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FREQUENCY OF VAGINAL BIRTH AFTER CESAREAN IN A MATERNITY HOSPITAL IN THE EXTREME SOUTH OF SANTA CATARINA, BRAZIL

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ABSTRACT

Knowing the frequency of vaginal birth after cesarean in a maternity hospital in the southern part of Santa Catarina State. This was an observational and retrospective study carried out through the electronic records analysis, whose sample was composed of 1387 pregnant women with previous cesarean section. Among the pregnant women considered fit for VBAC (n = 1072), cesarean section was the main route of delivery, corresponding to 82.3% of the cases. The majority (85.9%) did not even attempt normal delivery and the main indications for a new cesarean section were two previous cesarean sections and fetal distress. The frequency of VBAC was 17.7%, most without complications (52.1%) or with mild complications such as perineal lacerations (44.2%). There was no case of uterine rupture. The frequency of vaginal birth after cesarean at the study site is still low, but when performed, most of them progress without complications.

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INTRODUCTION

The performance of vaginal birth after cesarean (VBAC) represents a significant change in current obstetrics and has proven to be a safe and important practice in reducing cesarean

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rates, with rates in Brazil being approximately 40.0% in the public sector and 85.0% in the private (Zaitoun *et al.*, 2013; Chhabra *et al.*, 2006; MS/SVS/DASIS, 2013). When performed by obstetrical indications, cesarean section is a procedure capable of ensuring well-being and saving the life of the maternal-fetal binomial (World Health Organization, 2015). An emergency cesarean section is indicated when there is a fetal distress, placental abruption, cephalopelvic disproportion, impending uterine rupture, incorrigible

functional dystonia, among others.⁵ On the other hand, elective cesarean is recommended for twin pregnancy whose first fetus has a non-cephalic presentation, monoamniotic twins, fetal-fetal transfusion syndrome, placental insufficiency, extreme prematurity, placenta previa, HIV positive pregnant women with unknown viral load or greater than 1,000 fetal macrosomia, previous maternal tumors, HELLP syndrome (hemolysis, elevated liver enzymes, low platelet), gestation with an estimated fetal weight less than 1,500 g, imminence of eclampsia, maternal cardiopathies and previous body uterine scarring. In addition to those already mentioned, the interruption of cesarean pregnancy may occur at the request of the pregnant woman (Zugaib *et al.*, 2016; Secretaria de Atenção à Saúde, 2016; Ministério da Saúde, 2015). A VBAC attempt reported a success rate of around 70.0%, which contributes to decrease postpartum maternal morbidity and mortality and provides the newborn with reduced risk of respiratory diseases, early start and longer duration of breastfeeding and immediate bond between mother and child (Curtin *et al.*, 2015; Puri *et al.*, 2011; COREN, 2010. During the follow-up of the labor of patients with previous cesarean section, the close maternal-fetal monitoring is essential, as well as the guarantee of immediate access to the cesarean section in the case of complications.⁶ Although rare, the most feared complication is the uterine rupture, whose incidence is 0.2% to 0.5%. This risk increases with the reduction in the period between childbirths and in the proportion that increases the number of previous cesarean sections (Secretaria de Atenção à Saúde, 2016; Islam *et al.*, 2011). VBAC should be encouraged for all pregnant women with previous cesarean section for more than 15 months, with at most two previous cesarean sections, absence of traditional contraindications to labor or normal childbirth and adequate maternal pelvis on physical examination. On the other hand, it should not be attempted if the previous cesarean section was performed by means of a "classic" or T-shaped body incision or extensive fundic scar, if there was previous uterine rupture and if the place does not have adequate adjustments for emergency cesarean section (Secretaria de Atenção à Saúde, 2016; Freitas *et al.*, 2011). This study analyzed the frequency of vaginal birth after cesarean in a maternity hospital in the city of Criciúma, Santa Catarina.

MATERIALS AND METHODS

An observational and descriptive study with a quantitative approach, in which were reviewed the medical records of pregnant women with previous cesarean section who had a new childbirth in a maternity hospital in the city of Criciúma, Santa Catarina. The study was approved by the Ethics Committee of the Universidade do ExtremoSulCatarinense (UNESC), under the Certificate of Presentation for Ethical Appreciation (CAAE) 62281116.0.0000.0119 and by the Ethics Committee of Hospital São José, under the CAAE 62281116.0.3001.5364. Were included all the records of pregnant women with previous cesarean section who were admitted to the hospital for new childbirth in the period from January 2015 to December 2016, at the São José Hospital, in Criciúma / SC. Were excluded the records of twin pregnancies whose birth occurred in both childbirth routes, cases of second childbirths in the same period and those with incomplete data that would made the research unfeasible. The following variables were studied: maternal age, gestational age at birth (in full weeks of gestation, classified as term if gestational age were greater than 37 weeks completed and prematurity if

lower), existence of previous normal childbirth, number of previous cesareans, time from the last cesarean section, presence of maternal comorbidities, type of VBAC (spontaneous, induced with oxytocin or prostaglandin), delivery route, cesarean indications, episiotomy, VBAC maternal complications (first, second, third and unspecified lacerations, bleeding with and without the need for blood transfusion, infections, and uterine rupture). It was considered pregnant fit for VBAC those with cesarean section for more than 15 months and / or up to 2 previous cesarean sections (Secretaria de Atenção à Saúde, 2016). The collected data were analyzed with the support of the IBM Statistical Package for Social Sciences (SPSS) version 22.0 and the variables expressed by means of frequency, percentage, mean and standard deviation. The statistical tests were performed with a significance level $\alpha = 0.05$ and, therefore, confidence of 95.0%. The investigation of the existence of association between the qualitative variables was performed through the application of Pearson's chi-square test, likelihood ratio, followed by residue analysis when statistical significance was observed. The comparison between the means of the quantitative variables was performed using the Mann-Whitney U test. The assessment of the distribution of quantitative variables as to normality was performed using the Kolmogorov-Smirnov test.

RESULTS

A total of 1405 records of pregnant women with previous cesarean section were studied, of which 18 (1.3%) were excluded, 10 (0.7%) being the second delivery in the period, 7 (0.5%) for incomplete information and 1 (0.1%) because it is a twin pregnancy with different delivery routes, and therefore the final sample is composed of 1387 medical records.

Table 1. Information regarding pregnant women

Variables	Average \pm ST or n(%)
	n=1387
Age (years)	28.78 \pm 5.97
Number of pregnancies	2.93 \pm 1.20
Two	642 (46.3)
Three	430 (31.0)
Four	189 (13.6)
Five	73 (5.3)
Six	27 (1.9)
Seven	13 (0.9)
Eight	7 (0.5)
Nine	2 (0.1)
Ten	4 (0.3)
Previous vaginal birth	
No	1121 (80.8)
Yes	266 (19.2)
Number of previous cesarean sections	1.37 \pm 0.65
One	991 (71.4)
Two	301 (21.7)
Three or more	95 (6.8)
Time of the last cesarean section (n=1173)	
> 15 months	1119 (95.4)
\leq 15 months	54 (4.6)
Uninformed	214
Gestational Age (weeks)	38.47 \pm 1.85
Maternal comorbidities	
Absence of comorbidities	1068 (77.0)
Hypertension / Hypertension in pregnancy	184 (13.3)
Diabetes / Gestacionaldiabetes	50 (3.6)
HIV+	18 (1.3)
Thyroid Diseases	7 (0.5)
Others	108 (7.8)

HIV: Human immunodeficiency virus. ST= Standard deviation.

Of these, 1072 met VBAC criteria (up to two previous cesareans, the last one being performed more than 15 months ago) or progressed to normal childbirth. The average age of the patients was 28.78 ± 5.97 (n = 1387) years old, the majority (80.8%; n = 1121) had no previous normal childbirth. Regarding the number of previous cesarean sections, 71.4% (n = 991) had one, 21.7% (n = 301) two and 6.8% (n = 95) three or more. The average gestational age at birth was 38.47 ± 1.85 weeks (Table 1). There was a predominance of pregnant women without comorbidities (77.0%, n = 1068) and, when present, the most common (13.3%; n = 184) was hypertension / hypertension in pregnancy (Table 1). Among the pregnant women considered fit for VBAC or those who progressed to VBAC (n = 1072), cesarean section was the main way of childbirth, corresponding to 82.3% (n = 882) of the cases (Figure 1), of which 85.9% did not try normal childbirth and the main indications for a new cesarean section were two previous cesarean sections (25.8%, n = 176) and fetal distress (17.5%, n = 118) (Table 2). When those who had previous cesarean section were isolated between 15 months and 2 years, the rate of new caesarean section was even higher, 90.8% (n = 167).

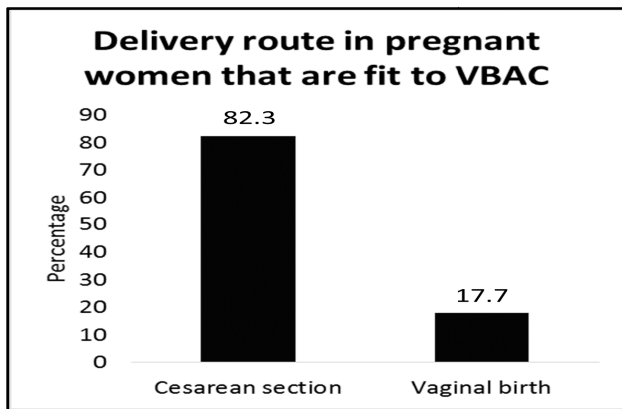


Figure 1. Chart of the delivery route in pregnant women that are fit to VBAC

Table 2. Caesarean section indications in pregnant fit for VBAC

Indications	Average \pm ST or n(%)
n=882	
Two previous cesarean sections	176 (25.8)
Fetal distress	118 (17.5)
BISHOP unfavorable	77 (11.3)
Pre-eclampsia / eclampsia / uncontrolled increase in blood pressure	53 (7.8)
One previous cesarean section	44 (6.5)
Cephalopelvic disproportion	42 (6.2)
Anomalous fetal presentation	36 (5.3)
Macrosomia	28 (4.1)
Stop progression	24 (3.5)
By request	21 (3.0)
Maternal comorbidities	15 (2.2)
Twin pregnancy	12 (1.8)
Placental abruption	9 (1.3)
Failure in the induction of labour	9 (1.3)
HIV with an unknown viral load or more than 1000 copies / ml	6 (1.0)
Rupture of the uterine membrane for more than 18 hours	3 (0.4)
Bad obstetric history	2 (0.3)
Abnormal bleeding	2 (0.3)
Lack of maternal cooperation	1 (0.1)
Imminence of uterine rupture	1 (0.1)
Fetal malformation	1 (0.1)
Placenta praevia	1 (0.1)
Uninformed	201

HIV: Human immunodeficiency virus. ST = Standard deviation.

VBAC occurred in 17.7% (Figure 1) of the patients (190 of 1072 pregnant women). The mean age was 27.51 ± 5.98 years, 94.7% (n = 180) had a previous cesarean section and 5.3% (n = 10) two. Regarding gestational age, the mean was 38.66 ± 2.16 weeks. Of the total deliveries, 98.9% (n = 188) had spontaneous onset and 1.1% (n = 2) were induced with prostaglandin, both with the last cesarean section three years ago; one of the cases was a 28-week fetal death in a patient with previous normal childbirth, and another case was an attempt to interrupt the pregnancy of 25 weeks with the use of vaginal misoprostol tablets inserted by the pregnant woman herself. Most of the pregnant women (52.1%, n = 99) had no complications, 44.2% (n = 84) presented perineal lacerations and there was no case of uterine rupture (Table 3).

Table 3. Information regarding pregnant women who performed VBAC

Variables	Average \pm ST or n(%)
n=190	
Maternal age (years)	27.51 ± 5.98
Gestational age (weeks)	38.66 ± 2.16
A term (≥ 37 weeks)	181 (95.3)
Pre-term (≤ 37 weeks)	9 (4.7)
Number of previous cesarean sections	
One	180 (94.7)
Two	10 (5.3)
Time of the last cesarean section (n=170)	
> 15 months	170 (100.0)
Uninformed	20
Method	
Spontaneous	188 (98.9)
Induced with prostaglandins	2 (1.1)
Episiotomy	
No	145 (76.3)
Yes	45 (23.7)
Complications	
Absence of complications	99 (52.1)
First degree laceration	57 (30.0)
Secondary laceration	20 (10.5)
Third degree laceration	3 (1.6)
Laceration not specified	4 (2.1)
Bleeding did not require blood transfusion	3 (1.6)
Bleeding required blood transfusion	3 (1.6)
Infection	1 (0.5)

ST = Standard deviation.

Table 4. Analysis of the way of delivery of pregnant women with previous normal delivery *

	Previous vaginal birth		Value-p
	Yes n=213	No n=336	
Caesarean	121 (27.9)	313 (72.1)	<0.001**
Vaginal birth after cesarean	92 (80.0)	23 (20.0)	

*Except the pregnant women who are in the second gestation.

**The value obtained by applying the chi-square test of Pearson

Correlating the current delivery route with the number of previous cesarean sections, VBAC was observed in a higher proportion in pregnant women with only one previous cesarean section (n = 180) compared to those with two (n = 10) (p <0.001) (Table 3) and the presence of previous vaginal delivery was significantly associated with success in the VBAC attempt (Table 4).

DISCUSSION

The high cesarean rates in Brazil make the discussion and the choice of the delivery route an increasingly important topic.

The objective is the reduction of cesarean sections in primigravidae and the incentive to those pregnant women fit for VBAC, modifying the thought that "once cesarean section always cesarean" (Zaitoun *et al.*, 2013; Chhabra *et al.*, 2006; Madi *et al.*, 2013). At the study site, it is common to indicate a new cesarean section in pregnant women who have two or more previous cesarean sections and in those with a previous cesarean section performed less than two years ago. Current evidence suggests that VBAC should be encouraged for all pregnant women with previous cesarean section longer than 15 months, with at most two previous cesarean sections, absence of traditional contraindications to labor or normal delivery, and adequate maternal pelvis on physical examination (Secretaria de Atenção à Saúde, 2016; American College of Obstetricians and Gynecologists 2010). The frequency of VBAC varies globally. In European countries it is between 29.0% and 55.0%, in the United States and Australia approximately 36.0% and in the United Kingdom 26.0%, rates higher than that found in this study (17.7%), (England NMS-. Hospital Episode Statistics, 2015; Schemann *et al.*, 2015; Alexander *et al.*, 2008). Part of this statistical divergence is due to the variability of the election criteria to consider pregnant women fit to VBAC, who depend on the study site, the protocols of each service, the local physical and socioeconomic structure, factors that limit the comparison of the data. Data from the United States indicate that more than 90.0% of pregnant women with a previous cesarean section were admitted to elective cesarean section.

In the city of Belo Horizonte this rate is 76.1% and in this research, 85.9% (Ferraz, 2015; Guise *et al.*, 2010). It is observed, prevailing the premise "once cesarean always cesarean" and also it is perceived the low incentive to the VBAC due to factors such as concern for patient safety, lack of adequate structure, professional inexperience and lack of protocols that establish with certainty which pregnant woman is fit for VBAC. The presence of two transverse uterine scars has historically been used as one of the main justifications for performing a new surgical delivery (Tahseen *et al.*, 2010). Currently, due to the high cesarean rates, Brazil has experienced a change in the birth pattern, with greater incentive to vaginal delivery. In 2016, CONITEC (Comissão Nacional de Incorporação de Tecnologias no SUS) launched the Guidelines for Care of the Pregnant Woman: the cesarean section, protocol of recommendations that represent the Ministry of Health vision regarding this way of delivering. In this document, it is recommended that, for pregnant women with two previous cesarean sections, the procedure be individualized, considering the risks and benefits of both ways of delivery. For being a recent recommendation, data on the evolution and outcome of vaginal delivery after two cesareans are still scarce in the literature (Secretaria de Atenção à Saúde, 2016).

The success rate of VBAC ranges from 50.0 to 85.0% (Society of Obstetricians and Gynaecologists of Canada, 1997; Biswass, 2003; Quilligan, 2001; Scott, 1997; Rageth *et al.*, 1999; Lovell, 1996). In the United Kingdom it is approximately 64.0% and in the United States, 60.1%, similar to that found in the present study (60.5%), (NHS Foundation Trust, 2017; User guide to the 2010 natality 2010 public use file, 2010). The literature describes that success is favored by the presence of previous normal delivery and evolution to spontaneous labor (Núñez *et al.*, 2009; Gregory *et al.*, 2010; Grobman *et al.*, 2011; Rosen *et al.*, 1990). In this study, 80.0%

of the pregnant women who progressed to VBAC had previous normal delivery and 98.9% were admitted to spontaneous labor. It is known that, although low, there is an increased risk of uterine rupture during VBAC. On the other hand, the maternal mortality rate is higher in pregnant women submitted to a programmed cesarean section when compared to those who had planned vaginal delivery (Secretaria de Atenção à Saúde, 2016). Data from London show low rates of complications during and after the VBAC: uterine rupture (0.5%), infections (2.9%), bleeding requiring blood transfusion (1.7%) and perineal.

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