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Defecograms

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Outline

- Patient Presentation
- Menu of Tests
- Anatomy
- Defecogram (Overview, Patient Prep, Procedure)
- Reading a Defecogram
- Normal Defecogram Video
- Defecogram with Rectocele
- Our Patient..Sigmoidocele
- Differential Diagnoses
- Drawbacks with Defecography
- Other Findings with Defecography
- MR Defecography
- Our Patient..Outcome
- Summary



Index Case..Radiology Requisition

- F w/history of Prader-Willi* and rectal prolapse.
- s/p rectoplexy ~1mo
- Please eval for persistent rectal or pelvic floor prolapse

*Prader-Willi associated with obesity, reduced muscle tone, lower IQ, hypogonadism



Menu of Tests

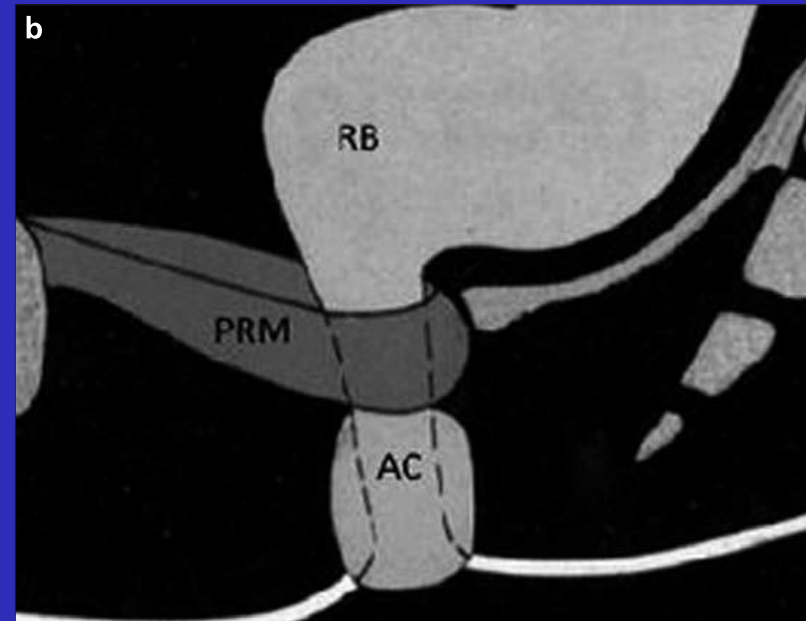
- Structure Information
 - Double Contrast Barium Enema
 - Endocavitary US
 - CT
- Function Information
 - **Fluoroscopic defecography**
 - Anal manometry
 - Electromyography
 - MR defecography



Anatomy

Schematic representation
of the puborectal sling,
rectal bulb (RB), pubo-
rectal muscle (PRM),
and anal canal (AC).

-Women have an anterior
vaginal vault not shown
in image





Defecogram Overview

- Indications
 - Constipation
 - Need for vaginal splinting
 - Incomplete evacuation
 - Incontinence
 - With or without rectal bleeding
 - Mucous discharge
 - Perineal pain or discomfort
- Preferred Study for:
 - Intussusception
 - Prolapse
 - Rectocele
 - Enteroceles
 - Sigmoidoceles
 - Descending perineum syndrome
 - Dyskinetic puborectalis muscle syndrome



Defecogram Patient Preparation

- Night Before
 - Bowel Prep
- Prior to Imaging
 - Oral Barium
 - Patient Counseling
- Patient Placed in Left Lateral Decubitus
 - Barium paste injected into rectum (also vagina if female)



Syringe filled with barium paste attached to rectal probe



Defecogram Procedure

- Patient placed upright on radio-transparent commode
- Told to evacuate bowels
- Fluoroscopic images taken of evacuation



Commode in front of fluoroscopy sensor for defecographic imaging

Image from Faccioli, N., A. Comai, et al. (2010). "Defecography: a practical approach." Diagn Interv Radiol 16(3): 209-216.



Reading a Defecogram

- Quality Control
 - Complete evacuation of paste
 - Appropriate timing of contraction
- Static
 - Anal Canal
 - Vaginal Vault
 - Sigmoid Colon
- Dynamic
 - Compare pre-, peri-, and post-evacuation
 - Motion of structures
 - Physiologic motion
 - Abnormal motion
 - Rectocele, sigmoidocele, enterocele
 - Mechanical obstruction
 - Dysmotility
 - Intussusception



Normal Defecogram Video

Companion Patient 1 Fluoroscopic Image
Sequence

- Can show entire straining sequence
- Used to diagnose functional defects



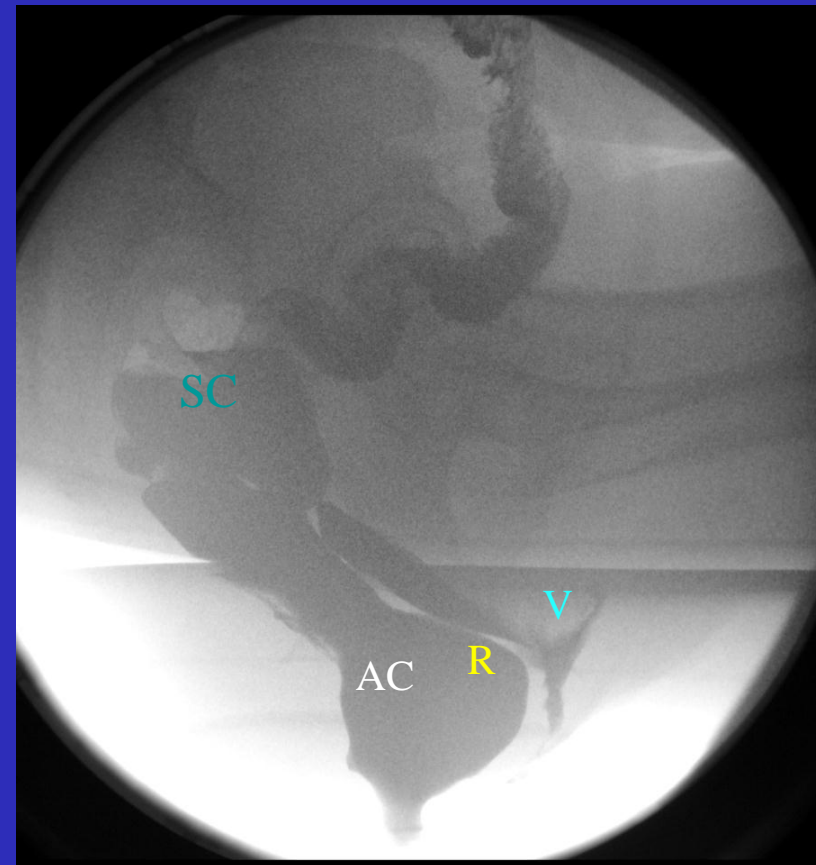


Defecogram with Rectocele

Spot film taken during fluoroscopic evaluation

Companion Patient 2

- Sigmoid Colon (SC)
- Anal Canal (AC)
- Vaginal Vault (V)
- Rectocele (R)





Our Patient..Sigmoidocele

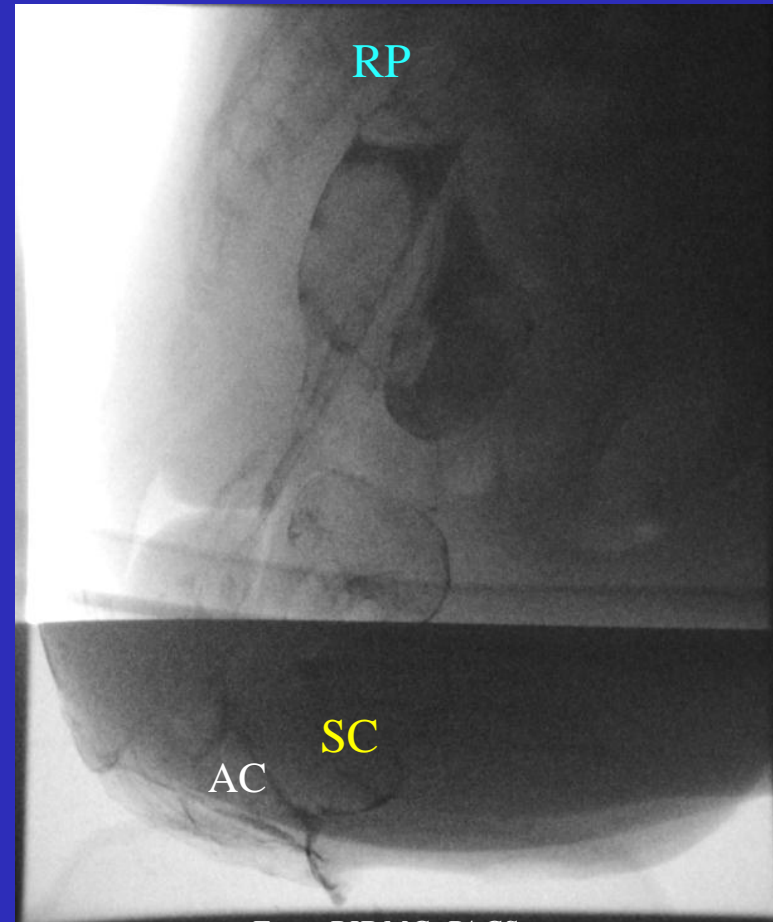
- Sigmoid Colon (SC)
- Anal Canal (AC)
- Site of rectoplexy (RP)

Large sigmoidocele, and probable enterocele, with marked descent of opacified sigmoid colon anterior to the rectum to the level of the perineum.

Lack of contrast in rectum probably due to reported incontinence

Lack of contrast in vaginal vault due to sigmoidocele

Index Patient



From BIDMC, PACS
Spot film taken during fluoroscopic
evaluation



Differential Diagnoses

- Marked descent of sigmoid
 - Failure of sigmoidoplexy
 - Redundant sigmoid colon
- Lack of contrast in bowel
 - Incontinence
 - Pelvic floor weakness



Drawbacks with Defecography

Contraindications

- Patient non-compliance
 - Weakness
 - Balance
- Non-communicating rectum
- Suspected perforation
 - Can attempt thickened gastrografin

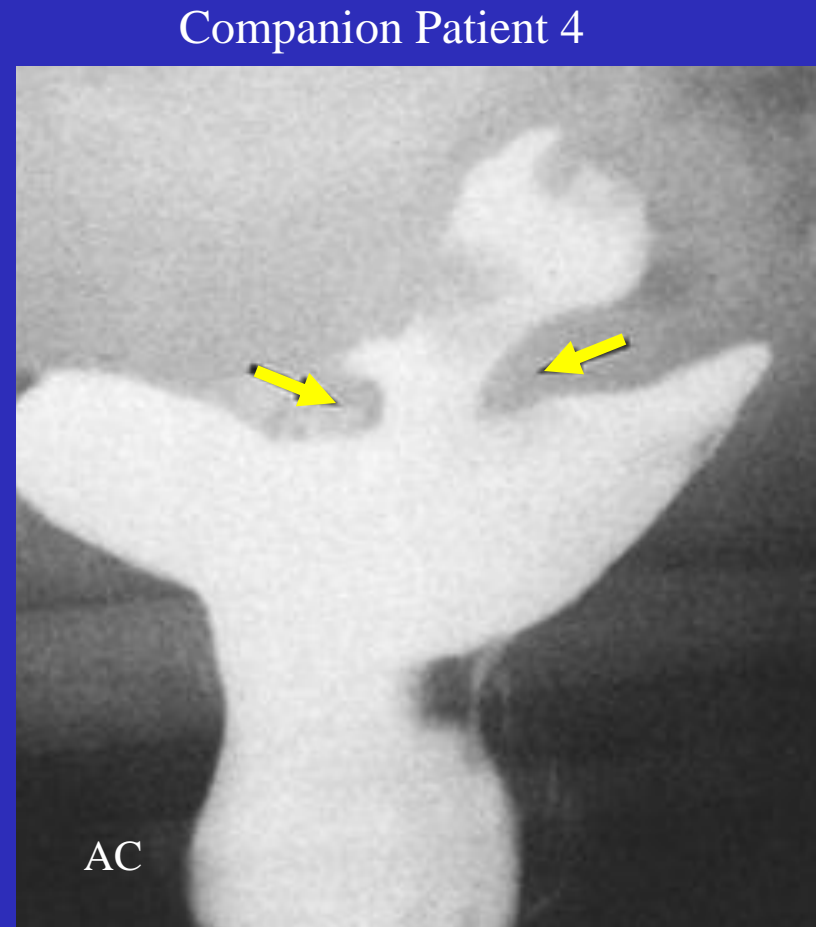
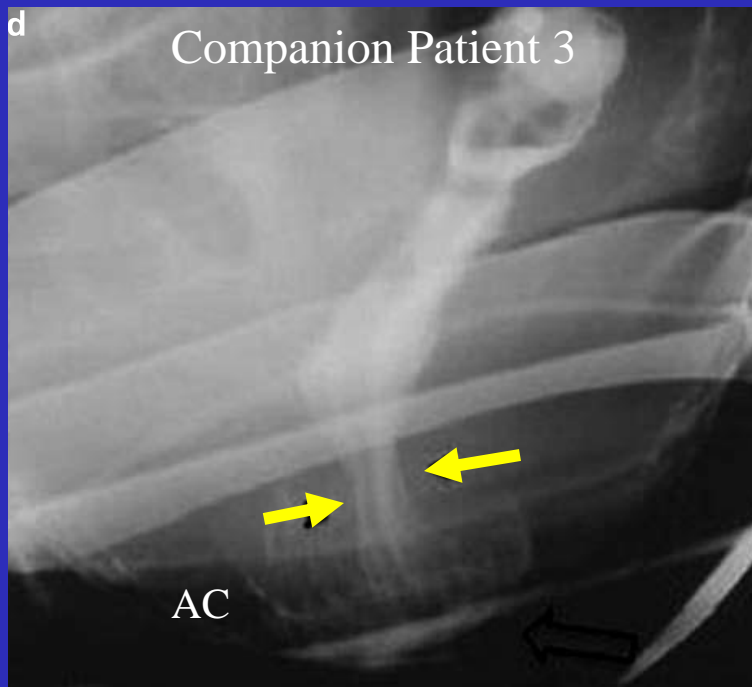
Limitations

- Fluoroscopy
 - Low resolution
 - Only single plane
 - Ionizing Radiation



Intussusception

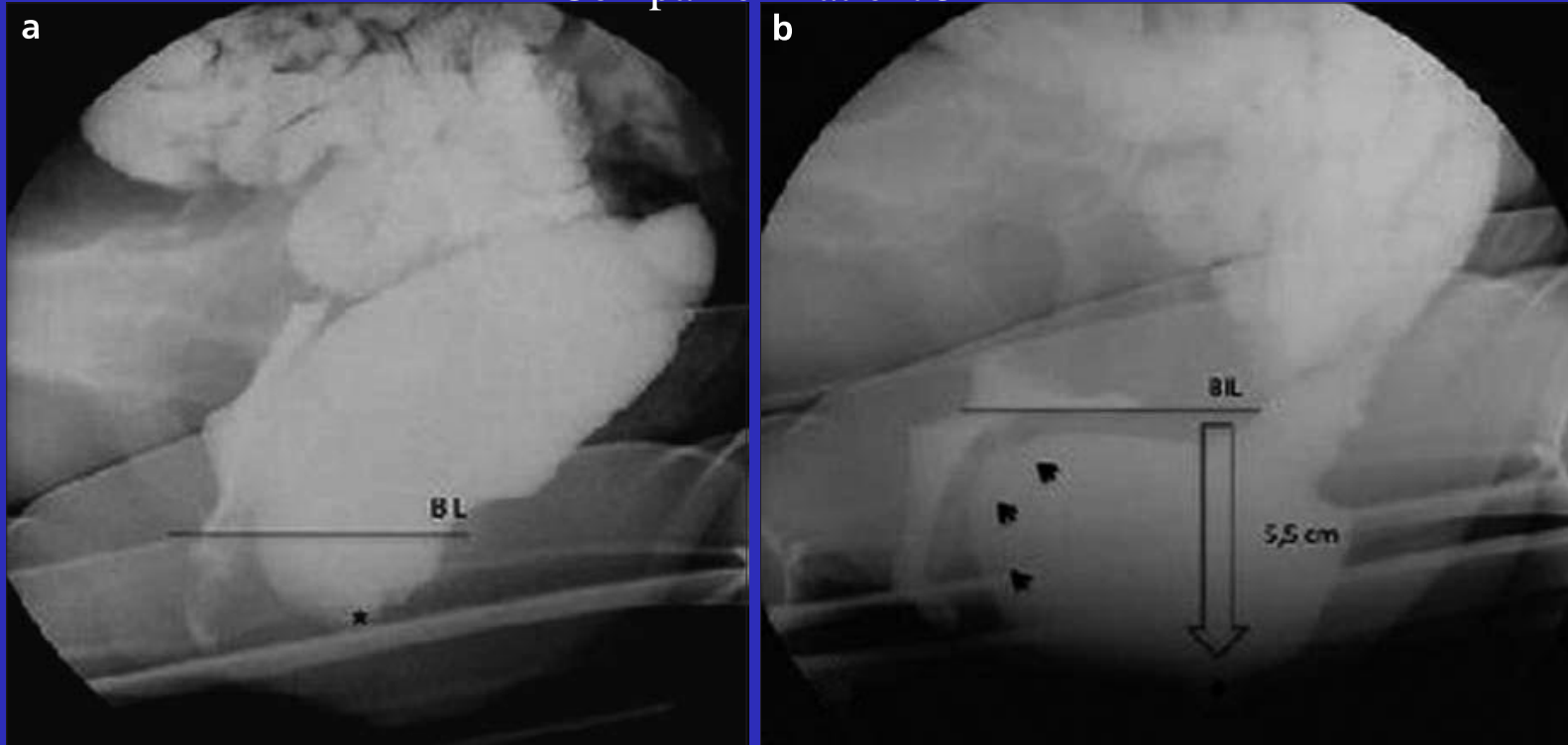
- Anal Canal (AC)
- Site of Intussusception (Arrows)





Descending Perineum Syndrome

Companion Patient 5

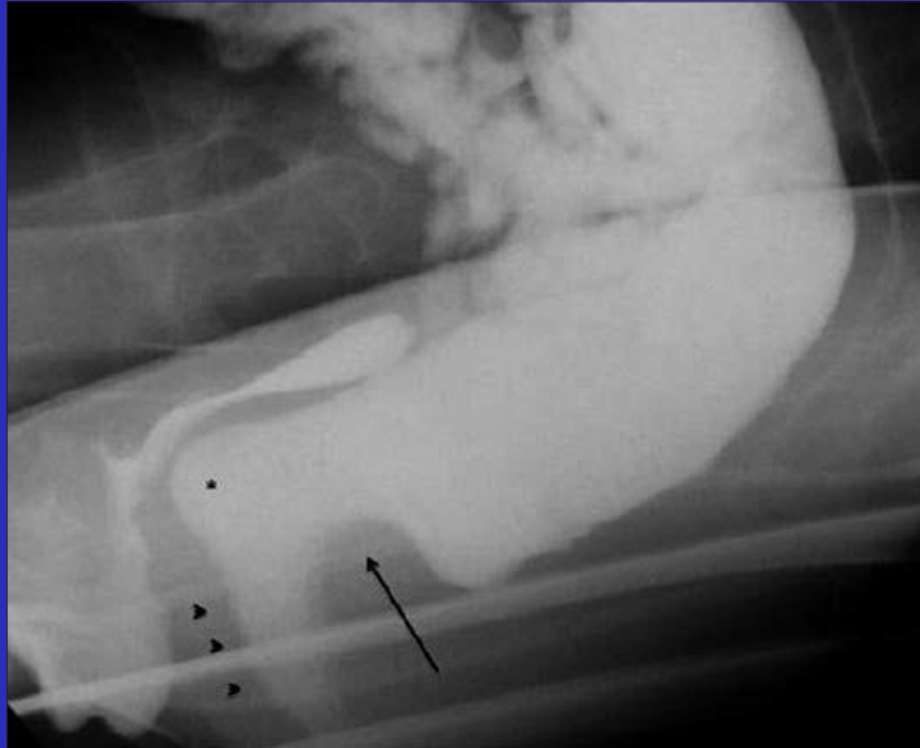


Descent of the anorectal junction (asterisk) between resting position (a) and during evacuation (b). Bis-ischiatic line (BIL) is considered as the reference level. A large rectocele is also evident (arrowheads). This is two spot films taken during the same fluoroscopic evaluation



Dyskinetic puborectalis muscle

Companion Patient 6



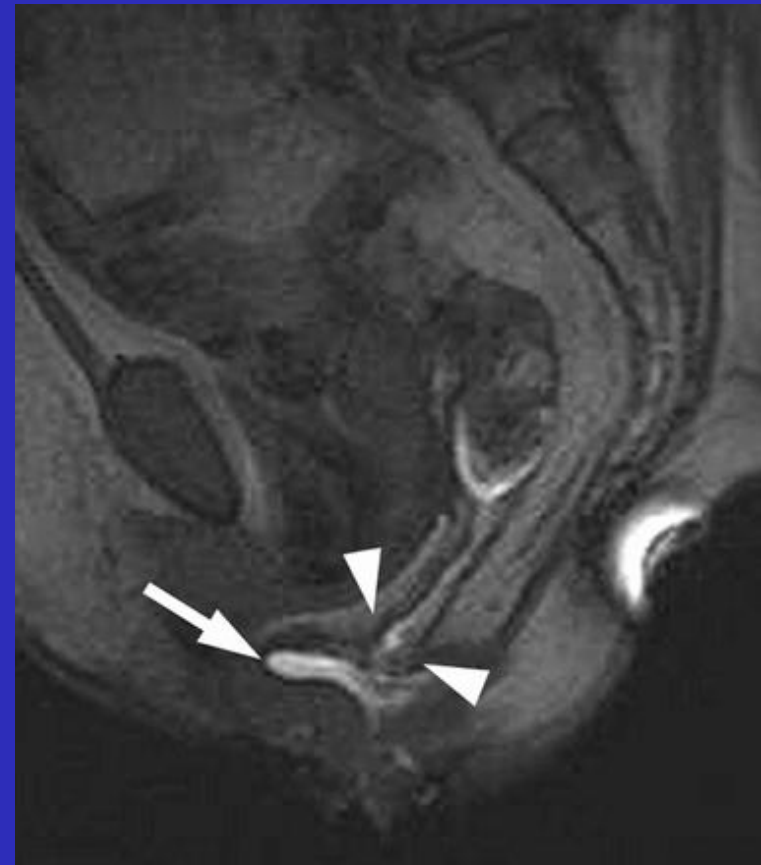
The arrow indicates an abnormally deep puborectal impression at the beginning of the evacuation phase. The anal canal is opening (arrowheads) and a small rectocele appears (asterisk).



MR Defecography showing Intussusception

- Higher Cost
- Technically more complex
 - Requires Open MR
- More comfortable for patient
 - No enema or vaginal contrast
- Circumferential mural intussusception (arrowheads) that extends into the rectal ampulla. An anterior rectocele is also evident (arrow)

Companion Patient 7 Sagittal MRI





Our Patient...Outcome

- Follow-up with PCP for potential surgical revision of sacroplexy if symptoms continue.



Summary

- Defecography is used for functional imaging of the muscles and tubular structures used in defecation
- It can diagnose anatomic and functional defects.
- The most common modality is fluoroscopy, but MRI can be used as well.
- Physicians ordering defecograms should prepare patients to go through an experience that may violate their social taboos.



References

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Acknowledgements

- Michael Acord MD