

Vaginal delivery after previous cesarean section in a teaching hospital**Parto vaginal após cesárea prévia em um hospital de ensino****Parto vaginal después de una cesárea previa en un hospital de enseñanza****Received: 30/04/2020****Approved: 21/10/2020****Published: 03/03/2021****Mariana Torreglosa Ruiz¹****Elizabeth dos Santos Campos²****Patrícia Barbosa Cruz³****Mário Sérgio Silva Gomes Caetano⁴****Marina Carvalho Paschoini⁵**

This is a cross-sectional and retrospective study based on the analysis of all medical records of puerperal women assisted at a teaching hospital in the state of Minas Gerais, from January 1 to December 31, 2016. This study aims to estimate the success rate in vaginal delivery after a previous cesarean section, and the factors associated with their outcome. 1,157 medical records were reviewed and, after selection, 215 records of puerperal women submitted to vaginal delivery after a previous cesarean section were analyzed. The rate of vaginal delivery after previous cesarean section was 55.8%. The factors associated with the outcome were mainly absence of complications and/or pathologies during pregnancy, full-term pregnancies, and having had at least one previous vaginal birth. There is a need for studies on the subject, given the recent recommendations, factors to be cleared and still contradictory results regarding vaginal delivery after previous cesarean section.

Descriptors: Cesarean section; Natural childbirth; Delivery, Obstetric.

Estudo transversal e retrospectivo a partir da análise de todos os prontuários de puérperas assistidas em um hospital de ensino de Minas Gerais, no período de 01 de janeiro a 31 de dezembro de 2016. Seu objetivo foi estimar a taxa de sucesso em parto vaginal após uma cesárea prévia, e os fatores associados ao desfecho. Foram revisados 1.157 prontuários e, após a seleção, foram analisados 215 prontuários de puérperas submetidas a parto vaginal após uma cesárea prévia. A taxa de parto vaginal após cesárea prévia foi de 55,8%, sendo associado ao desfecho a ausência de intercorrências e/ou patologias durante a gestação; gestações a termo, e ter tido pelo menos um parto normal prévio. Constata-se a necessidade de realização de estudos sobre o tema, dada as recomendações recentes, fatores a serem elucidados e resultados ainda contraditórios a respeito do parto vaginal após cesárea prévia.

Descritores: Cesárea; Parto normal; Parto obstétrico.

Estudio transversal y retrospectivo, basado en el análisis de todas las historias clínicas de puérperas atendidas en un hospital de enseñanza de Minas Gerais del 1 de enero al 31 de diciembre de 2016, que tuvo como objetivo estimar la tasa de éxito del parto vaginal después de una cesárea previa, y los factores asociados al resultado. Se revisaron 1.157 historiales y, tras la selección, se analizaron 215 historiales de puérperas sometidas a partos vaginales después de una cesárea previa. La tasa de parto vaginal después de una cesárea previa fue del 55,8%, y el resultado se asoció a la ausencia de intercurrencias y/o patologías durante el embarazo; a los embarazos a término, y a haber tenido al menos un parto normal previo. Se observa la necesidad de realizar estudios sobre el tema, dadas las recientes recomendaciones, los factores que hay que dilucidar y los resultados aún contradictorios en relación con el parto vaginal después de una cesárea previa.

Descriptor: Cesárea; Parto normal; Parto obstétrico.

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INTRODUCTION

The World Health Organization (WHO) recommends that the rate of cesarean sections should not exceed 10%-15% of all deliveries^{1,2}. Despite this recommendation, 63% of countries exceed these rates, and only 28% have rates below 10%³.

In Brazil, cesarean sections are characterized as a Public Health problem due to the high incidence of inappropriate and/or not justified indications^{3,4}. Since 2009, they represent more than 50% of delivery routes, which characterizes an increase⁵. Data from the Informatics Department of the Unified Health System (*Departamento de Informática do Sistema Único de Saúde - DATASUS*) of 2016 shows that 55.4% of deliveries were via cesarean section⁶, and the prevalence of cesarean sections performed by supplementary health reaches rates between 80 and 90%⁷.

WHO recommends, through strong evidence, measures to effectively reduce these indexes: focus attention on health education of pregnant women, since many choose cesarean section due to erroneous perceptions and fear of pain; indication for cesarean section through a second opinion (double indication); rigorous audit of cases of patients undergoing cesarean section and insertion of obstetricians/obstetric nurses in obstetric care¹.

In addition, it is suggested that institutions adopt strategies for reducing cesarean sections, such as the Robson Classification⁸, used to identify the women who should be submitted to cesarean sections and their possible results; and the C-model calculator, which consists of an operative delivery probability tool⁹.

In an attempt to control the high rate of cesarean sections, it is necessary to prevent primiparous women, as well as parturients who have had only one previous cesarean section, to be submitted to cesarean section, encouraging, whenever possible, vaginal delivery¹⁰.

Vaginal delivery after cesarean delivery (VDCD) is a strongly recommended evidence to reduce cesarean sections, and involves guidance from women; awareness of health professionals; adequacy of health systems and financial factors, consisting of a complex and multifactorial strategy¹¹. In Brazil, the vaginal delivery success rate after a previous cesarean section (VDCD) is 57%, while worldwide rates vary between 60% and 80%¹⁰.

Evidence points that VDCD is associated with greater satisfaction and positive experience with childbirth; faster postpartum recovery time; low maternal and neonatal morbidity and mortality; greater chances of a new vaginal delivery in the future; lower rates of postpartum depression; better rates of exclusive breastfeeding and lower rates of pain. The risks for newborn and parturient related to VDCD are similar to the risks of a primigravida and best outcomes are associated with continuous assistance to mother-baby binomial^{2,13}.

However, two review studies, the first of which consisted of the analysis of two clinical trials with the inclusion of 320 women¹⁴, and the second pointed out the lack of randomized and controlled clinical trials¹⁵, warn that VDCD should be chosen in the face of careful decisions and cautious^{14,15}. Thus, case-by-case assessment is suggested^{12,13}.

Given that cesarean section is a public health problem in Brazil and has an alarming growth; since the VDCD success rate is on average 60 to 80%, and that, with adequate monitoring, the mother-baby binomial presents positive evidence described, it is necessary to know the success rates of vaginal delivery after cesarean section in a teaching hospital. Thus, this study aimed to estimate the success rate of vaginal delivery after a previous cesarean section, and the factors associated with the outcome.

METHOD

This is a non-experimental, retrospective study, with a quantitative approach, on the prevalence of vaginal births after a previous cesarean delivery, in postpartum women assisted in a teaching hospital.

For context purposes, the hospital is a reference for the resolution of high-risk pregnancies, infectious diseases in the pregnancy-puerperal cycle, pathological prenatal care in the cities of the Triângulo Sul Macro-region of Minas Gerais (27 cities) and for normal prenatal pregnancies performed at the clinic and in District I of Uberaba (about 150,000 inhabitants) and, of all cities in the Triângulo Sul of Minas Gerais that do not have a hospital.

The study was carried out based on the analysis of all the medical records of puerperal women who were assisted in the Joint Housing units, considering the period from January 1 to December 31, 2016.

The two researchers were trained by the main researcher (professor) and the data were collected from September to December 2018.

The study was approved by the UFTM Human Research Ethics Committee (*Comitê de Ética em Pesquisa com Seres Humanos - CEP*), under the number 2,496,650, of February 16, 2018. Thus, all its development was guided by the Regulatory Guidelines and Norms Research involving human beings, contained in Resolution 466/12/CNS/MS.

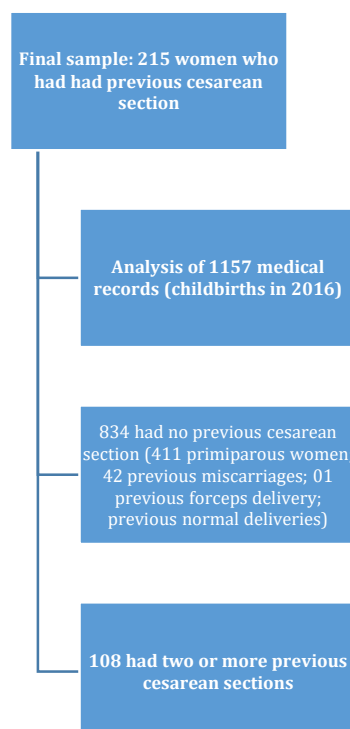
A specific tool was used for data collection, containing sociodemographic and obstetric variables, tested through a pilot study. The collected data were stored in an Excel® spreadsheet, using the double-entry technique and subsequent validation by the bank.

Data were imported into the Statistical Package for the Social Sciences (version 23). At first, the analysis was performed with simple descriptive statistics and the data were described and presented in tables. To verify the association between variables and the occurrence of VDCD, Fisher's exact test was used. Results of $p \leq 0.05$ were considered significant. To verify the real association of variables and the occurrence of VDCD, multiple linear regression was performed.

RESULTS

1,157 medical records were reviewed, of which 215 were selected, which corresponds to 18.6% of all deliveries in the period. These 215 medical records made up the final study sample (Figure 1).

Figure 1. Selection of medical records for analysis of women who underwent cesarean section, in 2016, Hospital de Clínicas da UFTM, Uberaba-MG, 2019.



Of the 215 pregnant women with previous cesarean section, it was observed that the average age was 26.3 ± 6.1 , ranging from 16 to 42 years. Of these, 3.7% were under 19 years old and 11.2%, 35 years old or more. Regarding race, 42.3% declared themselves white, 37.7% black, 12.1% *pardo* (mixed-raced), and 7.9% of medical records did not disclose any information on the patient's race. Most participants were single (65.1%) and lived in the city of Uberaba (66%).

When checking the participants' previous history of illness, 8.8% had some type of illness before pregnancy. However, 47.9% of pregnancies had some pathology or complication, such as: hypertensive syndromes (17.6%); hypothyroidism (12.9%); retrovirus (6.5%); diabetes (4.6%) and HPV injuries (4.6%).

It is noteworthy that 89.8% pregnant women had at least one prenatal consultation, with an average of 7.0 ± 2.7 , ranging from one to 18 consultations, 59.1% performed six or more consultations and 47, 4% performed prenatal care at the hospital's outpatient clinic.

The gestational age at the moment of delivery varied between 21 and 43 weeks, with 74.9% being full term (37 to 41 weeks and 6 days); 21.9% preterm (less than 37 weeks) and 1.4% of pregnancies with gestational age greater than 42 weeks (post-term). Of the medications used to conduct/induce labor, it was found oxytocin was used in 33.8% of cases, and misoprostol was used on 0.5% of cases.

The average number of pregnancies was 2.9 ± 1.4 , ranging from two to eight pregnancies; of these, 34.9% had a vaginal delivery, 17.8% had miscarriages and 0.5% required the use of forceps during delivery previously.

Of the 215 records analyzed, 120 (55.8%) pregnant women had vaginal delivery as their outcome; of these, two had operative delivery with forceps (0.9%) and 95 underwent cesarean section (44.2%).

To verify the association between sociodemographic and obstetric variables, the outcomes of vaginal or cesarean deliveries were considered after a previous cesarean. It was not possible to compare the data with forceps delivery, given its small prevalence in the sample (Table 1).

Table 1. Association of the vaginal delivery outcome after a cesarean delivery (VDCD) with sociodemographic and obstetric variables, Uberaba, MG, 2019.

Variables	Vaginal delivery (n=118)	% VDCD	Cesarean section (n=95)	% VDCD	p
Age > 35 years	14	6.5	10	4.7	0.830
Age < 35 years	104	48.8	85	39.9	
Age < 19 years	4	1.9	4	1.9	1.000
Age > 19 years	114	53.5	91	42.7	
White	44	22.4	46	23.5	0.060
Non white	67	34.2	39	19.9	
Lives with partner	29	15.0	25	13.0	0.748
Does not live with partner	79	40.9	60	31.1	
Previous illness	10	4.9	9	4.4	0.812
No previous illness	103	50.7	81	39.9	
Pregnancy pathology/complication	49	23.4	52	24.9	0.038
No pathology/complication	68	32.5	40	19.1	
Did prenatal (PN) care	103	50.5	88	43.1	0.391
No prenatal care	9	4.4	4	2.0	
6 + PN consultations	66	36.5	59	32.6	1.000
Less than 6 PN consultations	29	16.0	27	14.9	
Preterm labor	19	9.1	27	12.9	0.030
Full term pregnancy	97	46.4	66	31.6	
Induced labor	46	21.8	25	11.8	0.078
Spontaneous labor	72	34.1	68	32.2	
Previous vaginal delivery	50	23.7	25	11.8	0.014
No previous vaginal delivery	66	31.3	70	33.2	

To verify the real association of variables and the occurrence of VDCD, multiple linear regression was performed. The variables that showed statistical significance in the univariate analysis (Table 1) with $p < 0.05$ were included in the model: absence of pathologies/complications during pregnancy; full-term pregnancy; and previous vaginal delivery.

When analyzing the variables through the multiple linear model, it appears that the absence of pathologies/complications during pregnancy and having had a previous vaginal delivery in a previous pregnancy presented statistical significance, with both variables working as a protective factor against the occurrence of a new cesarean section and increased chances of successful VDCD, as shown in Table 2.

Table 2. Multiple linear regression model between the vaginal delivery outcome after a previous cesarean delivery (VDCD) associated with obstetric variables, Uberaba, MG, 2019.

Variable	Coefficient	(IC 95%)	p
No pregnancy complication/pathology	-0.150	(-0.284) - (-0.014)	0.031
Full term pregnancy	0.168	(-0.018) - 0.311	0.080
Previous vaginal delivery	0.122	0.035 - 0.313	0.015

DISCUSSION

The VDCD success rate in the study sample was 55.8% (54.9% - normal delivery). This index was lower than the results of studies carried out in Canada¹⁶, China¹⁷ and Colombia¹⁸, where the success rates reached between 75 and 85%¹⁶⁻¹⁸, but it was higher than the rates obtained in the Netherlands and Czech Republic^{19,20}, with 46% and 24% respectively.

The average age of women who had a previous cesarean section was similar to the age group of puerperal women included in a Colombian study¹⁸. However, it was below the age found in studies that assessed the VDCD success rate, which ranged from 31 to 35 years old^{17,20,21}. In this series, age was not associated with VDCD success rates, however, research shows higher success rates in young women^{12,16,18} and the risk of recurrent cesarean sections in women over 35 years old^{12,22}.

Most women said they were white and single, but there was no association between these variables and the occurrence of VDCD. However, in other studies, an association of non-white women with higher rates of recurrent cesarean sections was found^{12,18,22}.

There was a predominance of women whose pregnancy had no pathologies and/or complications and higher success rates for VDCD. A similar study found that the absence of comorbidities is a good predictor of success for VDCD²². Of those who had complications or pathologies, hypertensive syndromes were more frequent. Pre-eclampsia cases are factors associated with a reduced likelihood of successful VDCD^{12,18}.

Most pregnancies were full-term at the time of admission for birth and gestational age showed statistical significance in the univariate analysis. Studies show contradictory results regarding gestational age. Higher success rates were found associated with gestational age equal to or greater than 39 weeks^{16,18,21}, however, there was less probability of VDCD in pregnancies greater than 40 weeks¹². In a Chinese study, it was found that pregnancies under the 39 weeks were associated with higher rates of VDCD¹⁷.

There were no significant differences between women admitted to spontaneous and induced labor in the study sample; and oxytocin was the most used drug for inducing/conducting labor. A Canadian study found that prostaglandins were the most widely used drugs to induce labor¹⁶; however, the evidence indicates that induction of VDCD with oxytocin is the one with the lowest risks, although caution is recommended when using it²³. Studies have shown an association between: onset of spontaneous labor, greater cervical dilation at time of admission, higher Bishop scores and better VDCD success rates^{12,16-18}.

Two parturients underwent operative vaginal delivery (0.9%), and, if added to vaginal deliveries, the success rate of vaginal delivery after a cesarean increased to 55.8%. An American study observed similar results between operative vaginal deliveries and recurrent cesarean sections after a previous cesarean section for maternal and neonatal health and safety²⁴, being a possible route of choice in these cases.

There was a predominance of secondary women, and 34.9% had a previous vaginal delivery, which was associated with higher success rates of VDCD. A study showed an association between VDCD among multiparous women, with more than one previous delivery¹⁸, and just as in the sample, having had a previous vaginal delivery was associated with a higher probability of VDCD^{12,17}.

Although it has not been the subject of a study, investigations point to a higher probability of VDCD in women with weight maintenance and adequate BMI during pregnancy^{12,16,17,21}, intact amniotic membranes at the time of admission^{17,18}; not using pain relief medication during labor¹⁷; fetal weight under 4000 grams^{12,17} and, with previous experience of VDCD¹². Thus, VDCD is a complex and multifactorial search.

CONCLUSION

The VDCD rate was 55.8% (54.9% normal births). Absence of complications and/or pathologies during pregnancy, full-term pregnancies, and having had at least one previous vaginal birth were associated with VDCV outcomes.

The present study was limited by the use of secondary data, which can result in ignored data and does not allow the deepening of information and the method adopted, since because it is a cross-sectional study, with regard to external validity, data cannot be generalized to other realities and causal relationships cannot be established. In turn, it brings a portrait of the reality of VDCD for a year and a hospital in the region.

Thus, there is a need for studies on the topic, given the recent recommendations, factors to be elucidated and still contradictory results regarding the VDVD.

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CONTRIBUTIONS

Elizabeth dos Santos Campos and **Patrícia Barbosa Cruz** contributed to data collection and writing. **Mariana Torreglosa Ruiz** and **Marina Carvalho Paschoini** participated in the design of the project, analysis and interpretation of data, writing and review. **Mário Sérgio Silva Gomes Caetano** worked with reviewing.

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