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Modified MR defecography without rectal filling in obstructed defecation syndrome: Initial experience

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ABSTRACT

Objective: To evaluate the role of dynamic MR defecography before rectal filling in detecting occult anterior compartment prolapse in patients with obstructed defecation.
Methods: This prospective study was approved by the ethics committee. Seventy six females with obstructed defecation underwent dynamic MR defecography before and after rectal filling. Pre-rectal and post-rectal filling sequences were interpreted separately by two radiologists on two different settings with a time interval of one week. Statistical analysis was performed using Wilcoxon's-matched-pairs signed rank test and *t*-test for matched pairs; differences were considered statistically significant at $p < 0.05$.
Results: Fifty eight females of 76 showed additional anterior compartment derangement, with 27 diagnosed only in pre-rectal filling sequence (27/58 = 46.55%). Following rectal filling detected cystocele in 27 patients was not identified in 14 cases and downgraded in 13. Similarly, detected uterine prolapse in 17 patients was not visualized in 14 patients and downgraded in 3. Furthermore, rectocele was identified in 7 cases before gel enema, additional 32 detected after rectal filling. Significant statistical difference in the detection of both cystocele ($p = 0.0001$) and uterine prolapse ($p = 0.0013$) was identified in the non-filled sequence.
Conclusion: Pelvic floor imaging before rectal filling is significantly better for detection of anterior compartment prolapse.

1. Introduction

The term "obstructed defecation" encompasses all pelvic floor abnormalities responsible for inadequate rectal evacuation and is found in approximately half of severely constipated patients [1]. The causes of obstructed defecation are multiple. Diagnostic procedures are required for patients who fail to respond to the conventional management of simple dietary or behavioural advice [1].

Dynamic magnetic resonance (MR) imaging or MR defecography has been introduced as a diagnostic tool to assess pelvic organ prolapse (POP) since the 1990s aiding the surgeon in pre-operative planning and selecting the surgical procedure of choice specifically in case of multi-compartment problem or posterior vaginal wall prolapse [2,3]. A need for re-surgery might be attributed to faulty choice of management technique or more often as a consequence of prolapse in another compartment. About 30% of females, who underwent directed surgery for posterior compartment dysfunction did undergo re-surgery [3,4] still the symptoms recurring in up to 30% of treated patients often involved anterior or urogenital compartments [4–6].

This raises the question whether there is associated abnormality in the anterior compartment which might be obscured by the leading posterior compartment pathology at the prior time of examination or is it a newly developed one.

The purpose of this study was to evaluate whether the inclusion of additional sequences without rectal filling will unveil dysfunc-

Abbreviations: POP, pelvic organ prolapse; CTT, colon transient time; ARM, ano-rectal manometry; OD, obstructed defecation; ODS-S, obstructed defecation syndrome score; ARAD, ano-rectal angle descent.

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Table 1
The clinical and imaging distribution of the 76 examined female patients.

Clinical complaint			Patients' pool and distribution			Total patient's no.	%
Obstructed defecation (ODS—S)	12–14		14			**14**	18.42
	15–17		34			**34**	44.74
	18–20		28			**28**	36.84
Anterior compartmental	Urinary symptoms		49			**49**	64.47
	Clinically felt bulge		36			**36**	47.37
MRI findings	Rectal filling	According to detection	according to Degree of descent				
Ano-rectal junction descent	Before		Mild	Moderate	Severe		
		Without discrepancy	21	19	9	**76**	100
		With discrepancy	1	16	10		
	After		Mild	Moderate	Severe		
		Without discrepancy	21	19	9	**76**	100
		With discrepancy	1	16	10		
Rectocele	Before		Mild	Moderate	Severe		
		Without discrepancy	10	–	–	**13**	17.11
		With discrepancy	3	–	–		
	After		Mild	Moderate	Severe		
		Without discrepancy	7	11	–	**39**	51.32
		With discrepancy	17	4	–		
intra-rectal intussusception	Before		Mild	Moderate	Severe		
		Without discrepancy	–	–	–	–	–
		With discrepancy	–	–	–		
	After		Mild	Moderate	Severe		
		Without discrepancy	7	–	–	**9**	11.84
		With discrepancy	2	–	–		
Cystocele	Before		Mild	Moderate	Severe		
		Without discrepancy	18	10	3	**58**	76.32
		With discrepancy	19	7	1		
	After		Mild	Moderate	Severe		
		Without discrepancy	18	10	3	**58**	76.32
		With discrepancy	12	1	0		
Uterine Prolapse	Before		Mild	Moderate	Severe		
		Without discrepancy	9	8	2	**36**	47.37
		With discrepancy	13	4	0		
	After		Mild	Moderate	Severe		
		Without discrepancy	9	8	2	**36**	47.37
		With discrepancy	3	–	–		
Peritoneocele	Before		Mild	Moderate	Severe		
		Without discrepancy	4	3	–	**11**	14.47
		With discrepancy	3	1	–		
	After		Mild	Moderate	Severe		
		Without discrepancy	–	–	–	–	–
		With discrepancy	–	–	–		
Enterocele	Before		Mild	Moderate	Severe		
		Without discrepancy	–	–	–	–	–
		With discrepancy	–	–	–		
	After		Mild	Moderate	Severe		
		Without discrepancy	–	–	–	–	–
		With discrepancy	–	–	–		

tion of the anterior compartment in patients with obstructed defecation and its impact on treatment plan, since the assumed anterior compartment prolapse might go unnoticed on the commonly used MR defecography protocol, where rectal filling by gel is used for better lumen delineation to detect any rectal intussusception or anterior rectocele.

2. Materials and methods

The current study was approved by the ethical committee of the university hospital and the study protocol review committee of our institute. A written informed consent was obtained from all patients included in the current study.

2.1. Patient's population

Our study was designed in a prospective manner, over the course of one year, starting February 2013 till January 2014, during which 76 females complaining of obstructed defecation, who underwent dynamic MRI of the pelvic floor, were subjected to the technique modification. Consequently after cases review, patients with additional anterior compartment derangement (n = 58) were enrolled in the study and subjected to further statistical analysis later on. Post-management follow-up for at least an additional year was performed to evaluate the treatment outcome.

2.2. Clinical assessment

All patients underwent needed clinical evaluation, proctoscopy, rectosigmoidoscopy, colon transit time (CTT), and anorectal manometry (ARM) warranting the decision for MR defecography.