ADVANCED LARYNGOLOGY PART II – SEEING A VOICE PROBLEM

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Purpose: Many clinicians (otolaryngologists, speech therapists) take a history and then endoscopically examine the vocal cords. Without listening to the voice, or being able to describe types of hoarseness, many voice disorders are overlooked. In advanced laryngology, the examiner elicits the voice problem and then utilizes advanced endoscopic techniques to visualize the specific impairment already heard.

Outcome objective: Upon completion of this session, participants should be able to…

… understand video terminology from standard definition (SD) to high definition (HD) to ultrahigh-definition (UHD), selective color imaging and their application to endoscopy and how to utilize consumer video equipment for laryngeal imaging and documentation.

… utilize inexpensive yet advanced low technology techniques to create high-definition images, even with lower cost equipment.

… understand video and stroboscopy artifacts and make reasonable diagnoses even with the artifact present.

Goal: In advanced laryngology, consider a different diagnostic approach. Consider a three-part examination consisting of

1) a history
2) listening to and recording vocal capabilities
3) then endoscopically examining the larynx.

The endoscopic portion of the examination is directed both by the history and by the vocal signature of the individual's hoarseness.

Advanced technology

1) Recording: Understand how the most important component of laryngology is the video recording of the image. The capacity to review an image several times reveals many additional details. Using a high resolution computer screen along with software which allows the easy ability to move frame by frame, backwards and forwards or at variable speed aids the examiner in visualizing microscopic vibratory impairments otherwise occurring faster than the examiner's perception is able to digest the information.

2) Fiberoptics & chips: Understand how the most commonly used endoscope, the very cost-effective flexible fiber-optic endoscope, artificially alters our perception of the larynx. How does the image compare to a distal chip endoscope image? If the examiner keeps endoscopic visual alterations in mind, a more accurate and precise diagnosis can be made, even with blurred and honeycombed images. There is also wisdom in knowing what you don't know.

3) HD & UHD: Understand the capabilities of the highest resolution images that can be obtained with high definition and ultra high definition cameras from Toshiba, Olympus and Pentax for both rigid and digital chip-on-tip endoscopes. Whether or not you can afford an HD endoscope, you will leave with an understanding of what you might be missing.

4) Selective Color: Understand how the added visual qualities of selective color imaging such as NBI (narrow band imaging) by Olympus or iScan by Pentax, highlight vasculature. Neovascularization readily identifies the borders of many lesions, some malignant and some benign.

Advanced techniques

1) Vowels & Pitch: Understand how the correlation of sound with video augments the diagnostic value of the image. Variation in vowels, changes in pitch and changes in vocal intensity all alter the clarity of the visual endoscopic image.

2) Understand how variations in lighting alter our perceptions of what we see.

3) Utilize standard definition, rigid and flexible endoscopes during a single exam to offer complementary views of the larynx, the combination of views resulting in essentially a high-definition perception of the larynx.

4) Understand how topical anesthesia - at very little cost and only a small addition of time - can turn a standard definition (SD) image into essentially a high definition (HD) image by navigating the endoscope closer. Closeness yields a recording with more pixels on the pathology and consequently is equivalent to a higher resolution image.

As a result of attending this session, participants who can only afford the minimal amount of laryngeal imaging equipment can learn to obtain essentially high definition images of pathology with low-budget equipment.