SUMMARY

To our knowledge it is the first time that we use MRI in assessment of all pelvic floor dysfunction in males.

It is noteworthy to mention that we evaluated the entire pelvic floor muscles and all compartments for the referred patients; however, for research purposes we conducted our results for(static study) the anal sphincter complex (EAS, IAS & puborectalis muscle) and the supporting measurements in dynamic sequence (maximum straining & evacuation phases).in addition to the external urethral sphincter and the muscles of the penis.

Pelvic floor dysfunction (PFD) in males has broad spectrum of clinical conditions, divided into anterior and posterior compartments. The latter housing the anorectum, thence the name Anorectal dysfunctions which in turn divided into 2 categories 1) Anal incontinence, 2) Constipation.

The anterior compartment is considered with urinary incontinence and erectile dysfunction.

The aims of this study to answer the following questions:

A) Do we need to revise our findings, which based only on maximum straining phase in anorectal dysfunctions?

B) Is there any difference in the supportive measurements between maximum straining & evacuation phase yielding a reason for obtaining baseline measurements for evacuation phase? And is there any changes in sensitivity and specificity between these measurements in different phases?

C) Is the muscles of the penis have any role in ED?

D) Is there any changing in the thickness of the external urethral sphincter between the control and the diseased group?

General anatomical considerations of pelvic floor muscles &anal canal sphincter complex including normal MRI anatomy (static & dynamic) were described, followed by reviewing the literature on normal physiology of defecation & continence. Then anorectal dysfunctions withhighlighton clinical assessment, neurophysiological tests, andradiological investigations, followed by MRI assessment (static, dynamic & defecography).

We studied five groups: control (37 males) mean age 38.05 ± 10.26 yrs, OD (27 males) mean age 45.67 ± 14.48yrs , ED (13 males) mean age 56.62 ± 8.72yrs and AI (12 cases) mean age. UI(6 males) mean age 58.67±8.24. All the cases referred diagnosed from the surgery, urology and andrology clinic for further assessment. The control, OD and AI had the same preparation, intra rectal gel, same MRI technique for pelvic floor and penis , the evaluation of the images was done in the workstation. For the referred clinicians the reports were based on Elsayed R (2013) report, however for the research purposes we based on our control results.

MRI anal sphincter complex and pelvic floor muscles were evaluated for any muscle tear, detachment or thinning, the anal sphincter were evaluated for any scar, defect or thinning, external urethral thickness was evaluated for its anterior and posterior parts thickness and the penis was evaluated for its muscles thickness . All the control had normal static images, all the AI cases anal sphincter lesion being the scarring as the dominant pathology, and all the OD cases had no sphincter lesion. This

defined the commonest anorectal dysfunction with anal sphincter structural abnormality is anal incontinence.

Then all (cases & control) undergone dynamic sequence including evacuation, the supportive measurements (ARJ descent, H&M- Lines, LPA) in addition to rectocele (presence & size) were evaluated in both phases (maximum straining & evacuation); moreover ILca & WLH were evaluated on maximum straining phase. In all groups, we found statistical significant difference between the measurements in maximum straining & evacuation phase.

The evacuation phase was able to elicit many functional & structural abnormalities (intussusception, rectal prolapse, peritoneocele, rectocele & sigmoidocele).

By comparing the control group with OD group during Maximum straining we found that ARJ is more sensitive than M-line but has the same specificity of M-line.

ARJ has very good NPV & good PPV.

WLH is the most sensitive and specific with very good PPV & NPV.

But during Evacuation ARJ is more specific than M-line but has the same sensitivity of M-line with very good PPV &NPV.

By comparing the control group with AI group during Maximum straining we found that M-line has the highest sensitivity and specificity with very good NPV.

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But during evacuation ARJ has the same sensitivity of M-line but is more specific than M-line. ARJ has very good NPV & moderate PPV.

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- But during Evacuation ARJ is more specific than M-line but has the same sensitivity of M-line with very good PPV &NPV.
- We found in ED group reduction of the full thickness of the ischiocavernosus muscle than control did, but the bulpospongiosus muscle has no specific pattern for its thickness.

About the external urethral sphincter there is no significant difference for its thickness (anterior & posterior parts) between the control & the diseased group.

The breakthroughs in this study:

- We increased the amount of intrarectal gel for control & OD group from 80-100ml to 140ml-180ml to facilitate the sensation of rectal filling and ease the anal canal opening eventually minimize the time & the failed evacuation attempts.
- We added new planes to the sagittal evacuation, axial (which we thought it is doubtful to yield information) & coronal oblique, which we believe it will be a promising technique.
- We used the static images to evaluate the external urethral sphincter (anterior & posterior parts).
- Thin cut thickness in axial and sagittal images is a must in MRI penile imaging.

The limitations of this study:

- The small number of the sample size in UI & ED group.
- The lack of land mark and standard measures for the penile muscles.
- The lack of operative data, follow up and multidisciplinary approach.