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położnictwo

Misoprostol-induced termination of second-trimester pregnancy in women with a history of cesarean section: A retrospective analysis of 56 cases

Terminacja ciąży mizoprostolem w drugim trymestrze u pacjentek po cięciu cesarskim: retrospektywna analiza 56 przypadków

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Abstract

Objective: *To assess the effectivity and safety of misoprostol induced termination of pregnancy in the second trimester in women with a history of previous caesarean section.*

Materials and Methods: *Retrospective analysis of case records from the obstetrics and gynecology department of a tertiary care center between January 2009 and February 2012 was performed. Data derived from 219 women, who underwent a second trimester termination of pregnancy, was analyzed in terms of demographics, clinical findings, laboratory and procedural data. The study group consisted of 56 women with a previous caesarean section and the control group was composed of 163 women without such a history. Termination of pregnancies was conducted by administration of misoprostol at doses of 50-600 mcg intravaginally or by surgical evacuation in cases of failure of medical measures.*

Results: *There was no statistically significant difference between two groups in terms of demographics such as age, menarche, number of pregnancies or live births, smoking habit and co-morbidities. Necessity for blood transfusion (p=0.05) and additional procedure for abortion (p=0.056) were found to be similar in both groups. However, laparotomy (p=0.004), uterine rupture (p=0.016), hysterotomy (p<0.001) were performed more frequently in the study group; while abortion was more likely to occur within 24 hours in the control group (p=0.031).*

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Conclusion: *Medical abortion must be carefully used for the termination of second trimester pregnancies in women with a history of CS. Increased possibility of uterine rupture and requirement of interventions such as laparotomy or hysterotomy is more likely in these patients.*

Key words: **second trimester** / **abortion** / **cesarean section** / **misoprostol** /

Streszczenie

Cel: *Ocena skuteczności i bezpieczeństwa terminacji ciąży mizoprostolem w drugim trymestrze u kobiet po cięciu cesarskim w poprzedniej ciąży.*

Materiał i metoda: *Wykonano analizę retrospektywną historii choroby pacjentek oddziału położniczo-ginekologicznego ośrodka trzeciego poziomu referencyjnego z okresu od stycznia 2009 do lutego 2012. Uzyskane informacje o 219 kobietach, które przebyły terminację ciąży w drugim trymestrze, poddano analizie pod względem danych demograficznych, objawów klinicznych, wyników laboratoryjnych i proceduralnych. Grupa badana składała się z 56 pacjentek po cięciu cesarskim w poprzedniej ciąży a grupa kontrolna ze 163 kobiet bez takiej przeszłości. Ciążę terminowano przy pomocy mizoprostolu w dawce 50-600mcg podawanego dopochwowo a w przypadku niepowodzenia przy pomocy chirurgicznej ewakuacji.*

Wyniki: *Nie zaobserwowano istotnych statystycznie różnic pomiędzy obiema grupami pod względem czynników demograficznych, takich jak: wiek, pierwsza miesiączka, liczba ciąż lub żywych urodzeń, palenie tytoniu i choroby współistniejące. Konieczność przetoczenia krwi (p=0,05) i dodatkowe procedury związane z aborcją (p=0,056) były podobne w obu grupach. Laparotomia (p=0,004), pęknięcie macicy (p=0,016), histerotomia (p<0,001) występowały częściej w grupie badanej, natomiast poronienie w ciągu 24 godzin było częstsze w grupie kontrolnej (p=0,031).*

Wnioski: *Terminacja ciąży za pomocą leków w drugim trymestrze u kobiet po przebytym cięciu cesarskim musi być przeprowadzana bardzo ostrożnie. U tych pacjentek istnieje zwiększone ryzyko pęknięcia macicy oraz konieczność interwencji, takich jak laparotomia czy histerotomia.*

Słowa kluczowe: **drugi trymestr** / **poronienie** / **cięcie cesarskie** / **misoprostol** /

Introduction

There is a constant increase in the incidence of cesarean sections (CS) performed leading to a consequent increase in the number of women with a cesarean scar [1]. If termination of pregnancies in women who had previously undergone CS is a necessity, then formation of a uterine scar is unavoidable [2, 3]. Since uterine rupture is a serious complication and major concern in women with CS, hysterotomy can be needed for such a complicated second-trimester pregnancies [1-3].

Regarding near-term delivery and early medical abortion, some studies have demonstrated a low risk of complications in women with a history of CS [2, 4]. Experience and data for termination of midtrimester pregnancies in women with a uterine scar are relatively limited [1, 5, 6]. Medical abortion of a second trimester pregnancy in women with prior CS may call for a more careful management due to increased likelihood of complications [6]. It was reported that the use of misoprostol might result in an increase in the rate of uterine rupture [7].

Objectives

The aim of this study was to analyze the risk of maternal complications among women with uterine scars necessitating termination of second-trimester pregnancy (TOP) using misoprostol.

Materials and methods

A total of 219 women who underwent a second trimester TOP (13 to 24 weeks of pregnancy) induced by administration of intravaginal misoprostol at the obstetrics and gynecology department of a tertiary care center between January 2009 – February 2012 were enrolled in this study. The study group included all women with a history of at least one previous cesarean section. Control group consisted of women without a uterine scar. Data were obtained from the medical records after the approval of local Institutional Review Board. Medical records were reviewed to retrieve demographic, clinical, laboratory and procedural data. Two groups were compared in terms of these parameters.

Misoprostol (200 mcg bid, Cytotec®, Ali Raif Pharm. Co, Turkey) was administered at doses of 50-600 mcg with intervals of 4-6 hours. Total daily dose of misoprostol ranged between 100-4400 mcg. The route of administration was vaginal in all patients. In cases of heavy bleeding (>300 mL) or when placenta could not be delivered, women had been kept under observation for some time. No strict schedule had been designed for the appropriate observation period. The retained placenta had been removed either at the ward or in the operating theater under general anesthesia. Heavy bleeding had been accepted as an indication for urgent surgical evacuation. Clinical judgment, continuous heavy bleeding and ultrasonographic findings

consistent with uneven endometrial thickening confirmed the presence of residual tissue. Severe complications such as hemorrhage (defined 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 recorded. Generally, women without any complications were discharged no sooner than 4 hours after expulsion or D&C. Laparotomy was performed to achieve hemostasis surgically by ligation of vessels responsible for hemorrhage and total abdominal hysterectomy was required in circumstances where this goal could not be accomplished via laparotomy. Hysterotomy was performed transabdominally when abortion did not occur within 72 hours of the first misoprostol insertion and the treatment was considered to have failed completely.

Statistical analysis: Data were analyzed using the Statistical Package for Social Sciences (SPSS) software (version 13.0 for Windows). All differences associated with a chance probability of .05 or less were considered statistically significant. Chi square test was used to evaluate qualitative variables, while Student t test was utilized to assess quantitative variables.

Results

Pregnancies of 219 women had been terminated during second trimester (between 13 to 24 gestational weeks) using prostaglandins. From this group, 56 women had a history of cesarean section. Mean age of the women was 29.5±4.95 (14–51) years. In the study group, median values for maternal age (30.1), and the number of gravidities (4.3), parities (2.6) and previous abortions (0.9) were estimated as seen in parentheses. In the control group, the corresponding median values for maternal age, and the number of gravidities, parities and previous abortions were 29.3, 4.5, 2.8, and 0.7 respectively.

Need for blood transfusion and an additional procedure for induction of abortion was found to be similar in the study and the control groups (p=0.05 and p=0.056, respectively). The rate for surgical evacuation after incomplete or failed induction of abortion via prostaglandins was statistically similar in both groups (p=0.176). In the study group, the rates for laparotomy (p=0.004), uterine rupture (p=0.016) and hysterotomy (p<0.001) were significantly higher than the control group. In contrast, abortion was more likely to occur within 24 hours in the control group; whereas this interval was more prolonged in the study group (p=0.028). Mean dose of misoprostol necessary to induce abortion was lower in the study group (p=0.023). In patients with CS history, number of CSs did not seem to influence the likelihood of experiencing laparotomy, hysterotomy and uterine rupture. Rh incompatibility was more common in the group with a previous CS history (p=0.03). Complications that occurred in the study and control groups are demonstrated in Table I.

Discussion

Recently, the rate of delivery via CS has increased worldwide. There is limited data on TOP in women with a previous history of CS performed in the second trimester [1,4-6]. While near-term spontaneous labor after CS has a 0.4% risk of uterine rupture, it rises up to 1.4% if labor is induced with PGs with or without oxytocin [7]. Medical abortion using synthetic PGs is reported to be effective and safe in terms of complications and side effects [4].

There is an increased risk of uterine rupture after use of misoprostol for induction of labor in women with a history of CS [4,8]. Our data suggest that a prior cesarean section can be a risk factor for uterine rupture in women scheduled for termination of a midtrimester pregnancy. In our series, rate of uterine rupture in the study and the control groups were 5.4% and 0% respectively. Uterine rupture may occur either in the mid-trimester or in the third trimester. Nevertheless, previous history of cesarean section does not contraindicate use of misoprostol [4].

However, caution is required due to higher risk of uterine rupture regardless of gestational age [4]. It is noteworthy that the mean dose of misoprostol necessary to induce abortion is lower in the cesarean group. As reported in other studies [4, 8, 9], we observed no statistical difference between the cesarean and control groups as for the time interval between induction and abortion and in particular in the duration of the abortion procedure. Lower doses of misoprostol used in the group of women with previous cesarean section did not affect the time to abortion significantly. This is important since prolonged induction of labor (after 24 hours) may be correlated with a higher risk of uterine rupture.

According to our results, laparotomy and hysterotomy were required more frequently in the study group. This may be attributed to adhesions, synechiae and fibrosis calling for these interventions, which are more likely to occur in the presence of uterine scarring due to previous CS.

Rate of surgical evacuation was similar in the groups with and without history of CS. Thus, it can be suggested that uterine scarring, adhesions or fibrosis may not directly enhance the rate of surgical evacuation. Intraoperative ultrasonography can be practically used for detection of retained products of conception; thereby complication rates will be reduced [7].

In our study, the need for blood transfusion or an additional procedure for induction of labour was similar in both groups (p=0.05 and p=0.056, respectively). Chapman reported that the need for blood transfusion is doubled in women with prior CS (11.4% vs. 5.3%) [6].

In our series, requirement of blood transfusion was similar in both study and control groups. Prolonged medical induction may play an important role for requirement of blood transfusion. Studies on larger series may yield more trustworthy results in these aspects.

Poor response to medical induction within 24 hours was more common in the patients with a history of CS. This may be due to scarring and adhesions, which may interfere with the sensitivity of uterus to prostaglandins. Rh incompatibility was more common in patients with previous CS history. We think this finding may be coincidental; however the only explanation for this occasion may be the increased incidence of CS in cases with Rh incompatibility where potential complications are expected.

There is a debate for the optimal agent to be used for medical TOP in the second trimester. In general, misoprostol can be used for the induction of the scarred uteri in the second and third trimesters. Further studies investigating misoprostol as a modern pharmaceutical agent for TOP in midtrimester gestation are required to evaluate the appropriate drug regimen for pregnant women with a history of CS [7].

In our series, we have utilized misoprostol in patients with a history of caesarean delivery who were undergoing second trimester abortion. Our results imply that pregnancy can be

Table I. Complications encountered after termination of pregnancy in patients with and without a history of cesarean section.

	Cesarean section group (n)	Control group (n)	p Value
Blood transfusion	5/56	4/163	0.050
Laparatomy	4/56	0/163	0.004*
Uterine rupture	3/56	0/163	0.016*
Hysterectomy	-	-	-
Hysterotomy	8/56	1/163	<0.001*
Mortality	-	-	-
Chorioamnionitis	2/56	5/163	1.000
Surgical evacuation	13/56	30/163	0.29
Additional procedure	26/56	57/163	0.127

*=statistically siginificant

terminated safely in the second trimester by inducing vaginal delivery in these patients.

An important finding of our study was that a previous caesarean delivery does not appear to increase the incidence of complications (except for uterine rupture) in women whose pregnancies will be terminated in the second trimester by induction of labour. Uterine rupture is the most serious complication in cases with a previous uterine scar. The risk of rupture has been reported to be higher when oxytocin is given concomitantly with prostaglandins. The issue of potentially increased risk of complications following termination of pregnancy with misoprostol in such cases remains to be answered. Until then, we believe that these patients should be carefully selected and monitored during labour. In order to estimate the risk of uterine rupture more thoroughly, studies on larger case series are required, probably using national or multicentric cumulative data. Our retrospective study possesses limitations in this aspect. Previous cesarean section scar does not seem to increase perioperative risk of midtrimester termination by the laminaria and evacuation technique [5].

Conclusion

In conclusion, medical abortion must be carefully used for the termination of second trimester pregnancies in women with a history of CS. Increased possibility of uterine rupture and requirement of interventions such as laparotomy or hysterotomy must be kept in mind for these patients. Response to prostaglandin induced abortion must be closely observed. Insufficient response after 24 hours may alert for possibility of complications and requirement of surgical evacuation.

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