

ICEA Position Paper

Delayed Cord Clamping

Position

The International Childbirth Education Association recognizes that the first minutes after birth are crucial to both mother and newborn. Optimal care of the mother-baby dyad should include the following: delayed cord clamping, skin-to-skin contact and unlimited access to breastfeeding. ICEA agrees with the World Health Organization/ Pan American Health Organization (Chaparro, et al, 2007) that the optimal time to clamp the umbilical cord for all infants regardless of gestation age or fetal weight is when the circulation of the cord has ceased and the cord is pulseless.

Background

As the newly born infant begins the physiologic adjustment to the environment, modern Western obstetrics begins the implementation of procedures known as active management of the third stage: cord traction, immediate cord clamping, intravenous injection of oxytocin, Apgar score and more. According to Sloan (Sloan, 2013), the first mention of early cord clamping (ECC or cutting the cord before it stopped pulsating) was found in the 1600s, “when management of the third stage of labor changed with the rise of male midwives, flat-on-the-back birthing practices, and forceps.”

While the time that it takes for the umbilical cord to stop pulsating varies with every baby (from 1-3 minutes), the average time is approximately 3 minutes (Queensland Centre, 2012).

According to Dr. Sarah Buckley (Buckley, 2009), immediate cord clamping or ICC carries the disadvantage of depriving the baby of the oxygen-rich placental blood that tides the baby over until breathing is well established. This reservoir of oxygenated blood can be life-saving. Ironically, the current standard of practice in many facilities is to cut the cord immediately if resuscitation is necessary.

Delayed cord clamping (DCC) is a practice by which the umbilical cord is not clamped or cut until after it stops pulsating. It may also include not clamping or cutting the umbilical cord until after the placenta is delivered. Many studies do not include the actual timing of the DCC, however it can range from 30 seconds to 180 seconds. Some say there are insufficient data to determine whether there is any additional benefit of waiting beyond 60 seconds (Rabe, et al, 2012; Raju, 2013).

Benefits of Delaying Cord Clamping

Immediately after the birth of the baby, the cord pulsates and the placenta continues providing oxygen, red blood cells, stem cells, immune cells and blood volume to the baby. This transfer of blood is called *placental transfusion* and is an important part of the birthing process. Placental

transfusion is facilitated by delayed cord clamping and can ensure safe oxygen levels and blood volume for the baby (Mercer, et al, 2008).

Several studies have shown benefits of delayed cord clamping. A meta-analysis (Hutton, et al, 2007) showed that delaying clamping of the umbilical cord for a minimum of two minutes in full-term neonates following birth is beneficial to the newborn in the following respects: improved hematocrit (the volume by percentage of red blood cells in the blood); improved iron status as measured by ferritin (a protein that stores iron) concentration and stored iron; a reduction in the risk of newborn anemia and need for transfusion (Hutton, et al, 2007; McDonald, et al, 2013). Other studies have shown an increased risk of polycythemia (more red blood cells in the blood) and jaundice when the cord is clamped later. Polycythemia may be beneficial, in that more red cells means more oxygen being delivered to the tissues. The risk is that polycythemia will cause the blood to become too thick (Hyperviscosity Syndrome). Hyperviscosity Syndrome is a frequent argument against DCC but seems to be negligible in healthy babies (Buckley, 2009).

A 2012 Cochrane Review of early cord clamping versus delayed cord clamping or cord milking for preterm babies found that a delay of 180 seconds provided babies with additional blood through delayed cord clamping or milking the cord before clamping appeared to help the babies to adjust to their new surroundings with fewer transfusions for anemia, and the risks of intraventricular hemorrhage and the risk of necrotizing enterocolitis were reduced (Rabe, et al, 2012).

Factors Influencing Timing of Cord Clamping

The optimal timing of umbilical cord clamping has been the subject of a large number of studies, randomized controlled trials and meta-analyses. In most births, delay of cord clamping can take place if all involved in the birthing process agree. Delay cord clamping would be contraindicated in cases where the newborn has respiratory distress and is in need of immediate resuscitation (ACOG, 2012; Military OB/GYN, 2013).

McDonald et al reviewed the effect of timing of umbilical cord clamping of term infants on mother-baby outcomes. A review of 15 randomized trials involving a total of 3911 women and infant pairs showed no significant difference in postpartum hemorrhage rates when early and late cord clamping (generally between one and three minutes) were compared. From this study, some important advantages of DCC were shown to include higher birthweight, better early hemoglobin concentration and increased iron reserves up to six months after birth (McDonald, et al, 2013).

Speculation exists on the relationship between DCC and cord blood banking. According to several leading cord blood collection banks, DCC and cord blood banking are not mutually exclusive. Since the placenta and umbilical cord can contain up to 200 ml of blood (which contains the hematopoietic stem cells as well as the iron reserves), current industry benchmarks for cord blood collections are a minimum of 50 ml, leaving approximately 150 ml to pulse into the newborn.

Delayed cord clamping and premature infants

Infants weighing < 1500 g with DCC tended to have higher mean BP, and needed less mechanical ventilation and surfactant compared with ICC neonates. Infants with DCC did not experience more polycythemia (Hct > 60%), but had a trend toward higher bilirubin levels with no differences in the phototherapy needs. DCC seems to be safe and may be beneficial when compared with ICC in premature neonates (Kugelman, et al, 2007). Buckley cites a 1993 study where premature babies experienced 30 second DCC and showed a reduced need for transfusion, less severe breathing problems, better oxygen levels and indications of probable improved long-term outcomes (Buckley, 2009).

Studies examining late-onset sepsis (LOS) and intraventricular hemorrhage (IVH) with premature babies demonstrated that a brief DCC (30-40 seconds), along with lowering the infant to hasten the placental transfusion, offers protection from IVH and LOS. The additional blood volume received seems to contribute to

the improved outcomes of the premature baby (Mercer, et al, 2006).

Rabe concluded in 2012 that DCC for 30-120 seconds in the premature infant less than 37 weeks' gestation appears to be better than clamping within 30 seconds, as it is associated with a reduction in the risk of IVH and less need for blood transfusion (Rabe, et al, 2000). Rabe also pointed out in 2000, delayed cord clamping of 45 seconds is feasible and safe in preterm infants below 33 weeks of gestation; it is possible to perform the procedure at caesarean section deliveries and it should be performed whenever possible. It reduces the need for packed red cell transfusions during the first 6 weeks of life (Rabe, et al, 2000).

Adverse Maternal or Neonatal Outcomes of DCC

Studies of DCC have found no significant differences in any maternal outcomes. With the exception of a slight increase in the need to treat hyperbilirubinemia, no differences have been found in babies in terms of neonatal outcomes such as morbidity, mortality, Apgar scoring or NICU admission.

Implication for Practice

Sufficient evidence exists to support delayed cord clamping for all babies. ACOG, while concerned that delayed cord clamping could interfere with resuscitation efforts in preterm births, finds that the evidence does support DCC for preterm infants (ACOG, 2012). The World Health Organization (WHO) (Abalos, 2009) states that DCC would require training of providers in the detection of signs/symptoms of respiratory distress or other neonatal complications requiring immediate care. Many health benefits including less need for blood transfusion for anemia, and reduction in IVH and LOS exist. Hutton points out that DCC is a physiological and inexpensive means of enhancing hematologic status that impacts all newborns regardless of birth setting and advocates for a clinical practice of minimum delay of 2 minutes before clamping

the umbilical cord following birth for all full-term infants (Hutton and Hassan, 2007). WHO recommends timing of cord clamping to 1-3 minutes after birth, with exception for those babies requiring immediate resuscitation (Abalos, 2009).

Based on this relatively new data and delay by providers to embrace new practice, parents wishing to delay cord clamping may need to state this as an option on a birthing plan. They may also have to request this desire in writing as their refusal to consent to early/ immediate cord clamping.

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International Childbirth Education Association

2501 Aerial Center Pkwy Ste. 103, Morrisville, NC 27560 • Phone 919-863-9487 • Fax 919-459-2075 • www.icea.org