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MR IMAGING OF PELVIC FLOOR OF POSTOPERATIVE PATIENTS WITH ULCERATIVE COLITIS IN THE SITTING POSITION

Hypothesis / aims of study

To determine the differences between pelvic floor anatomy for patient with ulcerative colitis (UC) before and after proctocolectomy with ileal pouch anal anastomosis using open configuration MR imaging in the erect sitting position and fecal incontinence assessed by an incontinence severity scales.

Study design, materials and methods

Four male patients (age range 18-45 years) with UC were prospectively studied before and after surgery (proctocolectomy with ileal pouch anal anastomosis).

Imaging was performed using the Signa SPi 0.5T open system (GE Medical System). Patients were seated on a MR-compatible commode chair and a receive-transmit surface coil in the erect sitting position. Images were acquired using a fast spoiled gradient recalled echo (SPGR) real-time sequence (GE Medical System) in the erect mid-sagittal and coronal planes through the mid-anorectum. After performance of a spoiled gradient-echo localizer series, a T2-weighted sagittal image of the midline stuructures, including the symphysis, urethra, and coccyx, was obtained at rest and during both straining and squeezing maneuvers in both sagittal and coronal planes to assess whole pelvic floor movements. Motion images that were made by paging through MRI were also used for evaluation of pelvic floor movement. (**Figure 1**) Rectal preparation was not used beforehand. We made multiple measurements of pelvic floor support structures using the MR console. Measurements were made of bladder base and anorectal junction descent on straining, in relation to a standard pubococcygeal baseline drawn from the inferior aspect of the pubis to the last coccygeal joint.

Fecal incontinence after pouch operation was functionally assessed using Cleveland Clinic continence score (0-20; 0, perfect continence; 20, complete incontinence) as an incontinence severity scale.

Results

The procedure was well tolerated by all patients with an average total examination time of 30 min per patients. In the erect sitting position, fine-quality images were obtained for all 4 patients. The pelvic floor structures were well seen, including the levator ani, and urethrae. Elongation of the levator sling and separation of the obturator muscles were found in the erect sitting position. All MR examinations were considered almost normal during both straining and squeezing maneuvers.

The postoperative Cleveland Clinic continence score was slightly increased (range 2-6) compared with a preoperative score (range: 0-3).

Interpretation of results

MRI has two distinct advantages over conventional fluoroscopy. Firstly, there is no ionizing radiation to the body with MRI as there is with the fluoroscopy used in conventional method. And it gives excellent soft tissue resolution of the pelvic floor compartments and pelvic organs. The open configuration of Signa SPi Interventional MR system allows imaging even in the erect sitting position. So this open MR system is ideal for assessing movement disorders of the pelvic floor in a really physiological manner with the advantage of fine imaging of all the pelvic soft tissues. We have already applied the open MRI system in assessment in patients with rectal prolapse and uterine prolapse.

Troublesome fecal incontinence especially nocturnal soiling is an important problem associated with surgery for UC. We tried to preserve pelvic structures other than colon and rectum in surgery for UC. In this study, the pelvic structures were morphologically well preserved even in the erect sitting position assessed by open MR. Further observations will be necessary in other more severe incontinent postoperative patients.

Concluding message

We examined pelvic floor anatomy for postoperative patients with ulcerative colitis using open MR imaging and functionally assessed fecal incontinence using an incontinence severity score. Obvious abnormality was not morphologically observed in the postoperative UC patients who had fairly good continence.

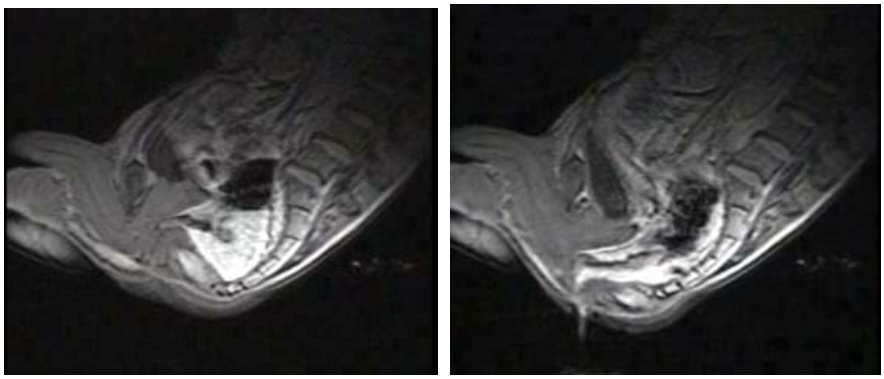

Figure 1. Sagittal images during both straining and squeezing maneuvers.

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