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**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.3592413>Available online at: <http://www.iajps.com>**Research Article****CLINICAL SIGNIFICANCE OF UMBILICAL CORD MILKING DURING CESAREAN SECTION OF NEONATAL PROGNOSIS WITH ABNORMAL BLOOD FLOW IN MIDDLE CEREBRAL ARTERY****¹Mr Jie Li, ²Mr Guo Wei, ³Miss Yan Lv, ⁴Miss Li Zihan, ⁵Miss Aleexaa Masood, ⁶Mr. Muhammad Talha**¹Radiology Department, the Second Affiliated Hospital of Zhengzhou University²Luoyang Central Hospital, Affiliated to Zhengzhou University, Luoyang, China³The Third Affiliated Hospital, Soochow University, Obstetrics and Gynecology, China⁴University of Glasgow, UK⁵Islamia University of Bahawalpur, Pk⁶Superior University, Pk**Article Received:** October 2019 **Accepted:** November 2019 **Published:** December 2019**Abstract:**

To investigate the clinical significance of umbilical cord milking in the treatment of neonatal prognosis in women undergoing cesarean section with abnormal blood flow in middle cerebral artery. A total of 40 cases of umbilical cord milking in the cesarean section of the maternal uterus in the second trimester of pregnancy were selected as the experimental group, and the fetus with abnormal fetal cerebral artery blood flow was selected. For the cesarean delivery, 40 cases of routine umbilical cord ligation were used as the control group. The difference of Apgar score and neonatal asphyxia between the two groups was analyzed. The incidence of asphyxia in the experimental group was significantly lower than that in the control group. The incidence of neonatal pediatric wards in the experimental group was significantly lower than that in the control group ($P < 0.05$). The difference in neonatal asphyxia between the two groups was statistically significant. ($P < 0.05$). The umbilical cord milking during cesarean section can reduce the incidence of neonatal asphyxia and improve neonatal prognosis in fetal middle cerebral artery blood flow.

Key Words: umbilical cord milking; fetal middle cerebral artery; neonatal asphyxia; fetal distress; cesarean section

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INTRODUCTION:

Fetal distress has been a concern during pregnancy. How to assess the intrauterine status of the fetus, choose the appropriate timing and safe way to terminate the pregnancy, thus avoiding neonatal asphyxia and improving the prognosis of the newborn is the responsibility of all obstetric medical staff. At present, more research and clinical use of fetal middle cerebral artery blood flow resistance value in the third trimester of pregnancy evaluation of utero-placental-fetal circulation status, monitoring fetal intrauterine status[1], provide a corresponding basis for improved circulation, and appropriate termination of pregnancy. However, amniotic fluid pollution, abnormal labor progress, surgical midwifery and other complications, neonatal asphyxia, and neonatal resuscitation and rescue are still inevitable. Since the concept of delayed umbilical cord was proposed in the 1960s, a large number of studies have shown the advantages of delaying umbilical cord ligation, but there are also potential risks. In recent years, some scholars have suggested that the umbilical cord milking can achieve the benefits of delaying the umbilical cord and avoid the disadvantages of delaying the umbilical cord. In the 2008 Hosono [2] study, umbilical cord milking was defined as: placing the newly born newborn under the placenta level, and squeezing the umbilical cord about 20 cm long in the direction of the newborn before the umbilical cord was ligated 2 ~3 times, the speed of the squeeze is about 10cm/s, the time required to complete the umbilical cord crushing does not exceed 10 seconds. In December 2012, the American College of Obstetricians and Gynecologists (ACOG) [3] suggested that the optimal umbilical cord ligation should be selected for neonatal umbilical cord ligation. In 2014, ACOG proposed to implement delayed umbilical cord ligation, suggesting that delayed umbilical cord ligation can reduce the neonatal

asphyxia rate, increase neonatal blood volume and increase iron reserves [4]. In this study, women with abnormal blood flow in the middle cerebral artery were selected. Because of obstetric indication, these pregnant woman take cesarean section to terminate pregnancy. we take umbilical cord milking during the delivery of the cesarean section., and then analyze the effect of neonatal asphyxia.

MATERIALS AND METHODS:**1. Case data:**

Pregnant women in the obstetrics department in our hospital from May 2018 to May 2019, who has abnormal blood flow in the middle cerebral artery, delivery by caesarean section because of obstetric indication. 40 cases were selected as the experimental group, and the umbilical cord was crushed after the newborn was delivered. 40 cases were selected as the control group, and the control group was selected for routine umbilical cord ligation. Both the experimental group and the control group were single-child delivery. The maternal ages were (29.2±3.51) and (29.3±3.8) years old, respectively. The cesarean section was performed by epidural anesthesia and the lower uterus transverse incision cesarean section. There were no significant differences in the general data of maternal age, gestational age, maternal parity, pregnancy complications and complications ($P>0.05$), which were comparable.

Table 1

	Groups	N	M±SD	T	P
Ages	Control group	40	29.3±3.8	0.15	0.879
	Experimental group	40	29.2±3.51		
Gestational week	Control group	40	38.26±1.4	-1.32	0.191
	Experimental group	40	38.68±1.46		
MCA(S/D)	Control group	40	2.85±0.33	0.28	0.777
	Experimental group	40	2.83±0.37		

Table 2

	Groups		χ^2	P
	Control	Experimental		
Scar uterus	24	47.1%	.487	.485
	16	55.2%		
Preeclampsia	33	50.8%	.082	.775
	7	46.7%		
Gestational diabetes	31	48.4%	.313	.576
	9	56.3%		
Breech	36	50.7%	.125	.723
	4	44.4%		
Pregnancy with anemia	37	49.3%	.213	.644
	3	60.0%		
Fetal distress	37	49.3%	.213	.644
	3	60.0%		
AbnormalNST	29	49.2%	.065	.799
	11	52.4%		

2. Operation method:

Umbilical cord milking method: After the delivery of neonates in cesarean section, the assistant immediately cleans the respiratory tract on the stage, and the surgeon lifts the umbilical cord, and squeezes the umbilical cord at a speed of 10 cm/s from the root of the umbilical cord 30 cm from the root of the umbilical cord. Clamping and umbilical cord 3-4cm from the umbilical root, routine treatment of neonatal re-delivery, and the newborn was then routinely treated under the table. Conventional umbilical cord ligation: Immediately after birth, it is treated at 3-4 cm from the umbilical root and clamped under the umbilical cord. Monitoring indicators: Apgar scores at birth: 0 to 3 are classified as severe asphyxia, 4 to 7 are classified as mild asphyxia, and 8 to 10 are classified as normal.

3. Statistical method:

Statistical analysis was performed on the data using SPSS statistical software. Measurement data were expressed as mean \pm standard deviation ($\pm s$), t test was used; count data was expressed as rate (%), and t test was used. $P < 0.05$ indicates that the difference is statistically significant.

4. Data result:

The age, gestational age, cerebral artery S/D ratio, and incidence of comorbidities in the two groups of pregnant women were not significantly different between the two groups. There was a significant difference between the neonatal Apgar score of 1 minute in the umbilical cord and the neonatal Apgar score of 5 minutes and the control group, and the neonatal asphyxia rate decreased.

Table 3.

		Groups				χ^2	P
		Control		Experimental			
Apgar 1 minute	Asphyxia	14	35.0%	5	12.5%	5.591	.018*
	Normal	26	65.0%	35	87.5%		
Apgar 5 minute	Asphyxia	4	10.0%	0	0.0%	4.211	.040*
	Normal	36	90.0%	40	100.0%		

DISCUSSION:

Intrauterine distress is one of the most serious diseases in perinatal period, which can cause damage to various organs such as fetal heart, brain and kidney, affecting the growth and development of newborns, causing permanent damage to the nervous system, severe cases can lead to neonatal death[5]. The fetal middle cerebral artery is the largest branch of the internal carotid artery of the fetal cerebral hemisphere. The blood supply reaches 80% of the blood supply to the entire fetal brain. It is the path of blood flow with high oxygen content, which can reflect the dynamic changes of fetal brain circulation. When the fetus has intrauterine hypoxia, the body's regulation mechanism is activated, and the "brain protection effect" tries to ensure the blood supply to the brain tissue. In the fetal distress state, the blood flow resistance parameters of the fetal middle cerebral artery are lower than those of the normal pregnancy[6]. At present, more studies have shown that the use of fetal middle cerebral artery blood flow resistance value monitoring and evaluation of uterus-placenta-fetal circulation status is of great value, in the third trimester of pregnancy can guide obstetric clinicians to terminate pregnancy at the right time. Healthy newborns cry immediately after birth to make lung ventilation rapidly established, the blood flow to the lungs increased, the proportion of pulmonary blood flow to cardiac output increased significantly, sufficient blood volume is needed to ensure the filling of pulmonary capillaries and alveolar expansion. Breathing cycle, then establish a breathing cycle. When the newborn is delivered, the umbilical cord is immediately ligated, the lung ventilation is not fully established, the pulmonary blood flow is reduced, and the amount of left ventricular oxygenation is also reduced. Therefore, the left ventricular blood output of the asphyxiated neonate is decreased, resulting in a decrease in blood flow in the capillary network. , tissue perfusion is insufficient. Hemodynamic instability and multiple organ perfusion in neonates can cause cerebral ischemic injury and cause secondary damage to the gastrointestinal tract, lung

function, and kidney function. Insufficient blood supply and supply of oxygen in brain tissue is an important factor in the development of brain damage in premature infants and asphyxia. It plays a role in intraventricular hemorrhage and white matter softening around the ventricles. During the process of delivery and umbilical cord ligation, the blood transferred from the placenta to the newborn is called placental transfusion. We can form a placental transfusion by umbilical cord. Studies have shown that umbilical cord milking increases the placental blood transfusion by about 20 ml, which can produce similar effects as delaying umbilical cord ligation[7].

For asphyxia newborn, they need to be rescued immediately after delivery. In the past, umbilical cord ligation is usually performed immediately for the golden time of recovery. Immediately ligating the umbilical cord can quickly complete the transition from the fetus to the newborn, and also reduce the blood transfusion of the newborn placenta, which is harmful to rescue. Therefore, we consider that umbilical cord milking may be a better choice to increase the placental transfusion without delaying neonatal resuscitation. Since the concept of delayed umbilical cord was proposed in the 1960s, there have been more and more studies on umbilical cord ligation, and the advantages of delayed umbilical cord have been recognized. For newborns who need immediate resuscitation during birth or unstable mother circulation, many scholars have also suggested that delays in umbilical cord ligation can impede the recovery of neonates with asphyxia or heart failure[8].

Simple delayed umbilical cord ligation requires 30s-180s, umbilical cord milking takes only 30s, or even more transient, which makes the placental blood transfusion speed faster. The newborn gets a lot of blood in a short time, and the increase of blood volume ensures the blood perfusion of various tissues and organs. With oxygen supply, the circulation and internal environment are more stable, and the oxygen

content of brain tissue is increased to reduce the occurrence of brain damage after hypoxia-ischemia. The placental blood transfusion formed by umbilical cord milking increases the blood volume of the newborn, promotes the stability of circulation and internal environment, reduces anemia, blood transfusion, intraventricular hemorrhage, promotes cardiopulmonary adaptation, and reduces the occurrence of necrotizing enteritis, thereby improving the survival rate of newborns. To improve the prognosis[9], without increasing the incidence of polycythemia and serum bilirubin and the need for phototherapy[8]. For premature babies, neonatal anemia is prone to occur after birth, and blood transfusion is the main method of treatment[10], rapid transplacental transfusion through umbilical cord milking can reduce the incidence of neonatal anemia, post-natal hemoglobin, hematocrit, increased serum ferritin levels and reduced neonatal venous transfusion requirements are a low-cost, high-yield option.

The uterine incision in the cesarean section is open, and if the routine umbilical cord ligation is performed, the uterine incision bleeding time will be prolonged, resulting in unnecessary blood loss, and it is not conducive to neonatal warming and timely and effective asphyxia resuscitation during waiting. Moreover, exposure to the surgical field of vision is affected during bleeding. In contrast, fast and effective umbilical cord milking has greatly improved the drawbacks of conventional delayed umbilical cord ligation, reducing the incidence of postpartum hemorrhage and improving the success rate of neonatal resuscitation.

Neonatal asphyxia, premature infants and other disease states often have low blood volume. Umbilical cord crush can quickly correct the hypovolemia state through placental transfusion, increase the blood supply of various tissues and organs of the newborn, and reduce ischemia and hypoxia injury. This study shows that umbilical cord crushing can increase the neonatal blood volume by increasing the newborn's Apgar score and reducing the incidence of neonatal asphyxia. Considering the treatment of the third stage of labor in cesarean section, the placenta can be naturally peeled off after the umbilical cord is squeezed to empty the placenta. Compared with the traditional delayed umbilical cord, this operation time is short, which can reduce the loss of calories in newborns, and win time for heat preservation and neonatal asphyxia recovery. At the same time, shorten the time of uterine incision bleeding during cesarean section, and avoid postpartum hemorrhage.

CONCLUSION:

A total of 40 cases of umbilical cord milking in the cesarean section of the maternal uterus in the second trimester of pregnancy were selected as the experimental group, and the fetus with abnormal fetal cerebral artery blood flow was selected. For the cesarean delivery, 40 cases of routine umbilical cord ligation were used as the control group. The difference of Apgar score and neonatal asphyxia between the two groups was analyzed. The incidence of asphyxia in the experimental group was significantly lower than that in the control group. The incidence of neonatal pediatric wards in the experimental group was significantly lower than that in the control group ($P < 0.05$).

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