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Risk factors predisposing to surgical evacuation after medical termination of pregnancy during the second trimester: A retrospective study

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Abstract

Purpose: To investigate the possible risk factors which might increase the likelihood of surgical evacuation after medical termination of pregnancy during the second trimester.

Methods: Data derived from 262 women who had undergone medical termination of pregnancy during her second trimester in a tertiary care center between January 2009-February 2013 were retrospectively analyzed. Misoprostol was administered vaginally at intervals of 4-6 hours at a total dose of 100-4400 mg for medical termination.

Results: Surgical evacuation was performed at a rate of 19.8 percent (52/262). Indications for surgical evacuation were incomplete abortion in 37, and failure of medical induction of abortion in six patients. Total dose of misoprostol, time to abortion after induction, duration of hospitalization, systolic blood pressure at admission and baseline hematocrit levels, occurrence of side effects of misoprostol seem to increase the likelihood of a surgical procedure for definite termination of a second- trimester pregnancy.

Conclusion: Both surgical evacuation as well as medical induction of abortion can be utilized for termination of second- trimester pregnancies. Surgical evacuation should be considered in case of failure of induction, incomplete abortion or for hemodynamically instable patients. Correct and timely decision for the selection of an appropriate method is crucial to avoid hazardous outcomes.

Key words: Second trimester; pregnancy; termination; surgical evacuation.

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Introduction

At least 3% of pregnancies are affected by either a genetic or structural fetal anomaly, and prenatal screening for anomalies is a routine part of prenatal care (1). Most women diagnosed with a fetal anomaly choose to terminate the pregnancy, with proportions ranging from 47% to 90% (2). Most diagnoses of genetic and structural anomalies are made by amniocentesis and/or ultrasonography, and, consequently, patients wishing to terminate an anomalous fetus often do so in the second trimester.

Both medical and surgical evacuation can be used for termination of a second-trimester pregnancy (STP). The rate of surgical evacuation performed during STP ranges between 5 and 30% (1, 3, 4). There are few studies focusing on the possible risk factors predisposing to surgical evacuation for termination of STP (1). In the literature, older maternal age, higher dose of prostaglandin, previous termination of pregnancy and increasing duration of gestation have been associated with likelihood of surgical evacuation (5,10). To supply secure second trimester abortion, there should be careful pre-abortion evaluation and preparation. A detailed history and careful physical investigation should be performed to exclude possible medical pull down, risk factors for complications of abortion and to assess the gestational age of the pregnancy. If there is a inconsistency between the gestational age as calculated by the date of the last menstrual period and the uterine size, an ultrasound examination should be built for accurate dating of the pregnancy (10).

Our aim was to evaluate possible demographic and clinical factors detected in second-trimester pregnancies that seem to be predisposing for surgical evacuation after medical termination.

Material and Methods

Data derived from the medical records were retrospectively analyzed. The local Institutional Review Board approved the trial. The study included patients treated in the obstetrics and gynecology department of a tertiary care center between January 2009 and February 2013.

A total of 262 women whose pregnancies were terminated between 13 and 24 weeks of gestation were included in the analysis. These patients were admitted to our clinic because of fetal abnormalities, and a dead fetus. 67 patients were performed cesarean operation previously. Patients aged ≥18 years with a history of live fetuses were included in this study. Exclusion criteria were cardiopulmonary problem such as severe asthma or coronary artery disease, and the presence of ectopic pregnancy or intrauterine contraceptive device in the uterus. Misoprostol (400 mcg; 2×200 mcg, Cytotec®, Ali Raif Pharm. Inc., Istanbul, Turkey) was administered at doses of 50-600 mcg at intervals of 4-6 hours. Total dosage of misoprostol ranged between 100-4400 mcg. The estimated of administration was vaginal in all patients. Bleeding is the most known complication of surgical abortion in the second rimester. Its incidence enhances with gestational age. The use of uterotonics, such as oxytocin, is commonly employed to decrease the amount of blood loss of the processes.

In cases of heavy vaginal bleeding (>300 mL) or when placenta was not delivered, the patients had been monitored for some time. No strict schedule was determined for the appropriate observation period. The retained placenta was removed either at the ward or in the operating theater under general anesthesia. Heavy bleeding was accepted as an indication for urgent surgical evacuation. The diagnosis of retained placenta was confirmed by clinical judgement, continuous heavy

bleeding and ultrasonographic findings consistent with uneven endometrial thickening. Heavy complications such as hemorrhage (determined as an estimated loss of ≥1000 mL blood) due to atony, placental retention, secondary bleeding or uterine rupture and any necessity for blood transfusions were reported. Laparotomy was performed to achieve hemostasis surgically by ligation of vessels responsible for hemorrhage. Total abdominal hysterectomy was necessaried in circumstances where this target could not be accomplished via laparotomy. Hysterotomy was performed transabdominally when abortion did not occur within 48 hours of the first misoprostol insertion and the treatment was considered to have failed completely. Usually, women without any complications were discharged no sooner than 4 hours after expulsion or dilatation-curettage.

Statistical analysis: Data were analyzed using the Statistical Package for Social Sciences (SPSS) software (version 15.0 for Windows). All differences associated with a chance probability of .05 or less were considered statistically significant. The variables with normal distribution are analyzed using Student T-test, while variables that are not distributed normally are assessed with Mann-Whitney U test. Qualitative variables were evaluated via Chi-Square test.

Results

The study population consisted of 262 women who had undergone termination of STP. Medical termination and surgical evacuation were performed in 210 and 52 patients respectively. Surgical evacuation was performed in cases of incomplete abortion or in cases where misoprostol treatment failed to induce abortion after 48 hours. These conditions were considered as an indication for surgical treatment. Demographic characteristics of the study population are shown in **Table 1**.

Table 1. Demographics of our patients that underwent termination of second trimester pregnancy.

Variable	Description	Number of patients (%)
Gestational week at admission	13-14 weeks	49 (18.7%)
	15-16 weeks	74 (28.3%)
	17-18 weeks	65 (24.6%)
	19-25 weeks	74 (28.3%)
History of previous abortion		112(42.9%)
Smoking		5 (1.8%)
Previous cesarean section		67(25.6%)
Usage of additional methods (oxytocin, transcervical foley catheter)		41(15.5%)
Uterine rupture		5(1.4%)
Need for laparatomy		6 (1.8%)
Need for blood transfusion		11 (4.1%)
Chorioamnionitis		9 (3.2%)

Median IQR (interquartile range) gestation at TOP (termination of pregnancy) was 15 (range 14 to 17) weeks. The mean age of the women was 29.5±4.95 (range 14 to 51) years. Hysterotomy was performed in eleven patients (nine in the medical termination group, two in the surgical evacuation group). Uterine rupture was encountered in five patients in the medical termination group. The average interval between induction of abortion and TOP was 37.95 (range 3 to 240) hours.

Total dose of misoprostol (p=0.039), time to induction of abortion (p=0.043), duration of hospital stay (p=0.020), systolic blood pressure at admission (p=0.022), baseline hematocrit levels (p=0.031) and occurrence of side effects of misoprostol (p=0.001) were found to increase the risk of surgical evacuation.

On the other hand, age (p=0.594), menarche (p=0.89), number of pregnancies (p=0.535) and live births (p=0.257), history of cesarean section (p=0.557), necessity for blood transfusion (p=0.691), co-existence of chorioamnionitis (p=0.139), use of additional measures (e.g. oxytocin, transcervical Foley catheter etc.) (p=0.673) and history of abortion (p=0.742) were found not to be associated with the risk of surgical evacuation. Leukocyte count (p=0.301), levels of blood glucose (p=0.285), blood urea nitrogen, creatinine (p=0.257), bilirubin (p=0.281), albumin (p=0.269), platelet count (p=0.163) and coagulopathy (p=0.586) did not seem to increase the necessity for surgical evacuation.

Discussion

Termination of pregnancy during second trimester is a challenge from social, emotional, and management perspectives. Provided that fetal anomalies or fetal death is detected, the usual option is use of prostaglandins for induction of abortion (11-13). Surgical evacuation is an alternative seldom used outside the United States. There is a gradual increase in the incidence of second-trimester abortion because of wide scale introduction of prenatal screening programs that detect women with pregnancies complicated due to serious fetal abnormalities (11-14). In these circumstances, examination of the fetus could yield valuable information after medical abortion not only to confirm the congenital anomalies but also to further evaluate the subsequent recurrence risk and provide information to help in counseling of these patients (11).

Although comparisons of medical abortion with surgical evacuation for pregnancies up to nine gestational weeks have demonstrated that both methods are highly acceptable, medical abortion seems to be more painful and less effective with advancing gestation (2-5). Development of regimens including the use of misoprostol has increased the efficacy and reduced the side effects of medical abortion. Medical abortion is accepted to be as effective as surgical evacuation in the late-first and early-second- trimester pregnancies (16-18). Dilation and evacuation has been reported to be significantly safer and more effective than induction of labor for second-trimester abortion because of fetal indications (11,19,20).

Our results indicate that the total dose of misoprostol and occurrence of side effects seem to increase the likelihood of application of surgical evacuation. Increasing the dose may signify the unresponsiveness to prostaglandins and may predict the failure of medical termination. Therefore, surgical evacuation appears to be a safe and effective option in these circumstances. Since a time interval is necessary to decide for the surgical evacuation, duration of hospital stay and induction are significantly higher in the surgical evacuation group. Low levels of hematocrit and high systolic blood pressure

are important hemodynamic parameters, which favor surgical evacuation. In such a circumstance, prolongation of medical induction with a longer observation period might result in further blood loss and subsequently circulatory and hemodynamic status of the patient would be deteriorated.

Mortality rate is increased significantly in the second trimester abortions compared to those the first trimester. Although absolute risk of death is low, relative risk of mortality of a TOP performed at ≥21 gestational weeks is more than 75 times higher than the risk associated with a TOP at 8 weeks. The abortion-related mortalities have been attributed mostly to direct causes such as hemorrhage and infection and to a lesser degree to indirect causes such as embolism and anesthesia related complications (5, 21). In our series, any case of mortality was not encountered. This may be due to the increased quality of healthcare services and effective prenatal screening programs in our country in recent years.

Surgical evacuation of the contents of the uterus is not routinely required following mid-trimester medical abortion. It should be performed if there is clinical evidence that the abortion is incomplete or medical TOP fails (3,5,6). In the literature 2.5-11% of the pregnant have been reportedly required surgical evacuation following medical abortion (3,5,7). A relatively low incidence of surgical evacuation have been also indicated in previous reports (2,5,9). In our series, the increased rate of surgical evacuation (19.8%) may stem from the fact that our institution is a referral centre, where mostly complicated pregnancies are dealt with.

Complete abortion have been attempted with increasing frequency (>80%) during advanced (≥20 wks) gestational weeks. Routine evacuation does not protect against the necessity for hospital readmission for indications of post-abortion bleeding and uterine curettage (3, 22). A more determined approach to use surgical evacuation only when indicated would probably reduce the length of hospital stay. For achievement of this goal, the use of staff experienced in assessing placental integrity after abortion is essential.

We think that induction of abortion with misoprostol can be initially considered in hemodynamically stable patients. However, existence of side effects of misoprostol, unresponsiveness to induction, delayed or incomplete abortion after application of misoprostol are signs suggesting the likelihood of subsequent surgical evacuation.

Conclusion

Both medical and surgical termination of pregnancy seem to be safe and effective methods to be used during the second trimester. Selection of the appropriate method must be made carefully with respect to clinical findings including the hemodynamic status of the patient, and responsiveness to prostaglandins. In this aspect, surgical evacuation and medical termination have different indications rather than being alternative modalities.

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