

THE RELATIONSHIP OF SUBPUBIC ARCH ANGLE AND POSTPARTUM STRESS URINARY INCONTINENCE

Hypothesis / aims of study

Postpartum stress urinary incontinence (SUI) has been recently shown to be associated with a wider subpubic arch angle in retrospective study using magnetic resonance imaging (1). This study aimed at evaluating the relationship of subpubic angle and postpartum SUI using transperineal ultrasound.

Study design, materials and methods

283 nulliparous women with singleton pregnancy, who did not have history of SUI before pregnancy, were recruited at first trimester. Each woman was examined with three-dimensional transperineal ultrasound scan (3DTUS) at 35-38 weeks of pregnancy. The 3DTUS was performed with women lying in supine position and hips slightly flexed and abducted. Midsagittal view of the pelvic floor, with symphysis pubis and urethra seen anteriorly and anal canal posteriorly, was first obtained on 2D B-mode; followed by capturing the 3D volume with sweep angle of 85°. Mode of delivery of women was managed according to department protocol. They were followed-up at six months and one year after delivery for symptoms of SUI. Offline USG analysis was performed by one operator who was blinded to the SUI data. The infero-posterior point of symphysis pubis was defined as the reference point. The midsagittal image was rotated along the z-axis until the maximal length of infero-posterior border of both pubic rami could be visualized on the axial section. A horizontal reference line passing through the centre of urethra was drawn. The two interception points between this line and the infero-posterior border of the pubic rami were identified. The angle formed between these two points and the infero-posterior point of symphysis pubis was measured as the subpubic arch angle (2). Independent sample t test were used for analysis.

Results

In all, 260 (91.9%) women, aged 30.8±3.6 years completed the 1 year study. The mean gestation at delivery was 39.2±1.9 week and birth weight was 3.1±0.5 kg. The mean subpubic arch angle was 111.6°±7.9° (range 90.0°-138.4°). Among them, 202 (77.6%) delivered vaginally (normal delivery 153 and instrumental delivery 49). There was no difference of the subpubic arch angle between the vaginal delivery group and the caesarean section group (vaginal delivery 111.1°±7.7° vs caesarean section 111.8°±7.3°, P=0.57). Further analysis only included the vaginal delivery group. At 6 and 12 months after delivery, 40 (19.8%) and 52 (25.7%) women reported symptom of stress urinary incontinence. There was no difference of the subpubic arch angle between the group with SUI and the non-SUI group at both 6 months and 12 months (110.9° ±7.2° vs 111°±7.9°, P=0.96 and 110.3°±7.3° vs 111.1°±7.9°, P=0.5).

Interpretation of results

In all, 19.8% and 25.7% of primiparous women reported SUI at 6 months and 12 months after vaginal delivery. There was no difference of the subpubic arch angle between the SUI and the non-SUI group.

Concluding message

There was no difference of subpubic arch angle in women reported postpartum SUI at 6 or 12 months after delivery as compared to women without SUI.

References

1. Berger M, Doumouchtsis S, DeLancey J. Bony pelvis dimensions in women with and without stress urinary incontinence. Paper presented at: 41st Annual Meeting of the International Continence Society; August 29, 2011; Glasgow, UK. Available at <http://webcasts.prousonline.com/ics2011/html/1-en/template.aspx?section=7&p=7,19573#>
2. Sarah Choi, Symphorosa Shing Chee Chan, Daljit Singh Sahota, Tak Yeung Leung (2012) Measuring the angle of the subpubic arch using three-dimensional transperineal ultrasound scan: intraoperator repeatability and interoperator reproducibility. American Journal of Perinatology. Accepted.

Disclosures

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