

## VIDEOKYMOGRAPHY – CLINICAL FOCUS

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This instructional course will be devoted to the fundamentals of videokymographic imaging and to the application of videokymography in clinical practice.

Videokymography is a high-speed videolaryngoscopic examination method, which allows obtaining detailed information of the vibratory behavior of the vocal folds and surrounding tissues. In contrast to the standard strobolaryngoscopic methods, which work properly only on regular voices and do not allow detecting irregularities, the high-speed imaging does not suffer from this limitation and allows detecting real vibration of the vocal folds. Videokymography differs from the other high-speed videolaryngoscopic methods in that it uses a special videokymographic camera which provides two images simultaneously – in the left half it shows the standard laryngoscopic image (50 or 60 images per second), in the right half it provides the kymographic image showing the vibratory behavior of a selected part of the vocal folds in high speed (7200 line images per second). In contrast to other high-speed imaging methods, the high-speed videokymographic images are available immediately, which makes the method less time-consuming and friendlier for use in busy clinical practice.

For clinicians, videokymography allows detailed diagnosis of vibration disorders of the vocal folds in small developing lesions, which are difficult to detect using other methods. Research on videokymography in voice disorders identified over 30 vibratory features which reveal on various causes of vibration disorders of the vocal folds. One of the most useful visual VKG features that cannot be observed with standard laryngostroboscopy is sharpness of lateral peaks which reflects on pliability of vocal fold mucosa. Reduced sharpness of lateral peaks points towards organic basis of damaged vocal fold tissue, such as tiny scarred areas or increased stiffness of the mucosa and of the submucosal tissues, in cases which have otherwise been considered to be functional disorders. The method appears useful especially for examining voice disorders in patients with unclear pathology and in voice professionals such as singers who complain of worsened singing voice.

The course will demonstrate the basics of videokymographic examination and show case examples of characteristic pathologic conditions, which were diagnosed thanks to videokymographic findings. Furthermore, the course will introduce software which has recently been developed for analysis of videokymographic images in collaboration with the Institute of Information Theory and Automatization of the Czech Academy of Sciences.

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