

Observation on efficacy for rectal medication of methyl carprost suppository combined with oxytocin in preventing hemorrhage after cesarean section

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Abstract: The efficacy for rectal medication of methyl carprost suppository combined with oxytocin in preventing and controlling hemorrhage after cesarean section is observed and analyzed. The 180 parturients who are conducted cesarean section in our hospital are selected as research subjects. All parturients are entitled to the right to know and randomly divided into research group and control group with 90 cases in each group. Among them, the parturients in control group are given oxytocin to prevent and control hemorrhage during the operation, while the research group combines with rectal medication of methyl carprost suppository to prevent and control postoperative hemorrhage base on the ways of control group. The condition of hemorrhage in two groups is observed and compared. By comparing with the time of the third stage of labor in two groups, the results don't demonstrate significant difference ($p>0.05$). Compared with the amount of hemorrhage during the operation, 2h and 24h after delivery, the amount of hemorrhage in research group is less than control group with obvious difference ($p<0.05$); through recording the change of blood pressure before and after medication in two groups, the result shows that there is no significant difference ($p<0.05$), which indicates higher safety. In preventing and controlling hemorrhage after cesarean section, rectal medication of methyl carprost suppository combining with oxytocin can achieve good efficacy, significantly reduce the amount of postpartum hemorrhage and will not affect the blood pressure index.

Keywords: Methyl carprost suppository, rectal medication, oxytocin, cesarean section, postpartum hemorrhage.

INTRODUCTION

In the field of obstetrics, cesarean section is an important operation and has a wide range of applications. With the gradual improvement of anesthesiology, blood transfusion, transfusion, hydroelectric balance knowledge, surgical methods and surgical suture materials and so on with high decrease in infection rate, caesarean section has become an effective means to solve dystocia and some obstetric complications as well as to save the life of parturients and perinatal infants (Jia, 2015; Wang, *et al.*, 2018; Xu, *et al.*, 2017). At the same time, with the change of people's concept, more and more parturients choose cesarean section.

Cesarean section requires corresponding indications, such as Cephalopelvic disproportion (as shown in fig. 1), abnormal position of fetus (as shown in fig. 2), fetal distress and pregnancy complications and so on. One of the most common complications during cesarean section and post operation is hemorrhage. Postpartum hemorrhage will increase the risk of infection and cause other symptoms, which have a serious effect on life safety of parturients. Therefore, effective preventing and controlling hemorrhage during cesarean section and post operation has become the focus of medical research content (Elgafor El-Sharkwy, 2016). This study observes and analyzes the effect for rectal medication of methyl

carprost suppository combined with oxytocin in preventing hemorrhage after cesarean section. The report is as follows.

Postpartum hemorrhage is a common complication after cesarean section. In recent years, the continuous increase of postpartum hemorrhage rate is the first cause of maternal death in China, especially in remote and backward areas (Chen, 2017; Tsai, *et al.*, 2017). According to relevant data, the incidence of postpartum hemorrhage accounts for 2%-3% of the total number of births (Koyama, *et al.*, 2017). It is very important to prevent and control postpartum hemorrhage effectively and maintain the life safety of parturient.

At present, there are many methods to deal with blood loss during cesarean section, including uterus massage, use of oxytocin, arterial compression and B-Lynch suture and so on. The results show that after implementing the rectal medication of methyl carprost suppository combined with oxytocin in research group, the amount of intraoperative blood loss, 2h of postoperative blood loss, and 24h of postoperative blood loss were less than those of the control group treated with oxytocin alone, with significant difference ($P<0.05$). Oxytocin is a typical mammalian hormone, which can be naturally secreted by neurons of paraventricular nucleus and supraoptic nucleus. For women, it can cause uterine contraction during childbirth. The sensitivity of oxytocin is closely

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related to the level of estrogen and progesterone in the body and different bodies can develop different levels of sensitivity.

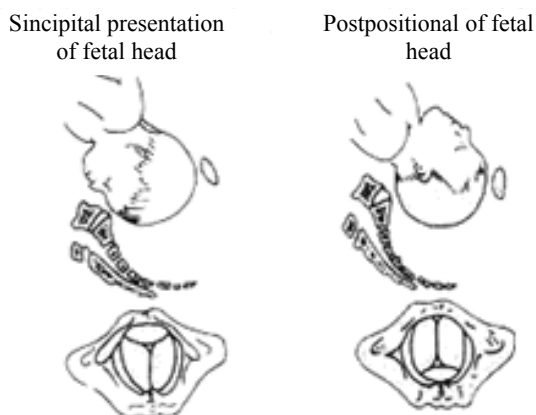


Fig. 1: Cephalopelvic Disproportion

MATERIALS AND METHODS

General materials

The 180 parturients who had accepted cesarean section in our hospital from August 2016 to March 2018 were selected as the subjects. All selected parturients met the indications of cesarean section. Parturients and their families enjoyed the right to know and signed the formal informed consent formulated by our hospital. This study was approved by the ethic committee of hospital. Among selected parturients, there were no cases of extreme uterine inertia, gestational diabetes mellitus, pregnancy induced hypertension, drug allergy, anemia and pelvic infection (Hayata, *et al.*, 2016). All 180 parturients were randomly divided into research group and control group, each containing 90. Among 90 parturients in research group, the age ranged from 22 to 43 years old with average age being (29.5 + 3.2) years old and the pregnancy week ranged between 37 and 41 weeks with average week being (39.4 + 1.6) weeks. There were 32, 20, 16, 10, 8 and 4 cases with scar uterus, giant baby, placenta previa, twins, placental abruption, and the other symptoms respectively. Among 90 cases of parturients in control group, the age ranged from 23 to 44 years old with the average age being (30.6 + 4) years old and the pregnancy week ranged between 38 to 41 weeks with average week being (40.2 + 1.8) weeks. There were 30, 13, 19, 14, 10, and 4 cases with scar uterus, giant baby, placenta previa, twins, placental abruption, and the other symptoms respectively. Comparing with relative data of two groups of parturients, the results were comparable ($p > 0.05$).

Methods

All parturients in research group and control group were given normal cesarean section and epidural anesthesia. After taking out fetus, parturients in control group were injected with oxytocin into uterus with the specification of oxytocin being 20IU and at the same time, the venous

channel was set up quickly. 20IU of oxytocin was injected into the vein for self-controlling pains after the operation. In research group, the method for rectal medication of methyl carprost suppository combined with oxytocin was carried out. The application of oxytocin was the same as that of control group. In addition, the application of methyl carprost suppository was: plug methyl carprost suppository (produced by Shenyang First Pharmaceutical Co., Ltd., Northeast Pharm Group; SFDA approval number is H10800007 and specification is 0.5 mg per grain) into rectum through anus, that is, after taking out fetuses, plug 2 grains of methyl carprost suppository (1 mg) into anus with new aseptic gloves, attaching to rectum (close to the position of uterus).

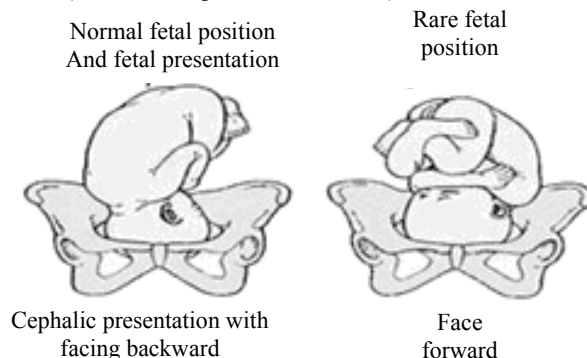


Fig. 2: Abnormal Position of Fetus

Observation indexes

The time of third stage of labor, the changes of blood pressure and side effects before and after medication were compared between the research group and the control group. In addition, the intraoperative blood loss, 2h postoperative blood loss and 24h postoperative total bleeding of the two groups were strictly observed and recorded. The amount of intraoperative hemorrhage was calculated by unified volume method (Guo, Hu, 2018), i.e., postoperative blood loss = the total amount of fluid in suction bottle after the operation - the total amniotic fluid volume before and after delivery - the amount of saline used for the operation + table gauze blood volume. The postoperative blood loss was calculated by weighing method (Liu, Qin, 2017), that is, the postoperative blood loss = the postoperative pad weight difference before and after usage / 1.05. The criteria for evaluating maternal hemorrhage is that the amount of haemorrhage is 400ml or above within the 2 hours after fetal delivery, or amount of haemorrhage is 500ml or above within the 24 hours after giving birth.

STATISTICAL ANALYSIS

The data were analyzed by statistical software is SPSS21.0. The measurement data was expressed in mean number \pm average number ($\bar{x} \pm s$) and t test was used for group comparison. The count data was expressed in natural number (n) and percentage (%) and χ^2 was used

Table 1: Comparison of time for the third stage of labor between two groups of parturients ($\bar{x} \pm s$)

Groups	Cases	Time of the third stage of labor (min)
Research Group	90	7.5±1.8
Control Group	90	7.2±1.1
t		0.12
p		<0.05

Table 2: Comparison for the amount of hemorrhage during the operation and after the operation between two groups of parturients ($\bar{x} \pm s$)

Groups	Cases	Amount of hemorrhage during the operation (ml)	Amount of hemorrhage 2h after the operation (ml)	Amount of hemorrhage 24h after the operation (ml)
Research Group	90	120.29±20.23	96.35±31.20	165.88±35.25
Control Group	90	124.68±32.17	155.70±28.46	248.95±38.02
t		18.23	15.27	20.38
p		<0.05	<0.05	<0.05

Table 3: Comparison of changes in blood pressure before and after medication between two groups of parturients ($\bar{x} \pm s$)

Groups	Cases	Systolic pressure before medication (mmHg)	Systolic pressure after medication (mmHg)	Diastolic pressure before medication (mmHg)	Diastolic pressure after medication (mmHg)
Research Group	90	110.56±11.29	113.80±12.36	75.60±9.80	79.85±8.8
Control Group	90	108.34±10.28	112.46±13.09	78.43±8.16	80.93±8.5
t		0.46	0.28	1.02	0.15
p		>0.05	>0.05	>0.05	>0.05

for group comparison. The difference was considered statistically significant when $p < 0.05$

RESULTS

Comparison of time for the third stage of labor between two groups of parturients

As recorded in the following table 1, it showed that there was no significant difference by comparing with time for the third stage of labor between two groups of parturients and there had statistical significance ($p < 0.05$).

Comparison for the amount of hemorrhage during the operation and after the operation between two groups of parturients

As recorded in the following table 2, it showed that the amount of hemorrhage in research group was less than control group by comparing with the amount of hemorrhage during the operation and 2h after the operation as well as 24h after the operation between two groups of parturients, which had statistic significance ($p < 0.05$).

Comparison of changes in blood pressure before and after medication between two groups of parturients

As recorded in the following table 3, it showed that there was no significant difference by comparing with changes

in blood pressure before and after medication between two groups of parturients, which had no statistic significance ($p > 0.05$).

DISCUSSION

Studies have shown that oxytocin can cause transient hypotension and vasopressin if given in a short amount of time, while if the dosage is more than 40IU, the desired results cannot be obtained. So it's important to pay close attention to the proper use of oxytocin. Methyl carprost suppository is a derivative of prostaglandin PGF2 α , which can stimulate contraction of uterine smooth muscle. The main target organ of Methyl carprost suppository is the uterus. Methyl carprost suppository can exert the super strong contractile muscle fibers of the uterus, promote the delivery of the placenta, shorten the third stage of labor, and thus effectively prevent postpartum hemorrhage. At the same time, methyl ester suppository is absorbed fast and usually can be formed within 5 minutes, with a half-life of half an hour and the duration of 3 hours. It can significantly reduce postpartum 2h blood loss. The method of rectal administration is easy to operate and can work directly in the corresponding place. Therefore, the administration of the carprost methyl ester thrombolytic therapy combined with oxytocin can better prevent and control the postpartum hemorrhage.

CONCLUSION

Cesarean section is a common procedure in obstetrics, which can reduce the infection rate with the development of the knowledge of anesthesiology, blood transfusions, transfusion and hydro-electric balance, as well as surgical methods, surgical suture materials and other techniques. However, one of the most common serious complications during and after cesarean section is hemorrhage, which increases the risk of infection and causes other symptoms. Therefore, it is very important to prevent and control the hemorrhage during and after cesarean section. Calprost is a derivative of prostaglandin PGF₂, which can stimulate and contract the smooth muscle of the uterus and effectively prevent postpartum hemorrhage. Calprost has a half-life period of half an hour and continuing efficacy of 3 hours, which can be administered by rectal administration, playing its therapeutic effect at the corresponding place. In the prevention and control of postoperative hemorrhage after cesarean section, the combination of calprost methyl ester thrombolytic therapy and oxytocin can be used to achieve better results, significantly reduce postoperative blood loss, and will not affect blood pressure indicators, nor produce serious adverse reaction problems. Therefore, such combined therapy is worth of being promoted in clinics.

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