590

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OBSTETRICAL RISK FACTORS CONTRIBUTING TO URINE RETENTION > 500 ML 2 HOURS AFTER VAGINAL DELIVERY – A STUDY OF 239 PATIENTS

Hypothesis / aims of study

The frequent use of lumbar epidural analgesia or spinal anesthesia in obstetrics usually makes transurethral catheterization necessary 2 h after delivery. Many recent studies have confirmed the contribution of ultrasongraphic (US) determination of post-voiding urine retention, in men and women, with a 3-dimensional (3D) volumetric captor (Bladder Scan™). To date, the urine retention volume has been measured after cesarean (1) or vaginal delivery. The aim of this prospective study was to evaluate the frequency of urine retention 2 h after vaginal delivery and to look for predisposing risk factors for it.

Study design, materials and methods

Over 6 months, 239 women who delivered vaginally underwent 3D-US (Bladder Scan™, BVI-3000) 2 h postpartum to measure the volume of urine retained. For each patient, 5 determinations were made: the first for calibration and the mean of the last 4 3D-US values were compared to the real volume systematically collected by transurethral catheterization. Statistical analyses used Bland–Altman plots, Pearson's correlation coefficient and the Mann–Whitney test.

Results

3D-US determinations of postpartum urine retention volumes were highly reproducible, as was the relationship between 3D-US and real values, which yielded a correlation coefficient of 0.933 ($p<0.0001$), thereby confirming the strong agreement between techniques. Urine retention volumes exceeding 500 mL or 1 L were found, respectively, for 123/239 (51.5%) and 18/239 (7.5%) of the women. According to univariate analysis, age (protective effect, OR=1.77 for every 10 years younger, 95% CI: 1.03–3.02, $p=0.038$), the volume perfused (deleterious effect OR=1.70/L, 95% CI: 1.15–2.52, $p=0.0080$) and the delivery–catheterization interval (mean: 2 h 24 min±30 min) ($p<0.029$) were independent prognostic factors associated with urine retention during the immediate postpartum period. The other factors – instrumental delivery, epidural anesthesia, spontaneous urination, parity, duration of labor or expulsive efforts, the baby's weight, length and head circumference – were not selected.

Concluding message

The use of 3D-US to evaluate the urine retention volume, regardless of the postpartum uterus volume, is reliable. More than half of the patients had retained volumes > 500 ml and 7.5% had volumes exceeding 1 L, raising the possibility of a potential contribution to a future urinary dysfunction and suggesting that such determinations should become routine practice 1 h after delivery.

References

1. Barrington JW, Edwards G, Ashcroft M, Adekanmi O. Measurement of bladder volume following cesarean section using bladderscan. *Int Urogynecol J Pelvic Floor Dysfunct.* 2001;12(6):373-4.