

# Imaging in Pelvic Organ Prolapse

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## Disclosures:

There are no potential conflicts of interest, relevant relationships or financial interests to report regarding this presentation

## Imaging in pelvic organ prolapse

Is it necessary?

Does it help?

“Normal” women have abnormalities

“It is not as good as clinical assessment”

## Imaging in pelvic organ prolapse

### How I do it:

- Fluoroscopic proctography
- Dynamic pelvic floor MRI

(Translabial/perineal ultrasound)

Grading systems

But which is best: MRI vs x-ray (vs US)

Imaging in the context of symptoms & signs

## What prompts imaging?

### "Obstructed defaecation syndrome" = ODS

- Inability to evacuate contents from rectum despite excessive straining

### Symptoms of rectocele

- perineal pressure / vaginal bulge / digitation / dyspareunia / incomplete evacuation

### Symptoms of intussusception or prolapse

- "something" coming out / fullness in back passage / mucus discharge

### (Chronic constipation)

## Fluoroscopic proctography



## Recipes

All female patients have a barium drink 45 mins before scan

- 200 ml water
- 100 ml Baritop

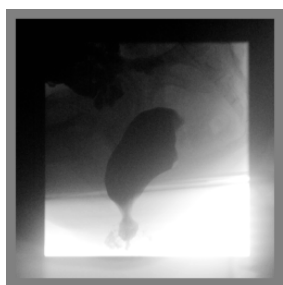
### Barium paste

- 10 tablespoons ReedyBrek (porridge)
- 3 tablespoons EZ-HD (powdered barium)
- 200 ml water
- Inserted using 2 x 50 ml bladder syringes

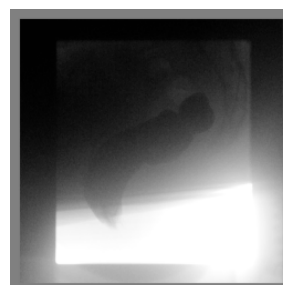
## FP: baseline image



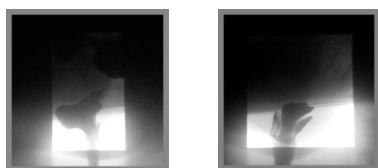
FP: normal



FP: rectocoele

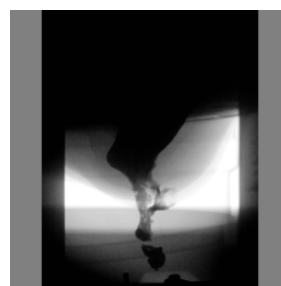


Intussusception



- Rectal mucosal thickening
- Rectorectal mucosal
- Rectoanal mucosal
- Rectoanal full thickness
- External full thickness

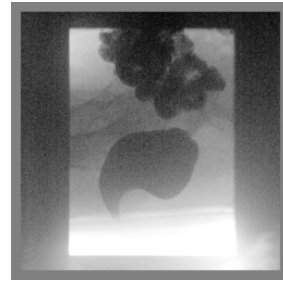
FP: prolapse



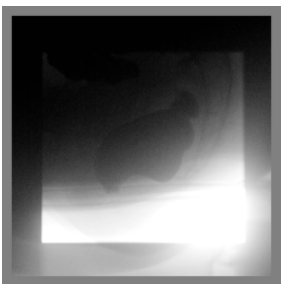
FP: prolapse and enterocele



FP: typical triad



FP: anismus



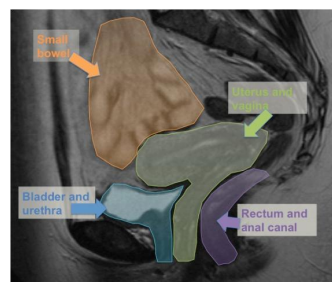
FP: the full works

Dynamic colpo-  
cysto-entero-  
proctography

## Dynamic pelvic floor MRI



## Dynamic pelvic floor MRI



## Dynamic pelvic floor MRI: sequences

	Slices	FOV	Thickness	TR	TE	Time
Planning						~1:00
T2 axial	38	280 mm	4 mm	3390	106	3:15
T2 coronal	38	280 mm	4 mm	3390	106	3:35
TRUFISP sagittal	1x200	280 mm	10 mm	3.49	1.44	1:27
Insert gel						~2:00
Planning						~1:00
TRUFISP sagittal	1x200	280 mm	10 mm	3.49	1.44	1:27
						~15:00

## Setting the scene

Currently developing tools to measure effect of:

- Visual information delivered immediately before the examination
- Review of images with patient immediately after the examination

Hypothesis:

- Study "quality" improved if patient understands rationale
- Patient satisfaction improved if symptoms can be related to own scan findings

## MRI: structural information

“Static” sequences provide information about pelvic supporting structures

- Fascia
- Muscles

Evolving role in assessment of stress urinary incontinence

- Cystocele
- Hypermobility urethra

Currently unclear as to importance of identifying endopelvic fascial defects

## Endopelvic fascia

Level I – suspend

- Parametrium
- Paracolpium

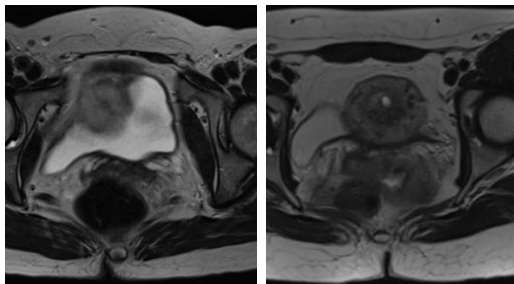
Level II – attach

- Arcus tendineus fascia of pelvic sidewall

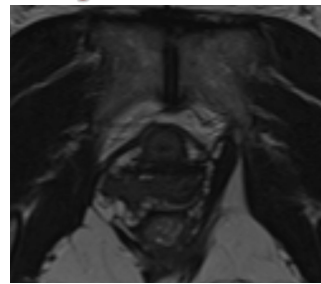
Level III – fusion

- Levator ani
- Perineal body
- Urethra

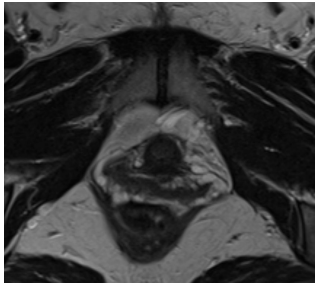
## Static images: saddlebag bladder



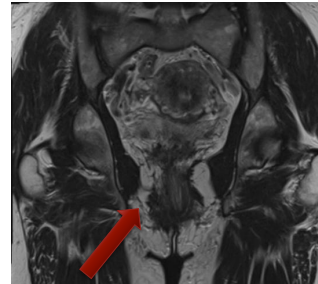
## Static images: loss of normal W shape of vagina



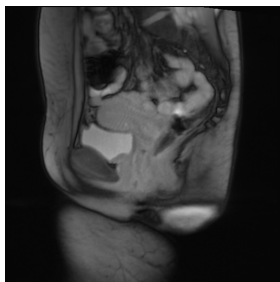
Static images: drooping moustache



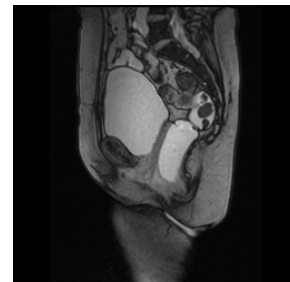
Static images: levator defects



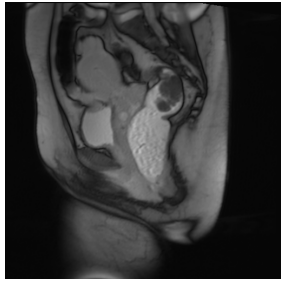
Dynamic images: practice



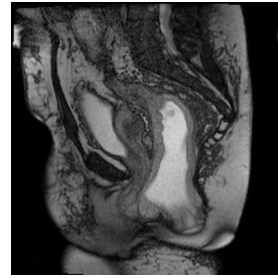
Dynamic images: evacuation



Dynamic images: evacuation



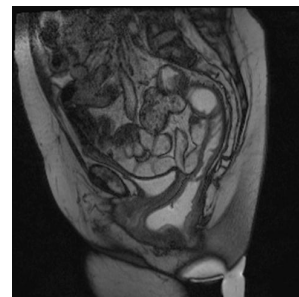
MRI: intussusception



MRI: recto-rectal intussusception

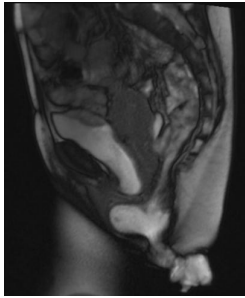


MRI: rectocele

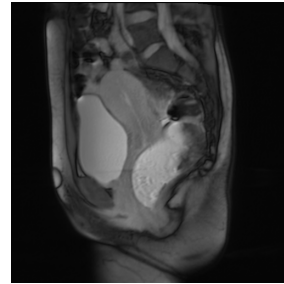




### MRI: cysto- and rectocele



### MRI: anismus - or situational?



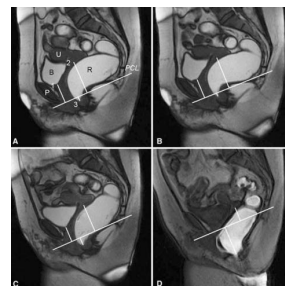
### How do we describe POP?

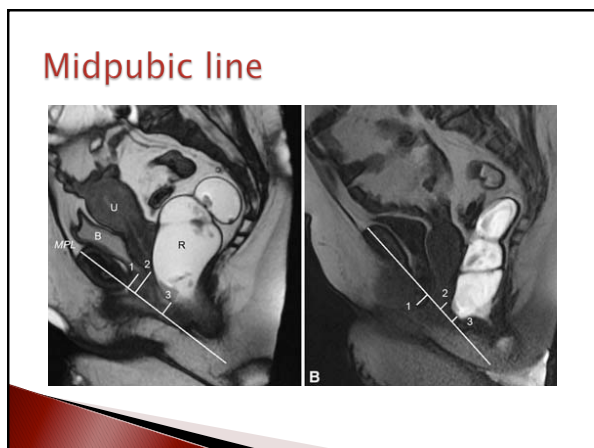
Qualitative (“eye-ball”)

Quantitative

- PCL
- MPL
- HMO
- POP Q

### Pubococcygeal line - rule of 3s





### How I report the studies

**MRI Defaecating proctogram:**

**Structural findings:**  
 Intrauterine contraceptive device noted. 13 mm simple endocervical cyst. Otherwise normal appearances of the pelvic viscera. Symmetric but thinned levator musculature bilaterally. No pelvic lymphadenopathy.

**Dynamic findings:**  
 Measurements obtained at maximal straining using the PCL system are as follows:  
*Bladder neck:* 35 mm below line (moderate cystocele)  
*Vagina:* 15 millimetres below line (mild uterovaginal prolapse)  
*Anorectal junction:* 70 mm below line (severe anorectal junction descent)  
*Rectocele:* 32 mm in depth (moderate anterior rectocele)

Tricompartmental pelvic organ prolapse is demonstrated, with marked global pelvic floor descent. There is no significant rectoanal mucosal intussusception and no external prolapse with no obstruction to the expulsion of the gel. There is no enterocele.

**Comment:**  
 Severe pelvic floor descent with tricompartmental pelvic organ prolapse.  
 No rectoanal mucosal intussusception or external prolapse.  
 No signs of anismus with no obstruction to expulsion of the gel.

### POP staging: how good?

Good interobserver agreement for different lines

Weak association between imaging grade and symptoms/clinical findings

- Partly due to difference in anatomic and imaging landmarks
- Greater degree of prolapse with evacuation?

Lakeman et al, Int Urogynecol J, 2012

### So which is best: MRI, xray or US?

	MRI	Fluoroscopy	Ultrasound
No radiation	✓		✓
Cost			✓✓
Sitting		✓✓	
Non-invasive	✓✓	*	✓
Multi-compartment	✓✓	*	✓
Privacy	✓	✓	
Reproducible	✓	✓	?
Accurate	?	?	?

### How important is position?

One study of sitting vs lying MRI

Lying down option missed intussusceptions

BUT no evacuation

Bertschinger et al, Radiology, 2002

### How important is evacuation?

Important – aids in detection of

- Cystocele
- Vaginal prolapse
- Rectocele
- Intussusceptions and full thickness prolapses
- Enterocoeles

Flusberg et al, AJR, 2011

Foti et al, Radiol Med, 2013

### Evacuation: sitting FP vs lying MRI

Accepted that MR shows more than clinical exam reveals – ? related to active evacuation unmasking prolapse

45 pt study of sitting FP vs lying MR:

- Rectal emptying: 29% FP vs 2% MRI
- Anismus: 29% FP vs 43% MRI
- MRI missed 31% of rectal intussusception seen on FP (? related to not emptying)

What if the MRI could be made better?

Pilkington et al, Colorectal Dis, 2012

Maglante et al, Abdom Imaging, 2013

## Asymptomatic individuals

Both MRI and fluoroscopy find "pathology" in asymptomatic individuals

Moderate or severe rectal descent in 30%

Anterior and middle compartments better

Study without evacuation – ? Even more false positives with evacuation

Rosenkrantz, Clin Rad, 2014

## Take a pragmatic approach

### MRI

- If available!
- If developing multidisciplinary team
- If free to supervise or train radiographers (rad techs)
- If have time to spend with patients before test

### Fluoroscopy

- If high volume centre, easier to justify fluoro use
- If clinical assessment finds "obstructed defaecation" – can limit to posterior compartment

## The future of pelvic floor imaging

More studies comparing MRI and fluoroscopy – not enough data at present

Studies evaluating the importance of "unexpected" findings – e.g. intussusception when only rectocele expected

Post op outcomes – if the posterior wall is repaired but the rectoanal intussusception is left alone, do symptoms of OD get better or worse?

Global pelvic floor assessment and MDT referral for imaging

Role extension / radiographer led imaging service

## Thank you

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