

## **Feasibility and safety of vaginal delivery for subsequent pregnancy in scarred uterus after cesarean section.**

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### **Abstract**

**Objective:** This study aims to explore the feasibility and safety of vaginal delivery for subsequent pregnancy in scarred uterus after cesarean section.

**Methods:** The observation group consisted of 62 puerperas who were admitted in our hospital and accepted vaginal trial delivery after subsequent pregnancy in scarred uterus from October 2015 to October 2016. The control group consisted of 60 primiparas who were hospitalized in the same period, satisfied the vaginal delivery conditions, and accepted vaginal trial delivery. Data of the two groups were statistically analyzed.

**Results:** Forty-nine puerperas in both groups underwent successful vaginal delivery with success rates of 79.03% and 81.67%, and their difference was not statistically significant ( $\chi^2=0.1339$ ,  $P=0.7144$ ). The duration of both the first stage and second stage of labor ( $364 \pm 105$  min and  $54 \pm 31$  min, respectively) in the observation group was shorter than that in the control group, and the difference was statistically significant ( $P<0.05$ ). Moreover, of the occurrence of postnatal complications was not different between the two groups ( $P>0.05$ ).

**Conclusion:** Puerperas with scarred uterus could select vaginal delivery only if sufficient preparations are made before delivery and indications of vaginal delivery are strictly mastered.

**Keywords:** Scarred uterus, Subsequent pregnancy, Vaginal delivery, Feasibility, Safety.

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### **Introduction**

With continuous improvement in the medical technological field, indications for cesarean section have relaxed, and its safety has improved; in this regard, many puerperas have selected cesarean delivery, and the cesarean section rate has increased [1,2]. As the national second-child policy is comprehensively promoted, the number of puerperas with subsequent pregnancy in scarred uterus after cesarean section has continuously increased [3,4]. In this case, the selection of delivery mode has become an important subject for clinical research and is mainly discussed in this paper.

### **Information and Method**

#### **General information**

The observation group consisted of 62 puerperas who were admitted in our hospital and accepted vaginal trial delivery after subsequent pregnancy in scarred uterus from October 2015 to October 2016. The control group consisted of 60 primiparas who were hospitalized in the same period, satisfied the vaginal delivery conditions, and accepted vaginal trial delivery. In the observation group, the subjects had age 25 to 37 years (mean:  $27.4 \pm 2.2$  years old), gestational period of 39

to 41 weeks (mean:  $39.5 \pm 1.1$  weeks), and the last cesarean delivery 2.5 to 10 years ago (mean:  $4.2 \pm 1.3$  years). In the control group, the subjects had age between 22 to 38 years (mean:  $26.2 \pm 2.3$  years old) and gestational period of 37 to 41 weeks (mean:  $39.2 \pm 0.8$  weeks). General information of puerperas in the two groups were compared, and no statistically significant difference was found ( $P>0.05$ ).

#### **Inclusion criteria**

None of the puerperas had indications for cesarean section or high-risk pregnancy factors; all met vaginal delivery conditions. In the observation group, puerperas should have undergone one successful cesarean section and exhibit favorable post-operative recovery without any post-operative complications. The lower uterine segments should be of preferable continuity, and the cicatricial thickness should be higher than 3 mm. The ages of the subjects should be below 40 years, and their pre-pregnancy BMIs should be less than 28 kg/m<sup>2</sup>. All puerperas should be willing to accept vaginal trial delivery and have experienced singleton pregnancy.

## Methodology

For the control group, pre-pregnancy preparations should be made according to conventional method, the monitoring of stages of labor should be enhanced, and pregnancy should be terminated under unforeseen circumstances. For the observation group, a specially-assigned person will observe the trial delivery process, master the general conditions and stages of labor of puerperas, and lay the emphasis on uterine contraction and cervix opening state. The puerperas are intravenously injected with 80 mg of hydroxyguinol to facilitate cervix expansion, shorten labor stages, and save their physical strength. During this process, delivery aids can be appropriately used but abdominal compression is forbidden. If the stages of labor are too long, cesarean delivery should be conducted. Moreover, during trial delivery process, any manifestation of premonitory metrorrhaxis should be closely monitored, the presence of which warrants immediate termination of the vaginal trial delivery. After smooth delivery, the intactness of placenta and fetal membrane should be confirmed, cervix laceration degree and bleeding quantity should be observed, and neonatal conditions should be recorded in detail. Postpartum hemorrhage is an important risk factor; hence postpartum management should be properly conducted. Vital signs and hemoglobin content of patients should be closely monitored, and metrorrhaxis should be evaluated, with any abnormality found warranting timely treatment.

## Observation items

Success rate of vaginal delivery, time of stages of labor, postpartum hemorrhage, length of hospital stay, neonatal score, and occurrence of postpartum complications of puerperas in the two groups were observed. For the evaluation of bleeding quantity, the weighting method was used wherein pre-weighted clean sanitary towels were laid underneath the puerpera buttocks, the bleeding state was closely observed, the towels were timely replaced, and their weights were taken, and the bleeding quantity was calculated based on the following formula: bleeding quantity = total weight - net weight of sanitary towel.

Furthermore, the neonatal score (Apgar score) was determined where a score of 10 indicates normal condition of the infant, and a score below 7 indicates possible neonatal asphyxia.

## Statistical method

SPSS16.0 was used for statistical analyses.  $\chi^2$  test was performed for enumeration data,  $\pm$  was used to express the standard deviation of measurement data, and t test was adopted. Statistical significance is indicated by  $P < 0.05$ .

## Results

### Comparative analysis of success rates of vaginal delivery of puerperas in the two groups

Forty-nine puerperas in both groups experienced successful vaginal delivery, success rates of vaginal delivery were 79.03% for the observation group and 81.67% for the control group. Comparative difference between the two groups showed no statistical significance ( $\chi^2 = 0.1339$ ,  $P = 0.7144$ ).

### Comparison of time of stages of labor between the two groups

In the observation group, the time it took for the first stage of labor ( $364 \pm 105$  min) and that of the second stage ( $54 \pm 31$  min) were obviously shorter than those in the control group, with the difference being statistically significant ( $P < 0.05$ ), as shown in Table 1.

**Table 1.** Comparison of the time of labor stages between the two groups ( $x \pm s$ , min).

Group	N	First stage of labor	Second stage of labor	Third stage of labor
Observation group	62	$364 \pm 105$	$54 \pm 31$	$33 \pm 14$
Control group	60	$388 \pm 93$	$63 \pm 18$	$29 \pm 10$
T		2.325	2.145	1.378
P		<0.05	<0.05	>0.05

### Comparative analysis of postpartum hemorrhage and length of stay between the two groups

Puerperas in the two groups showed no statistically significant differences in postpartum hemorrhage and length of stay ( $P > 0.05$ ). Results are shown in Table 2.

**Table 2.** Comparative analysis of delivery conditions and length of hospital stay of puerperas in the two groups.

Group	Number cases	Postpartum hemorrhage (ml)	Length of stay (d)
Control group	60	$330.7 \pm 25.6$	$3.8 \pm 1.1$
Observation group	62	$338.4 \pm 27.1$	$4.1 \pm 1.1$
T		1.6122	1.5060

P	0.1095	0.1347
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**Comparison of delivery conditions of puerperas in the two groups**

Neonatal asphyxia score and parturient depression score were significantly higher in the observation group than those in the control group (P<0.05), as shown in Table 3.

**Table 3.** Comparison of delivery conditions of patients in the two groups.

Group	Neonatal score	asphyxia	Parturient score	depression
Observation group (62)	8.66 ± 2.12		13.67 ± 6.32	
Control group (60)	4.57 ± 1.81		7.43 ± 1.19	
T	11.553		7.640	
P	0.000		0.000	

**Comparative analysis of occurrences of postpartum complications in puerperas in the two groups**

No obvious difference in the occurrences of postpartum complications were observed in puerperas in the two groups (P>0.05), as shown in Table 4.

**Table 4.** Comparative analysis of the occurrence of postpartum complications in the two Groups (n, %).

Group	Number of cases	Postpartum hemorrhage	Postpartum infection	Urinary retention
Control group	60	1 (1.67)	1 (1.67)	2 (3.33)
Observation group	62	2 (3.23)	1 (1.61)	3 (4.84)
χ <sup>2</sup>		0.3090	0.0005	0.1758
P		0.5783	0.9813	0.6750

**Discussion**

With the current prevalence of cesarean delivery, the choice of delivery mode in puerperas experiencing subsequent pregnancy after cesarean delivery has become a difficult problem in clinical obstetrics and has drawn much concern from clinicians [5]. Relevant reports have stated that occurrence rate of cesarean section pregnancy (CSP) is about 0.45%, which occupies 6.0% in ectopic gestation in patients with history of cesarean delivery. The pathogenesis of CSP is still unclear and some scholars believe that cesarean delivery, dilation and curettage, and hysteroscope operation result to CSP [6]. With continuous development of ultrasonic technology and diagnostic equipment, the detection rate of CSP after cesarean delivery has increased. Active treatment should be carried out once a patient is diagnosed with CSP. Studies find that in the relationship between CSP and cesarean delivery, induced labor can be considered at 32.5% risk for CSP. In the second trimester of pregnancy in scarred uterus, fiber tissues

surrounding uterine membrane at the cicatrix bear greater pressure, and once rupture occurs, the safety of the patient is easily endangered [7]. Therefore, selecting the proper method to carry out induced labor is of prime importance.

Studies have confirmed that for puerperas with scarred uterus to accept cesarean section, the risks are very high and the procedure can easily give rise to hemorrhage and even death. Thus, vaginal trial delivery for puerperas with scarred uterus has been proposed to be implemented without indications of cesarean section so as to reduce delivery risks [8]. In recent years, as perinatology and therapeutic and nursing levels continue to improve, the safety of vaginal delivery in puerperas with scarred uterus has also improved. Survey shows that the success rate of vaginal delivery for subsequent pregnancy in scarred uterus can reach 80%, which is consistent with this study [9]. With gradual improvement in cesarean delivery technology, the damage caused by the procedure has been reduced and the recovery after operation has been generally favorable so the formation of cicatricial tissues has been effectively reduced. Furthermore, the safety and feasibility of vaginal delivery for subsequent pregnancy in scarred uterus have improved [10].

In this study, results show that puerperas with scarred uterus were not significantly different from primiparas in the aspects of success rate of vaginal delivery, time of stages of labor, postpartum bleeding quantity, length of stay, neonatal score, and occurrence of complications. This indicated that the safety of vaginal delivery of scarred uterus was relatively high; thus, puerperas without any indication of cesarean section should be encouraged to accept vaginal trial delivery as much as possible to effectively reduce the risks of cesarean section. Vaginal delivery in scarred uterus is also of certain danger; hence, clinicians should strictly master indications of vaginal delivery and enhance the monitoring of stages of labor so that maternal and child health and safety can be guaranteed. The good results obtained in this study were due to prenatal understanding of the indications of vaginal delivery and sufficient evaluation. Moreover, present cesarean section is mostly done through a transverse incision mode in the lower uterine segment where the incision is made along the direction of muscle fiber, which can effectively result in damage to uterus with favorable post-operative wound healing, reduce cicatrization, and further improve the feasibility and safety of vaginal delivery for subsequent pregnancy after cesarean section.

**Conclusion**

Vaginal delivery of puerperas experiencing subsequent pregnancy in scarred uterus after cesarean section poses certain danger; thus, sufficient prenatal preparations should be made and indications of vaginal delivery should be strictly mastered.

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