

## DYNAMIC TRANSPERINEAL ULTRASOUND IS COMPARABLE TO MR PROCTOGRAPHY FOR ASSESSING STRUCTURAL ABNORMALITIES IN PATIENTS WITH RECTOCELE

### Hypothesis / aims of study

To evaluate the inter-observer reliability of dynamic transperineal ultrasound in diagnosing rectoceles and its effectiveness in comparison to MR proctography and clinical examination.

### Background

MR proctography is frequently used as the gold standard for rectocele diagnosis and pelvic floor investigation due to its clear delineation of compartments and lack of radiation. However drawbacks of MR proctography include the high cost, lack of availability and discomfort to use. We wanted to see if transperineal ultrasound could describe similar results in the diagnosis of rectocele, as a cheaper, more portable and far more patient friendly option.

### Study design, materials and methods

An observational cohort study recruited 53 women awaiting surgery for symptomatic rectocele, from a waiting list of a single surgeon between September 2008 and February 2010. The patients had an average age of 59 (range 34-78), with an average parity of 2.6 (range 0-5). They all underwent a standardised interview, POP-Q examination (1), transperineal ultrasound and MR proctography. The ultrasound was performed supine at rest, on cough, squeeze and on straining by one of the two investigators. A BK medical Pro Focus ultrasound machine with an 8802 transperineal probe was used. The images were interpreted by two blinded clinicians and compared for inter-observer reliability. Where there were differences between interpretations, the clinicians reviewed the images together, and a consensus opinion was reached. The MRI was a GE Excite 1.5 machine using the standardized protocol with ultrasound gel placed in the rectum. The rectocele size was measured as has been previously described (2) by a clinician blinded to the ultrasound results. A rectocele was diagnosed on MR proctography where the degree of displacement of the anterior rectal wall was greater than 2.5cm. Each participant gave their written consent, and no external funding was used for this study.

### Results

Cohen's Kappa was used to assess correlations. A significant correlation was found between the diagnosis of rectocele on ultrasound and MR. There was a moderate correlation of enterocele diagnosis, but no significant correlation for cystocele. These results are displayed in table 1.

Table 1. Inter-modality correlation of diagnosis of prolapse

	Inter-modality correlation		
	Kappa	p	Interpretation
Cystocele	0.175	0.178	Slight (not significant)
Rectocele (>2.5cm on MR)	0.366	0.006	Fair
Rectocele (>3cm on MR)	0.416	0.001	Moderate
Enterocele	0.542	<0.001	Moderate

Inter-observer reliability between the two clinicians interpreting the ultrasound images showed moderate reliability for diagnosis of rectocele, as demonstrated in table 2.

Table 2. Inter-observer reliability of transperineal ultrasound image interpretation.

	Inter-rater reliability		
	Kappa	p	Interpretation
Diagnosis of cystocele	0.739	<0.001	Substantial
Diagnosis of rectocele	0.494	<0.001	Moderate
Diagnosis of enterocele	0.338	<0.005	Fair

Diagnosis of rectocele was also compared with clinical findings on examination using the POP-Q scale. Significant correlations were found for both imaging modalities when compared to the measurement of Pb (Most distal position of upper posterior vaginal wall on straining (1)). These results are shown in table 3.

Table 3. Correlation of rectocele diagnosis with examination finding (Pb)

Imaging modality compared with Pb value	Pearson's correlation	p
MR proctography	0.453	<0.005
Transperineal ultrasound	0.300	<0.05

### Interpretation of results

Complete pelvic floor ultrasound is a new technique for assessing pelvic floor structure and function. In this study we have focussed on transperineal ultrasound for the diagnosis of rectoceles.

Transperineal ultrasound was reliable and correlated significantly with MR proctogram when diagnosing rectoceles and enteroceles. Interpretation of transperineal ultrasound images is significantly reproducible. We also showed that our findings both on MR proctography and transperineal ultrasound directly correlate with clinical findings.

#### Concluding message

Transperineal ultrasound has an increasing role in the urogynaecological and pelvic floor outpatient setting. This study shows that transperineal ultrasound results are comparable to the more expensive and invasive MR proctogram, and correlate with clinical findings. It also found that the interpretation of the images is reproducible.

#### References

1. Bump R, Mattiasson A, Bø K, Brubaker L, DeLancey J, Klarskov P, Shull B, Smith A. The standardization of terminology of female pelvic organ prolapse and pelvic floor dysfunction. American Journal of Obstetrics and Gynecology 1996;175(1):10-17
2. Kelvin FM, Maglinte DDT, Hornback JA, Benson JT. Pelvic Prolapse: Assessment with Evacuation Proctography (Defecography). Radiology 1992; 184(2):547-51

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<b><i>Is this a clinical trial?</i></b>	<b>No</b>
<b><i>What were the subjects in the study?</i></b>	<b>HUMAN</b>
<b><i>Was this study approved by an ethics committee?</i></b>	<b>Yes</b>
<b><i>Specify Name of Ethics Committee</i></b>	<b>Dorset Research Ethics Committee</b>
<b><i>Was the Declaration of Helsinki followed?</i></b>	<b>Yes</b>
<b><i>Was informed consent obtained from the patients?</i></b>	<b>Yes</b>