High definition three chip camera

To compare the image quality of a standard definition (SD) three chip camera with a new high definition three chip camera. In five neurosurgical interventions, an SD three-chip camera and an HD three-chip camera were used with the same endoscopic equipment.

Both cameras were used while performing one endoscopic third ventriculostomy, one endoscope-assisted microvascular decompression, one endoscope-assisted removal of a vestibular schwannoma, and two endonasal pituitary surgeries. To provide comparable conditions, the outputs of both cameras were displayed on the same flat screen and were recorded on hard disk with an appropriate workstation using a visually lossless codec. Both cameras were used with full light intensity and maximal zoom. The cameras were connected to the same rod-lens endoscopes (2.7- and 1.7-mm lens) one after the other. The image quality of the HD camera was far superior in all applications. Especially in pituitary surgery, the difference was striking when the tumor had to be differentiated from the normal pituitary tissue. Improved resolution and color information explained the better images in HD imaging. Additionally, because of the 16:9 aspect ratio, the viewing field of the HD camera was larger than with the 4:3 aspect ratio of the SD camera. The progressive image processing of the HD camera provided a much clearer image than the interlaced image processing of the SD camera, especially with a modern flat panel screen. HD imaging provides a much better image quality compared to SD imaging. Therefore, we recommend use of HD cameras in neuroendoscopic procedures [1].

[1]

Schroeder HW, Nehlsen M. Value of high-definition imaging in neuroendoscopy. Neurosurg Rev. 2009 Jul;32(3):303-8; discussion 308. doi: 10.1007/s10143-009-0200-x. Epub 2009 Apr 16. PubMed PMID: 19370368.

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