

Quantification of Vaginal Support: Are Continuous Scores Better than POP-Q Stage?

Objective: Surgeons are aware that the arbitrarily adopted stages of the POP-Q system do not correlate well with symptoms or differentiate clinically important subgroups. POP-Q stage is an ordinal (rather than continuous) variable, which has statistical limitations as a surgical outcome measure. We defined three continuous summary scores, based on POP-Q measures, to describe support loss and assessed their correlation with prolapse symptoms.

Methods: We used baseline data from 1141 subjects in 3 randomized trials of the Pelvic Floor Disorders Network (CARE 322, OPUS 380, ATLAS 439) to test the utility of three support loss scores: SL (Support Loss) = (TVL + C) + (Aa + 3) + (Ap + 3) + (Ba + 3) + (Bp + 3); SL3 = (TVL + C) + (Ap + 3) + (Bp + 3); and SLmax = location of single most distal point. Zero is the theoretical lower limit of SL and SL3 and -3 is the limit for SLmax, and represent perfect support. Higher values of SL measures represent greater support loss. Each support loss measure was correlated with POP-Q stage, total scores for responses to the Pelvic Organ Prolapse Distress Inventory (POPDI) and the Pelvic Organ Prolapse Impact Questionnaire (POPIQ), and responses to questions 4 (“usually have a sensation of bulging or protrusion”) and 5 (“usually have a bulge or something falling out seen/felt”) of the Pelvic Floor Distress Inventory (PFDI). Two-year CARE data were used to assess utility of these support loss measures for describing anatomical outcomes.

Results: All POP-Q stages were represented within the 1141 subjects: Stage 0 (4%), 1 (18%), 2 (29%), 3 (41%), 4 (8%). Symptomatic subjects were moderately (11%) or quite often (32%) bothered. Subjects had a wide range of support loss scores (mean [range]): SL [18.1 (0 to 60)], SL3 [10.7 (0 to 41)] and SLmax [1.5 (-3 to 12)]. Support loss scores were comparable to POP-Q stage with respect to correlation with baseline prolapse symptoms (Table 1).

N=1,141	PFDI 4	PFDI 5	POPDI	POPIQ	POP-Q Stage
SL	.58*	.64*	.25*	.24*	.87*
SL3	.51*	.57*	.25*	.23*	.79*
SLmax	.62*	.69*	.26*	.25*	.93*
POP-Q Stage	.62*	.69*	.24*	.24*	--

*p<0.01

The anatomic improvement in the CARE population is displayed using continuous support loss measures and POP-Q stage (Table 2). However, anatomic change, as measured by support loss or POP-Q stage, was not well correlated with prolapse symptom improvement.

	Baseline N=322	24 Month N=250	Change N=250	Correlation of change in SL/POP-Q stage With Change in POPDI	Correlation of change in SL/POP-Q stage with Change in POPIQ
SL Mean (SD)	27.4	4.4 (3.3)	-22.7 (10.8)	.24*	.10

Range	(11.3) 7 to 60	0 to 15	-53 to 0		
SL3 Mean (SD) Range	16.8 (8.8) 2 to 41	2.4 (2.5) 0 to 12.5	-14.1 (8.6) -38 to 7	.26*	.11
SLmax Mean (SD) Range	3.9 (2.5) -1 to 12	-1.5 (1.2) -3 to 3	-5.4 -13 to 0	.22*	.08
POP-Q Stage Mean (SD) Range	3.1 (0.6) 2 to 4	1.3 (0.8) 0 to 3	-1.8 (0.9) -4 to 0	0.17*	0.01

*p<0.01

Conclusions: Summary measures of support loss that more closely correlate with prolapse symptoms are desirable. These new support loss measures have a statistical advantage as continuous variables and may improve the transparency of surgical outcome reporting, augmenting the current POP-Q staging.