

EVALUATION OF POST-VOIDING RESIDUAL BLADDER VOLUME IN PRIMIPARAS DAY 3 POSTPARTUM

Hypothesis / aims of study

The first delivery is known to be the primary factor of subsequent pelvis floor disorders, often associated with stress urinary incontinence. Numerous other factors seem to be involved, e.g., epidural analgesia, durations of labor and expulsive efforts, instrumental extraction, episiotomy, and the newborn's birth weight and cranial circumference. Some obstetricians have reported that > 50% of their patients experience urine retention exceeding 500 mL during the immediate postpartum period following vaginal delivery under epidural anesthesia. To determine whether this bladder dysfunction incurs post-voiding residual volume during the short-term postpartum period, we used 3D-ultrasonography (3D-US) to measure this residual volume in primiparas 3 days after delivery.

Study design, materials and methods

This study included 156 primiparas, all of whom had been catheterized 2 hours postpartum to measure precisely the volume of urine retained. On the morning of discharge day 3 (D3) postpartum, when the patient felt the desire to urinate, her 3D-US pre-voiding bladder volume was determined with Bladder Scan™ (BVI-3000), then her urine was collected to accurately quantify its volume and, finally, 3D-US was repeated to evaluate the post-voiding residual volume.

Results

Among these 156 women, 154 (98%) had received epidural analgesia, 90 (57%) felt the need to urinate and 97 (61%) had a retained volume \geq 500 mL. According to our univariate analysis, the following factors were associated with a retained volume \geq 500 mL: age ($p=0.04$), the fluid-volume perfused during labor ($p=0.2$) and epidural analgesia ($p=0.2$). Trends towards significance were observed for maternal weight, BMI and duration of expulsive efforts, notably > 25 min. D3 postpartum, the median volumes were: 426.7 mL (158–999.7) pre-voiding, 350 mL (15–1000) collected by urination and 83.2 mL (2–433.3) post-voiding. On D3, post-voiding residual volume exceeded 100 mL in 58 (37%) women. The fluid-volume perfused ($p=0.016$) and instrumental extraction ($p=0.043$) seem to predict post-voiding residual volume on D3.

Interpretation of results

Even though some authors affirm that post-voiding residual urine volume on D3 following vaginal delivery is not responsible for subsequent urinary dysfunction, as could be suggested by our findings, it must be emphasized that 37% of these primiparous women had post-voiding residual volumes exceeding 100 mL. In addition, based on our findings, instrumental extraction was significantly associated with this phenomenon. Furthermore, our data showed no relationship between the volume of urine retained during the immediate postpartum period and the presence of post-voiding residual urine volume in the same women 3 days later.

Concluding message

Other studies are needed to elucidate whether postpartum urine volume retained and/or post-voiding residual volume could be factor(s) contributing to a subsequent bladder dysfunction. Nonetheless, our observations confirm the existence of this dysfunction in primiparas (61% had immediate postpartum retained urine volumes > 500 mL and 37% of them had D3 post-voiding residual volumes > 100 mL. Whenever possible, these women will be followed