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PROFESSIONAL VOICE DISORDERS (G GARRETT, SECTION EDITOR)

The Initial Evaluation and Management of a Vocal Performer With New Voice Complaints

Lesley F. Childs[1] · **Amy L. Hamilton**[1]

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Abstract
Purpose of Review Caring for the vocal performance community represents a great privilege. A multidisciplinary team approach that is both accessible and sensitive to the unique needs of the performing artist is crucial to providing the highest level of care.
Recent Findings The approach to a vocal performer in the clinical setting must be one that does not trivialize vocal concerns nor ignore vocal demands and habits outside of the performance milieu. Furthermore, relevant historical details and considerations for the performing artist are specific to their craft. Counseling this population often addresses vocal dose awareness, vocal hygiene optimization, and muscle memory pattern adjustments. Behavioral intervention in the form of voice therapy almost always precedes consideration of surgical therapy. Furthermore, prescribed short-term voice rest periods, guided by videostroboscopic exam, can be effective both diagnostically and therapeutically.
Summary Various medical, surgical, and behavioral intervention recommendations and management strategies are highlighted from the perspective of a fellowship-trained laryngologist and a voice therapist, both with clinical emphasis on performance voice.

Keywords Voice · Vocal performer · Hoarseness · Voice disorder · Laryngology · Voice therapy

Introduction

Vocal performers represent a unique and often inspiring subset of patients. Secondary to their high and often unrealistic vocal demands, they are at an increased risk of developing voice disorders. Richard Miller, a former professor of singing at Oberlin College Conservatory of Music and the author of numerous books on singing technique and vocal pedagogy, noted that "the most perfect vocal technique cannot surmount some of the demands of the current professional performance world" [1]. Furthermore, given that these patients' livelihood depends on their voice, the severity of their situation is magnified. "Singers will continue to be asked to 'defy gravity' and generate more complex vocal acrobatics in order to stay employed"[2••]. Additionally, the human voice is personal, closely linked with self-identity and often accompanied by a powerful emotional overlay and sometimes an "illness identity" which can complicate both the presentation and management of this group of individuals [3]. Within this context, it is exactly this very personal, emotional experience that makes caring for vocal performers a great privilege and incredibly rewarding.

The Team Approach

A multidisciplinary approach is particularly useful when caring for vocal performers, as many voice disorders are multi-dimensional. A voice care team approach involving a

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✉ Lesley F. Childs
lesley.childs@utsouthwestern.edu

Amy L. Hamilton
amy.hamilton@utsouthwestern.edu

[1] Department of Otolaryngology – Head & Neck Surgery, Clinical Center for Voice Care, University of Texas Southwestern Medical Center, 5303 Harry Hines Blvd, Dallas, TX 75390, USA

laryngologist, voice therapist, voice teacher/vocal pedagogue, voice coach, and physical/massage therapist improves outcomes and helps to prevent future injury. American Speech-Language-Hearing Association (ASHA), National Association of Teachers of Singing (NATS), and Voice and Speech Trainers Association (VASTA) produced a joint committee statement noting that the "most effective path to vocal recovery often will include an integrated approach" that addresses "both speech and singing tasks" [4]. This team effort may also include other physicians involved in the patient's care and is most effective when all members are in open communication with each other. The vocal performer should also engage in this collaborative approach. Given the sometimes urgent need for evaluation required by vocal performers, a voice care team that is accessible is of paramount importance, as waiting several weeks for an evaluation can jeopardize the professional future of these patients.

Clinical Presentation

Although each vocal performer's clinical presentation is different, there are some common themes and clinical implications relevant to this population. First, no matter how subtle a voice complaint may seem, to trivialize or discount the concern in this population will negatively impact their clinical experience and likely alienate the patient. And many times what sounds like a minor voice concern represents only a small portion of a more global vocal issue. Voice care professionals must remember that subtle complaints by elite performers often signify real pathology. As Dr. Robert Sataloff notes "failure to establish a diagnosis for a professional singer with a voice complaint is caused by lack of expertise on the part of the physician rather than an imaginary complaint on the part of the singer" [5].

There is unfortunately a stigma associated with voice problems in the vocal performance community; presentation to a voice care team for help demonstrates a vulnerability that must be honored. With regard to instrumentalists, orthopedic surgeon Dr. William Dawson states that, "injury, whether or not caused by the making of music, now has become a respectable topic for discussion and action by musicians of all degrees of skill and involvement, and its artistic and economic significance has gained increasing recognition by artists' unions and by administrators of many performing organizations worldwide" [6]. The vocal performance community should aspire to the same level of awareness regarding the injured voice.

Third, although vocal performers likely use their instruments most often in a professional setting, ascertaining their vocal demands and habits outside of the professional realm can be revealing. Supplemental employment or day jobs can often contribute to voice problems, as can habitual throat clearing or coughing. Environmental irritants such as cigarette smoke exposure or a dust-filled rehearsal space can exacerbate vocal injury. When obtaining a history during the initial evaluation of a vocal performer, many considerations are relevant. It is likely that each member of the multidisciplinary voice care team will compile his/her own relevant historical details that when combined together will result in a thorough documentation of the vocal performers story (see Table 1). It is also helpful to obtain a Voice Handicap Index (VHI) and/or Singing VHI to further understand how the symptoms impact the patient's daily life.

Finally, the goals of vocal performers with a voice disorder likely differ from those of nonvocal performers. In a practical sense, the vocal performer will want to return to their livelihood as soon as it is safe to do so. Additionally, some vocal performers will not want to reveal to their colleagues in the industry the fact that they have sustained a vocal injury and sought treatment. With regard to the management of voice disorders in this population, voice care professionals must be mindful that certain prescribed interventions such as unnecessarily prolonged periods of voice rest will often result in noncompliance. Similarly, repeated use of steroids without addressing the root pathology, or using steroids as a surrogate for the behavioral changes necessary, will serve to set this population up for a potentially career-threatening injury down the road.

Videostroboscopy

Manuel Garcia, probably the most revered voice teacher of the 19th century, is credited with developing the laryngoscope. He was interested in movements connected with the production of the singing voice and did not anticipate the importance of laryngoscopy for medicine [7]. The physical exam of the vocal performer is not complete without videostroboscopy, a truly essential component to state of the art management of voice disorders. Not only does videostroboscopy afford the examination of the viscoelastic properties of the phonatory mucosa, but it also provides a permanent record to serve as a reference point. Along with a vocal fold exam, a video recording of "The Rainbow Passage" (which contains most phonemes in the English language) or some other standardized text is invaluable for both tracking the progress during the course of treatment as well as providing a representative sample of connected speech for research and teaching purposes. Common stroboscopic parameters include vibration, mucosal wave, amplitude, phase symmetry, vertical phase

Table 1 Historical details relevant to the performance voice community

Timing considerations
Was the onset of the voice problem sudden or gradual?
Is the voice change chronic or acute?
Is there a history of previous voice problems? How long ago?
What stage of hormonal/menstrual cycle (if applicable) is present?
Patterns of voice use
Further describe and characterize vocal demands throughout the day?
Does the voice improve with vocal rest?
Is the speaking voice and/or the singing voice affected?
Presence of frequent coughing, throat clearing, yelling or loud talking?
Is there a regular warm-up and cool-down regimen present?
Is there a history of voice training (previous or current)? What specific genre has been studied?
Is there a specific area of the vocal range that has been affected?
Describe the nature of any upcoming performances? (travel demands, presence of understudies, open dress rehearsals for critics, amplification/sound system considerations)
Is there concurrent instrumental playing with the singing? What instrument?
Associated symptoms
Is there pain or discomfort with voice use, including speaking and singing voice?
Presence of heartburn, nasal congestion, post-nasal drip or other nonvocal symptoms?
Is there difficulty or pain with swallowing?
Additional exposures
How much water and other hydrating beverages are consumed on a daily basis?
How much caffeine is consumed on a daily basis?
Use of alcohol or smoking (including recreational drug use)?
What medications and supplements (both prescribed and over the counter) are being used?
Is there exposure to potentially harmful environmental irritants?

difference, periodicity, and closure. Videostroboscopic findings in singers presenting with acute voice problems are usually related to an inflammatory process. Additionally, acute-on-chronic injuries frequently affect this specific population. Therefore, a baseline or "wellness" exam for vocal performers can be useful as a reference in times of acute injury.

Counseling the Vocal Performer

Counseling the vocal performer represents the art of laryngologic medicine. Voice care professionals are often the second and third opinions sought for vocal performers, so extra time is often required to properly address previously recommended strategies and conclusions. Certain management principles are common to this population; similarly certain strategies are likely to result in more favorable outcomes. Remembering that vocal performers are "vocal athletes" and using the analogy of a sports injury lends itself well to conversations surrounding strategies to improve performance. Elite athletes can sustain injuries that require the focus to temporarily shift to rehabilitation before re-entering the playing field—this is also the case with elite vocalists. Taking the time to explain in detail the cause of the voice symptoms and how this is impacting the laryngeal mechanism to the patient is important to increase patient's compliance with recommendations. It is also important for the laryngologist to explain to the performer that the goal is to return the voice to its premorbid state, not necessarily complete resolution of the lesion. Three common principles when counseling this population include vocal "dose" awareness, vocal hygiene optimization, and muscle memory pattern adjustments.

Vocal Dose Awareness

As mentioned earlier, many vocal performers require the use of their voices for supplemental employment. Increasing awareness of vocal dose or amount of use, especially on performance days can greatly affect the speed of recovery and the likelihood of future injury. The notion of having a certain quantity of voice use allowed per day

and rationing it out throughout a 24-hour period can be a helpful exercise. Each individual's threshold for phonotrauma differs and unlike instrumentalists who can practice for hours at a time, the vocal performer's instrument is simply not designed to sustain such patterns without developing some amount of tissue damage. Therefore, the vocal performance community should "work smarter not harder," for example, by utilizing amplification systems, in-ear monitors and minimizing voice use between sets and after late-night performances. Other examples include reducing the length of a set, rearranging the order of the songs being performed, changing the key of vocally challenging pieces to better fit in the vocal performer's current comfortable pitch range and marking during rehearsals. Often, communicating this to the performer's manager or producer can help to reduce vocal demands outside of the performances. According to Dr. Norman Punt, "Don't say a single word for which you are not being paid" [8] This requires great discipline by the vocal performer but is often the most immediate factor in improving voice symptoms.

Vocal Hygiene Optimization

"Vocal hygiene" refers to education surrounding care of the larynx. Fundamentals of vocal hygiene include adequate hydration via both internal and external sources and avoiding large quantities of known dehydrating substances such as caffeine and alcohol. Much of the vocal performance community likely engages in certain practices and rituals regarding voice care that may or may not have scientific merit. Out of 142 teachers of singing, 71 % used therapies they perceived to be alternative medicine and of that group 53 % claimed to use it daily [9]. Dispelling some of these misconceptions is of utmost importance, as some natural remedies such as those involving garlic or ginger, for example, may increase vocal fold hemorrhage risk through inhibition of platelet aggregation. Handouts provided to the vocal performance population with helpful vocal hygiene tips and resources increase adherence to the recommendations.

Muscle Memory Pattern Adjustments

Frequently, the muscle memory patterns associated with voice use need to be adjusted, most likely due to laryngeal hyperfunction. In the classically trained singer population, the suggestion of a technique problem can be met with resistance. It is likely that their technique prior to the injury was not problematic, however in the setting of injury—compensatory maladaptive patterns of voice production develop and require adjustment. A rehabilitative approach is required in collaboration with a voice therapist, much like the important work completed with a physical therapist and an injured athlete. Care must be taken to help our patients avoid inappropriate self-blame; labels such as "vocal abuse" can be difficult and antagonizing in certain vocal performance communities.

Medical and Surgical Management

Interventions appropriate for the vocal performer with new voice complaints will rarely begin with surgical recommendations. More often, medical management may accompany behavioral management. Examples of medications more commonly used in this population include steroids, often prescribed in conjunction with strict voice rest with a follow-up examination immediately thereafter. Steroids used in this context can aid in the diagnostic process and to some degree may serve to hasten their recovery likely by decreasing glottic inflammation more quickly than voice rest alone. Steroids without a follow-up exam and concomitant behavioral intervention may increase risk of further vocal injury, especially within the vocal performance population. Note that the empiric use of steroids for hoarseness is not supported in the literature. Nearly, 32 % of actors and actresses performing in Broadway Productions reported ever using steroids in the past for their vocal symptoms [10].

For seasonal allergies, second-generation antihistamines have a higher specificity for binding to H1 receptors and are less sedating than first-generation antihistamines. Both antihistamines and decongestants can be drying; therefore, in the cases of nasal congestion, short-term nasal oxymetazoline use can avoid systemic side effects. Expectorants such as guaifenesin can help to liquefy tenacious mucus. Lifestyle and dietary modifications, such as avoiding both late-night eating and foods known to trigger acidic responses, as well as occasional histamine blockers (H2) and 2–3 month courses of proton pump inhibitors, may prove useful in cases of laryngopharyngeal reflux. Also noted in the Broadway Production performers was the use of proton pump inhibitors or H2 blockers in 36.4 % of the male lead groups (note that the actual presence of GERD in this population was not determined) [10].

Surgical management in the vocal performance population is seldom recommended as first-line treatment. Behavioral intervention in the form of voice therapy almost always precedes surgical considerations in this population. Observational studies of vocal fold polyps have documented resolution with conservative (nonsurgical) approaches, especially with smaller lesions[11••]. If surgical intervention is required given minimal reversibility of a vocal fold lesion, a microflap excision is most commonly performed with both voice rest and voice therapy

incorporated into the post-surgical timeline. The concept behind microflap surgery is to remove the lesion while minimizing disruption of the uninvolved lamina propria and mucosal cover. The ultimate surgical goal is the preservation of the vibratory mechanism that is fundamental to phonation. Post-surgical voice rest and voice therapy aid in the process of wound healing through a gradual return to voicing and specific rehabilitative techniques.

Behavioral Management

As mentioned previously, behavioral management is often considered first-line when caring for the vocal performance community. Short courses of prescribed voice rest (sometimes in combination with steroids) can help to assess the reversibility of vocal fold lesions. However, extended periods of voice rest may prolong vocal recovery by interfering with muscle fiber adaptations developed through vocal training [12].

Behavioral management commonly includes both indirect and direct voice therapy conducted by a certified speech-language pathologist with specialization in assessing and treating voice disorders and in working with the performance voice population. Voice therapy involves a combination of both the artistic and scientific components of voice production. Indirect voice therapy targets improving vocal hygiene, as well as teaching the vocal performer to manage and pace vocal demands on a daily basis. Direct voice therapy focuses on upper body tension reduction and postural optimization, diaphragmatic breath support, and improving the coordination of the vocal subsystems (respiratory, phonatory, and resonatory) in both speaking and singing techniques.

The purpose of direct voice therapy is to eliminate vocal misuse and replace with a more efficient speaking and/or singing technique. A voice therapist should begin assessing a vocal performer upon introduction by observing the performer's posture, breathing pattern, instances of throat clearing/coughing, as well as the voice technique used during conversational speech. These observations aid the voice therapist in the initial formulation of a behavioral treatment plan.

Typically, voice therapy with a singer will focus on improving the speaking voice technique before addressing the singing voice technique. Often speaking voice problems will underlie difficulties with the performing voice [13]. By improving the efficiency of the speaking voice production, the singing voice will likely improve. Most vocal performers do not pay much attention to their speaking voice technique in conversation. Increasing the performer's ability to self-monitor his/her vocal habits and overall technique is imperative to the success of voice therapy. Common programs and techniques utilized during voice therapy include Resonant Voice Therapy [14], Vocal Function Exercises [15], Stretch and Flow [16], Circumlaryngeal massage [17], and Semi-Occluded Vocal Tract Exercises [18].

In addition, philosophical techniques that are theater-based and emphasize the mind–body approach can be used in therapy to increase awareness and freedom [19]. These techniques include Alexander Technique, The Linklater Method, The Feldenkrais Method, The Lessac System, and Estill Voice Training.

A combination of any of these voice therapy techniques and programs can be used to help a performer with voice problems. Every case is unique. The combination of therapy techniques that helped resolve voice symptoms in one singer will most likely be different from the set of techniques that are beneficial to another singer with a similar diagnosis. A vocal performer may be reticent to the idea of voice therapy for fear that his/her unique voice quality will be altered. It is important for the voice therapist to address these fears and explain that the purpose of therapy is to help the performer produce his/her unique quality in a more efficient manner, while resolving the voice complaints and improving longevity and endurance.

In addition, many vocal performers with voice problems experience high levels of anxiety. This anxiety may stem from concerns surrounding the potential impact of the vocal injury on an individual's reputation as well as the ability to perform at a certain level, if at all [19]. As a result, the increased anxiety can cause the voice disorder to be more severe and should be addressed during the course of voice therapy. The ability to create a setting that is secure for a vocal performer has more to do with establishing rapport than therapeutic expertise [20]. Taking the time to listen to the vocal performer and to let the patient explain his/her discoveries throughout the voice therapy process is of paramount importance.

Another challenge faced by the vocal performer is the demands of his/her schedule and their potential inability to attend regular voice therapy sessions. It is then ideal for the voice therapist to develop a behavioral exercise regimen during the initial voice evaluation that can be completed as home practice by the vocal performer. The instruction for this initial voice regimen typically involves patient education regarding vocal hygiene practices, recommendations for peri-performance routines, and establishing vocal unloading strategies that can be implemented without multiple voice therapy sessions. Follow-up via teletherapy would then be recommended if allowed in the speech pathologist's state of practice, or recommendations for continued voice therapy when the vocal performer's schedule permits. The ultimate goal after completion of a course of voice therapy is to create a self-monitoring artist with an increased level of awareness of vocal behaviors and patterns.

Conclusions

In summary, caring for vocal performers represents an opportunity in the medical field to positively impact a group of individuals whose livelihood, artistry, and often self-identity are derived from their voice. By working as a team with other voice care professionals, we can help to ensure that the vocal performer's vocal health remains the priority. Longevity in the vocal performance realm should be at the forefront of clinical decision-making. While every vocal performer's presentation will be unique, common themes are often encountered. Similarly, certain diagnostic and management strategies when working with the vocal performance community more commonly result in optimal outcomes. Many of the vocal injuries encountered in the performance world are reversible to an extent; this fact alone can provide reassurance and serve to motivate vocal performers to make the necessary changes with that goal in mind. A more holistic approach to caring for vocal performers means taking our vocal performer patient's "multifaceted nature into account—the intellectual, spiritual, psychological, emotional, physical, and acoustic aspects of the human experience" [21]. Indeed, the human voice is inextricably linked to our identity. With this in mind, caring for injured vocal performers requires a clinical approach rooted in sensitivity and compassion. We owe it to this talented community to provide only the highest level of quality care.

Compliance with Ethics Guidelines

Conflict of Interest Dr. Lesley F. Childs and Ms. Amy L. Hamilton declare that they have no conflict of interest.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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