



Full length article

Acupuncture for the treatment of post-partum urinary retention

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ABSTRACT

Study objectives: The aims of the present study were to evaluate acupuncture as an alternative treatment to an indwelling catheter for women with postpartum urinary retention, and to evaluate the accuracy of sonographic estimation of bladder volume by portable bedside equipment in women postpartum.

Study background: Post-partum urinary retention is a common obstetric complication. The accepted method for diagnosing post void residual bladder volume is by ultrasound or catheterization. However, the accuracy of bedside sonographic evaluation of bladder volume in women postpartum is controversial due to anatomical and technical issues. The traditional treatment of urinary retention is catheterization for variable lengths of time. Acupuncture, while an accepted treatment method for urinary retention in traditional societies in the Far East, has not been proven scientifically to resolve the problem. Therefore, the aims of our study were to evaluate acupuncture as an alternative treatment to catheterization for urinary retention, and to evaluate the accuracy of sonographic estimation of bladder volume by portable bedside ultrasound in women postpartum.

Materials and methods: The study was a prospective randomized case-controlled trial conducted in 55 women post-partum with urinary retention. All patients underwent a pre and post treatment sonographic evaluation of bladder volume. Women with urinary retention were given the choice of treatment by acupuncture or catheterization. Acupuncture was performed by an experienced acupuncturist licensed in Traditional Chinese Medicine and point selection was based on Meridian theory and clinical experience.

Results: In the acupuncture group, 23 women (92%) achieved spontaneous micturition within one hour following treatment. Bedside sonographic evaluation of bladder volume showed excellent correlation to actual volume as measured by catheterization ($r^2 = 0.988$).

Conclusion: Acupuncture proved to be an excellent alternative to catheterization in treatment of women with postpartum urinary retention.

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Introduction

Post-partum urinary retention (PUR) is a common condition defined as the inability to void after delivery. This inability may be symptomatic (overt) or asymptomatic (covert). The incidence of this disturbing condition has been reported to be 1.7–17.9% [1,2]. This large variance has been accounted for the various definitions for PUR and the different methodologies that have been used. Of the women with PUR about 5% may suffer significant and longer lasting dysfunction [3]. Traditionally, post-partum urinary

retention is described as “the inability to void spontaneously within 6 h after vaginal delivery or 6 h after removal of an indwelling bladder catheter after cesarean section, requiring catheterization” [4].

Post-void residual volume (PVR) is defined as the volume of remaining fluid in the bladder immediately following micturition completion. Although there is great variance in the determination of significant residual urine, the most accepted threshold for a post void residual bladder volume is 150 ml after spontaneous micturition, verified by ultrasound or catheterization [5–7]. Another difficulty with estimating urinary volume is that there is much controversy on the accuracy of ultrasound bladder volume estimation and its usefulness in cases of urinary retention, especially postpartum, where the normal anatomy of the bladder may be distorted by the enlarged uterus. However, most recent

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studies report good correlation with bedside portable ultrasound equipment compared to urine volume as determined by catheterization [8–10].

Risk factors for post-partum urinary retention include nulliparity, prolonged labor (especially in the setting of a prolonged second stage), assisted/instrumental delivery, perineal injury, tissue edema, cesarean section and regional analgesia [11,6]. Urinary retention may also result from nerve injury during delivery [12]. However, many women with post-partum voiding difficulties may have no apparent risk factors.

When postpartum urinary retention results, an indwelling catheter is usually utilized and maintained for 24–72 h. If symptoms persist, catheterization for a week or longer may be recommended [6]. Others advocate intermittent catheterization as it may decrease the probability of urinary infection [13,14].

Acupuncture has been used as an alternative treatment for urinary retention in several Chinese medical centers with reports of spontaneous restoration of micturition in all treated patients [15,16]. Though results seem to be quite promising, none of the studies published to date, performed PVR measurements whether by catheterization or sonographic evaluation, they used diverse treatment protocols and no post treatment follow-up has been reported.

The aims of the present study were therefore: a) to evaluate acupuncture as an alternative treatment to an indwelling catheter for women with postpartum urinary retention, and 2) to evaluate the accuracy of sonographic estimation of bladder volume by portable bedside equipment in women postpartum.

Methods and materials

Population selection

The study is a prospective randomized case-controlled trial conducted between January 2016 and March 2017. The study protocol was approved by the local Ethics Committee (RMB-0590-15) and all women participating signed an informed consent. Our policy is that women who cannot void within four hours after spontaneous delivery have a Foley catheter inserted for 24 h. For women who have undergone cesarean section and have a Foley catheter, our policy is to remove it within 8–12 h upon patient ambulation. These women who cannot void spontaneously within 4 h, have the Foley catheter reinserted. Patients after vaginal delivery or cesarean section who could not void within four hours following delivery or the removal of the catheter were selected for the study. During the study period fifty-five subjects had PVR of over 150 ml by sonographic evaluation. Twenty five women were willing to undergo acupuncture treatment, and thus comprised the study group, while 30 did not want to undergo acupuncture treatment, and thus comprised the control group. These women were treated by catheterization. The 55 patients that comprised the study and control groups were selected from parturients with a PVR of 0.5–1 l. The reason for this selection was that patients with a PVR of over 1 l were in high risk for bladder damage and would not benefit from any prolongation of the time interval until catheterization

Time interval selection

According to previous studies regarding postpartum urinary retention, the accepted interval between delivery or catheter removal and micturition is 4–6 h [2,4,6]. The selection of the four hour marker was based in this study on the expected time required for study explanation and informed consent retrieval, sonographic PVR evaluation and the acupuncture treatment, all of which took between 45 and 60 min, therefore reaching the accepted six-hour

limit. Additionally, patients in the study group were given an extra 60 min to void after the end of acupuncture and before treatment failure was asserted. Thus, a maximum time frame of six hours postpartum or post catheter removal was maintained for all subjects.

Sonographic evaluation and catheterization

All patients enrolled for the study underwent a pre-treatment ultrasound to measure bladder volume. Subjects with a PVR of more than 150 ml were included in the study. Subjects who achieved micturition post treatment had a second ultrasound performed in order to determine the residual volume. Treatment success was considered as a PVR of less than 150 ml post treatment. Subjects who continued to experience micturition difficulties one hour after the completion of the treatment, had a second ultrasound performed in order to assess again the PVR, and then underwent bladder catheterization. This allowed the validation of the ultrasonographical accuracy of the estimated bladder volume vs. the actual volume.

Ultrasound evaluation

We used the CUBEScan BioCon 700 (Mcube Technology Co, Ltd, Korea) portable ultrasound in the present study. The ultrasound transducer head was placed suprapubically with the patient in supine position and the bladder image was obtained. Bladder volume was automatically calculated from the acquired image. Three readings were acquired from each woman consecutively and if the readings were within $\pm 15\%$, the average of the three readings was calculated.

Acupuncture treatment

All treatments were performed by an experienced acupuncturist licensed in Traditional Chinese Medicine (TCM). Acupuncture point selection was based on TCM, Meridian theory, and clinical experience. Acupuncture points included: BL-28 (Pangguangshu)-the back transporting points of the bladder, known to be responsible for bladder and micturition regulation, located mid-laterally at the level of the second posterior sacral foramen; BL-32 (Ciliao)-known for bladder channel obstruction removal and micturition promotion, located in the mid second posterior sacral foramen; LU-7 (Lieque)-known for bladder blood supply regulation, located at the radial aspect of the forearm, in the cleft between the tendons of the brachioradialis and abductor pollicis longus; KI-6 (Zhaohai)- known for bladder blood supply regulation, located below the prominence of the medial malleolus; GV-20 (Baihui)-known for promotion of clear qi ascending and impure qi descending, located at the midline vertex; HT-7 (Shenmen)-known for calming the spirit, located at the radial side of the wrist joint at the level of the flexor carpi ulnaris; SP-6 (Sanyinjiao)-known for three leg yin channels qi regulation and water passage in addition to pain management.

Five to seven acupuncture points were selected for each treatment after diagnosis by the experienced licensed acupuncturist. Patients underwent acupuncture treatment either in the decubitus or supine position. The acupuncture points were punctured 0.5–2 cm deep depending on the point selected, and moderate stimulation was applied. The needles were retained for 20–30 min after achieving de-Qi and were manipulated once every 3–5 min. Dong bang spring handle sterilized acupuncture needles were used (0.16\15 mm 0.20\30 mm 0.25\30 mm 0.25\40 mm in diameter). Sham needles were not used during the study for ethical reasons.

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