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FALSE NEGATIVE PROLAPSE ASSESSMENT IS MOST LIKELY TO OCCUR IN THE CENTRAL COMPARTMENT

Hypothesis / aims of study

Female pelvic organ prolapse (FPOP) is generally quantified clinically using the International Continence Society Pelvic Organ Prolapse Quantification system (ICS POPQ) (1). Recently there has been an increase in interest and use of translabial ultrasound (TLUS) to assess FPOP. Imaging findings of organ descent have been shown to be strongly associated with signs and symptoms of FPOP.(2) Imaging may be considered more objective compared to clinical examination as it provides information of organ position relative to the bony pelvis, rather than surface anatomy relative to the hymen. False- negative findings on examination with one technique (clinical or ultrasound) are not uncommon and are sometimes identified by the other method. In this study we aimed to identify the prevalence of false-negative results on POP-Q in the different compartments.

Study design, materials and methods

This was a retrospective study using 1240 archived data sets of women seen in a tertiary urogynaecological centre between September 2011 and August 2014. All women had undergone a local standardised interview and a clinical examination including prolapse assessment by ICS POP-Q and a 4D translabial ultrasound (TLUS), in the supine position after bladder emptying as previously described (2). Clinical assessments were carried out by two senior urogynaecology subspeciality trainees. Clinically significant FPOP was defined as ICS POPQ Stage >=2 in the anterior and posterior compartments, and Stage >=1 centrally (3). An offline analysis for pelvic organ descent was undertaken at a later date, on a desktop PC using proprietary software, blinded against all other data. Sonographically significant FPOP was defined as bladder and rectal ampulla descent of >=10mm and >=15mm below the symphysis pubis (SP), respectively, and uterine descent of <=15mm above the SP. A ‘false negative’ clinical finding was defined as failure to detect clinically significant FPOP in the presence of significant pelvic organ descent on TLUS. Categorical data were analysed using Chi-squared tests; agreement was tested using Cohen’s kappa.

Results

During the study period, 1240 women were seen, and US volume data sets were available for 1215. All subsequent results refer to these 1215 women. Mean age was 57 (range 17-89) years with mean BMI of 29 (range 15-59) kg/m^2. 62% (n=752) were postmenopausal and 4.3% (n=76) were on hormone replacement therapy. Median parity was 2 (range 0-9) with 90.4% (n=1098) being vaginally parous. 23.7% (n=288) and 31.7% (n=379) gave a history of instrumental delivery and hysterectomy respectively. The majority presented with stress and urge incontinence 71.8% (n=872) and 74.3% (n=902) respectively, followed by frequency 33.3% (n=404), nocturia 44.8% (n=544), voiding dysfunction 36.7% (n=445) and symptoms of prolapse 53.1% (n=645).
On clinical examination, 76.7% (n=932) were found to have a prolapse ICS stage >=2: a cystocoele in 55.8% (n=678), uterine prolapse in 41.3% (n=346) and a rectocoele in 53.6% (n=652). Enterocoele was diagnosed in 2.6% (n=31). Mean Ba, C and Bp were -1 (SD1.9, range, -3 to +8) cm, -4 (SD 2.8, range -9 to +8) cm, and -1 (SD 1.5, range -3 to +9) cm respectively. Mean Gh+Pb was 8 (SD 1.4, range, 4 to 13) cm. On imaging, mean bladder descent was to -5mm (SD 18.2, range, -62 to 35), ie. to 5 mm below the symphysis pubis (SP). Mean uterine descent was to 14mm (SD25.3, range, -55 to 57) above the SP. The rectal ampulla reached a position of -9 mm (SD14.8, range -50 to 37), ie., 9 mm below the SP. A true rectocele was seen in 567 (46.7%) at a mean depth of 18 mm (SD9.8, range, 10 to 47). On imaging, sonographically significant FPOP was diagnosed in 63.3% (n=769): in 37% (n=448) this was a cystocoele, in 47.6% (n=29.8) uterine descent and in 37.3% (n=453) significant descent of the rectal ampulla.

Overall agreement between clinically determined significant FPOP and TLUS on blinded assessment was 75% (910/1215), yielding a Cohen’s kappa of 0.45 (95% CI 0.41-0.48) signifying ‘moderate agreement’. False negative clinical findings in any compartment were obtained in 21.4% (n=260), and this was more likely in younger pre-menopausal women (Table 1). The highest prevalence of a false negative clinical diagnosis was documented for the central compartment (Table 2).

	False negative clinical findings (in any compartment)		P-value
	1 (n=260)	0 (n=954)	
Age (years, SD)	54.8 (13.0)	57.0 (13.6)	0.02
BMI (kg/m2, SD)	29.4 (6.3)	28.9 (6.3)	0.30
Pre-Menopausal (n=462)	124/260 (47.7%)	338/954 (35.4%)	<0.001
POP symptoms (n=645)	141/260 (54.2%)	504/954 (52.8%)	0.68
Bother of POP (Median, IQR)*	0.6 (0-5.48)	0.9 (0-6.2)	0.66
Previous incontinence / POP op (n=225)	40/260 (15.3%)	185/954 (19.4%)	0.14
Mean Oxford Grading (mean SD)	2.37 (1.0)	2.32 (1.1)	0.53

Table 1*: Demographic and clinical characteristics (n= 1215). Categorical data are expressed as n (%). *Mann-U-Whitney test (Z=-0.447).*

	Anterior compartment (n=1215)	Central compartment (n=836)*	Posterior compartment (n=1215)	P-value
False negative (clinically)	28 (2.3%)	160 (19.1%)	105 (8.6%)	<0.001^
Sensitivity (%)	93.8	59.8	76.8	-
Specificity (%)	66.4	75.3	60.1	-
Positive Predictive Value (%)	62.0	68.8	53.4	-
Negative Predictive Value (%)	94.8	67.4	81.35	-
Correlation# (kappa, 95%CI)	0.54 (0.51-0.57)	0.35 (0.29-0.42)	0.34 (0.29-0.39)	-

***Table 2**: Prolapse on POPQ versus sonographically determined significant prolapse.*Assessment of central compartment excluded those with prior hysterectomy. ^X2 test, #Cohen ' s kappa.*

Interpretation of results

False negative findings on clinical examination seem to be most prevalent in younger pre-menopausal women and are most likely to affect the central compartment. This may be due to relatively higher tissue elasticity in younger women, i.e., an initially steeper stress- strain (force- displacement) curve for uterine support tissues. In those women a longer Valsalva maneuver may be needed to achieve maximum descent and replicate symptoms.

Conclusions

A false- negative result on POP-Q examination seems to be more likely in young, premenopausal women, and it is most likely to affect the assessment of uterine descent.

References

1. Am J Obstet Gynecol 1996;175:10-17
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Disclosures

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