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Title (type in CAPITAL LETTERS): MRI BASED 3-D MODELING OF PELVIC STRUCTURES AFTER VAGINAL SACROSPINOUS FIXATION

AIMS OF STUDY

Magnetic resonance imaging (MRI) with its excellent soft tissue differentiation and global system of coordinates offers information that can be reconstructed and modeled in three-dimensions. Our aim was to describe the changes of the pelvic anatomy after vaginal sacrospinous fixation. The project was supported by grant agency of the Czech Ministry of Health, grant No. 4855-3.

METHODS

3 women indicated for sacrospinous fixation were involved. The MRI was performed before and 2 months after the operation.

Siemens Vision 1T unit with pelvic phased array coil was used to obtain T2 axial views from the level of sacrospinous ligament to the distal urethra. Slice thickness was 3 mm. The Rhinoceros® 1.0 NURBS modeling software was used for creation of three-dimensional reconstruction. The following structures were traced: vagina, urethra, urinary bladder, rectum, levator muscles, obturator muscles and the bony pelvis – sacral, coccygeal, ilic and pubic bones.

The sacrospinous suspension was done in Amreich-Richter II modification by an experienced surgeon (62 procedures). The right sacrospinous ligament was used for vaginal vault suspension. There were no peri or post operative complication, and clinical effect in all women was good

Fig.1: Followed structures in 2D MR image

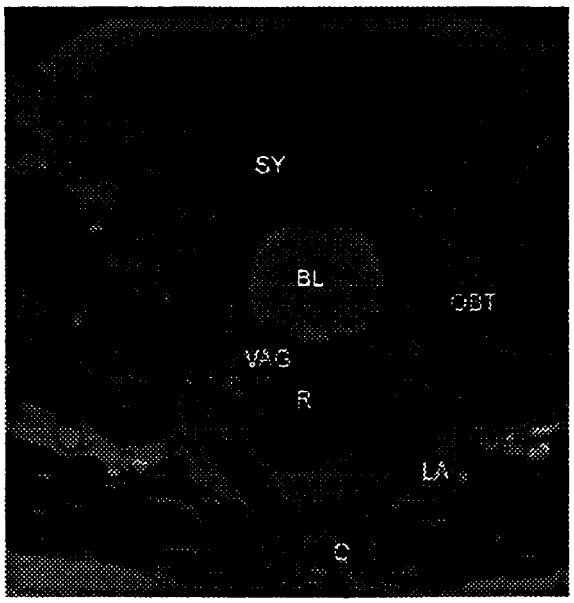
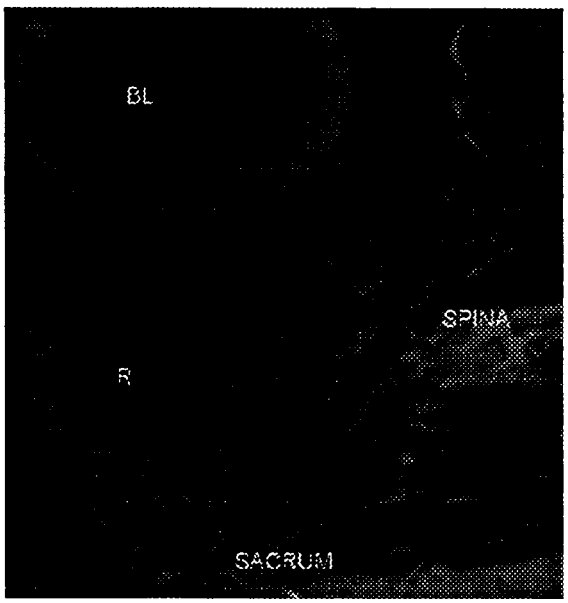


Fig.2: Detail of spina and part of the sacrospinous ligament



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RESULTS AND CONCLUSIONS

Six three-dimensional models were analyzed individually and compared with each other. Among many followed parameters were: the length of the sacrospinous ligament, estimated position of suspension stitches, the shape of the vaginal vault, the length of the vagina and its relative position towards the other pelvic organs, especially rectum, urinary bladder and levator muscles. The computer images provide spectacular pictures for demonstration of pelvic anatomy.

The 3D modeling seems to be good method for evaluation of pelvic anatomy. Prospective non-invasive examination can answer many questions about the effect of different surgical procedures.

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