MRI defecography: technique, indications and clinical findings not only in obstructed defecation syndrome

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Learning objectives

MRI defecography allows to show the whole dynamic phase of evacuation, through cine-sequences, in association with high resolution morphological data.

This education poster aims to share our personal experience about the MRI defecography, even though there is no general agreement about the technical and methodical details of the exam, also to improve knowledge about when and how is important to suggest MRI.

Background

MRI defecography have been recognized as a valuable method of assessment of pelvic disorders. However the study of the pelvic cavity and rectum during evacuation, through imaging of dynamic changes, has a role not only for the obstructed defecation syndrome but also in other functional pathologies.

Recognizing which kind of pathologies are more frequently diagnosed through this technique, we also reconsider the role of the method in patients surgically treated, evaluating, at least, the sensibility of MRI about post-surgical findings.

MR-defecography is almost recognized as a useful tecnique in the evaluation of pelvic floor disorders and, although the study of pelvic cavity and the rectum during defecation, especially during dynamic sequences, is recommended in the obstructed defecation syndrome, perform a rilevant role also in more funcional pathologies.

In particular, pelvic floor disorders as pelvic prolapse or constipation, represent an emergent problem especially in adult female people, interesting about the 15%. Principal symptoms are constipation, urinary incontinence, sensation of incomplete rectal evacuation and pelvic pain.

The pelvic floor is divided into three compartments: anterior (bladder and urethra), posterior (rectum and Douglas) and intermediate (vagina and uterus, in women, prostate in men).

Starting from an accurate clinical evaluation by the specialists, the role of radiologist permit to obtain more detailed addictional infromations, especially considering that very often, in this kind of pathology, are envolved, in different proportion, all three compartments. In consideration of the absence of ionizing radiation and the simple

reproducibility of the tecnique, MR defecography can be very useful for evaluation and pre-surgical selections of the patients candidate for appropriate surgical approach.

In our center, we perform the study in 1.5 T MR unit, in supine position, with torso phased-array coil placed around the pelvis.

Findings and procedure details

After a rectal injection of 180 cc of sonographic gel, the patient lays on the MRI table and the the examination develops in multiple phases: static phase, squeezing, stress phase without evacuation, evacuation phase and, if necesary, urinary phase.

In our experience we examined patients with different problems, such as fecal or urinary incontinence (e.g. coccyx sarcoma), gluteus hernia, rectocoele, rectum invagination (intussusception), pluricompartimental syndrome and abdomino-pelvic dyssinergia.

SEQUENCES:

· LOCALIZER

· TRUE-FISP COR

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· T2 TSE SAG

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· TRUE FISP SAG DIN (SQUEEZING)

· TRUE FISP SAG DIN (EVACUATION)

· TRUE FISP SAG DIN (URINARY)

The whole exam takes about 20 minutes.

We study some important parameters: PCL (pubococcygeal line), representing the level of the pelvic floor; H-line (puborectal hiatus line), representing the anteroposterior hiatal dimension, allowing the grading of the maximal widening of the pelvis sling during

straining; M-line (muscular pelvic floor relaxation) measures the pelvic floor descent from the PCL line during straining.

Grading of the pelvic organ prolapse

Grade	Organ location (cm) relative to PCL
0 (none)	Above
1 (minimal)	1-3
2 (moderate)	3-6
3 (severe)	#6

The pathologies more frequently recognized, divided into the three compartments are:

Anterior compartment:

- Cystocele and urethral hypermobility

Middle compartment:

- Uterine and vaginal vault prolapse

Posterior compartment:

- Enterocele, peritoneocele and sigmoidocele

- Rectal prolapse

- Rectocele

- Hemorrhoidal prolapse

More over:

- Descending perineal syndrome

- Gluteus hernia

Images for this section:

Fig. 1: Cystocele. The horizontal line represents the PCL. The vertical one the descent of the bladder.

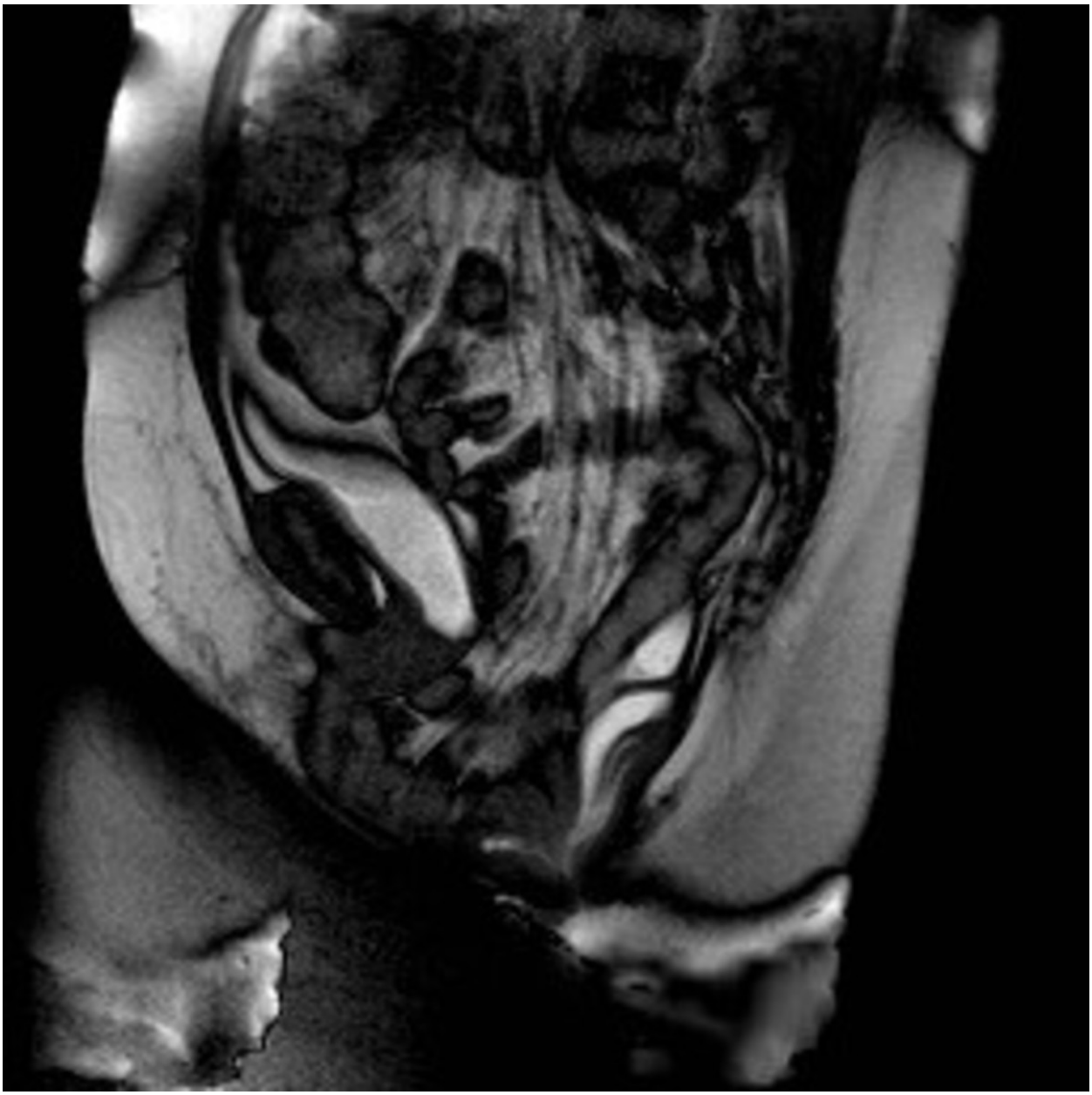

Fig. 2

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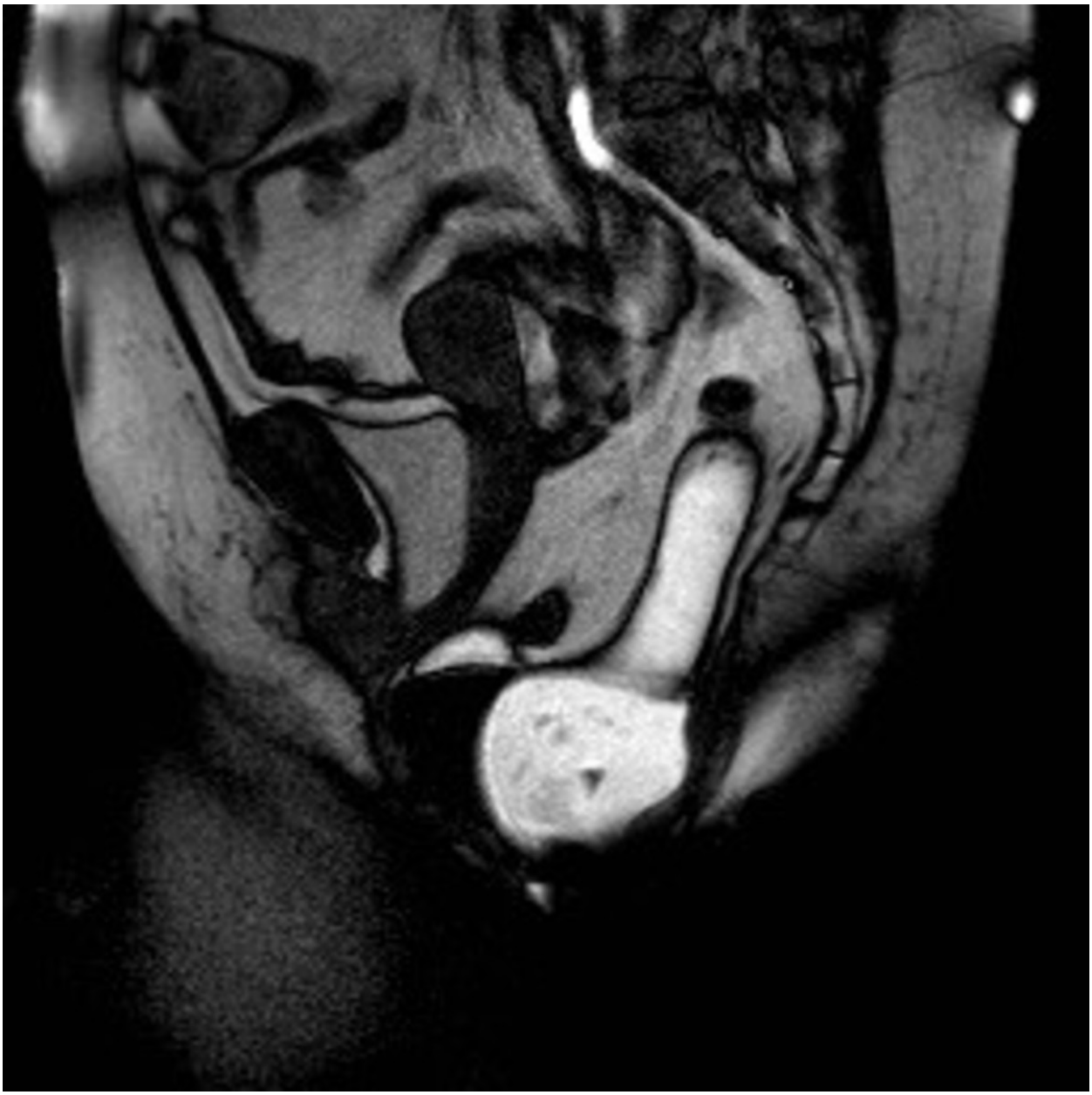

Fig. 3

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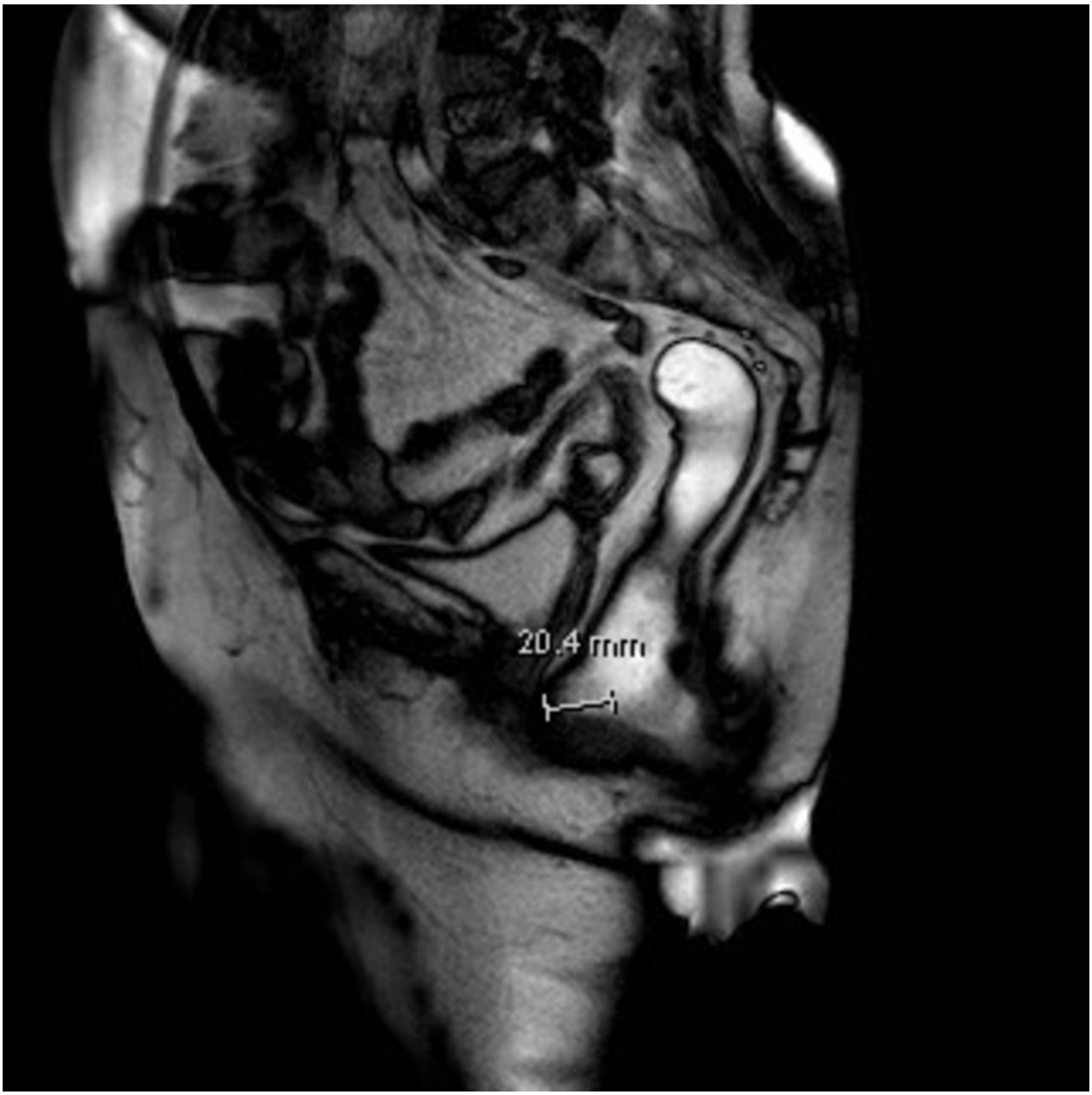

Fig. 4: anterior rectocele

Fig. 5: Gluteus hernia in patients with connectivitis

Fig. 6: Gluteus hernia

Fig. 7: Young patient with history of coccyx sarcoma

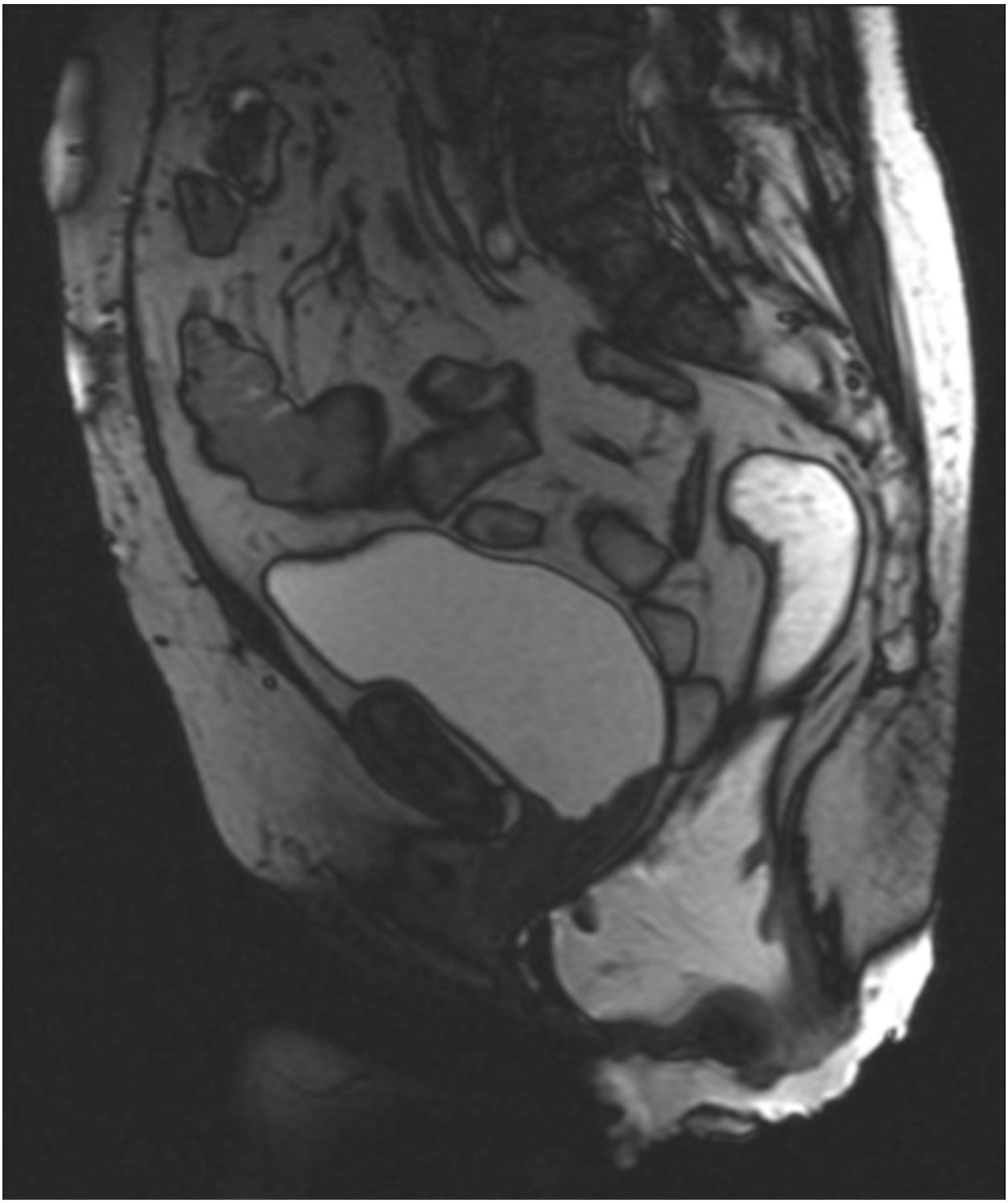

Fig. 8: rectal prolapse

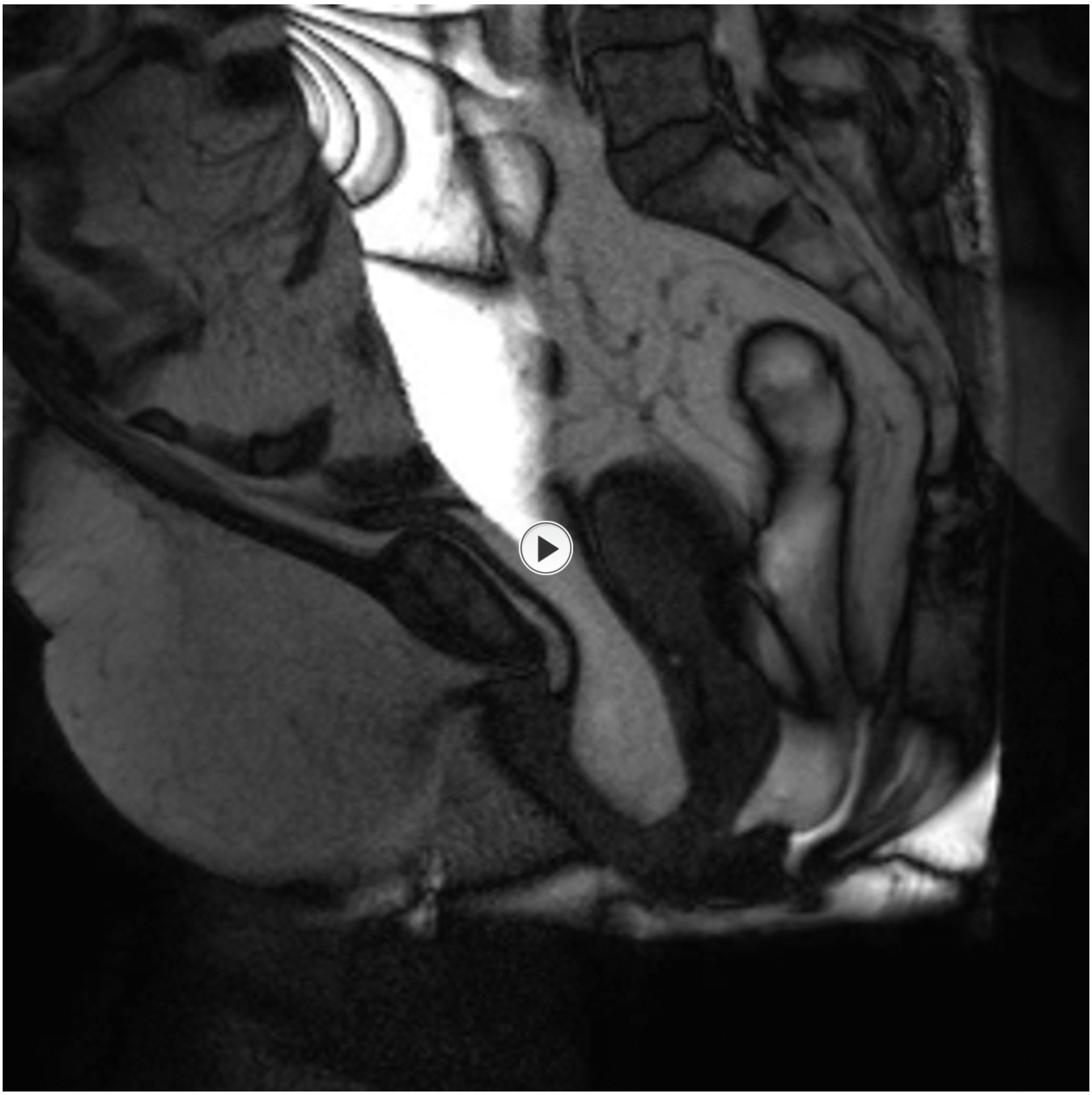

Fig. 9: Female patient treated trough STARR surgery with perineal descent syndrome. We can see that without any stress, in normal condition, the anorectal junction is 9 cm under PCL.

Conclusion

About the technique we can affirm that is not necessary to administer ev contrast medium and only the sagittal and coronal images permit to obtain an accurate diagnosis.

Moreover MRI defecography allows the functional study of anorectal area during evacuation phase and represents a non-invasive imaging investigation useful to understand the genesis of constipation syndrome, discerning between organic and funtional syndrome. In a future prospective, it could be developed, especially in young patients, as a standard investigation thanks to its reproducibility and the absence of ionizing radiation.

Images for this section:

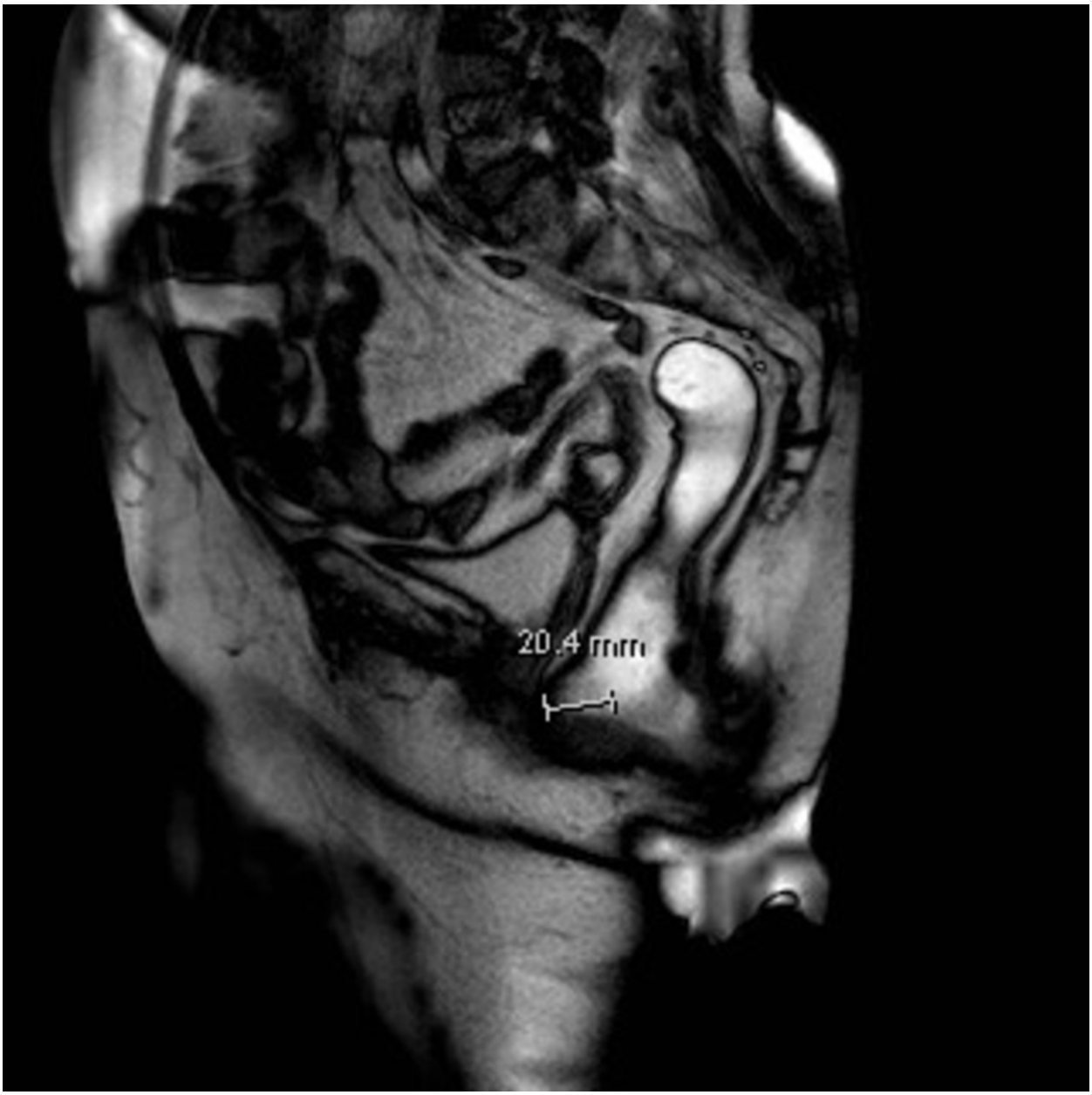

Fig. 4: anterior rectocele

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