

Pre- and postoperative dynamic MRI: evaluation of pelvic organ prolapse in symptomatic women

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Objective

Evaluation of dynamic changes of pelvic organ prolapse before and after mesh-repair by MRI.

Method

In this prospective study women with pelvic organ prolapse underwent dynamic 1.5 T MRI before, 4 and 12 weeks after mesh-repair.

The examination protocol included sagittal T2w tse images (TR 3460ms, TE 85ms, matrix 512), dynamic sagittal T2w trufi single-shot images during straining (TR 397ms, TE 1,5ms, matrix 256) and sagittal T2w trufi images at maximum strain (TR 4,3ms, TE 2,15ms, matrix 256).

The dynamic changes of the pelvic organs were measured in accordance to two referential lines: the pubococcygeal-line and the mid-pubic-line. The anatomical landmarks and the compartments were the neck of the bladder (B, anterior compartment, cystocele), the distal portion of cervix/ the vaginal vault (V, middle compartment, uterine prolapse), the pouch of Douglas (P, posterior compartment, enterocele) and the anterior rectal wall (R, posterior compartment, rectocele).

Results

77 women with symptomatic pelvic organ prolapse underwent preoperative dynamic MRI. 62 patients received mesh-repair and underwent postsurgical control after 4 and 12 weeks. Surgical treatment was anterior mesh-repair (43/62), posterior mesh-repair (15/62) and combined anterior/posterior mesh-repair (4/62). Median values (cm) after anterior mesh repair for organ prolapse preoperative and 4 / 12 weeks were 3.48 – 1.14 – 1.29 for B, 2.38 – 1.13 – 0.89 for V, 1.43 – 0.68 – 1.37 for P and 0.98 – 0.61 – 0.82 for R. Median values (cm) after posterior mesh repair for organ prolapse preoperative and 4 / 12 weeks were 1.60 – 1.28 – 1.64 for B, 1.19 – 0.62 – 0.08 for V, 1.33 – 1.45 – 1.30 for P and 1.53 – 0.51 – 1.07 for R.

Median values (cm) after combined anterior/posterior mesh for organ prolapse preoperative and 4 / 12 weeks repair were 4.67 – 1.22 – 1.12 for B, 3.30 – 1.19 – 1.51 for V, 2.64 – (-0.57) – (-0.85) for P and 0.95 – (-0.25) – 0.54 for R.

The median values after anterior mesh repair showed significant changes pre- and postoperative for all compartments ($p < 0,05$). The median values after posterior mesh repair didn't show significant changes pre- and postoperative for all compartments 12 weeks after mesh-repair. The median values after combined anterior/posterior mesh repair showed significant changes pre- and postoperative for anterior and middle compartment ($p < 0,05$), no significant changes for posterior compartment.

Conclusion

Dynamic MRI offers an accurate identification of pelvic structures and extent of organ prolapse and allows to evaluate the success after reconstructive surgery.

In a short term follow-up (12 weeks) best treatment for a cystocele was anterior mesh-repair, for cystocele, uterine prolapse and enterocele was combined mesh-repair. The changes of organ prolapse in patients with posterior mesh-repair were not significant in this short term follow up.