IUGA Debate

“This house believes that instrumental delivery should be abandoned in favour of Caesarean section”

Profs Don Wilson & Jim Dornan
CLINICAL OPINION

UR-CHOICE: can we provide mothers-to-be with information about the risk of future pelvic floor dysfunction?

Don Wilson · James Dornan · Ian Milsom · Robert Freeman

Received: 13 January 2014 / Accepted: 13 March 2014 © The International Urogynecological Association 2014

Abstract Vaginal childbirth is probably the most important factor in the aetiology of pelvic floor dysfunction (PFD) and results in the combination of some or all of the following conditions: urinary (UI) and faecal (FI) incontinence and pelvic organ prolapse (POP). Up until now, it has been difficult to counsel women antenatally regarding risk factors for subsequent PFD, as there has been little good-quality, long-

Keywords Pelvic floor dysfunction · Urinary incontinence · Faecal incontinence · Pelvic organ prolapse · Vaginal delivery · Caesarean section · Prediction

Introduction
Moderately robust epidemiological data 12 & 20 years after delivery & pathophysiological data using risk factors

**Major risk factors for subsequent PFD:**

<table>
<thead>
<tr>
<th>U</th>
<th>UI before pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>Race/Ethnicity</td>
</tr>
<tr>
<td>C</td>
<td>Childbearing started at what age</td>
</tr>
<tr>
<td>H</td>
<td>Height of mother</td>
</tr>
<tr>
<td>O</td>
<td>Overweight (weight, BMI of mother)</td>
</tr>
<tr>
<td>I</td>
<td>Inheritance (family history)</td>
</tr>
<tr>
<td>C</td>
<td>Children (number of children desired) or Caesar/delivery mode for postpartum “score”</td>
</tr>
<tr>
<td>E</td>
<td>Estimated fetal weight</td>
</tr>
</tbody>
</table>

*Wilson, D, Dornan, J, Milsom, I, Freeman, R, (International Urogynaecology Journal, April 2014)*
Prediction Models for Postpartum Urinary and Fecal Incontinence in Primiparous women

Jelovsek JE, Piccorelli A, Barber MD, Tunitsky-Bitton, Kattan MW

Vaginal Delivery – Risk of Any Pelvic Floor Disorder (AnyPFD)

Aim:

To Produce normograms that accurately generate individualized prognostic estimates of postpartum UI and FI.
Predictive Modelling Co-operation

SwePOP Study Group
Sahlgrenska Academy, Gothenburg
Maria Gyhagen, Jwan Othman, Björn Areskoug, Ian Milsom

PROLONG Study Group
Aberdeen, Glasgow and Otago
Don Wilson, Charis Glazener, Suzanne Hagen, Andrew Elders

CLEVELAND CLINIC Group
Cleveland
Matt Barber, Eric Jelovsek, Michael Kattan, Kevin Chagin
**Study Population**

Data from 2 longitudinal, prospective cohorts

1. **Swedish Pregnancy, Obesity and Pelvic Floor Study (SwePOP)**
   - Only Primiparous women delivered 1985-1988 (n = 9423)
   - Swedish Medical Birth Register data
   - 4991 linked to Postal Questionnaire 20 years after delivery

2. **ProLong study from UK/New Zealand**
   - All deliveries w/n 12 months (1993-94)
   - 7883 participated 3 months after index birth
   - Aberdeen (UK), Birmingham (UK), Dunedin (New Zealand)
   - 3638 followed up to 12 years after delivery

Study Cohort: 8624

Gyhagen M, Bullarbo M, Nielsen T, Milsom I. BJOG 2013
Hypotheses

• Multiple regression models can be developed to predict the likelihood of developing PFDs 12-20 years after delivery that:

  ❑ Discriminate better than chance women who are at high risk from women who are at low risk
    
    Concordance Index  
    1 = perfect discrimination  
    0.5 = no better than chance

  ❑ Reasonable calibration and are internally and externally validated.
Women delivering in the first half of the cohort time period

Training

Predictive Models

Women in Second Half

Test Set

Actual Outcomes
METHODS

• Training Set
• Multiple logistic models
• Harrell’s “Model Approximation” process of backwards elimination
• Best parsimonious model

• Model accuracy was measured as discrimination using a concordance index and calibration using visual plots were created.

• Online calculators
Results

Model Discrimination
Overall all models were able to discriminate better than chance and able to discriminate risk 51-75% of the time for each temporal validation set.

Before delivery, 12 & 20 year concordance indices for bothersome or receiving treatment were:

- POP (0.570, 0.627)
- UI (0.653, 0.689)
- FI (0.618, 0.676)
Other Predictive Models currently used in Clinical Practice

• National Cancer Institute Gail Model for Prediction of Breast Cancer Risk – Concordance Index 0.59

• Framingham Cardiovascular risk model – Concordance Index 0.72