International Journal of Gynecology and Obstetrics (2007) **98**, 227–231

available at www.sciencedirect.com

ScienceDirect

www.elsevier.com/locate/ijgo

CLINICAL ARTICLE

Vaginal birth after cesarean delivery in the West African setting

R.M.K. Adanu [a,*], **M.Y. McCarthy** [b]

[a] *Department of Obstetrics and Gynecology, University of Ghana Medical School, Accra, Ghana*
[b] *Department of Obstetrics and Gynecology, Korle-Bu Teaching Hospital, Accra, Ghana*

Received 19 January 2007; received in revised form 23 March 2007; accepted 23 March 2007

KEYWORDS
Africa;
Birth weight;
Ghana;
Vaginal birth after cesarean delivery

Abstract

Objective: To determine the fetal weight beyond which women with one previous cesarean delivery (CD) are most likely to have a repeat CD. *Methods:* A retrospective cohort study of 586 women who had one previous CD and were undergoing trial of labor was conducted in Accra, Ghana. Following delivery, the women were allocated to one of three groups according to whether they had a successful vaginal delivery, underwent a CD for cephalopelvic disproportion, or underwent a CD for another indication. The groups were then compared using analysis of variance or Kruskal–Wallis tests. Multiple logistic regression was used to assess the effect of fetal weight on the odds of having a repeat CD. *Results:* A fetal weight greater than 3.45 kg tripled the odds of having a repeat CD, and the probability of having a repeat CD were 50% for a fetal weight of 3.70 kg. *Conclusion:* In settings similar to those in Ghana, women who have undergone a previous CD whose fetuses weigh more than 3.70 kg are likely to have less than a 50% chance of having a successful vaginal delivery.

1. Introduction

Vaginal birth after cesarean delivery (VBAC) is an acceptable practice in the developed world [1], where it has also been found to be safe [2–4]. At Korle Bu Teaching Hospital (KBTH), a previous cesarean delivery (CD) has been the leading indication for CD since 1971, with 23% and 21% of all CDs performed for this indication in 1971 and between 1988 and 1999, respectively [5,6].

There are no uniformly accepted standards for allowing a trial of labor (TOL) in the West African setting, apart from the generally accepted rule that a woman with a previous lower uterine segment CD for a nonrecurrent indication should be offered the choice if the obstetrician does not judge the fetus to be too large. In most labor wards in West Africa fetal monitoring is by intermittent auscultation and analgesia is usually achieved by intramuscular injections of pethidine. In most cases women with a history of CD do not receive oxytocin for augmentation of labor.

* Corresponding author. Department of Obstetrics and Gynecology, University of Ghana Medical School, P. O. Box GP4236, Accra, Ghana.
E-mail address: rmadanu@yahoo.com (R.M.K. Adanu).

0020-7292/$ – see front matter
doi:10.1016/j.ijgo.2007.03.056

Table 1 Age, parity, and birth weight among women with one previous CD who experienced trial of labor

Variable	Vaginal delivery (n=281)	CD for CPD (n=155)	CD for other reasons (n=150)	P value for comparison of means
Birth weight, mean, kg	3.12	3.45	3.20	<0.001 [a]
Maternal age, mean, years	29.4	28.9	30.5	0.02 [b]
Para 1, %	51.0	72.3	66.2	0.001[a]

Abbreviations: CD, cesarean delivery; CPD, cephalopelvic disproportion.
[a] Comparison of means by the Kruskal–Wallis test.
[b] Comparison of means by analysis of variance.

Vaginal delivery in women who have had a previous CD helps reduce the rates of CD and therefore of maternal complications from repeated CDs, e.g. the serious complications of placenta previa accreta. Other benefits of VBAC are a shorter hospital stay and a more rapid recovery from the delivery. Success rates have been reported to range between 71% and 93% for TOL [7–14], and be highest in women who have already had a successful VBAC [7,9,11,12,15]. The reported success rates are lower in West Africa, however, between 48% and 84% [2,4]. Factors known to influence the outcome of labor in women with a history of one previous CD include previous vaginal delivery, previous VBAC, fetal weight at birth, maternal body mass index, previous labor patterns, and cervical dilatation on admission [7,9,10,12,16].

Elkousy and colleagues [9] found that the success rates of TOL were higher in women who underwent one previous CD when fetal weight was lower. In a study by Amoa and colleagues [17], a fetal birth weight greater than 2500 g was significantly associated with a repeat CD. A previous vaginal delivery seems to be a strong predictor of VBAC [11,15].

The complications of unsuccessful TOL in women with previous CDs are mainly rupture of the uterus, with rates between in 0.62% to 2.8% [2,4,13,16,18], and the inability to be delivered vaginally. Moreover, the rates of infectious morbidity are higher among women who had an unsuccessful TOL [16], and uterine rupture is more common when the fetal weight is greater than 4000 g, especially in women with no history of vaginal delivery [9]. A scarred uterus was the second most common cause of uterine rupture at KBTH [19,20].

There is no standard protocol at KBTH for deciding who should be allowed a TOL. In most cases, after a review of the patient's history, the fetal size is estimated by ultrasound or by palpation near term. Based on an arbitrary cut-off weight and other considerations, the obstetrician then decides whether to allow a TOL or perform an elective CD. Oxytocin augmentation of labor is not practiced during TOL. Moreover, women with a history of one CD who have a medical condition or a complication of pregnancy are usually delivered by elective CD at the hospital.

This study examines the effect of selected factors on TOL, especially birth weight, in women with a history of one CD in Ghana. The findings will guide clinical decision-making and aid in patient counseling.

2. Materials and methods

This retrospective cohort study was carried out in 2003 at the Department of Obstetrics and Gynecology of Korle Bu Teaching Hospital (KTBH). All women with a singleton pregnancy and a history of one transverse lower uterine segment CD who presented in labor in 2002 with the fetus in cephalic presentation and had been declared eligible for TOL by their obstetrician were included. Women with coexisting medical conditions were excluded. The record books in the labor wards and the obstetric theatre were reviewed and information on age, parity, mode of delivery in the pregnancy immediately preceding the index pregnancy, gestational age at delivery, mode of delivery of the index pregnancy, and fetal outcome was collected. The indication for the index CD in the women who underwent a repeat CD was noted, as well as whether uterine rupture occurred. The data were collected by a trained research assistant. Entries with incomplete information were excluded.

There were two sorts of indications for CD. One was labeled cephalopelvic disproportion (CPD), and included the following diagnoses: cephalopelvic disproportion, "big baby," prolonged labor, and failure to progress. The other was labeled non-CPD. The women were therefore allotted to three groups, the VBAC group, the CD for CPD group, and the CD for a non-CPD group.

The data obtained were analyzed using Stata software, version 8 (StataCorp, Texas, USA) [21]. Numeric variables were compared with the analysis of variance (ANOVA) test; the Kruskal–Wallis H test was used to determine whether the groups varied differently; χ^2 tests were used to compare proportions; and logistic regression was used to determine the effect of birth weight on VBAC while controlling for parity and mode of previous delivery. Only the VBAC and CD for CPD groups were analyzed by multiple logistic regression. From the results of the logistic

Table 2 Condition of newborns among women with one previous CD who experienced trial of labor [a]

Mode of delivery	Condition of the newborn				Total
	Satisfactory	Sent to NICU	Fresh stillbirth	Macerated stillbirth	
Vaginal delivery	257 (91.4)	15 (5.3)	3 (1.1)	6 (2.1)	281 (48.0)
CD for CPD	142 (91.6)	12 (7.7)	1 (0.7)	0 (0.0)	155 (26.5)
CD for a non-CPD reason	124 (82.7)	23 (15.3)	2 (1.3)	1 (0.7)	150 (25.5)
Total	523 (89.3)	50 (8.5)	6 (1.0)	7 (1.2)	586

Abbreviation: CD, cesarean delivery; CPD, cephalopelvic disproportion; NICU, neonatal intensive care unit.
[a] Values are given as number (percentage).