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Contribution of pelvic hot shower therapy to effectiveness in 2nd trimester medical abortions (Balsak's hot shower technique)

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ABSTRACT

Objective: This study aims to investigate the effects of the pelvic hot shower in missed second-trimester abortions.

Material and Methods: A total of 125 pregnant patients with fetal demise were included in this study. They were divided into two groups according to the treatment used to induce abortion. One group was treated with misoprostol only (n:74), and the other group received medical treatment and pelvic hot shower therapy (n:51). A pelvic hot shower application was applied when the patient's vaginal bleeding started. Hot water at 55-60 oC was applied to the pelvic region for 30 minutes.

Results: There was no difference between the two groups regarding age, body mass index (BMI), and gestational week. (p> 0.05) After the induction started, the duration of the abortion was 8.57 hours in the pelvic shower group and 12.97 hours in the misoprostol group. The difference of abortion times among the groups was statistically significant (p: 0.039*). The total dose of used misoprostol that caused vaginal contraction for abortionwas 396 mg in the patient with pelvic shower and 614 mg in the misoprostol group; the difference was statistically significant (p< 0.001). The Visual Analogue Scale VAS score and analgesic requirements were significantly lower in the pelvic shower therapy group (p<0.05).

Conclusion: Pelvic hot shower application is an accessible, applicable, simple, effective, and inexpensive beneficial method for patients in the induced 2nd trimester.

Keywords: Pregnant, abortion, pelvic hot shower

INTRODUCTION

Second-trimester termination of pregnancy accounts for approximately 10 to 15 percent of abortions performed each year worldwide (1). The United States Centers for Disease Control and Prevention (CDC) reports that in 2018, about 8 percent of abortions were performed between 14 and 20 weeks and 1 percent at or after 21 weeks (2).

Misoprostol and mifepristone are commonly used drugs for second-trimester medical abortions (3). Misoprostol is a valuable agent for both first and second-trimester termination of pregnancy. This agent is readily absorbed after sublingual, buccal, vaginal, and rectal administration (4). Side effects of misoprostol include maternal symptoms such as fever, chills, nausea, vomiting, diarrhea, and abdominal pain. There are rare complications in second-trimester medical abortions. Medical abortion was associated with a more extended hospital stay, increased risk of infection, and increased induction-curettage interval compared to surgical abortion (5-7). Several factors affect the induction-curettage interval. Although there are insufficient studies on this subject, combined measures are recommended to reduce the overall waiting time (8,9). Compared to misoprostol alone, combined regimens have been reported to reduce the induction-abortion interval and complications (10,11).

Hydrotherapy affects neuroendocrine responses that alter psychophysiological processes. Warm water reduces catecholamine release, increases uterine perfusion, increases uterine rhythmic contractions, accelerates cervical dilation, and shortens labor time (12-14). In clinics, medical abortion is often prolonged; patients stay in the hospital for long periods. These conditions can create severe physiological, psychological, and financial pressure on the patient, physician, and hospital. In addition to the use of hydrotherapy at birth, our study examined hot water application to the pelvic region in patients who received misoprostol and investigated the impact on medical abortion.

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MATERIAL and METHODS

In this prospective study, 125 early second trimester (14-20 gestational weeks) patients who decided to induction due to intrauterine fetal death in our clinic between 2014 and 2015 were included. The diagnosis of missed abortion was verified by the absence of a demonstrable heartbeat on B-mode and Doppler ultrasonography. Crown-rump length, biparietal diameter, and femur length measurements were noted. All patients were hospitalised after being diagnosed. Exclusion criteria were as follows: gross fetal anomaly, previous cesarean section history, multiple pregnancies, prostaglandin allergy, asthma, heavy vaginal bleeding, and fetal heartbeat positive patients. Ethics committee approval (29.07.2015-12) was granted, and written consent forms were obtained from all women. The study was conducted in compliance with the principles of the Declaration of Helsinki. The surgical or medical abortion methods were explained, and the study was planned for women with the desire to be treated with medical induction. Sample size n = [DEFF*Np(1-p)]/ [(d2/Z21-α/2*(N-1)+p*(1-p)] was calculated with Open Epi version 3.01 program.

The patients were divided into two groups as, misoprostol group (n:74) and the misoprostol + pelvic hot shower group (n:51). Misoprostol 400 mg was administered vaginally in repeated doses at three-hourly intervals (up to a maximum of 5 doses per day).If abortion did not occur, the same dose was repeated the next day. Pelvic hot shower was applied with the onset of vaginal bleeding of the patient. Pelvic hot shower application is as follows: With the patient in the lithotomy position, on the gynecological table, 55-60 degrees water is continuously applied to the groin area for 30 minutes, accompanied by a nurse (**Figure 1**).

The patients were evaluated in terms of abortion time (induction-abortion period), total drug dose, blood loss, VAS, need for analgesia, complications, transfusions, and drug side effects. The period in which the patients felt maximum pain before abortion was recorded with the VAS score. Statistical analysis was performed using the SPSS 22.0 software program. Descriptive statistics and Student's t-test were used to analyse the data variables. The Mann-Whitney U test, continuity test, and chi-square test were used to compare the data. A p-value<0.05 was considered statistically significant.

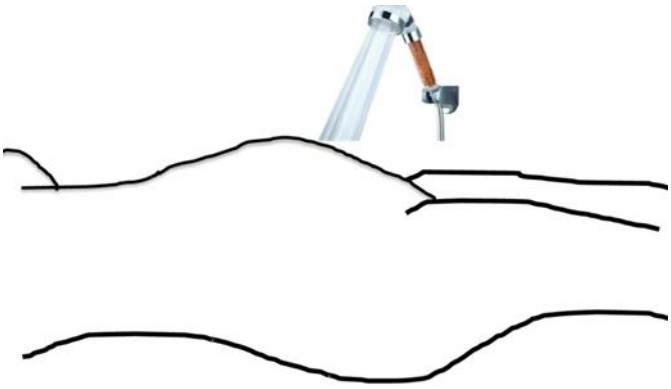

Figure 1: Representative image of Pelvic hot shower

RESULTS

A total of 125 patients were induced due to abortion. The 74 patients were in the misoprostol group, The 51 patients were misoprostol + pelvic hot shower patients. There was no difference between the two groups in terms of age, BMI, and gestational week in both groups. (p> 0.05) After the induction started, the duration of abortion was 8.57 hours in the pelvic hot shower group and 12.97 minutes in the misoprostol group. The difference between them was statistically significant (p: 0.039*).

The total dose of misoprostol used was 396 mg in the patient with pelvic hot shower and 614 mg in the misoprostol group; the difference between groups was significant (p< 0.001) VAS score and analgesia requirements were significantly lower in the pelvic hot shower therapy group (p<0.05).

However, the differences in complication rates and estimated blood loss between the two groups were not statistically significant (p>0.05). The two group's characteristics and comparative data are summarised in Table 1.

Table 1: Evaluation of the characteristics of pregnant women according to their pelvic hot shower and only misoprostol status

	Only misoprostol n:74 mean±SS (median)	Pelvic hot shower+ misoprostol n:51 mean±SS (median)	p
Age (years)	31.62±5.21	30.69±5.83	**0.349**
Parity	3.86±2.06 (3)	4.22±2.31 (4)	**0.315**
Gravida	4.93±2.12 (4)	5.57±2.46 (5)	**0.076**
Gestational age (wks.)	14.86±1.53 (14)	14.65±1.2 (14)	**0.875**
Abortion time (hrs.)	12.92±10.27 (8)	8.57±5.75 (6)	**0.039***
Total drug dose (mg)	614.04±176.71 (600)	396.08±213.5 (400)	**0.001****
Blood loss (ml)	285.67±92.17	265.29±63.83	**0.147**
VAS	6.53±0.74 (7)	3.41±1.36 (4)	**0.001****
Need for analgesia	12 (16.2%)	2 (3.9%)	**0.032***
Fever	11 (14.9%)	8 (15.7%)	**1.000**
Diarrhoea	5 (6.8%)	5 (9.8%)	**0.739**
Transfusion	1 (1.4%)	1 (2.0%)	**1.000**

DISCUSSION

Misoprostol is effective and safe for medical induction in case of fetal death in the second trimester (15). There are several combined methods to reduce the induction-abortion interval. Combined methods have been reported to reduce drug side effects and hospital stays (16,17).

In our study, after the induction started, the duration of the abortion was 8.57 hours in the pelvic hot shower group and 12.97 minutes in the misoprostol group. The difference between them was statistically significant (p: 0.039*).

Various dilators and drugs are used in combined methods and are reported to reduce the abortion period (16). Vitner et al. reported that inductions with misoprostol were also associated with higher parity and a shorter induction-abortion interval (18). Sak et al. said that the induction-abortion interval of misoprostol-induced abortions in the second trimester was longer in patients with hyperglycemia and advanced gestational age (19). Ting et al. noted that higher parity, intrauterine fetal death, and premature rupture of membranes were associated with the shorter induction-abortion (20). We found that the pelvic hot shower combined with misoprostol reduced the induction-curettage interval. This method is a viable, easy-to-use alternative method in countries where mifepristone is not approved and in underdeveloped countries where access to drugs such as osmotic dilators and misoprostol is limited.

The total dose of misoprostol used was 396 mg in the patient with the pelvic shower and 614 mg in the misoprostol group; the difference between them was significant ($p< 0.001$). Shah et al. reported that misoprostol alone required a higher total drug dose than the combined drug regimens (21). Ercan et al. found that the combination of misoprostol + foley catheter reduced the total dose of misoprostol required for termination (22). Studies have shown that the combined methods have reported lower doses of misoprostol.

The pelvic hot shower application, which is a simple and accessible method used in our study, seems cost-effective in reducing the total dose of misoprostol.

The VAS score and analgesic requirements were significantly lower in the pelvic hot shower therapy group ($p<0.05$). Tintara et al. reported that 400 mg of celecoxib, which they administered to misoprostol-induced second-trimester abortions, had an insufficient analgesic effect (23). Velipasaoglu et al. compared the analgesic needs of misoprostol patients. They concluded that there was no difference in pain perception in second-trimester pregnancy termination cases using acetaminophen, diclofenac, and hyoscine-N-butylbromide (24). In a recent review on the subject, local analgesia, and nonsteroidal anti-inflammatory drugs (NSAID) reported relief of second-trimester medical pain. They concluded there is a need for studies on non-pharmacological methods (25). Our study is the first non-pharmacological study; it is a method that will be beneficial in relieving the pain of patients wherever there is access to warm water.

Non-pharmacological analgesic modalities have been associated with reduced pain, pelvic relaxation, and less assisted vaginal delivery. (26-30). We found that women who gave birth during hydrotherapy had the highest level of satisfaction (31). Benfield et al. noted that hydrotherapy affects neuroendocrine responses that alter psychophysiological processes. Anxiety was associated with reduced vasopressin, oxytocin, and uterine contraction frequency. Additionally, they reported changes in cortisol levels and beta-endorphin levels (32). The concerns of the patients and their relatives about the prolonged induction-abortion, the scarcity of alternatives to the medical methods used, the lengthy hospital stay, and the financial burden it creates put significant pressure on physicians. We believe that combined non-pharmacological methods will reduce this pressure. Prospective studies on the hydrotherapy/pelvic hot shower method are needed in all trimesters. We could not classify the limitations of our research, the pelvic hot shower effect, findings based on demographic characteristics, and parity. The strength of our work is that this is the first study to examine the effects of hydrotherapy in the induced secondary trimester.

CONCLUSION

In the second trimester, misoprostol is widely used. There is a consensus that it is an effective induction method. But not every patient responds the same way to drugs, and every patient's pain threshold differs. The use of water in childbirth is an accepted method. We found that applying a pelvic hot shower to the pelvic region in the second trimester reduced the amount of medication used, the need for analgesia, and the induction-curettage interval. The pelvic hot shower application is an easy-to-access, applicable, simple, effective, and inexpensive method beneficial for patients in the induced second trimester.

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Author Contributions: DB, ŞA, YHE, MY: Patient applications**,** conceptualization, methodology, data collection, formal data analysis, writing original draft preparation, writing review and editing, supervision, validation, and editing.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the institutional and/or national research committee's ethical standards and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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