



THE SUCCESS RATE OF VAGINAL BIRTH AFTER ONE PREVIOUS CESAREAN SECTION IN KING ABDUL-AZIZ UNIVERSITY HOSPITAL

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ABSTRACT

There is an alarming increase in cesarean delivery in Saudi Arabia. Cesarean Section can expose the mother and her fetus to some serious complications. Vaginal birth after cesarean section is a viable option for reducing cesarean section rates. We are aiming to estimate the prevalence, and outcome of VBAC in King Abdul-Aziz University Hospital (KAAUH) in Jeddah in 2018-2019, as well as determine the relationship between the outcome and age of the mother, gestational age, parity, a trail of labor, and the use of the instrument. A retrospective cohort study was conducted in KAAUH including all pregnant women that had their delivery from the 1st of January 2018 to the 31st of December 2019 in KAAUH with one previous history of cesarean section, this data was collected from medical records, and delivery room logbook, this study has total participants of 355 patients. The successful Vaginal delivery rate was 28.7% (102) while 71.3% (253) failed. No significant correlation between age and the success rate of VBAC. There is a positive association between parity and the outcome of VBAC success. There is a positive association between instrumental delivery and VBAC success. There is a positive correlation between spontaneous delivery and VBAC. The prevalence of Success VBAC in this study's participants was low. VBAC is a viable option in decreasing the cesarean section rate, gynecologist and health care providers in our region should consider further investigating research on the causes of the high cesarean section rate.

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Introduction

There is an alarming increase in cesarean delivery in Saudi Arabia, it is now one of the most common surgeries done in Saudi Arabia [1]. According to the Ministry of Health (MOH) in 2006 [2], a total of 784,145 surgical procedures were done in all government and private hospitals, and 86,197 were cesarean deliveries (11%). This is a result of the perception of lowering the medico-legal concerns and decreasing maternal risks, as well as an escalation of fetal safety. One of the successful birth options after a previous cesarean section is a vaginal delivery after cesarean section (VBAC). Although cesarean section is more expensive than vaginal delivery; there is a slow acceptance of VBAC [3].

According to the Royal College, after a previous C-section, about three out of four women with an uncomplicated pregnancy go into labor naturally and deliver vaginally [4]. A successful VBAC will have a greater chance of vaginal delivery in the future [4]. VBAC is shown to be an effective method of reducing the overall rate of cesarean delivery [5]. It shows promising results with a high success rate for pregnant women [6] concerning maternal and fetal safety [7].

We are aiming to estimate the prevalence, and outcome of VBAC in King Abdul-Aziz University hospital in Jeddah in 2018-2019, as well as determine the relationship between the outcome (success or failure) and age of the mother, gestational age, parity, a trail of labor, and the use of an instrument.

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Materials and Methods

This is a retrospective cohort study that was carried out in king Abdul Aziz University Hospital (KAAUH), the hospital is located in the center of Jeddah city that serves the University students, staff members, their families, and a portion of the civilian population, it is a training center of both undergraduate and postgraduate students.

This study population was collected from the 1st of January 2018 to the 31st of December 2019.

This study includes all patients with a history of one previous C/S. Any patients with a history of more than one CS, chronic medical disease, any indication of CS, and recurrent cause of CS were excluded.

Data were collected from the delivery room logbook and medical files, including all women who did one previous cesarean section from the 1st of January 2018 to the 31st of December 2019, including the age of the mother, gestational age, gravidity, parity, use of instrument during VBAC, and trial of labor. We found 355 patients who were eligible for our study patients were categorized as the following:

Group 1 according to the outcome of their VBAC: (A) success (B) failure.

Group 2 according to the age of the mother: (A) <20, (B) from 20-35, (c) >35.

Group 3 according to Parity: (A) multi para, (B) grand multi para.

Group 4 according to the use of instrument during VBAC: (A) used or (B) not used.

Group 5 according to a trail of labor (A) induced (B) spontaneous.

Data were analyzed by using SPSS for windows version 21, to estimate the prevalence of VBAC after one previous CS, estimate the success rate of VBAC after one previous CS, and determine the type of relationship between group 1 and the other groups.

Results and Discussion

In this retrospective cohort study, there were a total of 355 participants that met our criteria, the success rate of VBAC is 28.7% (102), and the Failed rate is 71.3% (253) (**Table 1**). Their age was categorized as below twenty (1\355), between twenty and thirty-five (266\355), and above thirty-five (87\355). The association between the mother's age and the outcome of VBAC success showed no significant correlation (P-value 0.816) (**Table 2**).

Table 1. Rate (percentage) of success of vaginal delivery after CS (n = 355)

| Type of delivery | Frequency | Percent |
|-------------------------|-----------|---------|
| VBAC – successful trial | 102 | 28.7% |
| CS – Failed trials | 253 | 71.3% |

The successful vaginal delivery was 102/355 (28.7%). The failure of VBAC was 253/355 (71.3%) (**Table 1**)

Table 2. Correlate between success and mother age (n = 354)

| Age | Success of Vaginal Delivery | | P-value* |
|---------------|-----------------------------|--------|----------|
| | Success | Failed | |
| < 20 years | 0 | 1 | 0.816 |
| 20 - 35 years | 77 | 189 | |
| > 35 years | 25 | 62 | |

*Chi-squared test

The number of failed cases appears to be larger than successful cases in all age groups, and there is no significant correlation between age and the success rate of VBAC (P-value 0.816) (**Table 2**)

Three hundred twenty-eight participants were multiparous, twenty-seven participants were grand multiparous. The association between parity and the outcome of VBAC success shows a positive correlation (P-value 0.006) (**Table 3**).

Table 3. Correlate between success and parity (n = 355)

| Parity | Success of Vaginal Delivery | | P-value* |
|--------------------------|-----------------------------|--------|----------|
| | Success | Failed | |
| Multipara (n = 328) | 88 | 240 | 0.006 |
| Grand multipara (n = 27) | 14 | 13 | |

*Chi-squared test

There is a significant positive relation between parity and the possibility of success of vaginal delivery after CS, (P- value 0.006) (**Table 3**)

Three hundred fifty-two participants were unknown to use instrumental delivery, and three participants used instrumental delivery. The association between instrumental delivery and VBAC success shows a positive correlation (P-value 0.023) (**Table 4**).

Table 4. Correlate between success and instrument use (n = 355)

| Use of instruments | Success of Vaginal Delivery | | P-value* |
|-------------------------------|-----------------------------|--------|----------|
| | Success | Failed | |
| Not known (n = 352) | 99 | 253 | 0.023 |
| Instrumental delivery (n = 3) | 3 | 0 | |

*Fisher's exact test

There is a positive relationship between the use of instruments during delivery and the success of vagina delivery after CS, (P-value 0.023) (Table 4)

Three hundred fifty-five participants underwent a trial of labor where three hundred thirty-two had spontaneous labor with VBAC success in one hundred participants and twenty-three participants underwent induced labor with VBAC success in two participants, the association between spontaneous delivery and VBAC shows significant positive correlation (P-value 0.028) (Table 5).

Table 5. Correlate between success and trial of labor (n = 355)

| Trial of Labor | Success of Vaginal Delivery | | P-value* |
|-----------------------|-----------------------------|--------|----------|
| | Success | Failed | |
| Spontaneous (n = 332) | 100 | 232 | 0.028 |
| Induction (n = 23) | 2 | 21 | |

*Chi-squared test

There is a significant positive relationship between spontaneous labor and the success of vaginal delivery after CS (Table 5)

The total number of women who went through VBAC after 1 cesarean section from 1st January 2018- 31st December 2019 was 620 after applying including and excluding the criteria, which were mentioned above. Of the total 355 participants, 102/355 (28.7%) of them have successful VBAC [8].

A different parameter shows an increased rate of success, which is similar to other studies finding, like the use of instruments and spontaneous trial of labor [9], which had positive effects on an overall succession of VBAC. Although our study shows a significant positive relation between grand multipara and positive successful VBAC.

Different age groups do not have significant effects on the trial of VBAC.

In comparison to other studies "Fatimah Alkhamis "pregnancy outcome in women with previous cesarean section, experience from the kingdom of Saudi Arabia" 2019 and Yun-Xiu Li [10], "Predicting the success of vaginal birth after cesarean delivery: A retrospective cohort study in China" BMJ 2019 [11], the successful rate was 73.9% and 84% respectively. So, more effort is needed to increase the success rate in our center, to keep up with other centers nationally and globally, and help reduce the CS rate.

Strength and weakness points

- To our knowledge, our research is the first study on VBAC conducted in King Abdul-Aziz University Hospital.
- The lack of informative data in the delivery room logbook of the course and the outcome of delivery limits our knowledge to configure different causes of high failure rates. Which can help in lowering the rate of Cesarean sections.
- The health service at King Abdul-Aziz University Hospital is directed to staff members and their families mainly, which limits the variety of cases.

Limitations

- Inability to reach information from Phoenix (electronic medical file), which limits our data collection.
- Collecting data from handwriting files might show a misunderstanding of some information.

Conclusion

The prevalence of Success VBAC in this study's participants was low.

There was a significant positive association between the parity, mother age, instrument delivery, and history of spontaneous delivery with Success VBAC. VBAC is a viable option in decreasing the cesarean section rate, gynecologist and health care providers in our region should consider further investigating research on the causes of the high cesarean section rate.

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