

COMPARISON OF ANATOMICAL FINDINGS IN INTEGRATED TOTAL PELVIC FLOOR ULTRASOUND WITH DEFAECATION MRI IN PELVIC FLOOR DEFAECATORY DYSFUNCTION

Hypothesis / aims of study

Pelvic floor defaecatory dysfunction may be investigated with defaecatory imaging such as defaecation barium proctography or defaecation MRI. Defaecation MRI has the advantages of avoiding radiation and providing multicompartmental assessment but is often inaccessible. Defaecatory MRI has some limitations as it may underdiagnose certain anatomical abnormalities compared to barium proctography (for example size of rectocele, presence of intussusception). There is also concern that barium proctography overcalls pathology and consequently there is no absolute gold standard investigation.

Integrated total pelvic floor ultrasound (transperineal, transvaginal, endoanal) may provide a cheap, portable alternative. Previous studies compare total pelvic floor ultrasound with proctography but no one has drawn comparison between pelvic floor ultrasound and defaecation MRI.

This study is the first to compare diagnosis of anatomical abnormalities using total pelvic floor ultrasound with defaecatory MRI.

Study design, materials and methods

The dynamic images from 68 women (mean age 60, mean time between tests 4 months) who had undergone total pelvic floor ultrasound (transvaginal BK 8838, transperineal BK 8802) and defaecation MRI for pelvic floor defaecatory dysfunction between 2009 and 2015 were blindly reviewed. The following were recorded; rectocele (≥ 1 cm on ultrasound, ≥ 2 cm on MRI) intussusception (\geq grade III), enterocele (grade 1 to 3) and cystocele (grade 1 to 3).

Results

A comparison of integrated total pelvic floor ultrasound with defaecatory MRI;

	Number seen on MRI	Number seen on ultrasound	Number seen on both	Positive Predictive Value of ultrasound	Negative Predictive Value of ultrasound	Agreement between both (kappa)
Rectocele	26	49	21	47%	78%	0.12 (poor)
Intussusception	24	19	15	79%	80%	0.53 (moderate)
Enterocele	23	24	15	63%	82%	0.45 (moderate)
Cystocele	49	35	32	91%	48%	0.40 (fair)

On MRI mean size of rectocele was 2.9cm (median 2.8cm, range 2 – 5). Out of the 49 on total pelvic floor ultrasound, 45 were seen on both transperineal and transvaginal ultrasound (mean size 2.2cm, median 2, range 1 - 4) and 4 were only seen on posterior transvaginal. There was weak positive correlation for rectocele size on ultrasound compared to MRI (correlation R coefficient 0.4). There was fair agreement between measurements (intra class correlation coefficient 0.41) and the mean difference was 0.01cm. However, 95% of the differences in rectocele size between ultrasound and MRI lay between -2.8 to 2.78 (95% limits of agreement). The difference for an individual would be between -2.8 and 2.78 cm.

On MRI there were 22 cases without any intussusception, 6 grade I, 15 grade II, 9 grade III, 4 grade IV and 12 grade V. On ultrasound there were 18 without any, 14 grade I, 17 grade II, 8 grade III, 2 grade IV and 9 grade V. There was a positive correlation between grading on ultrasound and grading on defaecation MRI (Spearman's Rho 0.43, two tailed $p < 0.01$).

There were 25 cases of incomplete evacuation on MRI. When considering those cases with incomplete evacuation alone, there was no correlation between grading on ultrasound and MRI (Spearman's Rho 0.018, two tailed $p = 0.9$). There was a positive correlation between grading on ultrasound and MRI in those without incomplete evacuation (Spearman's Rho 0.47, two tailed $p < 0.01$).

The 23 enteroceles seen on MRI were; 7 grade I, 6 grade II and 10 grade III. Out of the 24 seen on ultrasound, 5 were seen on transvaginal ultrasound only, 8 on transperineal ultrasound only and 11 were seen on both. The 19 visualised on transperineal scanning were; 3 grade I, 4 grade II and 12 grade III. There was a positive correlation between grading on ultrasound and MRI (Spearman's Rho 0.52, two tailed $p < 0.01$).

The 49 cystoceles visualised on MRI were graded as 24 grade I, 22 grade II and 3 grade III. The 35 cystoceles present on transperineal ultrasound were graded as 13 grade I, 10 grade II and 12 grade III. There was a positive correlation between grading on total pelvic floor ultrasound and grading on defaecatory MRI (Spearman's Rho 0.48, two tailed $p < 0.01$).

Interpretation of results

There are differences in the pathology identified on total pelvic floor ultrasound and defaecatory MRI. Total pelvic floor ultrasound overcalls rectocele and under calls cystocele compared to MRI. If total pelvic floor ultrasound is normal, then rectocele, intussusception and enterocele are unlikely to be present on defaecatory MRI. A cystocele, and to a lesser extent intussusception, seen on ultrasound are likely to be seen on MRI. Measurements of rectocele are not comparable between the two imaging modalities.

Concluding message

Though there are differences in the pathology identified on integrated total pelvic floor ultrasound and defaecatory MRI, total pelvic floor ultrasound can be useful for the initial assessment of women with pelvic floor defaecatory dysfunction. If no pathology is seen during a screening ultrasound then defaecatory MRI is unlikely to be of further benefit.

Disclosures

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