Vaginal Birth After Caesarean Section in Low Resource Settings: The Clinical and Ethical Dilemma

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Abstract

Vaginal birth after Caesarean section (VBAC) has long been practised in low resource settings using unconventional methods. This not only poses danger to the woman and her baby, but could also have serious legal and ethical implications. The adoption of this practice has been informed by observational studies with many deficiencies; this is so despite other studies from settings in which the standard of care is much better that show that elective repeat Caesarean section (ERCS) may actually be safer than VBAC. This raises questions about whether we should insist on a dangerous practice when there are safer alternatives. We highlight some of the challenges faced in making this decision, and discuss why the fear of ERCS may not be justified after all in low resource settings. Since a reduction in rates of Caesarean section may not be applicable in these regions, because their rates are already low, the emphasis should instead be on adequate birth spacing and safer primary operative delivery.

Résumé

L'accouchement vaginal après césarienne (AVAC) est pratiqué depuis longtemps au moyen de méthodes non conventionnelles au sein de pays ne disposant que de faibles ressources. Cela entraîne non seulement des risques pour la femme et son enfant, mais peut également donner lieu à de graves conséquences sur les plans juridique et éthique. L'adoption de cette pratique est soutenue par des études observationnelles comptant de nombreuses carences. Cette pratique perdure malgré la publication d'autres études (issues de milieux au sein desquels les normes de diligence sont beaucoup plus élevées) qui indiquent que la tenue d'une césarienne itérative planifiée (CIP) pourrait en fait être plus sûre que l'AVAC, ce qui soulève des questions quant à la nécessité d'insister sur la mise en œuvre d'une pratique dangereuse, compte tenu de l'existence de solutions de rechange plus sûres. Nous soulignons certains des défis à relever pour la prise d'une décision dans de telles situations et traitons des raisons pour lesquelles les craintes quant à la tenue d'une CIP pourraient ne pas être justifiées après tout au sein des milieux ne disposant que de faibles ressources. Puisqu'une réduction des taux de césarienne pourrait ne pas être possible dans ces régions (car ces taux y sont déjà faibles), l'accent devrait plutôt être placé sur l'espacement adéquat des grossesses et sur la tenue d'un accouchement opératoire plus sûr dans le cadre de la première grossesse.

Key Words: Vaginal birth after Caesarean section, elective repeat Caesarean section, low resource settings.

Competing Interests: None declared.

J Obstet Gynaecol Can 2015;37(10):922–926

INTRODUCTION

The purpose of any obstetric intervention is to reduce morbidity and mortality, and to increase maternal satisfaction while ensuring patient safety. Vaginal birth after Caesarean section continues to elicit controversy. This is partly because the practice is informed by observational studies rather than randomized controlled trials, which would be difficult to justify ethically. Indeed, a recent Cochrane review did not find any RCT available to provide reliable evidence to guide the current practice.[1] Despite numerous reports on the safety of VBAC, women who attempt it are at an increased risk of major maternal morbidity which cannot be predicted accurately.[2] In order to optimize the safety of VBAC, several professional bodies have insisted on stringent criteria to be adhered to by units offering VBAC.[3–5] However, the ideal intrapartum care is still unclear, although these efforts at least ensure maternal safety within reason. Even though the practices may not be evidence-based, they are founded on sound clinical principles and experiential knowledge.

It is unfortunate that VBAC continues to be encouraged in low resource settings, in units that barely meet any of these criteria. The basis of these unsafe practices is evident from numerous observational studies that have reported

high rates of successful VBAC in sub-Saharan Africa with "minimal adverse outcomes."[6–9] Some of these studies have concluded that VBAC is safe even without facilities for intrapartum maternal and fetal monitoring. Such conclusions are misleading. As noted in one of the papers, "the price paid (by the fetus, mother, and obstetrician) for vaginal delivery after previous Caesarean section in this resource-poor setting can be very expensive."[6]

We explore here some of the challenges faced in decision-making for women who may desire VBAC in limited resource settings. We critically analyze issues concerning patient safety that may arise from offering VBAC to patients using nonconventional birth plans. In order to encourage the safe practice of VBAC, we suggest ways that can be used to minimize morbidity while ensuring safety in these settings. Bearing in mind the heterogeneity of health institutions in low resource settings, we will focus on units that do not have the necessary capacity and resources for one-to-one midwifery care and continuous fetal monitoring during labour, as would be the practice in an ideal context.

What is a successful VBAC?

The success rate associated with VBAC is typically cited as 70% to 80%, regardless of the setting in which the studies were undertaken, and is the rate commonly cited to all patients contemplating VBAC.[3–9] However, success cannot merely be measured by the proportion of women achieving a vaginal birth. There are many aspects that need to be taken into account.

First, it is wrong to generalize findings from published studies to inform clinical practice globally. All the studies reporting on success rates of VBAC were carried out in tertiary institutions or within university affiliated hospitals.[6–9] In most developing countries, tertiary institutions tend to be concentrated in major cities and account for a very small fraction of a country's total deliveries. These institutions differ greatly from the usual district hospitals in terms of human resources, because they attract some of the best and most experienced staff including midwives and obstetricians. These institutions also tend to be training centres, having many middle grade staff who provide 24-hour coverage with the necessary support systems in place. Therefore, VBAC in such institutions can be justified even though the institution may not have access to continuous electronic fetal monitoring. This is in direct contrast to most peripheral institutions, which are located mainly in rural areas with little back-up in the event of an emergency. Bearing in mind the heterogeneity of the health care delivery systems, one cannot use findings from one institution to inform practice in another. Contextualization of evidence, expertise, and patient values or expectations is vital in the implementation of a VBAC program.

Second, the studies do not define what is meant by successful VBAC. Does a successful VBAC only refer to the delivery of a baby vaginally in a woman with a previous Caesarean section? In our opinion, VBAC should only be considered successful if the woman has managed to deliver a healthy baby vaginally without any complications, has returned home, has had no complications in the puerperium, and is satisfied with the entire process. If a woman delivers vaginally but has a postpartum hemorrhage that necessitates multiple transfusions, or develops endometritis one week after VBAC, or delivers an asphyxiated baby with impaired neurodevelopmental outcome, then that VBAC cannot be regarded as successful despite the baby having been born vaginally. In those circumstances, the mother and/or the baby has suffered severe consequences that could have been avoided had the woman opted for an ERCS. While one may argue that these are events that could occur regardless of the mode of delivery, it is known that the prevalence of these complications is further increased in women attempting VBAC.[2,10,11]

Third, most of these studies were observational in nature and are therefore prone to bias, a factor that was not appropriately addressed in most of them. There is a tendency to underreport complications and to over-report favourable outcomes, especially in an environment where the culture of incident and adverse event reporting is nonexistent.[12] Most institutions in sub-Saharan Africa do not have reliable record-keeping systems, and the quality of most retrospective chart reviews is variable.[12,13]

The only reliable way to study this would be to perform retrospective data collections as the events occur. Furthermore, these studies[6-9,12,13] do not mention how the process of selecting women for VBAC was developed. It is not clear whether the women were given a choice between VBAC and ERCS. It is possible that in some circumstances the decision to attempt VBAC was influenced by the attending physician. There is also little description of whether the women were satisfied with the outcomes in relation to their values and expectations.

Finally, we cannot conclude that VBAC is safe simply by examining a cohort of women who undergo the practice.

ABBREVIATIONS

ERCS	elective repeat Caesarean section
RCT	randomized control trial
VBAC	vaginal birth after Caesarean Section

The best means of assessing safety would be a prospective comparative study. Such a study need not necessarily be randomized, but comparing the two groups in parallel would give a better understanding of the outcomes of either method. This has been done in some settings, and the investigators not surprisingly found VBAC to be associated with more morbidity than ERCS.[10,11] It would be useful to learn whether similar findings could be replicated in low resource settings.

VBAC IS STILL NOT SAFE IN LOW RESOURCE SETTINGS

The aim of VBAC is to reduce the rate of Caesarean section in order to avoid the associated sequelae of multiple operations, including placenta previa, morbidly adherent placenta, and hemorrhage.[14,15] All these conditions are potentially fatal; however, the main challenge is whether one would want to avoid a future catastrophe by exposing the woman to an immediate one. Looking at the figures derived from developed countries in which VBAC is relatively safe and practised under stringent criteria, the risk of major hemorrhage is 0.8% for ERCS, compared to 2.3% for successful VBAC (OR 0.37; 95% CI 0.17 to 0.80). There is an increased risk of death with VBAC (2.4%) versus ERCS (0.9%) (OR 0.39; 95% CI 0.19 to 0.80).[11] The risk of hypoxic ischemic encephalopathy is 2% for VBAC and 0% in ERCS; the risk of endometritis is 2.9% for VBAC and 1.8% for ERCS; and the risk of blood transfusion is 1.7% for VBAC and 1.0% for ERCS.[10] Compared to normal delivery, women undergoing VBAC have an increased risk of postpartum hemorrhage (OR 8.52; 95% CI 4.6 to 15.7), hysterectomy (OR 51.36; 95% CI 13.6 to 93.4), and serious perinatal outcomes (OR 24.51; 95% CI 11.9 to 51.9).[16] These risks are almost nonexistent with ERCS.

Unfortunately, these figures cannot be generalized to a population in low resource settings because the studies were performed in academic centres in high income countries where the a priori risk of these adverse outcomes is already low, so the contribution of additional risk is very small. This would be different in a setting where the a priori risk is higher. For instance, a WHO systematic review reported that the prevalence of uterine rupture and the associated mortality is lower in developed countries than in less developed countries.[17] This provides proof that VBAC can be a potential additional cause of maternal mortality in these regions.

Validated algorithms can be used to select appropriate candidates for VBAC.[18] Consequently, there are circumstances when it may not be prudent to offer VBAC. These include a previous non-transverse or non-lower segment uterine incision, unavailability of obstetric, pediatric, or anaesthesia emergency staff, an inter-pregnancy interval of less than 24 months, previous endometritis after Caesarean section, and lack of continuous intrapartum monitoring.[3–5] Most of the requirements for permitting VBAC are barely met in resource-poor settings. Even in situations in which the required staff are available, some information concerning the previous Caesarean section (such as type of uterine incision or post-operative complications) may not be available due to challenges with documentation and record-keeping.[12,13]

The most prominent argument against ERCS is that it can increase the risks associated with multiple surgical procedures, which include placenta previa and morbidly adherent placenta.[19–22] Is this sufficient to discourage us from offering an ERCS? First, the safety of Caesarean section has increased in association with improvements not only in technique but also the mode of anaesthesia; therefore, Caesarean section is in general a very safe procedure. Secondly, when risks are expressed in relative terms they appear more alarming than when expressed in absolute numbers. Therefore, it may be alarming to say that there is a 25-time higher risk of placenta previa associated with ERCS, when in absolute terms this is only a 1.3% increase.[11,19] Third, when compared to VBAC, the risks of ERCS do not seem to increase morbidity significantly when the morbidity associated with VBAC is factored in. A successful VBAC does not reduce the risk of a woman developing placenta previa or having a morbidly adherent placenta in the subsequent pregnancy. Therefore, the cumulative risk of adverse outcomes still remains high. This risk may be reduced if she had chosen to have an ERCS. To illustrate this, the lifetime risk of having major obstetric hemorrhage is an appropriate example. The overall risk of major hemorrhage in a woman attempting VBAC for the first time is 2.3%.[10] If she survives and conceives again, then she will have a 1.5% chance of developing placenta previa.[19] In contrast, a woman who opted for ERCS had a risk of major hemorrhage of 0.8%.[10] If this woman survives, she now has two uterine scars, increasing her risk of placenta previa in her next pregnancy to 2.2%.[19] Because the risk of bleeding from placenta previa remains constant regardless of the number of uterine scars, then the woman who undergoes VBAC has a lifetime risk of suffering major hemorrhage that is almost double that of the woman who elects ERCS. The same may be said of other conditions, except for morbidly adherent placenta; in this case, the risk is significantly increased with the number of Caesarean sections, although the absolute risk remains very small.[16] Therefore, in relative terms, there seems to

Box

Thank you for attending your appointment today to discuss your preferred birth plan.

We recognize that vaginal birth after Caesarean section is possible in your case. Seven of every 10 women attempting a trial of labour after a previous Caesarean section can achieve a successful vaginal birth. However, there is still a 1 in 200 chance that you may have a tear in your womb. There is also a risk of your baby suffering lack of oxygen to the brain, a risk of you bleeding heavily after delivery, and of needing to have your womb removed. To minimize these risks, it is advisable to monitor your labour continuously so that if any abnormal changes are detected the baby can be delivered immediately. Unfortunately, we may not be able to offer you immediate delivery in this unit. This means your chances of suffering harm are greater than if you had a planned delivery by Caesarean section.

We have had previous success with vaginal birth after Caesarean section in this unit. We will strive to offer you the best care within our means, but we cannot guarantee safe outcomes for you and your baby.

Should you choose to go ahead with a trial of labour we will support your choice and will not discriminate against you in any way. If you wish to attempt a trial of labour, kindly sign below. Remember that you are free to change your mind at any time without consequence.

Do not hesitate to contact us should you have any further queries.

Signed: Woman/health care provider

be a significant risk associated with repeated Caesarean section, but the absolute values are small and might be diluted if we factor in previous risks.

NONCONVENTIONAL VBAC PRACTICES

Assuming the prerequisites set by various professional bodies are scientifically acceptable as best practice, one can conclude that VBAC in most resource-poor settings is unconventional. The mother's wishes should be respected, and clinicians should support women through the entire decision-making process. However, a decision can only be reasonable if it is based on fact. It is therefore the duty of the clinician to present the facts to patients, including informing them of the inadequacies within the health care facility that may make their choices unsafe. These deficiencies should be pointed out in the woman's birth plan. We therefore propose a contextualized statement similar to the statement shown in the Box for all women considering giving consent for VBAC in resource-poor settings. If a woman chooses to go ahead with a trial of labour knowing the dangers involved, our duty is to minimize harm as much as possible. However, encouraging a woman to undergo an unconventional VBAC plan may have significant legal and ethical consequences besides posing a danger to the woman and her baby. Consequently, every woman should be made to understand the risks involved in any recommended intervention, and should be guided through the process in a non-judgmental way.[23] Local data should be used to guide the process. It would not be prudent to cite global outcome figures because they may not be applicable in the local context.

WHAT IS THE WAY FORWARD?

We acknowledge the major challenges posed by encouraging a universal practice of ERCS when VBAC is not safe. Indeed, we cannot underestimate the impact an increase in rates of placenta previa and morbidly adherent placenta may have on maternal morbidity in these low resource settings. To minimize the sequelae of Caesarean section, efforts should be geared towards reducing the primary Caesarean section rate, although it may be argued that such a move is not justified in view of the low rate of Caesarean section in most of these countries (well below the minimum required for maternal safety).[24] There is therefore a need to make VBAC safer. Health policy should be geared towards ensuring adequate staffing and the provision of basic emergency obstetric care. Electronic fetal monitoring should be considered a standard of care by all professional bodies in these regions. Adoption of evidence-based guidelines and good practices has been demonstrated to result in safer VBAC in these settings.[25]

There is also a need for concerted efforts to reduce family size. We therefore recommend that efforts should be made towards increasing contraceptive coverage, especially the use of long acting methods, for those women with previous Caesarean sections to ensure wider inter-pregnancy intervals.[26] Improved models of antenatal care can ensure

early identification of women at risk of adverse outcomes, such as those with previous uterine scars; these women can then be triaged to tertiary institutions sufficiently early to avoid unexpected outcomes.

CONCLUSION

Attempting VBAC without measures to ensure adequate fetal monitoring, and in the absence of readily available emergency measures, is unsafe. Compared to ERCS, VBAC may indeed have worse perinatal outcomes; it would be safer, therefore, to opt for ERCS in settings in which VBAC cannot be offered with the appropriate support. Of course, there are disadvantages associated with repeated Caesarean sections, but when critically analyzed the long-term risks associated with VBAC may outweigh those of ERCS. It is the duty of every practitioner to ensure maternal safety by appropriately informing women of all the risks involved in their choices, offering safer alternatives, and avoiding unconventional birth plans.

REFERENCES

1. Dodd JM, Crowther CA, Huertas E, Guise JM, Horey D. Planned elective repeat caesarean section versus planned vaginal birth for women with a previous caesarean birth. Cochrane Database sys Rev. 2013;12: CD0044224. doi:10.1002/14651858.CD004224.pub3.Review
2. Scrifes CM, Rogn A, Odibo A, Staachio O, Macones GA. Predicting significant maternal morbidity in women attempting vaginal birth after cesarean section. Am J Perinatol 2011;28:181–6.
3. Royal College of Obstetricians and Gynaecologists. Birth after previous Caesarean birth. Green-top guideline No. 45. London (GB): RCOG; 2007. Available at https://www.rcog.org.uk/globalassets/documents/guidelines/gtg4511022011.pdf. Accessed on March 21, 2015.
4. The American College of Obstetricians and Gynecologists. ACOG Practice bulletin no. 115: vaginal birth after previous cesarean delivery. Obstet Gynecol 2010;116:450–63.
5. Martel MJ, MacKinnon CJ; Clinical Practice Obstetrics Committee, Society of Obstetricians and Gynaecologists of Canada. Guidelines for vaginal birth after previous Caesarean birth. SOGC Clinical Practice Guidelines, No. 155, February 2005. J Obstet Gynaecol Can 2005;27:164–74.
6. De Muylder X. Vaginal delivery after caesarean section: is it safe in a developing country? Aust NZ J Obstet Gynecol 1988;28:99–102.
7. Boulvain M, Fraser WD, Brisson-Carroll G, Faron G, Wollast E. Trial of labor after caesarean section in sub-Saharan Africa: a meta-analysis. BJOG 1997;104:1385–90.
8. Aisieon AO, Oronsanhye AU. Vaginal birth after one previous caesarean section in a tertiary institution in Nigeria. J Obstet Gynaecol 2004:886–90.
9. van der Walt WA, Cronje HS, Bam RH. Vaginal delivery after one cesarean section. Int J Gynecol Obstet 1994;46:271–7.
10. Landon MB, Hauth JC, Leveno KJ, Spong CY, Leindecker S, Varner MW, et al. Maternal and perinatal outcomes associated with a trial of labour after prior cesarean delivery. N Engl J Med 2004;351;2581–9.
11. Crowther CA, Dodd JM, Hiller JE, Haslam RR, Robinson JS. Birth after caesarean study group. Planned vaginal birth or elective repeat caesarean: patient preference restricted cohort with nested randomised trial. PLos Med 2012;9:e1001192.doi:10.1371/journal.pmed.1001192. Epub 2012 Mar 13.
12. Stanton CK, Dubourg D, De Brouwere V, Pujades M, Ronsmans C. Reliablity of data on caesarean sections in developing countries. Bull World Health Organ 2005;83:449–55.
13. Stanton CK, Ronsmans C; Baltimore Group on Cesarean. Recommendations for routine reporting on indications for cesarean delivery in developing countries. Birth 2008;35;3:204–11.
14. Gilliam M, Rosenberg D, Davis F. Likelihood of placenta praevia with greater number of cesarean deliveries and higher parity. Obstet Gynecol 2002;99:976–80.
15. Ananth CV, Smulian JC, Vintzileos AM. Association of placenta praevia with history of cesarean delivery and abortion: a metaanalysis. Am J Obstet Gynecol 1997;177:1071–8.
16. Al-zirqi I, Stray-Pedersen B, Forsen L, Vangen S. Uterine rupture after previous caesarean section. BJOG 2010;117:809–20.
17. Hofmeyr GJ, Say L, Gulmezoglu AM. WHO systematic review of maternal mortality and morbidity: the prevalence of uterine rupture. BJOG 2005;112:1221–8.
18. Grobman WA, Lai Y, Landon MB, Spong CY, Leveno KJ, Rouse DJ, et al. Development of a nomogram for prediction of vaginal birth after cesarean delivery. Obstet Gynecol 2007;109:806–12.
19. To WW, Leung WC. Placenta previa and previous cesarean section. Int J Gynecol Obstet 1995;51:25–31.
20. Chattopadhyay SK, Kharif H, Sherbeeni MM. Placenta praevia and accreta after previous caesarean section. Eur J Obstet Gynecol Reprod Biol 1993;52:151–6.
21. Gurol-Urganci I, Cromwell DA, Edozien LC, Smith GC, Onwere C, Mahmood TA, et al. Risk of placenta praevia in second birth after first birth cesarean section: a population-based study and meta-analysis. BMC Pregnancy Childbirth 2011;11:95. doi: 10.1186/1471-2393-11-95
22. Faiz AS, Ananth CV. Etiology and risk factors for placenta praevia: an overview and meta-analysis of observational studies. J Matern Fetal Neonatal Med 2003;13:175–90.
23. Dexter SC, Windsor S, Watkinson SJ. Meeting the challenge of maternal choice in mode of delivery with vaginal birth after caesarean section: a medical, legal and ethical commentary. BJOG 2014;121(2):133–9.
24. Betran AP, Merialdi M, Lauer JA, Bing-Shun W, Thoma J, Look PV, et al. Rates of caesarean section: analysis of global, regional and national estimates. Paeds Perinatol Epidem 2007;21:98–113.
25. Wanyonyi SZ, Karuga RN. The utility of clinical care pathways in determining perinatal outcomes for women with one previous caesarean section; a retrospective service evaluation. BMC Pregnancy Childbirth 2010;10:62. doi.1186/1471-2393-10-62
26. Wanyonyi SZ, Ngichabe SK. Safety concerns for planned vaginal birth after cesarean section in sub-Saharan Africa. BJOG 2014;121:141–3.