

Management of Failed Early Pregnancies After Previous Multiple Caesarean Sections; An Evolving Clinical Dilemma

Olubusola Amu, Manal Shaker Taha*, Abdullah Al Ibrahim, Kevin Hanretty and Huda Saleh

Department of Obstetrics and Gynaecology, Women's Hospital, Hamad Medical Corporation, Doha, Qatar

***Corresponding Author:** Manal Shaker Taha, Department of Obstetrics and Gynaecology, Women's Hospital, Hamad Medical Corporation, Doha, Qatar.

Received: February 16, 2018; **Published:** April 09, 2018

Abstract

Miscarriage is the most common complication of pregnancy in the first trimester, with most studies reporting that one in five clinical pregnancies will end in miscarriage. For pregnancies that progress beyond viability, delivery by caesarean section (CS) has become a common intervention and its incidence is increasing for a variety of reasons. Evidence abounds regarding the different approaches to management of uncomplicated miscarriages but the optimal mode of management of intrauterine fetal demise in women with previous multiple caesarean births can be clinically challenging. This paper attempts to provide an overview of potential difficulties posed by early intrauterine fetal demise in patients after multiple caesarean sections and a literature review of available information

Key Content

- Miscarriage is the most common complication of pregnancy in the first trimester.
- Expectant management is most preferred approach after pregnancy failure.
- Complication rates after medical or surgical evacuation following caesarean sections.
- Management dilemmas in cases of scared uterus due to multiple caesarean sections.
- Absence of evidence-based approach to the management of women with failed pregnancies after multiple caesarean sections.

Learning Objectives: There is no standardized approach for management of women with failed pregnancies after multiple caesarean sections.

Keywords: *Multiple Caesarean Sections; Failed Pregnancy; Multiple Scarred Uteri*

Abbreviations

WHO: World Health Organization; CS: Caesarean Section; PGE2: Prostaglandin; NICE: National Institute for Health and Clinical Excellence guidelines; D&E: Both Dilation and Evacuation

Introduction

Spontaneous abortion, or miscarriage, is defined as a clinically recognized pregnancy loss before the 20th week of gestation [1]. The World Health Organization (WHO) defines it as expulsion of an embryo or fetus weighing 500g or less. Spontaneous abortion is the most common complication of early pregnancy. The frequency decreases with increasing gestational age [2]. The incidence of spontaneous abortion (miscarriage) in clinically recognized pregnancies up to 20 gestational weeks is 8 to 20 percent [2]. For the purposes of this article, failed early pregnancy refers to pregnancies less than 13 completed weeks.

Caesarean section (CS) is one of the most common operations performed in the United Kingdom and its incidence is increasing [3]. According to England Statistics data for 2013 - 2014, the CS rate for England has increased by 0.7 per cent to 26.2 per cent (or 166 081 operations) [4], and it is almost the same in The United States. Data from National vital statistic system reported that the caesarean rate rose by 53% from 1996 to 2007, reaching 32% [5].

This epidemic increase in the rate of cesarean delivery is due to many factors which include, cesarean delivery on request, later maternal age at first pregnancy, decrease in number of patients who are willing to try vaginal birth after cesarean delivery, virtual disappearance of vaginal breech delivery, increasing rates of fetal macrosomia and an increase in the number of women with pre-existing medical disorders such as diabetes mellitus, ischaemic heart disease and congenital heart disease in the reproductive age group.

Gao, *et al.* reported that the key determinant of high rates of CS in China is over-diagnosis of fetal and maternal risks rather than maternal requests [6]. It has also been recognized that structural factors relating to service supply had greater impacts on rising CS rate than other demographic characteristics, including the household's willingness and ability to pay [7]. The problems of an increasing CS rate are compounded in areas such as the Middle East and many African and Asian countries where there is a cultural expectation of large families.

Miscarriage is the most common complication of pregnancy in the first trimester, with most studies reporting that one in five clinical pregnancies will end in miscarriage [7,8]. Evidence abounds regarding the different approaches to management of uncomplicated miscarriages but the optimal mode of management of intrauterine fetal demise in women with previous multiple caesarean births presents a challenge for obstetricians due to absence of evidence-based protocols of proven efficacy, safety and acceptability in these challenging cases.

Complications of multiple Caesarean Sections

Whilst there is no doubt that caesarean delivery is a safe procedure, it is not without risks. Following multiple caesarean sections, abnormal implantation of the placenta into previous CS scar can be associated with pregnancy complications as placenta previa and placenta accreta. The incidence of placenta previa in women with a history of multiple caesarean sections is ten times higher compared with women who had vaginal deliveries [9]. Silver, *et al.* reported the likelihood of placenta accreta was 0.24% in women experiencing their first CS birth, compared with 0.31, 0.57, 2.13, 2.33 and 6.74% of women experiencing their second, third, fourth, fifth and sixth or more CS births, respectively [10]. The clinical significance of this complication is emphasized by Confidential Enquiries into Maternal Deaths showed that 72% of all maternal deaths associated with placenta previa in the UK between 1991 and 1999 occurred in women who had at least one previous Cesarean Section [11].

Embryo implantation in a previous caesarean scar, resulting in a caesarean scar pregnancy, is another rare but potentially catastrophic complication of a previous caesarean birth. More recently there has been a substantial increase in the number of scar pregnancies reported which may be a reflection of the rising CS rate worldwide [12].

Management of failed pregnancies

The currently available management options for women with an incomplete, inevitable, or missed miscarriage include expectant management, medication (typically misoprostol) or with surgical management (dilation, suction and curettage).

Expectant management

Expectant management is by and large a watchful expectation of natural passage of ruminants of a failed pregnancy without any intervention [13]. Expectant management is considered an initial management option for women with spontaneous abortion who have stable vital signs and no evidence of infection. However, the most important factor in determining management is women's preference [14].

Incomplete miscarriage is more likely to proceed to expulsion within two weeks than a missed abortion. An interval of three to four weeks between diagnosis of nonviable pregnancy and expulsion is not unusual. Most women are willing to wait when appropriately counseled and prepared for what to expect. However, some women may prefer medication rather than expectant management to expedite the process and potentially increase the likelihood of success. Other women may prefer to avoid medication.

If expectant management is unsuccessful after four weeks, it is reasonable to suggest either medical or surgical evacuation.

Medical management

Medical therapy is an acceptable alternative to surgical therapy for most women based upon early data. The patient should ideally be counseled regarding the risks and benefits of both. The advantages of medical therapy are that no surgical procedures are needed if it is successful, as it can speed up the process of passing the pregnancy tissue. If it is not successful, then a surgical approach may follow. The available information to date for management of failed pregnancy unfortunately largely relates to unscarred uteri and at best, management of pregnancy failures after one caesarean section.

Misoprostol, (Cytotec®) a prostaglandin E1 analog, is the most commonly used agent for medical uterine evacuation for incomplete or missed abortion. Its safety and efficacy have been well established in the literature.

Prolonged and serious side effects with misoprostol are rare, but the common complications like fever, cramping, bleeding requiring blood transfusion, diarrhea, nausea and vomiting [15].

In medically managed patients, complete expulsion occurred in 71 percent of all women by day 3 and 84 percent by day 8 [16].

Other agents like methotrexate, with or without mifepristone, or tamoxifen in combination with misoprostol, have been reported.

Surgical evacuation of the uterus

Uterine evacuation is an integral part of obstetric and gynecologic care, not only for elective pregnancy termination, but also in the management of spontaneous abortion, intrauterine fetal demise, retained products of conception, and gestational trophoblastic neoplasia. Diagnosis of miscarriage has traditionally been followed by surgical évacuation of the utérus, particularly for women who do not want to await spontaneous abortion or who also wish avoid the perceived traumas of pain and bleeding that accompany the passage of the products of conception.

The choice of technique for uterine evacuation depends more upon uterine volume and operator experience than the underlying indication for the procedure. Suction curettage can typically evacuate pregnancies up to 14 weeks of gestation. Skilled clinicians can perform dilatation and extraction procedures at later gestational ages but hysterotomy though now rarely performed for abortion may still be required.

Management dilemmas in cases of scared uterus due to multiple caesarean sections

Expectant management

In cases of miscarriages in scarred uteruses, expectant management would seem the most logical and preferred approach as when it is successful should be associated with least morbidity. Issues of note are however, patient’s choices and what constitutes an acceptable duration of observation. In the event of failure of the expectant approach, further management dilemma ensues as to the best and most acceptable method of evacuation of the uterus.

Medical management

In an attempt to standardize care in the medical evacuation of the unscarred uterus, an expert group convened by the World Health Organization in 2007 released a consensus paper proposing two different regimens of misoprostol [17]. For missed abortion, 800 mcg per vagina or 600 mcg sublingually as single doses were suggested and for incomplete abortion, 600 mcg orally (Table 1).

| Indication | Dosage | Notes |
|-----------------------|---|---|
| Pregnancy Termination | 800 mcg sublingually 3-hrly or vaginally/buccally every 3 - 12 hrs (2-3 doses) | Ideally used 48h after mifepristone 200 mg |
| Missed abortion | 800 mcg vaginally 3-hrly (x2) or 600mcg sublingual 3-hourly (x2) | Give 2 doses and leave to work for 1 - 2 weeks (unless heavy bleeding or infection) |
| Incomplete abortion | 600 mcg orally single dose or 400 mcg sublingual single dose or 400 - 800 mcg vaginally single dose | Leave to work for 2 weeks (unless heavy bleeding or infection). |

Table 1: These dosage guidelines are produced by FIGO and WHO. They are based on those originally produced by the Bellagio group in 2007 but updated regularly since. The most recent 2017 guidelines were published in the International Journal of Gynecology and Obstetrics.

Misoprostol administration in pregnancy induces cervical effacement and uterine contractions at all gestational ages, thereby facilitating uterine evacuation. The use of misoprostol is contraindicated as there is a high risk of uterine rupture when a patient has had more than one prior hysterotomy, a prior classical or T-shaped uterine incision, or extensive transfundal uterine surgery [e.g. myomectomy]. Available evidence supports management of second trimester missed miscarriage by misoprostol in previous one CS and is effective by 84.89% [18] and up to 90% in another study [19]. However, extrapolating these results for first trimester miscarriages and for previous multiple caesarean sections might be inappropriate. Data on its efficacy and safety in women with previous multiple cesarean deliveries are very limited.

The ideal route of administration, oral, buccal, sublingual or vaginal is unclear as there is no clear evidence of one regimen being superior to another [20]. The potency of misoprostol's effect also varies with gestational age, as well as with route of administration, dose, dosing interval, and cumulative dose. A Cochrane review of the risk of uterine rupture among women with a single previous cesarean delivery undergoing second-trimester abortion using misoprostol is less than 0.3%. It is however unclear if this risk is cumulative in relation to the number of previous caesarean deliveries. There are no proper studies to support appropriate dosage regimen in cases of medical management of failed pregnancy with the use of misoprostol.

Surgical Evacuation of Uterus

Surgical uterine evacuation is an age long established method used in the management of spontaneous abortion. The procedure unfortunately can result in complications that affect future obstetric outcome, including cervical incompetence, excessive bleeding, uterine perforation, intrauterine adhesions and morbidly adherent placenta [21], but it is unclear if the rates of these complications differ after multiple scars. Uterine perforation is a potentially common complication that may be associated with injury to surrounding viscera. The consequences of uterine perforation can be benign as a defect in the myometrium that heals spontaneously to bowel injury or life-threatening hemorrhage [22]. The risk of uterine perforation is further compounded by the relative difficulty in accessing the uterine cavity probably as a consequence of an unfavorable state of the cervix, especially in the absence of prior vaginal birth.

In the bid to improve the ease of surgery and minimize the risk of uterine perforation, cervical priming prior to pregnancy termination is a common treatment. Unfortunately, the safety data underpinning this practice after multiple caesarean sections are limited.

Ultrasound guidance is generally not required for routine surgical evacuation of the uterus, but if the cervix cannot be dilated using gentle force, ultrasound guidance may be required to safely dilate the cervix and gain passage into the endometrial cavity. This may help the surgeon guide the placement of the instruments during the procedure thereby theoretically reducing the risk of uterine perforation. Ultrasound visualization of a thin endometrial stripe at the end of the curettage assures the surgeon that the majority of the pregnancy tissue has been removed. There are no studies comparing the superiority of this approach in uterine evacuation after multiple caesarean sections.

Natural and synthetic devices are available, each with unique properties. Notwithstanding major advances in prostaglandin analogs as cervical ripeners, these mechanical devices continue to play a vital role in cervical preparation as uterine scar dehiscence can occur with misoprostol preoperative cervical priming for second trimester surgical termination of pregnancy [23].

Osmotic dilators have been used to ripen the cervix in gynecologic and obstetric procedures for centuries. Their gradual effect in softening and dilating the cervix reduces the chance of stretch injury or perforation and could enhance completeness of evacuation of the uterine cavity (Table 2).

| | < 20 weeks |
|---|--|
| <p>RCOG/NICE Based on TOP guidelines</p> <p>“Royal College of Obstetricians and Gynaecologists”</p> | <p>Uterine rupture during abortion is rare. Case reports have described uterine rupture in women who have had previous CS undergoing medical abortion at a gestation between 13 and 24 weeks with varied regimens. A large retrospective review of over 600 women undergoing mid-trimester medical abortion suggested an almost 20-fold increase in the risk among women who have had a previous caesarean section, although more recent retrospective reviews of women undergoing abortion at different gestations failed to identify any cases of uterine rupture. Recent systematic review evidence does support the finding that previous CS is a risk factor for uterine rupture during abortion; the absolute risk is less than 0.4%, which many women may find acceptable.</p> <p>No recommendations made addressing the issue of multiple previous caesarean sections [24].</p> <p>New Draft in Preparation. Consultation process concluded 20/7/17. Publication expected 2019.</p> |
| <p>ACOG/AAFP</p> <p>“American College of Obstetricians and Gynecologists”/“American Academy of Family Physicians”</p> | <p>No mention of previous CS in first trimester recommendations [25].</p> <p>“In second trimester Rare complications associated with both dilation and evacuation (D&E) and medical abortion include hemorrhage, cervical laceration, retained products of conception, and infection. Uterine perforation can occur with D&E, whereas uterine rupture can occur with medical abortion”.</p> <p>No recommendations on specific precautions in cases of multiple previous CS (2013).</p> |
| <p>CNGOF</p> <p>“French national college of obstetricians and gynecologists”</p> | <p>In the case of terminations of pregnancy or intrauterine deaths for women with uterine scars, induction of labor appears preferable to a planned cesarean in most cases, regardless of the number of past cesareans (professional consensus). The most substantial data concern misoprostol but the levels of evidence are low (LE4). Fewer data are available about sulprostone and vaginal PGE2 than for misoprostol in this indication, although sulprostone is authorized in France for it. It nonetheless appears possible to use both, as a function of term or cervical condition (professional consensus). Preparation by mifepristone or the use of hygroscopic dilators is not contraindicated for women with previous cesareans (professional consensus). Women with more than one previous cesarean should be referred to a hospital with experience in the management of termination of pregnancy and with the appropriate technical equipment and facilities (professional consensus) [26].</p> |

Table 2: Summary of National/International Recommendations in women with a previous CS.

Conclusion

The optimal approach to care of women with failed pregnancies after multiple cesarean sections remains uncertain. The question of a possible increased risk of complications following pregnancy termination with misoprostol in such cases remains to be answered. Given the recent revision of the National Institute for Health and Clinical Excellence guidelines (NICE), providing women the right to request a CS, it is essential to establish whether mode of delivery has an association with subsequent risk of stillbirth or miscarriage. Overall, compared to vaginal delivery, the pooled estimates suggest that caesarean delivery may increase the risk of stillbirth by 23%. Results for the miscarriage review were inconsistent. Higher methodological quality research is required to reliably assess the risk of miscarriage in subsequent pregnancies. Comprehensive and detailed counseling are required for patients with a scarred uterus who are presenting with miscarriage and should address all the management option, their benefits, and risks; adopting an individualized approach considering the previous obstetric history, surgical complications, and comorbidities should improve quality of care.

Disclosure

The authors declared no conflict of interest.

Bibliography

1. Regan Lesley and Raj Rai. "Epidemiology and the Medical Causes of Miscarriage". *Best Practice and Research Clinical Obstetrics and Gynaecology* 14.5 (2000): 839-854.
2. Shekoochi Sahar, *et al.* "Chromosomal Study of Couples with the History of Recurrent Spontaneous Abortions with Diagnosed Blighted Ovum". *International Journal of Molecular and Cellular Medicine* 2.4 (2013): 164-168.
3. Field Alexander and Rahim Haloob. "Complications of Caesarean Section". *The Obstetrician and Gynaecologist* 18.4 (2016): 265-272.
4. "Maternity Statistics - England | NCT" (2018).
5. Menacker F and BE Hamilton. "Recent Trends in Cesarean Delivery in the United States". *NCHS Data Brief* 35 (2010): 1-8.
6. Gao Yanyun, *et al.* "An Analysis of the Indications for Cesarean Section in a Teaching Hospital in China". *European Journal of Obstetrics and Gynecology and Reproductive Biology* 170.2 (2013): 414-418.
7. Feng Xing Ling, *et al.* "Factors Influencing Rising Cesarean Section Rates in China between 1988 and 2008". *Bulletin of the World Health Organization* 90.1 (2012): 30-39.
8. Mazzoni A, *et al.* "Women's Preference for Cesarean Section: A Systematic Review and Meta-Analysis of Observational Studies". *BJOG: An International Journal of Obstetrics and Gynaecology* 118.4 (2011): 391-399.
9. Miller DA, *et al.* "Clinical Risk Factors for Placenta Previa-Placenta Accreta". *American Journal of Obstetrics and Gynecology* 177.1 (1997): 210-214.
10. Silver Robert M, *et al.* "Maternal Morbidity Associated With Multiple Repeat Cesarean Deliveries". *Obstetrics and Gynecology* 107.6 (2006): 1226-1232.
11. Jurkovic D, *et al.* "First-Trimester Diagnosis and Management of Pregnancies Implanted into the Lower Uterine Segment Cesarean Section Scar". *Ultrasound in Obstetrics and Gynecology* 21.3 (2003): 220-227.
12. Collins Kelly and Alka Kothari. "Catastrophic Consequences of a Cesarean Scar Pregnancy Missed on Ultrasound". *Australasian Journal of Ultrasound in Medicine* 18.4 (2015): 150-156.
13. NHS. "Expectant Management of Miscarriage" (2012).
14. Allison Jana L, *et al.* "Management of First Trimester Pregnancy Loss Can Be Safely Moved into the Office". *Reviews in Obstetrics and Gynecology* 4.1 (2011): 5-14.
15. "Gynuity Health Projects Misoprostol for Incomplete Abortion and Miscarriage" (2017).
16. Zhang Jun, *et al.* "A Comparison of Medical Management with Misoprostol and Surgical Management for Early Pregnancy Failure". *New England Journal of Medicine* 353.8 (2005): 761-769.
17. Morris Jessica L, *et al.* "FIGO's Updated Recommendations for Misoprostol Used Alone in Gynecology and Obstetrics". *International Journal of Gynecology and Obstetrics* 138.3 (2017): 363-366.

18. Ashraf Saima., *et al.* "Inducing Abortion in 2Nd Trimester Efficacy of Misoprostol With Previous One Cesarean Section". *The Professional Medical Journal* 24.6 (2017): 839-842.
19. Naguib Ahmad H., *et al.* "Vaginal Misoprostol for Second-Trimester Pregnancy Termination after One Previous Cesarean Delivery". *International Journal of Gynecology and Obstetrics* 108.1 (2010): 48-51.
20. Kim Caron., *et al.* "Medical Treatments for Incomplete Miscarriage". *Cochrane Database of Systematic Reviews* (2017): CD007223.
21. Ambusaidi Qamariya and Anita Zutshi. "Effectiveness of Misoprostol for Induction of First-Trimester Miscarriages: Experience at a Single Tertiary Care Centre in Oman". *Sultan Qaboos University Medical Journal* 15.4 (2015): e534-e538.
22. Patounakis George and William Schlaff. "Management of Uterine Perforation". *Topics in Obstetrics and Gynecology* 32.23 (2012): 1-7.
23. Stitely Michael L., *et al.* "Uterine Scar Dehiscence Associated with Misoprostol Cervical Priming for Surgical Abortion: A Case Report". *The Journal of Reproductive Medicine* 60.9-10 (2015): 445-448.
24. "The Care of Women Requesting Induced Abortion". Royal College of Obstetricians and Gynaecologists 7 (2011).
25. ACOG. "Early Pregnancy Loss". The American college of obstetricians and gynecologists (2015): 1-10.
26. Sentilhes Loïc., *et al.* "Delivery for Women with a Previous Cesarean: Guidelines for Clinical Practice from the French College of Gynecologists and Obstetricians (CNGOF)". *European Journal of Obstetrics and Gynecology and Reproductive Biology* 170.1 (2013): 25-32.

Volume 7 Issue 5 May 2018

©All rights reserved by Manal Shaker Taha., *et al.*