MRI ANATOMY OF
ANTERIOR ECTOPIC ANUS
ESRNM 2013

Shaimaa Abdelsattar Mohammad, MD. lecturer of Radiodiagnosis,
Member of pediatric imaging section Radiodiagnosis Dep.

Amr Abdelhamid AbouZeid, MD. lecturer of Pediatric surgery

Khaled Talaat, MD. Professor of Radiodiagnosis

Tarek Hassan, MD. Professor of Pediatric surgery
Introduction

- The anal canal is the lower narrow part of the rectum that is surrounded by sphincters and muscles responsible for both fecal continence and defecation.
- Knowledge about the complex anatomy of the anal canal is important for understanding both normal function and pathology.
Introduction

Different imaging modalities have been used trying to disclose the complexity of this area. Recently, MRI has been used successfully for this purpose with several advantages:

- high soft tissue resolution,
- wide field of view with multiplanar capabilities,
- absence of ionizing radiation,
- the possibility of being reviewed by other radiologists and clinicians.
Purpose

• to describe the MRI anatomy of the anteriorly displaced anus, and its impact on the process of defecation.
Patients and methods

• We prospectively examined ten patients with anteriorly displaced anus between August 2009 and April 2012.

• Non contrast MRI examinations were performed on 1.5 T magnet.

• T2WI was obtained in axial, sagittal and coronal planes of the pelvis.

• The ano-rectal angle was measured in mid sagittal images, and compared with control group using independent sample t-test.
• Sedation
• Chloral hydrate is the sedative of choice below 2 years of age
• After 2 years deep sedation with IM. Phenobarbitone
• Adequate selection of the coil that match the patient’s size (head coil or cardiac coil)
• 3 plane localizer
• Start with Sagittal T2 based on the axial localizer for proper determination of the relation of the anal canal to the pelvic floor musculature
• Followed by axial T2 based on sagittal slices
• Axial slices perpendicular to anal canal
• Coronal T2 WI parallel to the anal canal based on sagittal T2WI.
• The ano-rectal angle was measured in mid sagittal images, and compared with control group using independent sample t-test
iliococcygeus
Puborectalis muscle
main body of external anal sphincter
external sphincter space;
subcutaneous external anal sphincter

Male 4 years as a control subject
mean 86°
control

mean 112°
anterior ectopic
Axial T2WI in 9 years old normal female subject
In axial T2WI, the anal canal appears to be formed of concentric layers of different signal intensities representing its different components.
Original Contribution

MRI OF THE ANAL CANAL: CORRELATION WITH HISTOLOGIC EXAMINATION

J. Jamart, § and J. Pringot *

Departments of *Radiology and †Surgery, University of Louvain, St-Luc University Hospital, Brussels, Belgium, and
‡Department of Pathology and §Center of Biostatistics and Medical Documentation,
Mont-Godinne University Hospital, Yvoir, Belgium
The distal anal canal is seen displaced anteriorly, running out of its outermost muscle layer and separating the 2 halves of the external muscle that normally meet ventrally in the midline.

control

anterior ectopic
Single-loop continence (Shafik A, 2004)
The distal anal canal is seen displaced anteriorly, running out of its outermost muscle layer and separating the 2 halves of the external muscle that normally meet ventrally in the midline.

control

anteroior ectopic
In anterior ectopic anus the anal canal passes across instead of along the longitudinal muscle which leads to obstructed defecation.
The obstructed defecation is quiet obvious clinically among most patients with anteriorly displaced anus

- narrow caliber
- anal displacement
- malformation of the sphincteric cuff
- intrinsic neurological defect (achalasia)
- The change in the orientation of the central axis of the anal canal by passing across instead of along the fibers of the longitudinal muscle coat
Conclusion

- The fact that the anus is anteriorly displaced while the external sphincters are normally developed at the predestined site of the anus is already well known from the available literature.
- Therefore, there will be no actual diagnostic value for MRI in patients with obvious anterior displacement of their ani.
• The real value would be for patients with intractable constipation dating back to early infancy, when a mechanical cause is strongly suspected.

• Here, the MRI can help to disclose unrecognized slight anterior displacement of the anus, and the patients can be offered surgical correction to relieve them from the need to continue on their cathartic programs.
• The change in the orientation of the central axis of the anal canal by passing across instead of along the fibers of the longitudinal muscle coat can explain obstructed defecation in cases of anterior ectopic anus.
Thank you