

Long-term consequences of vaginal delivery on the pelvic floor:
A comparison with caesarean section in one-parae women

Akademisk avhandling

som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien
vid Göteborgs Universitet
kommer att offentligt försvaras i kvinnoklinikens aula,
Sahlgrenska Universitetssjukhuset/Östra
fredagen den 25 januari 2013 kl. 9.00

av

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Avhandlingen baserar sig på följande studier:

- I. The prevalence of urinary incontinence 20 years after childbirth: a national cohort study in singleton primiparae after vaginal or caesarean delivery.
Gyhagen M, Bullarbo M, Nielsen TF, Milsom I. *BJOG*. 2012 Mar 14. doi:
10.1111/j.1471-0528.2012.03301.x. [*Epub ahead of print*]
- II. Prevalence and risk factors for pelvic organ prolapse 20 years after childbirth: a national cohort study in singleton primiparae after vaginal or caesarean delivery.
Gyhagen M, Bullarbo M, Nielsen TF, Milsom I. *BJOG*. 2012 Nov 12. doi:
10.1111/1471-0528.12020. [*Epub ahead of print*]
- III. A comparison of the long-term consequences of vaginal delivery versus caesarean section on the prevalence, severity and bothersomeness of urinary incontinence subtypes. Gyhagen M, Bullarbo M, Nielsen TF, Milsom I. (*Submitted*).
- IV. Cesarean section and episiotomy during vaginal delivery protect women from fecal incontinence in later life. Gyhagen M, Bullarbo M, Nielsen TF, Milsom I. (*Submitted*).



UNIVERSITY OF GOTHENBURG

2013

Abstract

Long-term consequences of vaginal delivery on the pelvic floor: A comparison with caesarean section in one-parae women

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Urinary incontinence (UI), symptomatic pelvic organ prolapse (sPOP), and faecal and anal incontinence (FI and AI) are the three major sequelae of childbirth. It has as yet not been finally settled whether in the long term vaginal delivery (VD) is detrimental to pelvic floor function in comparison to caesarean section (CS). The aim of this thesis was to study the influence of childbirth on the long-term prevalence of these pelvic floor disorders (PFD) and their putative obstetric and non-obstetric risk factors by comparing two large cohorts of women after one VD compared to one CS in 2008, 20 years after childbirth. This national cohort study included 5236 one-parae women who gave birth in 1985-1988 and returned a questionnaire on PFD in 2008. Self-reported information was linked to obstetric data from the Swedish Medical Birth Register.

The prevalence of UI; UI for more than 10 years; subtypes of UI; severe, significant and bothersome UI; sPOP; AI, severe AI; FI; were consistently higher after VD compared to CS. After one VD the prevalence of FI increased by about 4%, UI by 12% and sPOP by about 8%, compared to one CS. After a VD women with sPOP had an almost tripled prevalence of UI compared with CS. A $\geq 2^{\text{nd}}$ degree perineal tear was associated with an almost doubled prevalence of FI. Episiotomy during VD was protective for FI. BMI was second to VD the most important risk factor for PFD, which is important since it is modifiable.

In conclusion, one single VD was associated with an increased prevalence of all three of the most important pelvic floor disorders - UI, sPOP, and FI - 20 years after giving birth to one child.

Key-words; Vaginal delivery, caesarean section, urinary incontinence, subtypes, bothersome, severity, pelvic organ prolapse, anal incontinence, faecal incontinence, long-term, epidemiology, body mass index, episiotomy, perineal tear.

ISBN 978-91-628-8594-6

<http://hdl.handle.net/2077/31701>