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Urinary Stress Incontinence after Vaginal Childbirth

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Urinary stress incontinence is defined as an "involuntary loss of urine associated with sudden physical exertion such as coughing, sneezing, or exercising" (Doughty, 1991, p. 31). It is related to decreased support to the bladder neck and the proximal urethra, as well as proximal sphincter dysfunction (Doughty, 19991). Recent studies found direct correlation between urinary incontinence and vaginal childbirth, which were related to changes in the pelvic floor muscles, connective tissue, and neurologic structures.

The following literature review illustrates several aspects of urinary incontinence, its relation to vaginal childbirth, interventional childbirth, diagnostic testing, and treatment modalities and protocols.

Sampselle and DeLancy (1998) described in detail the pelvic floor structure, its relation to continence, and functional dynamics. They distinguish static pressure – at rest, and dynamic pressure – with increased in abdominal pressure, indicating that both are important for maintaining continence when abdominal pressure is increased. Women with urinary stress incontinence (USI) were found to have innervation problems of the pelvic floor. Furthermore, epidemiological studies indicated vaginal childbirth to be a significant predictor of USI, and the severity increases with increased number of childbirth. They summarized their study with the hope that further research will allow practitioners to prescribe appropriate treatment and prevention strategies.

Foldspang, Mommsen, and Djurhus (1999) examined the association between pregnancy, vaginal childbirth, and obstetric technique, compared to prevalence of urinary incontinence (UI) among adult women age 20-59. They used a self-administered survey,

which was mailed to a random sample of 6240 women, and had more than 75% response rate. Findings indicated increased UI during pregnancy, immediately after childbirth, age greater than 30, and a second vaginal childbirth. No association was found between UI and obstetric techniques such as forceps, vacuum, episiotomy and suturing.

Carley, Turner, Scott, and Alexander (1998) compared obstetric histories of women who had surgical procedure for UI or pelvic organ prolapse, with similar group, which did not require surgical interventions. The surgical group had 450 women age 38-63; the control group had 150 women age 40-60. The two groups had no significant differences in terms of age, race, height, weight, body mass index, and history of smoking. In the surgical correction group, women had significantly ($p<0.001$) greater parity compared to the control group, less often nulliparous (3% vs 18%, $p<0.001$), less likely to have had a cesarean delivery (4% vs 15%, $p<0.001$), and more likely to have had a vaginal delivery (94% vs 77%, $p<0.001$). Further delivery analysis found that the surgical group women were 4 years older at the time of their first delivery compared to the control group, and likely to have had epidural analgesia (87% vs 40%, $p<0.004$)

Groutz, Gordon, Keidar, Lessing, Wolman, David, and Chen (1999), assessed prevalence of USI in premenapousal, nullipara, primipara, and grand multipara, and examine obstetric risk factors. The parous women ages 20-43 were interviewed on the third postpartum day, detailed obstetric and gynecological history were included as well. Persistence USI was significantly more prevalent among grand multipara compared to nullipara (21% vs 5%, $p=0.0008$). Among grand multiparas, those who had an infant with birth weight greater than 4 kg, USI was significantly higher (29.4% vs 16.7%)

Persson, Wolner-Hanssen, and Rydhstroem (2000) evaluated obstetric and maternal risk factors for USI. Through population- based registries all women born between 1932-1977 who had surgery for UI between 1987-1996 were identified and trough other database the information about these women obstetric history was obtained and risk factors were evaluated. The following conditions were found to associate with USI: Diabetes mellitus, body mass index, age at first delivery, parity, birth weight, and epidural analgesia. Negative association was found with cesarean section, forceps or vacuum delivery, and episiotomy, and no difference with age of last delivery, smoking, multiple births, perineal tear, or breech delivery.

Dougherty (1998) published a literature review about the effectiveness of pelvic muscle strengthening techniques. These techniques had been effective for women with mild to moderate USI. Over 20 controlled studies found 50% decreased in urinary loss incidence, and other studies found 25% of women had 100% improvement. The author reported very little research on UI prevention, and suggested investigating pregnancy, childbirth, and postpartum periods for implementing these techniques as a primary prevention for UI.

Fischer and Baessler (1996) evaluated the effectiveness of daily cone training compared with conventional postpartum exercise. Women were examined 6-8 weeks after vaginal childbirth, and reexamined 4-6 weeks after cone training. The group included 71 women; the control group (conventional postpartum exercise) included 20 women, and 8 nullipara who used the vaginal cones as well. Women who used the vaginal cones demonstrated a 5-6mmHg increase in contractility in both groups, the differences between the cone group and the conventional therapy was not significant, yet the researchers suggested cone therapy in addition to conventional postpartum exercise.

Morkved and Bo (2000) evaluated long term effect of muscle floor training in the prevention and treatment of UI. The researchers used a prospective matched controlled trial design. There were 81 pairs of women with similar demographics and obstetric history. One women of each of the paired received an eight-week pelvic floor muscle-training program in the immediate post partum period. Exam and pressure reading, as well as pad test to show urinary leakage were evaluated. Finding showed significant differences between the groups. At the one-year follow up study the control group had significantly more incidence of USI ($p<0.01$). The training group showed a significantly higher muscle strength ($p<0.01$) than the control group. The researchers concluded that this specially designed postpartum program was effective in prevention and treatment of USI.

Sampselle, Wyman, Thomas, Newman, Gray, Dougherty, and Burns (2000) described the initial evaluation and implementation into practice of a newly developed evidence-based protocol for initial evaluation and treatment of UI. The objective was to outline a process that would facilitate the protocols' implementation into clinical practice. The Association of Women's Health, Obstetric and Neonatal Nurses (AWHONN) with collaboration from the Wound, Ostomy and Continence Nurses Society (WOCN) dedicated the organizational resources for this study. During the first phase the evidence based protocol and implementation plan were developed. The second phase was implementation, and included site recruitment and training of health care providers, and data collection. The last phase included analysis and interpretation of the data. The participating providers gave their clients a self-administered questionnaires for screening, for basic evaluation, and for ongoing evaluation, (if had UI) and intervened as needed. The healthcare providers who participated in the study reported increased awareness of UI, increased appreciation for evidence-based

practice, and greater professional satisfaction. The major drawbacks was increased workload related to data collection and needed interventions, and questionable reimbursement for patient education.

Sampselle et al (2000) than describe the effectiveness of the evidence-based protocol. The screening questionnaire identified 57% of women as incontinent, compared to other studies of 38% to 41%. Of these women, 63% completed the basic evaluation form. These finding indicates that the routine screening was effective in identifying women with UI. Of the 1474 women participants, 842 were incontinent. One hundred thirty two women completed a pelvic floor muscle and bladder training, and were evaluated four month later. The post treatment evaluation indicated significant improvement in the number of leakage episodes, the amount of leakage, cost of self-management, bother score, and activity avoidance. All demonstrate the effectiveness of the evidence-based protocol in clinical setting.

Summary

The studies described here are only a small sample of numerous others, which found direct correlation between USI and vaginal childbirth. Other risk factors related to vaginal childbirth were maternal age at the time of first childbirth, increased parity, large infant (>4kg) and epidural analgesia. Other research clearly showed that pelvic floor muscle training resulted significant changes in urine loss and pelvic muscle strength among women with USI, and improvement was sustained for several years. The AWHONN study was obviously one of the most comprehensive researches, which provided not only screening, assessment tools, and treatment protocols, but also benefited clients and providers with increased awareness of UI. Implementing UI screening and initial treatment into everyday clinical practice, UI prevention, and postpartum program, are major challenges facing consumers, healthcare providers and payers for the coming years.

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