

# Misoprostol for second trimester abortion in women with prior uterine incisions

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## Summary

**Purpose:** Termination of pregnancy in the second trimester with misoprostol is safe and effective, but there is very limited published experience of its use in women with one or more previous cesarean sections. Uterine rupture might occur when misoprostol and oxytocin are used for pregnancy termination at the second trimester in women with previous uterine scars. In the English literature there are some case-series of studied women with a history of previous cesarean sections, in which misoprostol was used for second trimester termination of pregnancy. However, many different protocols have been used with different doses of misoprostol and different intervals between doses and it is difficult to draw definite conclusions. Therefore, the decision to attempt pregnancy termination in the second trimester in cases with previous uterine scar should be made on a case-by-case basis, after consideration of the number of previous cesarean sections and gestational age, and careful labor monitoring of these patients.

**Key words:** Pregnancy termination; Second trimester; Misoprostol; Uterine rupture; Cesarean section.

## Misoprostol and prior uterine incision for second trimester termination of pregnancy

The reasons for pregnancy termination in the second trimester include congenital anomalies, chromosomal defects, metabolic diseases or other genetic syndromes [1]. Serious complications during second trimester abortions are blood loss requiring transfusion, infections, cervical lacerations, cervicovaginal fistulas, major unintended surgery and even maternal death [2, 3]. The usual agents employed to induce a medical termination of pregnancy in the second trimester are prostaglandin preparations. Misoprostol is a synthetic prostaglandin E<sub>1</sub> analog widely used for the prevention and treatment of gastroduodenal ulcers. Also, misoprostol promotes myometrial contractility and causes cervical softening and dilation. Misoprostol can be given orally, intravaginally, rectally or sublingually [4]. Termination of pregnancy in the second trimester with misoprostol is safe and effective, with a success rate of more than 90% [5]. However, there is very limited published experience of the use of misoprostol for termination of pregnancy in the second trimester in women with one or more previous cesarean sections.

Uterine rupture is a serious complication in cases for termination of pregnancy with a previous uterine scar and may occur either in the mid-trimester or the third trimester. The risk of rupture has been reported to be higher when oxytocin is associated with prostaglandins [6]. Some clinical studies examined the complications of second trimester medical pregnancy terminations in women with previous cesarean section using prostaglandins PGF<sub>2a</sub> and PGE<sub>2</sub>, before the wide use of misoprostol for pregnancy termination. Atienza *et al.* [7] reported one case of uterine rupture among 76 patients with a previous cesarean section managed with amniocentesis and PGF<sub>2a</sub>. Also, Boulot *et al.* [8] reported one case of uterine rupture among 23 women with a history of caesarean section managed with a combination of mifepristone (Roussel Laboratories) and gemeprost (PGE<sub>2</sub>). In addition, Chapman *et al.* retrospectively reviewed 606 second trimester medical pregnancy terminations using prostaglandins PGE<sub>2</sub> or PGF<sub>2a</sub>, of which 79 were in women with at least one previous cesarean, and found that the risk of uterine rupture was nearly 21 times higher in women with a scarred uterus than in women without this history (3.8% vs 0.2%,  $p < 0.01$ ; OR = 20.8, 95% CI = 14.1-104) [9].

The answer to the question "is misoprostol safe when used to induce labor in the second trimester in a surgically scarred uterus" is of great importance, since the cesarean rate is escalating rapidly and most obstetricians would do everything possible to avoid another repeat cesarean when such women require second trimester pregnancy termination of a nonviable fetus [10]. Some case reports describe uterine rupture with the use of misoprostol in both the scarred and unscarred uterus. For example, Phillips *et al.* reported a case of uterine rupture at 18 weeks of pregnancy in a patient with a history of cesarean section managed with a combination of oral mifepristone (Roussel Laboratories) and intrav-

aginal misoprostol [11]. Oral mifepristone 48 hours prior to misoprostol was administered followed by 600 µg misoprostol vaginally. Six hours later, further misoprostol (600 µg) was administered vaginally in the absence of uterine contractions. Four hours later, painful uterine contractions had been established with vaginal hemorrhage and the fetus was delivered with manual assistance, but the placenta was retained. Because of the fall in hemoglobin and the severe abdominal pain, emergency manual removal of the placenta was performed under general anesthesia and when the uterine cavity was checked digitally it was evident that there was a large defect in the uterine wall. Laparotomy was performed and the findings of a 8 cm uterine rupture with substantial hemorrhage into the broad ligament and abdominal cavity were confirmed. Hysterectomy with right salpingo-oophorectomy, were required to control the hemorrhage [11]. Also, Chen and Shih [12] reported a case of a woman with two previous cesareans who had separation of the uterine scar after a single 200 µg dose of intravaginal misoprostol for second-trimester termination. This dose stimulated strong, regular uterine contractions three hours after the misoprostol. Seven hours later, the cervix had dilated to 2 cm with engagement of the fetal head and after five hours she had sudden lower quadrant pain with vaginal blood clots, regression of the cervical dilation, no engagement of the fetal head and lessening of fetal movement. At emergency laparotomy, separation of the cesarean scar with intact fetal membranes was found, and the fetus and placenta were partially protruding into the peritoneal cavity. A 660 g, stillborn female was delivered and the uterus was repaired [12]. In addition, Berghahn *et al.* reported a woman with two prior cesareans who experienced uterine rupture after misoprostol was used for cervical ripening before second-trimester dilation and evacuation [13]. However, with case reports the absolute risk for uterine rupture remains essentially unknown. There have been only a few case series with a small number of studied women with a history of previous cesarean sections in which misoprostol was used for second trimester termination of pregnancy. However, many different protocols have been used with different doses of misoprostol and different intervals between doses and therefore it is difficult to draw definite conclusions. Daskalakis *et al.* examined 108 women with previous cesarean sections and 216 women without such a history (controls) who underwent pregnancy termination between 17 and 24 weeks of gestation because of fetal anomalies [1]. The first dose included 400 µg misoprostol per os together with 400 µg of intravaginal misoprostol. The same dose of 400 µg of intravaginal misoprostol was repeated every six hours for a maximum of five doses. One uterine rupture was found in the control group. It seems that this treatment protocol does not affect the incidence of complications when women with a previous uterine scar undergo mid-trimester pregnancy termination with misoprostol [1]. Mazouni *et al.* reported a significant incidence (4%) of uterine rupture after treatment using misoprostol among 13 patients at more than 15 weeks' gestation and with a history of cesarean section managed with a combination of oral mifepristone (Roussel Laboratories) and intravaginal misoprostol [14]. Three tablets of mifepristone 36 hours prior to prostaglandin analogue were administered. Women with previous caesarean sections and women without known uterine scars received 1 x 200 µg and 2 x 200 µg misoprostol tablets vaginally, respectively, every three hours until the onset of labor or uterine contractions. If no evidence of either event was observed after three treatments, the procedure was stopped and repeated 24 hours later [14]. Moreover, Bhattacharjee *et al.* examined 80 women who had at least one previous cesarean section and 80 women without such history who had undergone termination of pregnancy between 13 and 26 weeks of gestation for various indications. The standard regimen for misoprostol in all the cases was 400 µg up to 20 weeks of gestation and 200 µg for pregnancies longer than 20 weeks, either vaginally or sublingually every six hours (up to maximum of 24 hours). Misoprostol was found to be safe in the cohort of post-cesarean women and there was only one case of dehiscence [10]. It seems that this proposed regimen is safe in women with previous cesarean sections treated with misoprostol for pregnancy termination.

In conclusion, the decision to attempt pregnancy termination in the second trimester in cases with a previous uterine scar should be made on a case-by-case basis, after consideration of the number of previous cesareans, the gestational age and the placentation. These patients should be carefully monitored during labor. In addition, the combination of misoprostol and oxytocin should be avoided in such patients.

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