



## CASE REPORT

# Resuscitation with Intact Cord Reduces the Rate of Asphyxia at 5 Minutes

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## Abstract

**Objectives:** Explore the effect of resuscitation with intact cord in neonate asphyxia.

**Methods and materials:** Retrospective cohort study. Asphyxia babes 104 cases from Jan. 2011 to Dec. 2013 in the seconde maternal and neonate hospital in Jinan Shandong province received immediate cord clamping and transferring to the emergence-bed for the resuscitation process were enrolled as controlled group; experimental group were those asphyxia babes 94 cases from Jan. 2014 to Dec. 2016 where they were resuscitated with intact cord in delivery bed. Data was recorded from the clinical record in the hospital. Information including maternal condition, delivery process and neonate condition were recorded. Following up were through the telephone for the neonate survival condition.

**Results:** The general information of maternal age, pregnant weeks, neonate birth weight in two groups were not of significant. The rate of asphyxia in two groups were not of statistical difference ( $\chi^2 = 2.043$  P = 0.153; asphyxia rate at five minute in experimental group 4.3% (4/94) was lower than that in controlled group 13.5% (14/104, of statistical difference ( $\chi^2 = 4.968$ , P = 0.026). Neonatal death and paralysis in two groups were not of statistical difference.

**Conclusions:** Resuscitation with intact cord reduces the rate of asphyxia at five minutes without increasing the neonate death and paralysis rate. It should be considered against the protocol of cutting the cord immediately and transferred to emergence bed.

## Keywords

Neonate asphyxia, Resuscitations of neonate asphyxia, Delayed cord clamping, Neonate paralysis

## Introduction

The benefit of delayed cord clamping till the pulsation of the cord ceased has been proved both to mothers and babies, as increased hemoglobin levels and iron store of babies at first 6 months [1,2]. The traditional method of cutting the cord immediately after birth has been abended from the routing clinical practice protocols [3].

And most of the recommendation on these issues supporting the delayed cord clamping on the normal babies. But for the asphyxia babies, argues remain for the keeping warm by transferring to the radiators and resuscitation on this table, that will cut the cord and this may be deprived the asphyxia babies the oxygen and nutrient supplies from the placenta while their lungs not start to work properly. Brouwer E to measure the PH state from preterm babies with intact cord founded that median SpO<sub>2</sub> of the infants increased quickly in the first 4 min after birth to a stable level above 90%, that suggested placenta transfusion with intact cord improved neonate's conditions [4].

We have applied delayed cord clamping on resuscitation of asphyxia babies since 2014, and 94 cases asphyxia babies recovered and survived without palsy or other complications that offered good news to supporting the delayed cord clamping on asphyxia babies. We compared those case with data of asphyxia babies that were resuscitation in traditional methods that cutting cord and transferred to the bedside radiator tables.

**Table 1:** Comparison of maternal and neonatal conditions between two groups.

Indicators	Resuscitation at radiator with cutting cord immediately (104)	Resuscitation at delivery table with intact cord (94)	$t/\chi^2$	<i>P</i>
Maternal age (year)	29.14 ± 5.83	30.93 ± 5.85	1.105	0.057
Pregnant (wks)	38.17 ± 3.90	38.54 ± 3.39	0.683	0.496
Maternal complications	4 (4.2)	4 (4.3)	0.000	0.988
Birth weight of newborns (g)	3072.84 ± 878.45	3155.90 ± 841.89	0.664	0.508
Gender (female)	37 (38.9)	41 (43.6)	0.425	0.514
Preterm (%)	19 (54.3)	16 (45.7)	0.278	0.598
Asphyxia at 1 min (%)	43 (47.3)	48 (52.7)	2.043	0.153
Asphyxia at 5 min (%)	14 (13.3)	4 (4.3)	4.968	0.026
Neonate death	2 (2.1)	1 (1.1)	0.328	0.567
Palsy	1 (1.1)	0 (0.0)	Fisher	1.000

## Materials and Methods

Cohort studies were carried out in JINAN Second maternal and neonatal hospital. Experimental groups were 94 cases asphyxia babies application of resuscitation with intact cord since Jan. in 2014 to Dec. 2016. Controlled group were those 104 cases resuscitation in traditional ways that cutting the cord immediately and transfer to radiator from Jan. 2011 to Dec. 2013. Data information was recorded from clinical records from the hospital. Research plan was approved by ethical committee from the hospital. We did not ask for each patient's approval. The geography information of mothers as pregnant state, complications during pregnant and birth, birth style, process of labor, postpartum hemorrhage, the babies birth weight, gender. Apgar score at birth, resuscitation process, Apgar score at 5 min after birth were from clinical records and survival state at 1 month follow up, following up at 3 years after birth were carried out by midwives in the communities' services.

## Results

From Jan. 2011 to Dec. 2013 there were 104 cases of asphyxia babies. From Jan. 2014 to Dec. 2019 there were 94 cases asphyxia. The neonate pregnant wks and birth weight, the rate of severe asphyxia at birth were not of statistic difference between two groups ( $\chi^2 = 2.043$ ,  $P = 0.153$ , at five min the severe asphyxia rate in experimental group 4.3% (4/94) was lower than that in controlled group 13.5% (14/104, had of statistical difference ( $\chi^2 = 4.968$ ,  $P = 0.026$ . Controlled group had two babies died at birth, one case was 29 wks, male, birth weight 900 g, the second case is female, 28 wks, 950 g; experimental group had one baby died at birth, 30 wks, male, 1700 g; the mortality rate of newborns between two groups was not of statistical difference; all babies survived at 1 month follow up, and controlled group had one baby with severe palsy at 3 years with difficult in speaking and walking, experimental group had no palsy case. There was no difference in the rate of palsy between two groups (Table 1).

## Discussion

Many studies had proved that delayed umbilical cord clamping (DCC) as compared with immediate umbilical cord clamping (ICC) can reduce the risk of mortality and the need for blood transfusions [5,6]. It is believed the beneficial effect of DCC mainly was attributed to a larger circulating neonatal blood volume by increased placental transfusion [7].

Avoiding hypoxemia, especially in the first minutes after birth, is pivotal since this is associated with lower HR and increased risk of intraventricular hemorrhage and death.

And the rate of severe Apgar score at birth was not of statistical at birth in this study, and lower rate of severe asphyxia at 5 min in experimental group, that may be attributed to the continuous supplication of blood and oxygen from placenta transfusion. Also the palsy rate between two groups was not of difference, the benefit of resuscitation with intact cord should be considered.

## Conclusions

Resuscitation with intact cord improves the Apgar score at 5min without increasing the death rate and palsy rate. It should be considered in clinical practice and larger sample of observation study should be needed for more solid results.

## Declaration

We declare that there is no conflict of interest.

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