Clinical experience with confocal laserscanning endomicroscopy

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The use of a confocal microscope enables non-superficial microscopic imaging of untreated tissue without previous fixation and preparation of slices. This is enabled by having focused laser-light of a defined wavelength passed through a confocal aperture thereby reducing scattered light below and above the plane. Dynamic images are then reconstructed by having all light-spots to be scanned in the horizontal und vertical plane.

From a clinical perspective it can be therefore used during endoscopical examination for detecting cancers or further differentiation of suspicious lesions. Thereby, confocal laserscanning endomicroscopy helps to significantly reduce the number of biopsies. Moreover, it can potentially even replace standard tissue acquisition methods in areas where tissue acquisition methods perform rather bad. Of interest, application of this technology has the further advantage to visualize dynamic process on a microscopic level for monitoring and determination of blood flow in various conditions.

In summary, one may therefore conclude that, at present, endomicroscopy helps to establish a better diagnosis. Aspects for future research will be to combine this method with other new imaging methodologies, to measure biological changes in vivo in patients and finally to monitor therapy, such as anti-angiogenic therapy in cancer patients.