

In-vivo endoscopic visualization of patho-anatomy in painful degenerative conditions of the lumbar spine.

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Abstract

The degenerative processes in an aging spine have been defined traditionally only by our knowledge of the biology of disc and facet degeneration, as well as interpretation of post-mortem cryosections by forensic anatomist Wolfgang Rauschnig, M.D. In this chapter, visualization of in-vivo patho-anatomy in a degenerating disc and spinal segment is demonstrated at surgery using the Yeung Endoscopic Spine System (Y.E.S.S.), (Richard Wolf Surgical Instrument Company, Vernon Hills, IL, USA). An Institutional Review Board (IRB)-approved study of endoscopic treatment for degenerative conditions of the lumbar spine incorporated intraoperative probing under local anesthesia and endoscopic treatment of the visualized patho-anatomy. An intraoperative evocative chromo-discogram, using indigocarmine, was used to elicit discogenic pain and label the fissured and degenerative nucleus pulposus for surgical removal and thermal modulation. Painful patho-anatomy was probed in a conscious patient. The most common endoscopic finding was Inflammatory tissue in the disc and annulus. Inflammation was correlated with the presence of annular tears. Patho-physiologic changes that affect the exiting nerve, which contains the Dorsal Root Ganglion (DRG), was associated with stenotic and chemical irritation. Unavoidable postoperative dysesthesia was associated with the presence of an inflammatory membrane, and removal or thermal coagulation of "anomalous" furcal nerves in the foramen that branched off of the exiting spinal nerve. Neo-angiogenesis and neurogenesis in the inflammatory membrane present in the foraminal triangle was a new finding not reported in traditional clinical studies. Visualization and treatment of pathologic findings inside (annular tears) and outside the disc in Herniated Nucleus Pulposus (HNP), synovial cysts, foraminal stenosis, central stenosis, spondylolisthesis, is demonstrated. The endoscopic foraminal approach to the spine and disc is a technique that provides access to patho-anatomy in the lumbar spine not usually feasible with traditional surgical methods. Favorable surgical results allow for continued evolution of the endoscopic method, concomitant with the continued evolution of endoscopic spinal surgery.

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