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EPIDEMIOLOGY OF PELVIC ORGAN PROLAPSE IN RELATION TO DELIVERY MODE HISTORY AT 12 YEARS AFTER CHILDBIRTH: A LONGITUDINAL COHORT STUDY

Hypothesis / aims of study

To investigate the prevalence of pelvic organ prolapse 12 years after childbirth, and its association with lifetime delivery mode history and other antecedent factors.

Study design, materials and methods

A longitudinal study was carried out to follow up a population of 7879 women recruited originally 3 months after childbirth (index delivery) in three maternity units in three countries. Of the 7879 women, 3763 responded at 12 years (48%), of whom 678 (18%) consented to have a vaginal examination to evaluate prolapse stage and type using the Pelvic Organ Prolapse-Quantification system (POP-Q). Women completed postal questionnaires providing details of urinary incontinence, bowel dysfunction and prolapse symptoms. The latter were assessed using the Pelvic Organ Prolapse Symptom Score (POP-SS). Details of delivery mode history were provided by the women for all their deliveries. Logistic regression was used to examine the association between having prolapse (POP-Q Stage 2b, at hymen or greater) or not (Stage 0, 1 or 2a) and delivery mode history, adjusted for age at first birth, parity and current BMI. Delivery mode history was categorised into exclusive SVD(s), exclusive CS(s), mixed SVD and CS deliveries, any forceps delivery, and any vacuum extraction (but no forceps). BMI at 12 years was categorised with an extra category for missing data (not known).

Results

A full dataset was available for analysis in 678 women. Their mean age was 43, and 9% had only had one child. 59% of women had a Stage 2 prolapse or greater, and 26% of all women had a prolapse at or below the hymen (POP-Q Stage 2b). No woman had a Stage 4 prolapse, although some had already had pelvic floor surgery. Using the latter definition for 'prolapse', relative to women who had only ever had SVDs (29% with prolapse), delivering exclusively by CS was associated with significantly less risk of prolapse (>=Stage2b) (29% vs 6%), whereas having an SVD in addition to a CS birth was not (29% vs 21%, see Table). There was no significant difference in risk associated with any delivery by vacuum (30%) or forceps (25%). Older maternal age at first birth (30 years or older) was significantly associated with increased risk of prolapse, as was higher parity: women with two or more children had a significantly increased risk of prolapse compared with women who only had one child. However, we did not find an association with maternal BMI.

Table Logistic regression of delivery mode history on presence of pelvic organ prolapse at 12 years

Variable	Number	Prolapse (%)	OR	[95% CI]	P value
Delivery mode history					0.006
Only SVD	101/343	29%	Reference		
Only CS	3/53	6%	0.12	[0.04 to 0.41]	0.001
SVD and CS	11/52	21%	0.51	[0.25 to 1.05]	0.067
Any forceps	46/186	25%	0.74	[0.49 to 1.12]	0.150
Any vacuum, no forceps	13/44	30%	0.83	[0.41 to 1.69]	0.609

(continued)

Table Logistic regression of pelvic organ prolapse and delivery mode history at 12 years (continued)

Variable	Number	Prolapse (%)	OR	[95% CI]	P value
Age at first child					0.004
<= 24	38/180	21%	Reference		
25-29	67/281	24%	1.31	[0.81 to 2.12]	0.266
30-34	54/169	32%	2.32	[1.36 to 3.96]	0.002
35+	15/48	31%	3.01	[1.36 to 6.65]	0.007
Number of births					0.031
One	8/60	13%	Reference		
Two	98/373	26%	2.64	[1.18 to 5.93]	0.018
Three	45/168	27%	3.23	[1.37 to 7.63]	0.008
Four or more	23/77	30%	3.99	[1.54 to 10.32]	0.004
Body Mass Index					0.293
Normal (18.5-24.9)	74/318	23%	Reference		
Underweight (<18.5)	3/10	30%	0.80	[0.19 to 3.40]	0.765

Overweight (25 to 29.9)	56/197	28%	1.17	[0.27 to 5.02]	0.834
Obese (>=30)	31/122	25%	1.24	[0.28 to 5.49]	0.780
Not known	10/31	32%	1.34	[0.27 to 6.80]	0.722

Interpretation of results

Although the numbers examined were relatively small, we did demonstrate that delivery exclusively by CS reduced the risk of prolapse at or beyond the hymen 12 years after an index birth. However, this risk reduction was not observed in women who had experienced any vaginal delivery (spontaneous or assisted). Women who had more than one child, and those over the age of 30 when they had their first child were at higher risk of having a prolapse. Surprisingly, we did not demonstrate any association with maternal BMI. Although these data relate to the physical measurements of descent of the vaginal walls and apex, the women were not necessarily symptomatic. As their mean age was 43 years at the current follow up period, but the mean age of prolapse surgery is around 60 years, further follow up of this cohort may enable identification of factors which result in symptomatic prolapse requiring treatment.

Concluding message

This study suggests that if women wish to reduce their risk of developing prolapse, they might consider having their first child before the age of 30. Only women who have all their deliveries by CS have a reduced risk of prolapse: any vaginal delivery removes this association. However, having a measurable prolapse does not necessarily relate to having symptoms. Prevention of symptom development using pelvic floor muscle training or other conservative physical therapies may be appropriate. A randomised controlled trial of conservative treatment for prevention of prolapse symptoms or progression of prolapse amongst this cohort has now been funded.

Specify source of funding or grant	**WellBeing of Women, Royal College of Obstetricians and Gynaecologists, UK**
Is this a clinical trial?	**No**
What were the subjects in the study?	**HUMAN**
Was this study approved by an ethics committee?	**Yes**
Specify Name of Ethics Committee	**NHS Central Office for Research Ethics Committees (COREC), UK;** **Lower South Regional Ethics Committee, Ministry of Health, New Zealand**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**