

THE TRANSPERINEAL THREE-DIMENSIONAL ULTRASOUND CHARACTERISTICS OF PELVIC DIAPHRAGM HIATUS AFTER FIRST DELIVERY: INFLUENCE OF DIFFERENT DELIVERY PATTERNS

Hypothesis / aims of study

Using transperineal three-dimensional (3-D) ultrasound to identify the morphological characteristics of pelvic diaphragm hiatus in postpartum women with different delivery patterns.

Study design, materials and methods

82 postpartum women underwent transperineal three-dimensional (3-D) ultrasound investigation between Oct 2008 to Aug 2010 at department of Obstetrics and Gynecology. 44 of them were spontaneous vaginal delivery, 11 women were forceps delivery, and other 44 women were Cesarean delivery. We observed the morphological characteristics of pelvic diaphragm hiatus. The diameter of pelvic diaphragm hiatus, genitohiatal and levator ani angle and bladder neck mobility were measured at rest, on maximum Valsalva and maximum pelvic floor contraction respectively.

Results

The structure of hiatus were distorted. Pubococcygeus avulsion and urinary bladder were observed in some postpartum women. Vaginal delivery was associated with a significantly larger pelvic diaphragm hiatus parameters on maximum pelvic floor contraction compared to caesarean delivery ($P < 0.05$). While the I pelvic diaphragm hiatus parameters were no significant differences between vaginal delivery and cesarean delivery at rest, on maximum Valsalva ($P > 0.05$). There were no significant difference between spontaneous vaginal delivery and forceps delivery too ($P > 0.05$). Vaginal delivery was strongly associated with a greater degree of bladder neck mobility, especially in forceps delivery women. The pelvic diaphragm hiatus parameters of women who delivered macrosomia fetal were similar with that of women who delivered normal fetal ($P > 0.05$).

Interpretation of results

Epidemiology studies implicate childbirth in the development of incontinence and prolapse. It is unclear that the effect of mode of delivery is uncertain. Although cesarean section reduces the risk of pelvic floor trauma, it is not entirely protective PFD. Further research is required into the effect of pregnancy on pelvic floor dysfunction and the effect of mode of delivery.

Concluding message

Transperineal 3-D ultrasound clearly demonstrates the changes of pelvic diaphragm hiatus in postpartum women. The diameters of pelvic diaphragm hiatus were similar in postpartum women with different delivery patterns at rest, on maximum Valsalva. Vaginal delivery was associated with a significantly larger levator hiatus parameters on maximum pelvic floor contraction compared to caesarean delivery. A greater degree of bladder neck mobility was associated with forceps delivery.

References

1. Svabik K, Shek KL, Dietz HP. How much does the levator hiatus have to stretch during childbirth J? BJOG. 2009, 116(12):1657-62.
2. Lanzarone V, Dietz HP. Three-dimensional ultrasound imaging of the levator hiatus in late pregnancy and associations with delivery outcomes J. Aust N Z J Obstet Gynaecol, 2007,47(3):176-180.
3. Falkert A, Endress E, Weigl M, et al. Three-dimensional ultrasound of the pelvic floor 2 days after first delivery: influence of constitutional and obstetric factors J. Ultrasound Obstet Gynecol. 2010,35(5):583-8.

<i>Specify source of funding or grant</i>	CHINA, Shanghai Municipal Health Bureau Foundation, 2006057
<i>Is this a clinical trial?</i>	No
<i>What were the subjects in the study?</i>	HUMAN
<i>Was this study approved by an ethics committee?</i>	Yes
<i>Specify Name of Ethics Committee</i>	The institutional review boards of Hospital
<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes