The Effect of Parity and Gravidity on the Outcome of Medical Termination of Pregnancy

Marwan Odeh MD[1,2], Rene Tendler MD[1], Vladimir Sosnovsky MD[1], Mohamad Kais MD[1], Ella Ophir MD[1,2] and Jacob Bornstein MD[1,2]

[1]Department of Obstetrics and Gynecology, Western Galilee Hospital, Nahariya, Israel
[2]Rappaport Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel

ABSTRACT: **Background:** Previous pregnancies may influence the success of medical termination of pregnancy.

Objectives: To determine the effect of parity and gravidity on the successful termination of pregnancy using mifepristone and misoprostol.

Methods: The medical files of all patients attending a department of obstetrics and gynecology during the years 2006 and 2007 for the purpose of medical termination of pregnancy at ≤ 49 days of gestation were analyzed retrospectively. The medical history, previous pregnancies and deliveries were recorded. Mifepristone was administered orally followed by 400 mg of misoprostol 48 hours later. A second dose of misoprostol was offered 2 weeks later if uterine content thickness was more than 15 mm. Then, after 24 hours, if uterine content thickness was more than 15 mm the uterus was evacuated by dilation and curettage.

Results: Of 403 women, 349 (86.6%) aborted following the basic regime; 207 (51.4%) (group A) were primiparous while 196 (48.6%) (group B) had at least one prior pregnancy. Uterine curettage was performed in 17 patients (8.2%) in group A and in 37 (18.9%) in group B ($P = 0.002$). When patients with a history of a previous abortion were excluded from group B, 32 of 143 (22.4%) required curettage ($P < 0.001$). When patients without a history of previous cesarean section were excluded, 10 of 52 (19.2%) underwent curettage ($P = 0.038$).

Conclusions: Previous pregnancies negatively affect the success of medical termination of pregnancy, especially in women with a previous term pregnancy. This information is important when counseling women about the method of pregnancy termination.

IMAJ 2010; 12: 606–608

KEY WORDS: parity, termination of pregnancy, misoprostol, mifepristone

Medical termination of pregnancy using mifepristone and misoprostol or other prostaglandin analogs has gained wide acceptance in recent years. Approximately 92%–97.7% of pregnant women will successfully abort using only mifepristone/misoprostol [1-3]. The failure rate increases with advanced gestational age [1,2] and with a history of previous elective termination of pregnancy [1], previous live birth [2], older age, previous spontaneous abortion, multigravidity, and earlier follow-up visit [4].

The purpose of our study was to test the effect of gravidity and parity on the success of medical termination of pregnancy using mifepristone/misoprostol in pregnancies of 49 days or less.

SUBJECTS AND METHODS

The files of all the women admitted for medical termination of pregnancy during the years 2006 and 2007 were reviewed retrospectively. The medical history, number of previous pregnancies and deliveries, and mode of delivery were recorded. In all cases mifepristone was administered orally followed by 400 mg of misoprostol 48 hours later. All patients were observed for 4 to 6 hours after misoprostol administration and were scheduled to report to our ultrasound clinic 14 days later. At that visit a vaginal ultrasound was performed and uterine content thickness was measured. If the uterine content thickness was less than 15 mm and vaginal bleeding was not observed, the patients were discharged from follow-up. Otherwise, they were offered another administration of misoprostol or uterine curettage. If misoprostol was administered a vaginal ultrasound was performed 24 hours later, and if uterine content thickness was still more than 15 mm a curettage was performed.

STATISTICAL ANALYSIS

Qualitative data were presented as frequencies and percentages; quantitative data were expressed as mean, standard deviation, median and range. The chi-square test or Fisher's exact test, Student's *t*-test and multivariate logistic regression analysis were used as appropriate. The data were analyzed using the statistical software SPSS 11.5 (Chicago, Illinois, USA), and a P value < 0.05 was considered significant.

RESULTS

Over a 2 year period 403 women underwent medical termination of pregnancy in the obstetrics and gynecology department at the Western Galilee Hospital, Nahariya, Israel. The

retrospective analysis of the charts was approved by the local Institutional Review Board (Helsinki Committee). According to the charts 349 women (86.6%) aborted without surgical intervention. For 207 women (51.4%) this was their first pregnancy (group A) while 196 (48.6%) had had at least one previous pregnancy (group B) [Table 1]. The mean age in group A was, as expected, significantly lower than in group B: 21.7 ± 4.1 and 29.5 ± 6.6 years, respectively ($P < 0.001$). Overall, 54 women (13.4%) needed surgical evacuation of the uterus; all had products of conception in the pathology specimen. A statistically significant difference was found between groups A and B in the need for surgical evacuation of the uterus: 17 (8.2%) patients in group A and 37 (18.9%) in group B ($P = 0.002$). Multivariate regression analysis revealed that women who had had more than one pregnancy were more likely than primigravid women to require uterine evacuation ($P = 0.02$, odds ratio 2.25, confidence interval 95% 1.14–4.44). Age was not found to affect the rate of uterine evacuation ($P = 0.361$).

When the data of patients with a previous abortion were excluded from group B, 32 of 143 (22.4%) underwent curettage, and the difference was statistically significant in comparison to group A ($P < 0.001$). When the data of patients without a history of previous cesarean section were excluded, 10 of 52 (19.2%) underwent curettage, and the difference was statistically significant compared to group A ($P = 0.038$). Only 10 patients in group B had had only one previous cesarean section; 4 (40%) of them needed surgical intervention ($P = 0.009$). In order to further evaluate the effect of previous cesarean section on the success rate of medical termination of pregnancy, patients with at least one previous spontaneous delivery but without a previous cesarean (n=80) were compared to patients with at least one previous cesarean section (n=16). We found that among the former, 20 (25%) needed surgical intervention, while in the latter, 5 (31.3%) underwent curettage. This difference was not statistically significant ($P = 0.332$), neither was the age difference between these two subgroups (32.0 ± 4.9 and 33.4 ± 4.9 years respectively).

Table 1. Pregnancy and delivery history of women with one pregnancy and women with second and additional pregnancies*

	No. of patients (%)	No. of surgical evacuations (%)	*P*
First pregnancy only	207 (51.4%)	17 (8.2%)	
Second and additional pregnancies	196 (48.6%)	37 (18.9%)	0.002
Second and additional pregnancies without previous abortion	143 (35.5%)	32 (22.4%)	< 0.001
Second and additional pregnancies without previous abortion or cesarean	52 (12.9%)	10 (19.2%)	0.038
One previous cesarean section only	10 (2.5%)	4 (40%)	0.009

*All groups and subgroups were compared to the first pregnancy group (See text for more comparisons and for multivariate logistic regression analysis)

Only two patients in group B had had one or more spontaneous abortion without previous delivery. Thus, we were unable to test the effect of previous spontaneous abortion on the success of medical termination. However, 52 patients in group B had at least one termination of pregnancy and no deliveries, and 5 of them (9.6%) underwent surgical evacuation of the uterus; this rate was not statistically different from that in group A ($P = 0.78$).

Multivariate logistic regression analysis was used, including previous spontaneous abortion, previous termination of pregnancy, previous cesarean section and spontaneous delivery as the independent variables and the need for surgical intervention as the dependent variable. Previous cesarean section (OR 2.39, 95% CI 1.103–5.16) and previous spontaneous delivery (OR 2.07, 95% CI 1.11–3.86) were the only variables to affect the success of medical termination of pregnancy, with women who had no previous cesarean or spontaneous delivery more likely to have a complete abortion.

Multivariate logistic regression analysis was carried out using forward selection with the need for surgical intervention as the dependent variable, and age, previous pregnancy, previous spontaneous abortion, previous cesarean section, previous spontaneous delivery and previous termination of pregnancy as the independent variables. It revealed that previous pregnancy was the only variable to affect the need for surgical intervention (OR 2.60, 95% CI 1.41–2.48).

DISCUSSION

The use of mifepristone and misoprostol for medical termination has gained wide acceptance by patients and doctors in recent years, and as medical termination of pregnancy increases it is becoming more important to be able to characterize patients at high risk for failure.

Our study clearly demonstrates that after administration of mifepristone/misoprostol for medical termination of pregnancy, women with any previous pregnancy, especially term pregnancies – whether ended by cesarean section or spontaneous delivery – are more likely to require surgical intervention compared to primigravid women. This result is in agreement with several previously published reports [2,4,5,6], although some reports did not find any correlation between parity and the need for surgical intervention [7,8].

The overall need for surgical uterine evacuation was relatively high (13.4%) compared to other studies [1-3]; this may be attributed to the fact that we administered misoprostol orally and not vaginally. The difference between these two

OR = odds ratio
CI = confidence interval

routes of administration was reported by El-Refaey et al. [9], who found that 87% of patients receiving misoprostol orally aborted, while vaginal administration of misoprostol resulted in a 95% abortion rate.

Ashok and colleagues [2] found that women with a previous abortion were more likely to have a failed medical termination, while in the present study previous abortions, whether spontaneous or induced, did not affect the rate of successful medical termination. Furthermore, others reported that older age was also associated with a higher failure rate of medical termination of pregnancy [4], while in our study, as in that of Ashok et al. [2], age had no effect on the success rate. However, as long as there is no biologic mechanism to explain the effect of previous pregnancy and age on the success rate of medical termination, these observations need further investigation.

Attempting to predict the success rate of medical termination by measuring beta-human chorionic gonadotropin levels and endometrial thickness a few days after administration of misoprostol, some researchers [4,10] found that β-HCG levels and endometrial thickness were higher among the failures. However, the predictive values of these tests were low [10] and could not be used clinically as diagnostic tests in predicting late failure after medical abortion.

A weakness of this study was that we did not contact the patients to check if they underwent surgical uterine evacuation at another medical center. However, in the area we serve (the Western Galilee), our department is the only Obstetrics and Gynecology service; hence only on rare occasions would women travel elsewhere to undergo uterine evacuation. In addition, patients undergoing this procedure pay in advance, and the fee includes a surgical uterine evacuation if needed, as well as the management of any complications of the procedure. Furthermore, the hospital's Institutional Review Board did not permit phoning patients because of privacy and confidentiality considerations related to previous pregnancy.

From this and other studies it is clear that before consulting patients about the route of termination of pregnancy, data on previous pregnancies are a determining factor in failure of medical termination and this fact should be considered and disclosed to patients before a decision is made on the route of abortion. The impact of other variables, such as age, previous abortions and previous termination of pregnancy, need to be investigated in further studies.

B-HCG = beta-human chorionic gonadotropin

Corresponding author:
Dr. M. Odeh
Dept. of Obstetrics and Gynecology, Western Galilee Hospital, P.O. Box 21, Nahariya 22100, Israel
Fax: (972-4) 910-7472
email: marwan20@bezeqint.net

References

1. Spitz IM, Bardin W, Benton L, Robbins A. Early pregnancy termination with mifepristone and misoprostol in the United States. *N Engl J Med* 1998; 338: 1241-7.
2. Ashok PW, Templeton A, Wagaarachchi Pt, Flett GMM. Factors affecting the outcome of early medical abortion: a review of 4132 consecutive cases. *Br J Obstet Gynaecol* 2002; 109: 1281-9.
3. Ulman A, Silverstre L, Chemama L, et al. Medical termination of early pregnancy with mifepristone (RU 486) followed by a prostaglandin analogue; study in 16369 women. *Acta Obstet Gynecol Scand* 1992; 71: 278-83.
4. Haimov-Kochman R, Arbel R, Sciaky-Tamir Y, Berzezinski A, Laufer N, Yagel S. Risk factors for unsuccessful medical abortion with mifepristone and misoprostol. *Acta Obstet Gynecol Scand* 2007; 86: 462-6.
5. Child TJ, Thomas J, Rees M, MacKenzie IZ. A comparative study of surgical and medical procedures: 932 pregnancy terminations up to 63 days gestation. *Hum Reprod* 2001; 16: 67-71.
6. Bartley J, Tong S, Everington D, Baird DT. Parity is a major determinant of success rate in medical abortion: a retrospective analysis of 3161 consecutive cases of early medical abortion treated with reduced doses of mifepristone and vaginal gemeprost. *Contraception* 2000; 62: 297-303.
7. The efficacy and tolerance of mifepristone and prostaglandin in termination of pregnancy of less than 63 days gestation; UK multicentre study – final results. *Contraception* 1997; 55: 1-5.
8. Hill NCW, Ferguson J, MacKenzie IZ. The efficacy of oral mifepristone (RU 38,486) with a prostaglandin E1 analog vaginal pessary for termination of early pregnancy: complications and patient acceptability. *Am J Obstet Gynecol* 1990; 162: 414-17.
9. El-Refaey H, Rajasekar D, Abdalla M, Calder L, Templeton A. Induction of abortion with mifepristone (RU486) and oral or vaginal misoprostol. *N Engl J Med* 1995; 332: 983-7.
10. Rorbye C, Norgaard M, Nilas L. Prediction of late failure after medical abortion from serial B-HCG measurements and ultrasonography. *Hum Reprod* 2004; 19: 85-9.