

MAGNETIC RESONANCE IMAGING SIMULTANEOUS TO URODYNAMIC EXAMINATION: A NEW WAY TO PERFORM VIDEOURODYNAMICS

Synopsis of Video

Videourodynamics combines a multichannel urodynamic study with video X-ray or ultrasound imaging. The advantage of videourodynamics stem from the simultaneous measurement of intra-luminal pressures and visualization of the related anatomy. The disadvantages are patient and operator radiation exposures or requirement of direct ultrasound transducer contact to the patient's body, which may change the anatomical conditions. Additionally, in both cases it is not possible to obtain detailed imaging of the whole pelvic floor anatomy.

Magnetic Resonance Images (MRI) represents the best possibility of visualization of anatomical details in the pelvic floor including assessment of bladder neck, urethral mobility and genital prolapses in a single non-invasive study. Yet, it does not expose the patient to ionizing radiation.

Objective

To develop a new diagnostic method combining recording of intravesical and intra-abdominal pressures during vesical filling with simultaneous MRI of pelvic anatomical structures involved in the mechanisms of urinary continence.

Cistometry is performed simultaneously to pelvic MRI, while both intravesical and intra-abdominal pressures are monitored. A 7 French gauge urethral catheter with a double lumen allows intravesical pressure detection and controlled bladder filling. The abdominal pressure is registered through a rectal balloon. Valsalva maneuvers are performed at three different occasions with the bladder volumes at 150 ml, 250 ml, and 350 ml. The images are then combined resulting in a single videourodynamic study.

This method makes possible the achievement of detailed images of the pelvic floor while recording intravesical and intra-abdominal pressures during stress and also during progressive increases of vesical volumes. Therefore, it offers an entire new perspective for the understanding of the phenomena involved in stress incontinence in women. The determination of new parameters in the pathophysiology of SUI and in its diagnosis may determine new aspects for the treatment of this medical problem.