

THE EFFECT OF PREGNANCY AND MODE OF DELIVERY ON PELVIC FLOOR DYSFUNCTION: AN EPIDEMIOLOGIC STUDY.

Hypothesis / aims of study

The objective of this study was to assess the effects of pregnancy and mode of delivery on the risk of developing pelvic floor disorders (PFD).

Study design, materials and methods

A total of 12,200 women from a large managed health care organization ages 25 to 84 years were surveyed for the presence of PFD using the validated Epidemiology of Prolapse and Incontinence Questionnaire (EPIQ).[1] The presence of stress urinary incontinence (SUI), overactive bladder (OAB), anal incontinence (AI), including flatus, and pelvic organ prolapse (POP) was defined based on previously reported methods.[1] Women were categorized into three risk exposure groups: nulliparous (NP), vaginally parous (VP), or Cesarean section *only* (CS). Mantel Haenszel Chi square analyses were used to explore possible confounding variables and to determine crude odds ratios (OR) with 95% confidence intervals (CI). Multivariate logistic regression models, controlling for age and body mass index, were used for the adjusted OR with 95% confidence intervals. Institutional Review Board approval was obtained for all phases of the study.

Results

Mean age of the 4,401 respondents was 57 +/- 15.9 years (range 25 - 84). The overall prevalence of PFD was; SUI = 15% (n = 658), OAB = 13% (n = 572), POP = 7% (n = 281), mixed SUI & OAB = 8% (n = 358), AI = 25% (n = 1060), and any PFD = 36% (n = 1565). The distribution of women by risk exposure was; NP = 1079 (25%), VP = 2910 (66%), and CS = 412 (9%). The crude and adjusted OR and 95% CI for each PFD exposure are presented in the table below.

Delivery status	SUI	OAB	POP	AI	Any PFD
CS vs. NP					
Crude OR (CI)	1.08 (0.75-1.56)	0.91 (0.61-1.34)	1.12 (0.64-1.97)	0.77 (0.57-1.05)	0.83 (0.64-1.08)
Adjusted OR (CI)	1.06 (0.72-1.55)	0.93 (0.62-1.41)	1.08 (0.60-1.94)	0.78 (0.57-1.08)	0.81 (0.64-1.07)
VP vs. NP					
Crude OR (CI)	1.79* (1.44-2.23)	1.52* (1.22-1.91)	2.02* (1.44-2.83)	1.50* (1.26-1.78)	1.59* (1.36-1.85)
Adjusted OR (CI)	1.73* (1.38-2.17)	1.34 (0.06-1.70)	1.94* (1.37-2.75)	1.41* (1.18-1.69)	1.49* (1.27-1.74)
VP vs. CS					
Crude OR (CI)	1.66* (1.20-2.29)	1.68* (1.19-2.39)	1.80* (1.10-2.94)	1.93* (1.46-2.56)	1.92* (1.52-2.43)
Adjusted OR (CI)	1.77* (1.26-2.49)	1.52* (1.05-2.20)	1.80* (1.08-3.01)	1.78* (1.33-2.38)	1.84* (1.43-2.35)

* = p < 0.05

Interpretation of results

In this population, the risk of all pelvic floor disorders is independently associated with being vaginally parous, but not with pregnancy itself. Caesarean section has a protective effect on the development of all pelvic floor disorders. Women who deliver by caesarean section only have a risk of pelvic floor disorders which is comparable to women who are nulliparous, and significantly less risk than women who are vaginally parous.

Concluding message

In counselling pregnant women, the protective effect of caesarean section on the occurrence of female pelvic floor disorders must be balanced against the known risks associated with surgical delivery.

[1] Reference blinded (Funding NICHD #blinded)

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