very soon after the initial evaluation in the Voice Clinic so the patient and staff benefit from continuity and integration of the assessment process.

A more specific example of interdisciplinary practice is provided in recent efforts to classify and manage patients with vocal nodules. Recent studies of the vocal-technical, physical, acoustic,

spectrographic and psychological characteristics of patients with vocal nodules revealed some sign/symptom patterns common among the majority of these cases. The result is a classification of a muscle-tension based disorder called "muscular tension dysphonia" (MTD). (2,3) There appear to be specific visible, palpable and audible criteria that contribute to the operational definition. Psychological stress factors are often evident, with the onset of symptoms suggesting a possible relationship between psychological conflict and the characteristic muscle misuse patterns. Patients presenting these symptoms are commonly professional voice users or are in occupations which rely on voice/speech as the primary medium of operation. In a recent study comparing visible and audible features of the disorder, a close correlation has been demonstrated between the otolaryngologist's judged degree of open posterior glottic chink and the speech pathologist's judgement of severity of breathy voice quality. (2) Certain common technical errors are consistently detected and corrected by the speech pathologist and the singing teacher: misuse of posture, particularly of the head and neck; excessive use of the suprahyoid muscle group for initiation and dynamics of phonation; improper balance of resonance/"focus"/or register; and incorrect or inadequate use of breath support systems to sustain phonation. Differential diagnosis of dysphonias in the presence of vocal nodules is important due to the implications for possible variant strategies of rehabilitation. If we assume that vocal nodules as a symptom of MTD are secondary to the physiological-technical and psychological components of the disorder, we will generally first investigate and treat the primary problems prior to other medical or surgical management. If vocal nodules exist in the absence of MTD symptoms, then our treatment priorities and specific techniques may vary considerably.

The value of the team approach is perhaps most obvious in care of

patients with dysphonias of unclear etiologies. Certainly the least agreed upon, and possibly the least well understood of these is "spastic dysphonia". Each patient diagnosed with possible spastic dysphonia during the initial Voice Clinic evaluation is requested to undergo both neurological and psychiatric assessment, as well as a period of diagnostic voice therapy. Standardized audio-recordings of these patients, as with all Voice Clinic patients, are digitized and analyzed by a computer program being designed by the biomedical engineer, for research purposes. When a multifactorial etiology is suspected, ongoing assessment and management procedures may involve joint sessions with two or more of the team members.

A diagnostic label such as spastic dysphonia will not be used definitively by the Voice Clinic team as, at least from an interdisciplinary perspective, no current operational definition exists for the disorder. Along with voice specialists throughout the continent, a major team goal is specification of symptoms and signs to establish criteria for use of diagnostic labels such as "spastic dysphonia". Within a clinical and research team, the importance of selective use of descriptive terminology is confirmed. Jargon consisting of relatively unmeasurable features of voice such as "hoarseness" or "stridency" may have some consistency and value within one discipline, but generally only lead to confusion for other professionals. Unjudicious application of general descriptive terms such as "organic", "stress" or "tension" often also leads to ambiguous conclusions among a multidisciplinary team. Voice scientists and medical researchers have done much ground work for a more scientific approach to voice care. Interdisciplinary clinical work and study is certainly a powerful vehicle to that professional goal.

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December 1, 1983.

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