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BONY PELVIS DIMENSIONS IN WOMEN WITH AND WITHOUT STRESS URINARY INCONTINENCE

Hypothesis / aims of study

It has been previously shown that postpartum stress urinary incontinence (SUI) is associated with a wider pubic angle and wider intertuberous diameter [1]. However, there are less data available regarding associations of bony pelvis dimensions to SUI in middle-aged women.

The aim of this study is to determine whether bony pelvis dimensions are different in women with stress urinary incontinence (SUI), as compared to continent controls, in the postpartum and midlife periods.

Study design, materials and methods

Secondary analyses were performed of two case-control studies comparing women with SUI to asymptomatic controls. One study examined primiparas in the first 9-12 months postpartum; the other study involved middle-aged women. SUI was confirmed by full-bladder stress test.

All subjects underwent pelvic magnetic resonance imaging (MRI). The interspinous and intertuberous diameters, pubic angle and sacrococcygeal-infrapubic point (SCIPP) length were measured from MRI independently by two authors using ImageJ software.

Results

For young primiparas, we compared women with *de novo* SUI to continent controls. Subjects were well-matched for age, race, and height, although the incontinent cohort had a higher BMI. Bony pelvis dimensions were similar in both groups except women with SUI had pubic angles 2.6% wider than continent controls (Table 1). Similar trends were seen for interspinous and intertuberous diameters.

Table 1 – Demographics and Bony Pelvis Dimensions: Primiparas

	SUI (N=67)	Continent (N=73)	p value
Age (years)	29.6 ± 5.6	29.9 ± 4.7	0.77
Caucasian (%)	89.6	89.0	0.92
Height (inches)	65.3 ± 2.8	65.4 ± 2.6	0.82
BMI (kg/m^2)	26.2 ± 5.8	23.6 ± 4.2	**0.003**
Pubic Angle (degrees)	92.0 ± 6.8	89.7 ± 6.6	**0.04**
Interspinous Diameter (cm)	10.6 ± 0.7	10.4 ± 0.7	0.08
Intertuberous Diameter (cm)	11.4 ± 0.9	11.2 ± .9	0.09
SCIPP Length (cm)	11.6 ± 1.1	11.5 ± 0.9	0.75

Data presented as Mean ± Standard Deviation (SD) or Percentage

For middle-aged women, we compared women with daily SUI to asymptomatic controls. Both groups were well-matched by age, race, parity, hysterectomy status, and height, although women with SUI had higher BMI. No statistically-significant bony pelvis dimensions were identified (Table 2).

Table 2 – Demographics and Bony Pelvis Dimensions: Middle-Aged Women

	SUI (N=101)	Continent (N=107)	p value
Age (years)	47.8 ± 9.3	47.8 ± 11.4	>0.99
Caucasian (%)	92.1	94.4	0.51
Height (inches)	64.2 ± 2.2	63.8 ± 3.4	0.25
BMI (kg/m^2)	30.3 ± 6.6	27.6 ± 5.6	**0.002**
Parity	2.1 ± 1.3	2.0 ± 1.1	0.11
Hysterectomy (%)	11.9	8.4	0.41
Pubic Angle (degrees)	92.6 ± 6.3	91.7 ± 7.5	0.32
Interspinous Diameter (cm)	11.1 ± 1.8	11.2 ± 1.9	0.58
Intertuberous Diameter (cm)	11.7 ± 1.9	11.8 ± 2.1	0.71
SCIPP Length (cm)	11.7 ± 1.0	11.6 ± 0.9	0.68

Data presented as Mean ± Standard Deviation (SD) or Percentage

Interpretation of results

Our data are consistent with the growing body of evidence suggesting that the mechanisms underlying postpartum- and midlife SUI are different. For example, previous studies indicate that levator ani defects are more common in primiparous women with SUI than continent controls [2], whereas there are no differences in levator ani injuries between middle-aged women with and without SUI [3]. In both age groups, however, stark differences are noted in maximum urethral closure pressure (MUCP) between women with SUI and continent controls [2-3]. We hypothesize that in young women, a wider pelvic outlet may result in

birth trauma that reduces MUCP or unmasks poor urethral function. By contrast, for middle-aged women, age-related decline of MUCP predominates such that birth-related pelvic floor contributions to continence are minimized.

Concluding message

A wider pelvis is associated with SUI in the postpartum period, but not in middle age.

References

1. Handa VL, Lockhart ME, Kenton KS, Bradley CS, Fielding JR, et al., Int Urogynecol J 2009; 20:133-9.
2. DeLancey JOL, Miller JM, Kearney R, Howard D, Reddy P, et al., Obstet Gynecol 2007; 110:354-62.
3. DeLancey JOL, Trowbridge ER, Miller JM, Morgan DM, Guire K, et al., J Urol 2008; 179: 2286-90.

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