**Supplementary material**

*Intrapartum pudendal nerve block analgesia and risk of postpartum urinary retention: a cohort study*

*Waldum et al.*

Supplementary table 1. Characteristics of the pudendal block and non-pudendal block groups in women with spontaneous or instrumental vaginal birth, n=1007

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|  | **All** | **Spontaneous vaginal birth** **N=674** | **Instrumental vaginal birth** **N=333** |
|  | n=1007Mean ±SD or n (%) | **Pudendal block group****n=268**Mean ±SD or n (%) |  **Non-pudendal block group****n=406**Mean ±SD or n (%) | *p*-value | **Pudendal block group****n=231**Mean ±SD or n (%) |  **Non-pudendal block group****n=102**Mean ±SD or n (%) | *p*-value |
| **Maternal characteristics** |  |  |  |  |  |  |  |
| Age years | 32.1 ±4.1 | 31.3 ±3.9 | 31.9 ±4.0 | 0.07 | 32.3 ±4.2 | 33.6 ±4.1 | 0.21 |
| Married/cohabiting\* | 951 (95.2) | 252 (95.5) | 384 (94.8) | 0.71 | 223 (97.4) | 92 (91.1) | 0.01 |
| Higher education*Missing* | 832 (92.9)*113* | 224 (93.7)*29* | 327 (92.1)*51* | 0.46 | 196 (93.3)*21* | 85 (94.4)*12* | 0.71 |
| Body mass index (km/m2)*Missing* | 23.1 ±4.1*192* | 23.3 ±4.3*48* | 23.0 ±4.0*87* | 0.39 | 23.2 ±4.2*44* | 22.7 ±3.8*13* | 0.34 |
| **Fetal characteristics** |  |  |  |  |  |  |  |
| Gestational age days (weeks) | 281 ±8.3 | 281 ±7.8 | 279 ±8.5 | <0.01 | 283 ±7.8 | 282 ±8.6 | 0.29 |
| Birth weight | 3477 ±451 | 3498 ±493 | 3400 ±419 | <0.01 | 3584 ±433 | 3480 ±452 | 0.05 |
| **Birth characteristics** |  |  |  |  |  |  |  |
| Epidural analgesia | 696 (69.1) | 139 (51.9) | 270 (66.5) | <0.001 | 193 (83.5) | 94 (92.2) | 0.04 |
| Spinal analgesia | 37 (3.7) | 17 (6.3) | 10 (2.5) | 0.01 | 7 (3.0) | 3 (2.9) |  0.97 |
| Epidural and/or spinal analgesia | 724 (71.9) | 152 (56.7) | 279 (68.7) | <0.01 | 198 (85.7) | 95 (93.1) | 0.06 |
| Episiotomy\* | 480 (49.1) | 77 (29.8) | 103 (26.5) | 0.36 | 208 (90.8) | 92 (90.2) | 0.86 |
| Prolonged second stage of labor (>3 hours)\* | 180 (17.9) | 33 (12.3) | 39 (9.6) | 0.27 | 84 (36.5) | 24 (23.5) | 0.02 |
| Long duration of birth (>12 hours)1\* | 170 (17.0) | 26 (9.7) | 38 (9.4) | 0.88 | 79 (34.5) | 27 (26.7) | 0.16 |
| Oxytocin augmentation\*\* | 612 (60.8) | 124 (46.3) | 203 (50.0) | 0.34 | 198 (86.1) | 87 (85.3) | 0.85 |
| **Pudendal block anesthetic** |  |  |  |  |  |  |  |
|  Bupivacaine | 357 | 205 (82.7) | - | - | 152 (89.4) | - | - |
|  Lidocaine | 50 | 35 (14.1) | - | - | 15 (8.8) | - | - |
|  Bupivacaine with epinephrine | 11 | 8 (3.2) | - | - | 3 (1.8) | - | - |
|  *Missing* | *81* | *20* | - | - | *61* | - | - |
| Pudendal block duration (minutes) | 67 ±61 | 71 ±58 | - | -- | 61 ±64 | - | - |
| **Birth unit**\*\* |  |  |  |  |  |  |  |
|  Unit 1 (Rikshospitalet) | 666 (66.1) | 163 (60.8) | 271 (66.7) | 0.12 | 165 (71.4) | 67 (65.7) | 0.29 |
|  Unit 2 (Ullevål) | 341 (33.9) | 105 (39.2) | 135 (33.3) |  | 66 (28.6) | 35 (34.3) |  |
| **Primary outcome** |
| Overt PUR\*² | 327 (33.2) | 57 (21.9) | 102 (25.7) | 0.27 | 123 (53.7) | 45 (45.5) | 0.17 |
| **Secondary outcomes** |
| **Residual urine volume when overt PUR was diagnosed** |  |  |  |  |  |  |  |
|  ≥1000 ml3 | 35 (13.2) | 3 (6.0) | 14 (15.9) | 0.09 | 10 (11.1) | 8 (21.1) | 0.14 |
|  ≥7503 | 82 (30.8) | 15 (30.0) | 28 (31.8) | 0.83 | 27 (30.0) | 12 (31.6) | 0.86 |
|  Volume, ml3 (range) | 585 ±344(30-1700) | 571 ±307 | 598 ±346 | 0.65 | 576 ±344 | 594 ±394 | 0.81 |
| *Missing* | *61* | *7* | *14* |  | *33* | *7* |  |
| Catheterized after >3 hours postpartum\* | 116 (11.6) | 26 (9.7) | 32 (7.9) | 0.41 | 43 (18.9) | 15 (15.0) | 0.39 |
| Apgar score <7 at 5 minutes of age\* | 14 (1.4) | 1 (0.4) | 4 (1.0) | 0.37 | 6 (2.6) | 3 (2.9) | 0.86 |
| Anal sphincter injury*Missing* | 14 (1.5)*51* | 2 (0.8)*10* | 5 (1.3)*20* | 0.53 | 6 (2.8)*15* | 1 (1.0)*6* | 0.34 |

Missing data is presented as a separate category if ≥ 5%, marked (\*) if <5%, otherwise variable information was complete. ¹Vacuum and/or forceps extraction. ²Overt postpartum urinary retention (PUR): Catheterization within 3 hours postpartum. 3Among women diagnosed with overt PUR. 4T-test for continuous variables and Pearson Chi-Square for categorical variables.

**Supplementary Table 2.** Obstetric characteristic by delivery unit (n=1007)

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|  | **Unit 1 (Rikshospitalet)****(n=666)**Mean ±SD or n (%) | **Unit 2 (Ullevål)****(n=341)**Mean ±SD or n (%) | *p*-value3 |
| Pudendal block duration (minutes) | 57 ±53 | 86 ±70 | <0.001 |
| Overt PUR¹ | 263 (40.0) | 64 (19.6) | <0.001 |
| Epidural analgesia | 485 (72.8) | 211 (61.9) | <0.001 |
| Spinal analgesia | 30 (4.5) | 7 (2.1) | 0.05 |
| Epidural and/or spinal analgesia | 508 (76.3) | 216 (63.6) | <0.001 |
| Episiotomy | 314 (48.8) | 166 (49.8) | 0.75 |
| Instrumental birth² | 232 (34.8) | 101 (29.6) | 0.10 |
| Oxytocin augmentation | 436 (65.6) | 176 (51.6) | <0.001 |

¹ Catheterization within 3 hours postpartum. ²Vacuum and/or forceps. 3T-test for continuous variables and Pearson Chi-Square for categorical variables. PUR=postpartum urinary retention.

**Supplementary Table 3.** Odds ratios of factors associated with overt postpartum urinary retention in spontaneous birth, stratified Unit 1

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| **Unit 1 (Rikshospitalet)****n=410²** |
|  | Unadjusted OR | 95% CI | *p*-value | Adjusted OR3 | 95% CI | *p*-value |
| **Pudendal nerve block** | **0.72** | **0.47** | **1.12** | **0.14** | **0.65** | **0.41** | **1.03** | **0.07** |
| Epidural/ spinal analgesia | 2.26 | 1.39 | 3.69 | <0.01 | 2.25 | 1.35 | 3.75 | <0.01 |
| Episiotomy | 1.47 | 0.92 | 2.35 | 0.11 | 1.36 | 0.84 | 2.19 | 0.21 |
| **Unit 2 (Ullevål)****n=220²** |
|  | Unadjusted OR | 95% CI | *p*-value | Adjusted OR3 | 95% CI | *p*-value |
| **Pudendal nerve block** | **1.47** | **0.67** | **3.20** | **0.33** | **1.67** | **0.75** | **3.72** | **0.21** |
| Epidural/ spinal analgesia | 1.57 | 0.69 | 3.54 | 0.28 | 1.81 | 0.78 | 4.19 | 0.17 |
| Episiotomy | 1.18 | 0.52 | 2.69 | 0.70 | 1.23 | 0.53 | 2.84 | 0.62 |
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¹Vacuum and/or forceps extraction. **²**Number of women included in the analysis. 3Multivariable model adjusted for epidural/spinal analgesia and episiotomy. OR: Odds ratio; CI: Confidence interval.