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Groutz A, Gordon D, Hadi E, Maslevitz S, Pauzner D, Lessing J
Lis Maternity Hospital

POSTPARTUM VOIDING DYSFUNCTION: CORRELATION WITH UROFLOWMETRY MEASUREMENTS AND OBSTETRIC PARAMETERS

Aims of Study

Early postpartum voiding dysfunction is quite common, and was reported to be associated with prolonged labor, instrumental deliveries and epidural analgesia. Although most cases are self-limited, unrecognized voiding dysfunction and mismanagement may lead to recurrent urinary tract infections, upper urinary tract damage and permanent voiding difficulties. Yet, there are neither standard definitions nor guidelines for diagnosis and treatment of this common clinical entity.

The present study was conducted to determine whether uroflowmetry measurements ("free-flow") may be used as a simple, non-invasive screening tool to identify postpartum voiding dysfunction, as well as to examine the possible correlation between various obstetric risk factors and the development of early postpartum voiding dysfunction.

Methods

277 consecutive parturients at their 1-3 postpartum day were prospectively enrolled. Exclusion criteria included non-singleton deliveries and elective cesarean sections. Clinical evaluation included a complete history and physical examination, urinary questionnaire and non-invasive uroflowmetry measurements. Obstetric parameters were obtained from the medical charts. Patients were interviewed about the presence and severity of symptoms that were suggestive of voiding difficulties, i.e., hesitancy, straining to void, weak or prolonged stream, intermittent stream, pain and incomplete emptying. The severity of the symptoms was assessed using a 10-point visual analog symptom (VAS) score (0 = of no clinical significance; 10 = severely affected).

Free-flow measurements were undertaken in private in the sitting position, using a standard toilet, and were repeated at least twice to ensure consistency. All uroflow tracings were inspected and analyzed manually. Free-flow parameters included maximum flow rate, average flow rate, flow time, time to maximum flow, voided volume, and flow pattern. As no formal definitions for voiding dysfunction in women have been established, we considered a maximum flow rate $\leq$15 ml/sec (if at least 100 ml were voided) as a cut-off value suggesting voiding dysfunction.
Comparison of free-flow parameters was made between symptomatic and asymptomatic patients. Further comparison of various obstetric parameters was made in patients with decreased ($\leq$15 ml/sec) versus normal maximum flow rate.

Results were analyzed statistically by Student's *t*-test and χ^2 test. Values of $P<0.05$ were considered significant. Data are presented as mean $\pm$SD, or percentage according to the variables.

Results

277 patients were prospectively enrolled. The mean age of the patients was 25$\pm$6 years. 195 (70%) underwent spontaneous vaginal delivery, 24 (9%) underwent instrumental delivery and 58 (21%) were delivered by cesarean section.

125 patients (45% of the study population) were found to have clinically significant (VAS 5-10) voiding symptoms. The most common symptoms were pain (63%), weak stream (44%), intermittent stream (38%), and hesitancy (33%). Symptoms were significantly more common among women after instrumental delivery (38%) versus spontaneous vaginal delivery (27%) or cesarean section (15%).
The second stage of labor was significantly prolonged in symptomatic versus asymptomatic patients (62$\pm$52 vs 47$\pm$48 minutes, respectively; $P<0.05$). Similarly, a clear trend of longer first stage of labor was found in symptomatic versus asymptomatic patients, however statistical significance was not established (7.1$\pm$4.5 vs 6.4$\pm$4.1 hours, respectively).
Voided volume, maximum flow rate and average flow rates were found to be significantly decreased in symptomatic versus asymptomatic patients (283$\pm$156 vs 360$\pm$220 ml, 29$\pm$18 vs 33$\pm$15 ml/sec, and 15$\pm$12 vs 18$\pm$10 ml/sec respectively; $P<0.05$)). Similarly, intermittent flow pattern was found to be significantly more common among symptomatic versus asymptomatic patients (10% vs 5%, respectively).

28 patients (10% of the study population) demonstrated decreased (≤15 ml/sec) maximum flow rates. 82% of these patients underwent spontaneous vaginal delivery, 7% were delivered by vacuum extraction and 11% by cesarean section. The first stage of labor was significantly prolonged in patients with decreased versus normal maximum flow rates (9.7±5.8 vs 6.4±3.9 hours, respectively; *P*<0.05). Similarly, a clear trend of longer second stage of labor was found in patients with decreased versus normal maximum flow rates, however statistical significance was marginal (71±56 vs 51±44 minutes, respectively; *P*=0.056). Newborn birth-weights were found to be similar in both groups (3148±509 and 3297±474, respectively).

Conclusions

About half of women complain of significant voiding difficulties at the immediate postpartum period. Main risk factors include prolong first and second stages of labor and instrumental vaginal delivery. Uroflowmetry measurements may be used as a valid, non-invasive, screening tool to identify those patients who are at increased risk for significant postpartum voiding dysfunction. Early diagnosis may provide the possibility to use appropriate treatment, thus avoiding the development of irreversible bladder damage.