

A novel method based on the application of paraffin oil assisted delivery in reducing the degree of perineal laceration and cosmetic suture in the perineal wound

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Abstract

Objective: To study the effect of paraffin oil assisted new delivery method on reducing perineal laceration and cosmetic suture in the perineal wound.

Methods: Observation group consists of 102 parturients received in our department from January to December 2018. All patients were natural birth cases. They were divided into two groups according to the stochastic numerical table method, with 51 cases in the control and also 51 cases in the experimental group. The parturients in the control group gave delivery by traditional methods, and the perineal wounds were sutured with 2-0 absorbable microtrellis and No.1 black silk thread. The parturients in the experimental group were treated with paraffin oil, new assistant delivery method plus cosmetic suture (3-0 suture of mucosa and muscle layer, 4-0 suture of skin). The duration of labor, the degree of perineal laceration, the rate of the lateral perineal dehiscence, the degree of pain (24 and 48 hours after the operation), the healing of incision and the incidence of inflammatory reaction were compared between the two groups.

Results: In the experimental group, there were 23 cases of grade I perineal laceration, 12 cases of grade II perineal laceration, no puerpera with lateral perineal dehiscence, no puerpera with grade III or IV severe laceration, and the perineal integrity rate reached 31.37%. Compared with the control group, the degree of perineal laceration in the experimental group was significantly lower ($P < 0.05$), and the rate of lateral perineal dehiscence was also significantly lower ($P < 0.05$). There was no significant difference in the duration of labor between the two groups ($P > 0.05$). The degree of pain and wound healing in the experimental group were significantly better than those in the control group ($P < 0.05$). The incidence of inflammatory reaction in the experimental group was 5.88%, which was substantially lower than that in the control group ($P < 0.05$), and the degree of wire knot reaction was lesser than that in the control group ($P < 0.05$).

Conclusion: Paraffin oil assisted new delivery method can reduce the degree of perineal laceration, and the

application of a cosmetic suture in the perineal wound has a significant effect. It can considerably reduce the degree of perineal laceration, relieve pain, promote wound healing and reduce inflammatory reaction. There is no scar or mark after healing, and the appearance is beautiful. It also dramatically shortens the hospitalization time of patients, and the clinical popularization and application price.

Keywords: Paraffin oil, Innovative delivery method, Perineal laceration, Cosmetic suture, Degree of pain, Wound healing; Inflammatory reaction.

1. Introduction

With the development of society, change of medical environment and the improvement of living standards, the maternal self-protection consciousness has been strengthened. It leads to the higher requirements for quality nursing work and services of midwives. Therefore, we need to provide more refined services to meet the physiological and psychological needs of the mothers. During natural childbirth, perineal laceration is a common laceration of the obstetric tract, and the lateral perineal dehiscence is also a traumatic operation. Both of them will have some adverse effects on the puerpera, such as causing pain, increased bleeding, pelvic floor muscle group injury, vaginal and anal fistula, and other complications, and even scarring. Serious complications will also affect the normal birth of the puerpera. Physical function and normal life [1].

Therefore, taking active and effective measures to reduce perineal laceration and lateral dehiscence rate is of great significance. It can help reduce maternal pain and improve obstetric quality. Clinical practice has found that the semi-sitting position and other free positions in natural childbirth can make pregnant women return to nature and get better results [2]. The perineal suture method is also

essential for the puerpera with a perineal laceration and lateral dehiscence. It is necessary to minimize pain, increase the aesthetic appearance and reduce scar formation. At present, the chief clinical methods of the perineal suture are layered suture, full-thickness discontinuous suture, intradermal cosmetic suture, etc. [4]. In this experiment, 102 parturients received from January to December 2018 in our laboratory were observed and compared. The application effect of paraffin oil assisted new delivery method in reducing perineal laceration, and cosmetic suture in the perineal wound is discussed.

2. Materials and Methods

2.1. General information

102 parturients received in our department from January to December 2018 were selected for this observation and comparison. All parturients were natural delivery cases. The patients were divided into two groups based on a random selection process with 51 cases in the control group and 51 cases in the experimental group. The age limit of the control group was 20-35 years, with an average age of (27.6 ± 1.2) years, 32 cases of primipara, 19 instances of transpartum women, and 37-42 weeks of gestation, with an average gestational week of (39.6 ± 1.1) weeks. In the experimental group, the age ranged from 21 to 34 years, with an average age of (27.2 ± 1.4) years, 36 primipara and 15 transpartum women. The gestational weeks ranged from 37 to 42 weeks, and the gestational weeks averaged (39.4 ± 1.3) weeks. There were no significant differences in gestational weeks ($t = 0.839$, $P > 0.05$), age (1.5492 , $P > 0.05$) between the two groups, suggesting that the two groups could be compared. The study has been approved by the 'Hospital Ethics Committee' and agreed by both patients and their families.

2.1.1. Inclusion Criteria

Maternal nutritional and mental status is good; single head pregnancy, no fetal distress; maternal pelvic measurements are not abnormal; fetal B-ultrasonography indicates that body weight is less than 3750g; no obvious pregnancy complications.

2.1.2. Discharge criteria

Disproportionate cephalopelvic, late pregnancy, and other pregnancy complications; maternal with coagulation dysfunction; maternal with mental disorders; maternal with diabetes, hypertension, heart disease, and other underlying diseases; maternal with severe vaginitis.

2.2. Methodology

2.2.1. The control group

In the control group, no paraffin oil lubrication was done during the delivery process. Delivery was carried out in normal posture (such as supine position and lithotomy position). The type of delivery was a normal birth. Routine vaginal examination was performed after delivery of the placenta. Sterile gauze was inserted into the vagina to prevent blood outflow from the uterine cavity. It was helpful to widen the visual field of the wound and to continue suture with 0.5% metronidazole solution. Rinse the incision and cover the anus with sterile gauze. After local infiltration anesthesia, the puerpera with a perineal laceration and lateral perineal dehiscence were sutured. The traditional suture method was used. The vaginal mucosa, subcutaneous tissue, and muscular layer were sutured intermittently with 2-0 absorbable micro-trellis suture, and then the skin was sutured with No. 1 black silk suture mattress. The puerpera is discharged from hospital after 4-5 days.

2.2.2. Experimental group

Paraffin oil-assisted new delivery method + cosmetic suture (3-0 absorbable micro-trepanning suture mucosa

and muscle layer, 4-0 absorbable micro-trepanning suture continuous skin suture) was used in the experimental group. During the first stage of labor, the puerpera to take free posture, free movement, moderate food intake. The puerpera to choose the most comfortable position according to their wants, such as lying, squatting, sitting, etc. The mother in the first stage of labor to take free posture, free movement, moderate feeding, at this time puerpera according to their own needs to choose the most comfortable position, such as recumbent position, squat position, Sitting, etc. Midwives at the same time provide some required directions including appropriate guidance, massage, and observation; close observation of maternal incubation period and active period may appear rupture of the membranes, umbilical cord prolapse, etc. At the rupture of the fetal membranes should timely monitor the fetal heart, understand the situation of amniotic fluid, check the vagina to understand the the opening of the uterine mouth. If the fetal head and the cervix close, then continue to free posture. If the fetal head is not close to the uterus; then they will lie down first, and then maintain the free position. When the vaginal examination is over 8-9 cm in the active late stage of the uterine orifice, the vaginal wall can be lubricated with paraffin oil-asbestos ball, and the fetal head can help the fetus descend.

During the second stage of labor, the head of the bed is raised after the opening of the mouth of the uterus, and the parturient is given a semi-sitting position. The buttocks are protruded. The legs of both feet are naturally opened to the maximum. The knees are bent as far as possible. The parturient can use paraffin oil to smear the perineum, the labia, and vagina again. When the fetal head is exposed, the left thumb and four fingers are separated, and the palms are gently touched on the fetal head. Controlling the speed of fetal head to prevent fetal head from coming

out too fast and the pressure should be appropriate; the thumb of the right hand should be separated from the other four fingers, appropriately attached to the perineum, revealing the lower edge of the vaginal orifice, and a treatment towel under the right hand to facilitate the protection of the perineum. When the mother exerts herself, the thumb and the other four fingers are separated and adducted. The advantage of doing so is that the elasticity of both sides of the labia is fully expanded, which makes the whole perineum produce maximum tension, reduces the tension of laceration in the middle, and prevents severe laceration of the perineum. After the birth of the fetal head, wash the face thoroughly, let the fetus rotate by itself, and they do not need to protect the perineum when giving birth to the front shoulder. Pull the fetal head downward and forward gently, give birth to the front shoulder. When lifting the back shoulder, the right hand should just gently stick to the perineum without reliable protection. The other steps are the same as the normal delivery.

The treatment before suture is the same as the control group. The puerpera with perineal laceration were sutured with 3-0 absorbable suture. The vaginal mucosa was sutured with 3-0 absorbable suture. A wire knot was inserted 0.5 cm from the top of the puerpera's vaginal mucosa wound. The needle was sutured continuously from 0.5-0.7 cm to the inside of the hymen. The needle was inserted from the inside of the hymen and obliquely from the outside of the hymen to the subcutaneous fat layer on the opposite side of the wound. The needle was not cut off. Suture the muscular layer and subcutaneous tissue continuously until the top of the wound, without knotting and cutting the suture; then suture the skin with 4-0 absorbable micro-arbor suture, knot the needle from the top of the wound 0.5 cm, then needle from the

muscular layer, needle from the apex, so that the knot is buried under the muscular layer, the needle from the skin and subcutaneous fat layer junction, needle insertion and needle exit, with 0.3-0.5 cm needle spacing for subcutaneous alternate intradermal suture. In the process of suture, attention should be paid to aligning the needle entry and exit points of each needle. The suture should be tight and suitable. Finally, a knot should be made at the hymen orifice. Suture removal is not necessary after the operation and can be discharged 2 to 3 days after the operation.

2.3. Observation Indicators

- (1) Compare the degree of perineal laceration and the rate of lateral perineal dehiscence between the two groups. Standard of perineal laceration degree: I degree laceration: perineal skin, mucosa laceration (labia, vestibular mucosa); II degree laceration: perineal skin, mucosal muscle laceration, and anal sphincter intact [5].
- (2) Record and compare the delivery process of the two groups.
- (3) Compare the pain degree between the two groups. The degree of pain was assessed by VAS visual analogue score, with a total score of 0-10, 0 for painless and 10 for severe pain. Let the mother write the most representative number of their pain, 0-3 points for mild, 4-6 degrees for moderate, 7-10 points for severe [6].
- (4) Compare the wound healing between the two groups. Healing evaluation: Class A: good healing, the appearance of a straight line, neat epidermis, no hardening, and swelling; Class B: lack of healing, the appearance of obvious scars, irregular epidermis, hardening; Class C: full or partial dehiscence of perineal incision [7].
- (5) Statistical analysis and comparison of inflammatory reactions (knot reaction, infection, swelling, etc.) between the two groups. The degree I: Touchable sclerosis; Degree

II: marked sclerosis with mild local pain; Degree III: redness and swelling of the skin, some small pustules, and obvious pain [8].

2.4. Statistical Processing

SPSS19.0 was used to process and analyze the maternal data of the two groups. The measurement data, counting data and grade data were expressed in terms of representation and frequency (%) respectively. The comparison of the indicators between the two groups was made by t-test, chi-square test, and rank sum test. Significant level $\alpha = 0.05$, $P < 0.05$ was statistically significant.

3. Results

3.1. Comparison of perineal laceration degree and lateral perineal dehiscence rate between two groups

In the experimental group, there were 23 cases of grade I perineal laceration, 12 cases of grade II perineal laceration, the perineal integrity rate reached 31.37%. Compared with the control group, the degree of perineal laceration in the experimental group was significantly lower ($P < 0.05$), and the rate of lateral perineal dehiscence was also significantly lower ($P < 0.05$). See Table 1.

Table 1. Comparison of perineal laceration degree and lateral perineal dehiscence rate between two groups [cases (%)].

	Number of cases	Degree of perineal laceration		Perineal integrity rate	Lateral perineal dehiscence rate
		I Degree	II Degree		
Control group	51	23(45.10)	25(49.02)	3(5.88)	10(19.61)
Experimental group	51	23(45.10)	12(23.53)	16(31.37)	0(0.00)
χ^2		23.496			8.890
P		0.000			0.003

2.2. Comparisons of the parturient process between two groups

There was no significant difference between the first stage of labor and the second stage of labor in the experimental group ($P > 0.05$). See Table 2.

Table 2. Comparison of the delivery process between two groups ($\bar{x} \pm s$).

	First stage of labor (min)	Second stage of labor (min)
Control group n=51	627±133	62±14
Experimental group n=51	589±121	58±11
t value	1.5093	1.6044
P	0.1344	0.1118

2.3. Comparing the degree of pain at 24h and 48h postpartum

The degree of pain at 24h and 48h in the experimental group was significantly lower than that in the control group ($P < 0.05$). The statistical results are shown in tables 3 and 4.

Table 3. Pain degree of 24 hours in two groups [cases (%)]

	Number of cases	0~3	4~6	7~10
Control group	48	21 (43.75)	21 (43.75)	6 (12.5)
Experimental group	35	27 (77.14)	7 (20.00)	1 (2.86)
Z		-5.025		
P		0.000		

Table 4. Pain degree of 48 hours in two groups [cases (%)]

	Number of cases	0~3	4~6	7~10
Control group	48	17 (35.42)	23 (47.92)	8 (16.67)
Experimental group	35	31 (88.57)	4 (11.43)	0 (0.00)
Z		-6.240		
P		0.000		

2.4. Wound healing of parturients in two groups

The wound healing of puerpera in the experimental group was significantly better than that in the control group ($P < 0.05$), the results are shown in Table 5.

Table 5. Wound healing in two groups [cases (%)]

	Number of cases	Grade A	Grade B	Grade C
Control group	48	42 (87.5)	4 (8.33)	2 (4.17)
Experimental group	35	34 (97.14)	1 (2.86)	0 (0.00)
Z		-6.550		
P		0.000		

2.5. Comparison of the incidence of inflammatory reaction between two groups of parturients

The incidence of inflammatory reaction in the experimental group was 2.86%, which was significantly lower than that in the control group ($P < 0.05$), as shown in table 6.

Table 6. Comparisons of the incidence of inflammatory reactions [cases (%)]

	Cases	Inflammatory response				Total
		Redness and swelling	Exudation	Scleroma	Infecte d	
Control group	48	2 (4.17)	3 (6.25)	2 (4.17)	0 (0.00)	7 (14.58)
Experimental group	35	0 (0.00)	0 (0.00)	1 (2.86)	0 (0.00)	1 (2.86)
χ^2						4.196
P						0.043

2.5. Comparisons of incidence of knot reaction between two groups of parturients

The knot reaction in the experimental group was significantly lower than that in the control group ($P < 0.05$), as shown in Table 7.

Table 7. Comparisons of the incidence of knot reactions [cases (%)]

	Cases	0 degree	I degree	II degree	III degree
Control group	48	37(77.08)	7(14.58)	3(6.25)	1(2.08)
Experimental group	35	34(97.14)	1(2.86)	0(0.00)	0(0.00)
Z			-4.678		
P			0.000		

3. Discussion

Delivery is a physiological process that healthy women of childbearing age must undergo. It can usually proceed smoothly under natural conditions. With the improvement of the medical level and people's attention to the safety of pregnant women and newborns, the natural childbirth process has been intervened artificially [9]. At present, supine delivery posture is commonly used in clinical delivery, but the rate of perineal laceration and lateral dehiscence is higher, which not only increases the pain of parturients, increases the probability of dystocia, but also leads to severe hemorrhagic shock phenomenon, threatening the life safety of parturients. Excessive fetal size, fetal orientation, too fast delivery speed, and obstetric technology of midwives are all factors of perineal laceration in a natural delivery. Among them, fetal orientation, too fast fetal delivery and dry and astringent perineal are factors that can be changed, while other factors are difficult to change [10]. Relevant studies have pointed out that the use of semi-sitting position combined with other free positions in natural delivery can achieve better delivery outcomes, and the use of paraffin oil lubrication in the delivery process is not only simple and practical, but also can reduce the degree of perineal laceration, reduce maternal pain, and no adverse reactions [11]. Tu Xiaojin [12] reported the effect of paraffin oil lubrication in reducing perineal laceration of parturients. 123 cases (33.42%) and 81 cases (22.01%) of parturients with paraffin oil lubrication were found. The results of this study showed that the degree of perineal laceration in the experimental group was lower than that in the control group with paraffin oil assisted delivery, and the perineal integrity rate reached 31.37%. Compared with the traditional delivery control group, the degree of perineal laceration was significantly lower, the rate of lateral

perineal dehiscence was also significantly lower, and the degree of pain was also significantly lower than that in the control group. However, there was no significant difference between the first and second stages of labor in the experimental group, which may be related to the intervention of Obstetricians and midwifery nurses.

In natural childbirth, the traditional silk suture of perineal wounds can easily cause serious inflammatory reactions, such as pain, sclerosis, swelling, and infection. It can also form larger scars, affect the beauty, cause physical and mental injury to the puerpera, and also increase the pain of the puerpera after the operation. Subcutaneous cosmetic suture uses 3-0 and 4-0 absorbable sutures. The sutures are soft in texture, strong in tension and smooth in surface. They can be absorbed by human body under hydrolysis. When suturing, it is easy to penetrate through the tissues, with less damage to the tissues, continuous suturing of wireless knots, low tissue reactivity, fewer foreign bodies, no scar left, skin healing is good and fast, and the degree of pain is mild [13]. The results showed that the wound healing rate of the experimental group was significantly better than that of the control group. The incidence of inflammatory reaction in the experimental group was 2.86%, significantly lower than that in the control group, and the degree of linear reaction was lower than that in the control group. The results suggest that cosmetic suture (3-0 suture of mucosa and muscle layer, 4-0 suture of skin) is conducive to the recovery of perineal wounds and significantly reduces the suture reaction.

To sum up, paraffin oil assisted new delivery method can reduce the degree of perineal laceration, and the application of a cosmetic suture in the perineal wound has a significant effect, which can significantly reduce the

degree of perineal laceration, relieve pain and promote wound recovery.

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