

PREOPERATIVE PELVIC FLOOR ULTRASOUND MEASUREMENTS ARE NOT DIFFERENT BETWEEN PATIENTS WITH AND WITHOUT DE NOVO RECURRENCE OF AN ANTERIOR REPAIR – A RETROSPECTIVE STUDY

Hypothesis / aims of study

Anterior vaginal repair is associated with the highest long-term failure rates of all prolapse repairs [1]. Prediction of recurrence would allow a different surgical strategy. As a first step in generating a hypothesis for a prospective study, we *retrospectively* investigated whether preoperative genital hiatus area measurements by pelvic floor ultrasound (US) were different between patients with and without recurrence of prolapse. This has been earlier shown to correlate with severity of pelvic organ prolapse (POP) and higher recurrence rates following surgery [2]. For that purpose, we studied the pre-operative findings of patients who had an in-house anterior repair, and were at some stage seen back and re-evaluated by US, irrespective of the indication for the latter.

Study design, materials and methods

This was a retrospective study of the medical records and archived US images, which were obtained as a part of the assessment of patients attending the pelvic floor unit of the University Hospitals Leuven, Belgium. Eligible were patients who underwent anterior repair without level I repair and in whom pre- as well as post-operative transperineal 2D/3D/4D US measurements were available. The US was performed after voiding, in the supine position using a Voluson 730 or E8 Expert system (GE Kretztechnik GMBH, Zipf, Austria). Volumes were obtained at rest and on maximal Valsalva. All examinations were performed or directly supervised by the first author. POP was assessed on US in reference to the inferior margin of the pubic bone measuring the most distal part of bladder, uterus/vaginal cuff and rectal ampula; clinically by the POP-Q system (stage II+ qualifying as prolapse). Genital hiatus measures were including antero-posterior (AP) and right-left (RL) diameter as well as area of hiatus [3]. Clinical and operative data were retrieved from the medical records. Data were analyzed with JMP@7.0 software (SAS Institute, Heverlee, Belgium). For comparison of means we used non-parametric Wilcoxon signed rank test and logistic regression for testing the possible prediction markers. Significance was set on 0.05 for p value.

Results

33 patients were eligible with mean (range) age of 66 (45–81) years. The interval between the surgery and postoperative US was 12 (3-45) months. 12 women (36%) had a previous hysterectomy, while concomitant hysterectomy was performed in another 12 (36%) patients (Table 1). 24/33 patients (73%) had recurrent prolapse, either a local recurrence (1/24), or “de novo” middle (5/24) resp. posterior (19/24) compartment POP. The single local recurrence was combined with prolapse of the other compartments, hence also qualifying as “de novo” prolapse. Reasons for scanning patients without recurrent prolapse were urinary incontinence (3/9), bladder storage or voiding symptoms (6/9). In 23/24 patients (96%) with recurrent prolapse, the US at recurrence showed descent of small bowel, in more than half combined with rectocele, confirming the clinical diagnosis (Table 2). There was a trend for larger hiatal dimensions, both before the operation as on later review, in individuals with recurrence as opposed to those who did not recur, but this was far from significant ($p=0.1$) (Table 2). In terms of predicting recurrence, preoperative US reported a higher position of the rectal ampula and a shorter AP hiatal diameter in rest in patients without recurrence. The other two hiatal dimensions were comparable to those with recurrence.

Interpretation of results

In patients referred for pelvic floor ultrasound following anterior repair, 72% of patients had recurrence, all but one being “de novo” (i.e. in another compartment) prolapse. In those recurrence, preoperative AP hiatal diameter in rest was higher than in those without de novo prolapse. We could however not find any truly significant preoperative US marker predicting de novo recurrence following anterior repair.

Concluding message

In this retrospective study, admittedly with an imperfect design, preoperative US genital hiatus dimensions did not predict later posterior or middle compartment prolapse. Of note is that there were in this series virtually no local recurrences after anterior repair, the vast majority being done with native tissue.

Table 1: Population profile (* $p<0.05$; ** months)

Patients after anterior repair, with:	Prolapse n=24 (73%)	no prolapse n=9 (27%)
Age	65,3 (9,1)	68,7 (11,5)
Parity	2,6 (1,5)	2,6 (1,2)
Anatomy at anterior repair		
Preoperative point C	-0,8 (3,5)	-1,1 (3,6)
Preoperative point Ba	2,4 (1,7)	1,6 (1,9)
Preoperative point Bp	-2 (2,2)	-1,4 (1,7)
Native tissue repair	23 (96%)*	6 (66%)*
Mesh repair	1 (4%)	3 (33%)
Absence of uterus after anterior repair	19 (79%)	5 (56%)
Interval between US scans**	9.3 (3-22)	28 (4-44)

Table 2: Comparison of US measures between prolapse versus no-prolapse group (*p<0.05)

population with:	prolapse vs. no prolapse		prolapse vs. no prolapse	
	PRE OPERATIVE US		POST OPERATIVE US	
anterior	22 (92%)	6 (67%)	1 (4%)	1 (11%)
central/uterus	11 (46%)	3 (33%)	2 (8%)	0
central/enterocele	2 (8%)	2 (22%)	23 (96%)*	2 (22%)*
rectal ampula	7 (29%)	0	15 (63%)	6 (67%)
anterior (cm)	2,58 (1,9)	1,59 (1,9)	-1,08 (1,1)	-0,81 (1,1)
central/uterus (cm)	2,5 (1,7)	0,96 (2,2)	0,98 (3,4)	-1,95 (1,2)
central/entero (cm)	0,12 (1,9)	0,33 (1,8)	2,93 (1,3)*	-1,1 (2,5)*
posterior (cm)	0,6 (1,3)*	-0,6 (1,1)*	1,43 (1,2)	1,36 (0,7)
AP rest (cm)	7,0 (0,8)*	6,6 (1,4)*	6,73 (0,98)	6,75 (1,2)
RL rest (cm)	5,3 (0,7)	5,2 (0,8)	5,14 (0,97)	4,87 (0,51)
area rest(cm ²)	26,01 (6,4)	24,02 (9,0)	25,61 (8,37)	23,98 (5,7)
AP valsalva (cm)	8,0 (0,9)	7,4 (1,4)	7,93 (1,2)	7,37 (1,3)
RL valsalva (cm)	6,4 (0,7)	6,1 (0,8)	6,6 (1,1)*	5,67 (0,6)*
area valsalva (cm ²)	38,3 (8,1)	34,4 (12,5)	40,34 (11,7)	33,1 (11,6)

References

1. Clark AL, Gregory T, Smith VJ, Edwards R. Epidemiologic evaluation of reoperation for surgically treated pelvic organ prolapse and urinary incontinence. Am J Obstet Gynecol 2003; 189:1261-1267.
2. Medina CA, Candiotti K, Takacs P. Wide genital hiatus is a risk factor for recurrence following anterior vaginal repair. Int J Gynaecol Obstet. 2008;101(2):184-7.
3. Dietz HP. Ultrasound imaging of the pelvic floor. Part II: three-dimensional or volume imaging; Ultrasound Obstet Gynecol 2004; 23: 615-625.

Specify source of funding or grant	None
Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	Ethics Committee of the University Hospitals Leuven
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	No