

## SHOULD WE OFFER CAESAREAN SECTION TO WOMEN WHO DEVELOP STRESS INCONTINENCE AFTER FIRST VAGINAL DELIVERY?

### Hypothesis / aims of study

Women who had vaginal delivery are almost 3 times more likely to experience stress urinary incontinence (SUI) than nulliparous women (1). Many of these women request elective caesarean section for subsequent deliveries. However, there is no evidence for or against this practice. The urethral sphincter volume is smaller in women with SUI than continent women (2). The aim of our study was to measure the sphincter volume in women with different vaginal parity in order to assess the risk of sphincter damage by number of vaginal deliveries.

### Study design, materials and methods

The study was conducted at a tertiary referral centre for urogynaecology. Women undergoing urodynamic studies for urinary incontinence and pelvic organ prolapse were recruited for the study. Information regarding age, body mass index, parity, number of vaginal deliveries and caesarean sections was collected. Urodynamic diagnosis was made according to the joint ICS-IUGA terminologies. 3D transperineal scan was performed in recumbent position using a GE voluson-I machine and a 4-8 MHz by 2 operators with experience in transperineal scanning. The urethral sphincter measurements were made by tracing the outer and inner margins of the rhabdosphincter in multiple planes 1 mm apart. The rhabdosphincter volume was calculated by subtracting core volume from the total sphincter volume. Data analysis was performed using SPSS software version 23 by IBM Company. The outliers were excluded from the analysis. Kruskal-Wallis test was used for analysis and significance is tested at P value of 0.05.

### Results

136 women were included in the study. The mean age of the study group was 52 years. All the women were divided into 4 groups according to the number of vaginal deliveries they had as 0, 1, 2 and 3 or more. There was no difference in body mass index or urodynamic diagnosis of women in these groups. The last delivery was more than 1 year before the participating in the study in all women.

Urethral sphincter measurements in these women were as shown in table 1. All the measurements of the urethral sphincter are significantly related to the number of vaginal deliveries ( $P < 0.05$ ). Figure 1 and 2 show the means and 95% confidence intervals of the measurements in these women.

Table 1: Urethral sphincter measurement and number of vaginal deliveries

Measurement mean (Std Dev)	Number of vaginal deliveries				P value
	0 (n=31)	1 (n=21)	2 (n=45)	3 or more (n=39)	
Total sphincter volume	3.03 (1.10)	1.77 (0.98)	2.39 (1.04)	2.42 (0.95)	0.000
Rhabdosphincter volume	2.42 (0.88)	1.45 (0.77)	1.94 (0.86)	1.98 (0.78)	0.000
Core volume	0.60 (0.29)	0.31 (0.24)	0.45 (0.25)	0.43 (0.23)	0.001
Rhabdosphincter length	1.60 (0.37)	1.19 (0.42)	1.31 (0.37)	1.46 (0.36)	0.000
Maximum cross-sectional area	2.52 (0.70)	1.88 (0.56)	2.29 (0.69)	2.22 (0.72)	0.011

Figure 1: Rhabdosphincter volume and number of vaginal deliveries

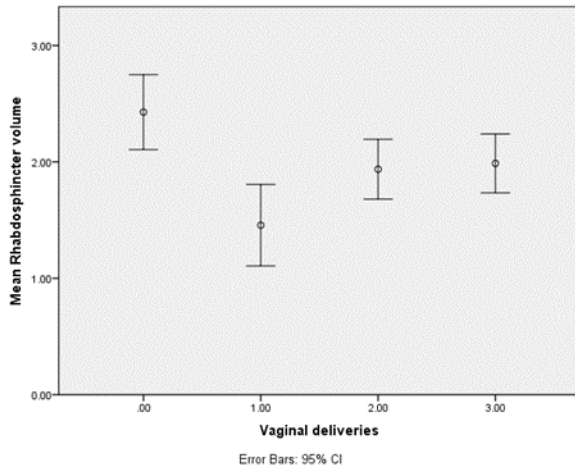
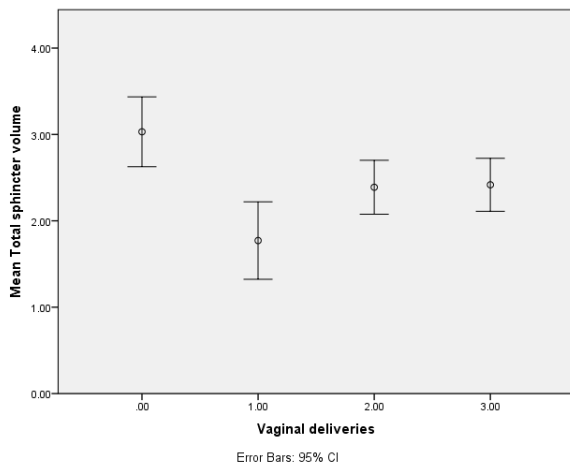


Fig 2: Total urethral sphincter volume and number of vaginal deliveries



Interpretation of results

The urethral sphincter is significantly smaller in women with one vaginal delivery than nulliparous women. However the sphincter volume does not decrease in women with increasing vaginal parity. The neuromuscular damage to the sphincter seems to happen during the first vaginal delivery and subsequent vaginal deliveries are unlikely to cause further damage to the sphincter.

This is an original research comparing urethral sphincter volumes in women with different vaginal parities. The results of the study can be used as evidence while counselling pregnant women and deciding the mode of delivery.

Concluding message

Stress urinary incontinence after first vaginal delivery is unlikely to worsen due to subsequent vaginal deliveries. Elective caesarean section for this indication may not offer any advantage.

References

1. n engl j med 2003;348;10:900-907
2. Obstet Gynecol 1999;94:295-301

Disclosures

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