

CORRECT POSITIONING OF THE ENDOVAGINAL PROBE IS ESSENTIAL FOR ACCURATE ASSESSMENT OF LEVATOR PLATE INJURY AND PELVIC FLOOR ALIGNMENT

Hypothesis / aims of study

Endovaginal ultrasound (EVUS) scanning is a component of total pelvic floor ultrasound assessment, routinely used to assess women with pelvic floor dysfunction. Women with levator plate injury on endovaginal ultrasound (EVUS) have a 7-fold increase in chance of developing 'obstructive defecation'. The role of EVUS is to assess alignment of the pelvic floor structures and diagnose levator plate injury by assessing insertion of the levator muscles into the pubic ramus, which can be graded according to degree of injury. The aim was to determine if the position of the probe affects the accurate diagnosis of pelvic floor injury and a shift in pelvic floor structures.

Study design, materials and methods

50 women - 40 parous, mean aged 46 (19 – 80) - with defaecatory dysfunction underwent vaginal examination, EVUS (central, left and right position) and wide-view endoanal ultrasound (EAUS) for control. Both the EVUS and the wide-view EAUS were performed using a BK 8838 axial type endoscopic probe with a 12 MHz transducer (B & K Medical, Sandhoften, Denmark). The EVUS probe was positioned in the vagina using the bladder neck as the cranial landmark. 3D scans were procured in the centre, left and right side of the vagina to assess the effect of positioning on the analysed outcome. Each procured image was analysed to assess alignment, the presence of levator plate injury on initial visual assessment (our current routine practice) and the degree of injury by staging levator ani muscle defects [1]. This grading system looks at the puboperinealis/puboanalis (PA), puborectalis (PR) and iliococcygeus/pubococcygeus (PV), scoring each in terms of degree of muscle loss, with the total combined score classifying the levator muscle as normal (score of 0), mild (score of 1-6), moderate (score of 7-12) or severe (score of 13-18).

Results

On visual assessment without staging, on EAUS, 47 showed alignment with 5 levator plate injuries. On EVUS, when great care was taken to accurately position the probe in the centre, 11 had a levator plate injury and 3 scans showed malalignment. These results were similar to the findings from the vaginal examination. However, when the probe was positioned to the left or right of the vagina, to represent inaccurate positioning, there were a greater number of cases of malalignment and levator plate injury.

	EAUS	Centre EVUS	Right EVUS	Left EVUS	PV Assessment
Malaligned	3 (6%)	3 (6%)	6 (12%)	9 (18%)	/
Right Injury	5 (10%)	9 (18%)	2 (4%)	28 (56%)	7 (14%)
Left Injury	0 (0%)	2 (4%)	29 (58%)	2 (4%)	2 (4%)

N (%) = number of patients (percentage of total patients)

When staging the degree of levator plate injury on each scan, it was again shown that when the EVUS probe was not centrally placed, the grading scores tended to be higher than when it was carefully positioned in the centre resulting in a higher classification of injury. However, the EAUS also showed a higher proportion of injuries when using this classification.

	EAUS	Centre EVUS	Right EVUS	Left EVUS
Mean	8 (Moderate)	4.5 (Mild)	7 (Moderate)	7.1 (Moderate)
Median	9 (Moderate)	4 (Mild)	6 (Mild)	8 (Moderate)
Mode	10 (Moderate)	2 (Mild)	6 (Mild)	9 (Moderate)
Min	0 (Normal)	0 (Normal)	2 (Mild)	1 (Mild)
Max	12 (Moderate)	12 (Moderate)	14 (Severe)	12 (Moderate)

X (Classification) = Grading (Classification)

Interpretation of results

Levator plate injury and malalignment is overcalled if the probe is incorrectly positioned within the vagina. This study shows that reported cases of malalignment and levator plate injury may not be accurate if great care is not taken to accurately perform the EVUS. As the EVUS is technically difficult to perform, initial assessment should be performed with the wide-view EAUS to determine if there is malalignment or a levator plate injury. However, staging of the injury is not accurate with the EAUS. This is predominately because the insertion of the PA muscle was difficult to distinguish, causing the injury to be consistently scored higher. Thus if an injury or malalignment is

found on the EAUS, a centre-positioned EVUS should then be performed to stage. There is also a possibility that as the PV examination tallied with the centre EVUS in determining injury, if staging is not required for clinical treatment, just an pv examination will suffice, with no ultrasound needed.

Concluding message

Correct positioning of the EVUS is essential for accurate assessment of levator plate injury and pelvic floor alignment and avoid overcalling injury. For accurate assessment, a wide-view EAUS scan should be performed, followed by a centre-positioned EVUS only if injury is found and staging required for clinical decisions.

References

1. Rostaminia G, Manonai J, Leclaire E, Omoumi F, Marchiorlatti M, Quiroz L H and Shobeiri S A. 2014 "Interrater reliability of assessing levator ani deficiency with 360 3D endovaginal ultrasound" Int Urogynecol J 25: 761 – 766

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