Review Article

Benefits of Delayed Cord Clamping

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Abstract

Delayed cord clamping (DCC) leaves the cord alone after birth and avoids disrupting the normal birth process. While the cord is pulsating, placental transfusion is supplying the baby with oxygen, nutrients and an increased blood volume to support the transition to life outside the womb.

Delayed cord clamping confers many benefits to the newborn baby including higher number of red blood cells, stem cells and immune cells at birth. In premature or compromised babies, delayed cord clamping may provide essential life support, restore blood volume and protect against organ damage. It reduces the risk that the baby will have iron deficiency anemia without substantial side effects in baby.

Key Words: Benefits, Cord Clamping, Delayed,

Background

"Early" cord clamping is generally carried out in the first 60 seconds after birth (generally within the first 15–30 seconds), whereas "delayed" umbilical cord clamping is carried out more than 1 minute after the birth or when cord pulsation has ceased(Pan American Health Organization and World Health Organization Regional Office for the Americas, 2013).

Delaying umbilical cord clamping (CC) by 2 to 3 minutes after delivery allows fetal blood remaining in the placental circulation to be transfused to the newborn (Farrar , Airey , Law, Tuffnell & Cattle, 2011). This transfusion can expand the blood volume by 30% to 40% (25-30 mL/kg). After physiologic hemolysis, hemoglobin-bound iron is transferred into iron stores. Consequently, delayed CC is associated with improved iron status at 4 to 6 months of age (McDonald, Middleton, Dowswell & Morris, 2013).

In a meta-analysis of Delayed Cord Clamping in preterm infants was associated with less need for blood transfusion and reduced risk of intraventricular hemorrhage (IVH) and necrotizing enterocolitis (NEC). Randomized clinical trials have shown other benefits of DCC in preterm infants including improved cardiovascular stability(Meyer & Mildenhall , 2011) cerebral oxygenation, and lower risks for both severe IVH and late onset sepsis (LOS) (Mercer , Vohr , McGrath , Padbury , Wallach & Oh ,2006) .

Delayed cord clamping is a birth practice where the umbilical cord is not clamped or cut until after pulsations have ceased, or until after the placenta is delivered. Research has shown that when we delay cord clamping the neonate will receive up to 30% more of the fetal-placental blood volume than it would have with immediate cord clamping (Mathew, 2011).

Newborns with delayed clamping had higher hemoglobin levels 24 to 48 hours postpartum and were less likely to be iron-deficient three to six months after birth, compared with term babies who had early cord clamping. Birth weight also was significantly higher on average in the late clamping group, in part because babies received more blood

from their mothers. Delayed clamping did not increase the risk of severe postpartum hemorrhage, blood loss or reduced hemoglobin levels in mothers, the analysis found (Louis, 2013).

Early cord clamping is generally carried out in the first 60 seconds after birth, whereas delayed cord clamping is carried out more than one minute after the birth or when cord pulsation has ceased. Delaying cord clamping allows blood flow between the placenta and neonate to continue, which may improve iron status in the infant for up to six months after birth. This may be particularly relevant for infants living in low-resource settings with reduced access to iron-rich foods (Mathew, 2011)

Timing for cord clamping (recommended by WHO)

In newly born term or preterm babies who do not require positive-pressure ventilation, the cord should not be clamped earlier than 1 min after birth. When newly born term or preterm babies require positive-pressure ventilation, the cord should be clamped and cut to allow effective ventilation to be performed.

Newly born babies who do not breathe spontaneously after thorough drying should be stimulated by rubbing the back 2–3 times before clamping the cord and initiating positive-pressure ventilation.

Delayed cord clamping (performed approximately 1–3 min after birth) is recommended for all births, while initiating simultaneous essential neonatal care.

Early umbilical cord clamping (less than 1 min after birth) is not recommended unless the neonate is asphyxiated and needs to be moved immediately for resuscitation.

The evidence base for recommendations on the optimal timing of umbilical cord clamping for the prevention of postpartum hemorrhage includes both vaginal and caesarean births.

Delayed cord clamping is recommended even among women living with HIV or women with unknown HIV status. HIV status should be ascertained at birth, if not already known, and HIV positive women and infants should receive the appropriate ARV drugs (WHO, 2014).

Benefits of Delayed Cord Clamping

For preterm/low-birth weight infants

Decreases risk of: intraventricular haemorrhage, necrotizing enterocolitis and late-onset sepsis

Decreases need for: blood transfusions for anaemia or low blood pressure, surfactant and mechanical ventilation

Increases: haematocrit, haemoglobin, blood pressure, cerebral oxygenation and red blood cell flow

Increases haemoglobin at 10 weeks of age and may be a benefit to neurodevelopmental outcomes in infants

For Full-term infants

Provides adequate blood volume and birth iron stores

Increases haematocrit and haemoglobin

Improves haematological status (haemoglobin and haematocrit) at 2–4 months of age and improves iron status up to 6 months of age

For mothers

No effect on maternal bleeding or length of the third stage of labour and indication from “cord drainage” trials that less blood-filled placenta shortens the third stage of labour and decreases the

incidence of retained placenta (Pan American Health Organization and World Health Organization Regional Office for the Americas, 2013).

Conclusion

Delayed cord clamping leaves the cord alone after birth and avoids disrupting the normal birth process. While the cord is pulsating, placental transfusion is supplying the baby with oxygen, nutrients and an increased blood volume to support the transition to life outside the womb.

Delayed cord clamping provides many benefits to the newborn baby including higher number of red blood cells, stem cells and immune cells at birth. In premature or compromised babies, delayed cord clamping may provide essential life support, restore blood volume and protect against organ damage. So it is highly recommended to practice the delayed cord clamping in all newborn babies for their health promotion.

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