Entero-colpo-cysto-defecography vs supine entero-MRI: which one is the best tool in the differentiation of enteroceles, elytroceles and edroceles?

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**Purpose**

Pelvic floor disorders represent a significant cause of morbidity associated with a severe reduction of quality of life. It represents a very common clinical problem that afflicts women three to seven times more often than men\(^1\)\(^,\)\(^2\). Even if the enterocolpo-cysto-defecography (ECCD) is considered the gold standard for patients with enterocele, the role of MR is discussed\(^3\).

The purposes of this study were to assess the diagnostic tools available to define the imaging strategy in case of pelvic floor dynamic dysfunctions and to investigate their abilities in the diagnosis of enterocele, elyroceles and edroceles.

**Methods and Materials**

From 2008 to 2011, 2711 patients with symptoms related to pelvic floor dynamic dysfunctions were enrolled in a retrospective study. Male patients, that represented about 10% of cases, were excluded from the study. The mean age of women in the study was of 57.3. Patients were divided into three groups: nulliparous, multiparous and women with prior hysterectomy. Referral symptoms varied from constipation and obstructed defecation to incontinence. After anamnesis and clinical examination enterocolpo-cysto-defecography (ECCD) was performed in all patients, supine entero-MRI (SE-MRI) in patients with positive ECCD findings. Both examinations were analyzed by two expertise investigators blinded against either the clinical data and the result of the other imaging technique. Chi-square analyses was used to evaluate the association between each risk factor and defecographic abnormalities.

**Imaging technique**

**Entero-colpo-cysto-defecography**

No bowel preparation was used for ECCD. In order to obtain small-bowel contrast, 1 h before the examination, 200 mL of barium sulfate 60% p/v was administered to each patient, 400 cc of iodine contrast medium (Ultravist, Bayer Schering Pharma, Berlin, Germany) was injected through urinary catheterization until the patient felt a sensation of fullness. Afterwards, the patient was placed in left lateral recumbent position, in order to inject 200 cc of barium paste (Prontobario Esofago 113%, barium paste, Bracco, Milan, Italy) into the rectum. During injector removal, the anal canal was contrasted, too. The vagina was contrasted with 25 ml of barium paste. Then, the fluoroscopic table was tilted upright 90°, and the patient was placed seated
on a radiolucent commode. An anteroposterior radiograph was taken with the patient at rest; after that, five lateral radiographs were taken at rest, during the following phases: abdominal straining, pushing, evacuating, and at rest after evacuation.

Dynamic MR defecography

SE-MRI was performed after ECCD in the same day. All SE-MRI imaging studies were performed on a 1.5-T closed magnet (Magnetom Symphony, Siemens, Germany). All patients were imaged supine (recumbent) with a body-phased-array receiver coil.

To ensure an adequate bladder filling, all patients were invited to drink 500-700 ml of water 10-15 min before the examination. The rectum and the vagina were filled with 200 mL and about 25-30 mL, respectively, with ultrasonographic gel. After an initial localizer in three different planes, the study protocol included the following MR imaging sequences: TSE T2-W axial (matrix, 181×256; slices, 25; thickness, 5 mm; TR/TE, 6,430/114; flip angle, 180°), TSE T1-W sagittal (matrix, 181×256; slices, 25; thickness, 5 mm; TR/TE, 846/11; flip angle, 150°), and functional dynamic sequences TRUFISP T2-W sagittal, during straining, pushing, and evacuation (matrix, 181×256; slices, 1; thickness, 8 mm; TR/TE, 3.75/1.6; flip angle, 80°). The SE-MRI images obtained were assembled in cineview in postprocessing. The examination time took about 30 min.

Results

According with other authors (4) our results with chi-square analyses show that women with multiparity or a prior hysterectomy are more likely to reveal enterocele and pelvic floor descent. On 2439 ECCD performed, enterocele (fig. 1, fig.2) was diagnosed in 241 patients and 7 patients showed elytroceles and 9 endroceles. Patients with positive ECCD findings underwent a SE-MRI, too. Both examination were analyzed by two expertise investigators blinded against the clinical data and against the results of the other imaging technique. Our results show that ECCD has a higher sensitivity in detecting of enterocele and endrocele. In fact 230 cases of enterocele (fig. 3) and 7 of endrocele have been proved with SE-MRI. In addition elytrocele can be visualized only with ECCD.

Conclusion

CONCLUSION

This study showed a moderate agreement between ECCD and SE-MRI. The diagnostic efficacy of ECCD is higher than that of SE-MRI in the detection of enterocele and
edrocele. These results emphasize the role of ECCD in the diagnosis of pelvic floor disorders, in accordance with other authors (5,6). Furthermore elyrocele can be visualized only with ECCD considering the position of patient during SE-MR examination.

In patients planned for surgery, considering the frequent association of defecatory disorders with pelvic organ prolapse, MR could be more useful to clarify the intra-pelvic interaction of multiple organ prolapse and to better define the pelvic anatomy and functioning (1).

References


Images for this section:
Fig. 1: Defeco-rx examination. Lateral view of the pelvis during the phase of evacuation. Presence of enterocele and rectocele of 30,53 mm.
Fig. 2: Defeco-rx examination. Lateral view of the pelvis during the phase of pushing. The exam shows enterocele and rectocele. The depth of rectocele is measured from its anterior aspect (horizontal dotted line) to the vertical from the anterior wall of the anal canal (vertical dotted line).
Fig. 3: 1.5 T MR Defecography using a body-phased-array receiver coil (Siemens) with a closed-configuration (Siemens) sequences in supine position in different conditions: patient at rest, straining, pushing, and evacuation. The exam shows rectocele, enterocele, omentocele