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Delayed cord clamping in newborns: Benefits, risks and current recommendations: A literature review

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Abstract

Delayed cord clamping (DCC) has gained increasing attention as a simple and effective intervention to improve neonatal outcomes. It is defined as clamping of the umbilical cord more than 30–60 seconds after birth. This narrative review aims to summarize the benefits, potential risks, and current recommendations regarding delayed cord clamping in newborns. DCC has been associated with improved hemoglobin levels, increased iron stores, and better cardiovascular stability, particularly in preterm infants. However, concerns such as polycythemia and jaundice have been reported. Overall, current evidence supports the routine use of delayed cord clamping in both term and preterm infants when feasible.

Keywords: Delayed cord clamping; Newborn; Neonatal outcomes; Iron stores; Preterm infants

1. Introduction

Delayed cord clamping (DCC) is increasingly recognized as an important practice in neonatal care. It refers to delaying the clamping of the umbilical cord for at least 30 to 60 seconds after birth [1].

Traditionally, early cord clamping was routinely performed, but recent evidence suggests that delaying cord clamping provides significant benefits for both term and preterm infants [2,3]. DCC allows placental transfusion, which increases neonatal blood volume and improves hemoglobin levels.

Several studies have shown that DCC is associated with improved iron stores, reduced risk of anemia, and better hemodynamic stability, particularly in preterm infants [3,4]. This review aims to summarize the benefits, risks, and current recommendations regarding delayed cord clamping in newborns.

2. Methods

This narrative review was conducted using a literature search in electronic databases including PubMed and Google Scholar. Articles published in English between 2000 and 2024 were considered.

Keywords used included “delayed cord clamping,” “umbilical cord,” “placental transfusion,” and “neonatal outcomes.” Relevant studies, including randomized trials, observational studies, and international guidelines, were reviewed.

Articles were selected based on their relevance to the benefits, risks, and clinical implications of delayed cord clamping.

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2.1. Benefits of Delayed Cord Clamping

Delayed cord clamping provides several benefits for newborns. It allows placental transfusion, which increases neonatal blood volume and improves hemoglobin levels at birth [3,5].

In term infants, DCC has been associated with improved iron stores during the first months of life, reducing the risk of iron deficiency anemia [4]. In preterm infants, DCC improves cardiovascular stability, reduces the need for blood transfusions, and decreases the incidence of intraventricular hemorrhage and necrotizing enterocolitis [6,7].

These benefits make DCC a simple and cost-effective intervention that can significantly improve neonatal outcomes.

2.2. Risks and limitations

Despite its well-documented benefits, delayed cord clamping (DCC) may be associated with certain risks and limitations. Several studies have reported a slight increase in the incidence of neonatal jaundice requiring phototherapy following DCC [5]. This is likely related to the increased red blood cell volume resulting from placental transfusion.

Concerns about polycythemia have also been raised; however, most studies indicate that it is generally asymptomatic and rarely requires treatment [3]. Therefore, the clinical significance of this finding remains limited.

Another important limitation is the feasibility of DCC in emergency situations. In cases of severe fetal distress or when immediate neonatal resuscitation is required, delaying cord clamping may not be possible. This can limit its implementation in high-risk deliveries.

Additionally, variations in clinical practice and lack of standardized protocols in some settings may affect the consistent application of DCC. Adequate training of healthcare providers and adherence to international guidelines are essential to ensure its safe and effective use.

Overall, while DCC is a safe and beneficial intervention in most cases, careful patient selection and clinical judgment remain important to optimize outcomes.

3. Discussion

Delayed cord clamping (DCC) has emerged as an important and evidence-based practice in neonatal care due to its simplicity and significant clinical benefits [2,3]. It represents a low-cost intervention that can be easily implemented in both high- and low-resource settings, making it particularly valuable in improving neonatal outcomes worldwide.

Several studies have demonstrated that DCC improves hematological parameters, including higher hemoglobin levels at birth and increased iron stores during infancy [4,5]. These effects are especially important in low-resource settings, where iron deficiency anemia remains a major public health concern. In preterm infants, DCC has been associated with improved cardiovascular stability, reduced need for blood transfusions, and decreased incidence of intraventricular hemorrhage and necrotizing enterocolitis [6,7].

Despite these benefits, concerns regarding potential adverse effects such as jaundice and polycythemia have been reported. However, most studies suggest that these risks are generally mild and manageable, and do not outweigh the overall benefits of DCC [3,5]. Careful monitoring and appropriate neonatal care can further minimize these risks.

Another important aspect is the feasibility of DCC in clinical practice. While it is recommended in most cases, its implementation may be challenging in emergency situations requiring immediate resuscitation. In such cases, early cord clamping may still be necessary to ensure prompt neonatal care.

International guidelines, including those from the World Health Organization and other major organizations, recommend delayed cord clamping in both term and preterm infants when feasible [1,8,9]. However, adherence to these recommendations may vary depending on local practices, available resources, and healthcare provider training.

Overall, delayed cord clamping represents a simple, effective, and evidence-based intervention that should be incorporated into routine neonatal care. Its benefits, particularly in improving hematological status and reducing complications in preterm infants, are largely explained by placental transfusion mechanisms [10], making it a valuable strategy to enhance neonatal outcomes globally.

4. Conclusion

Delayed cord clamping is a simple, low-cost, and effective intervention that provides significant benefits for newborns, particularly in improving hematological status and reducing complications in preterm infants.

Although certain risks, such as jaundice and polycythemia, have been reported, they are generally mild and manageable and do not outweigh the overall benefits of the practice. However, its implementation may be limited in emergency situations requiring immediate neonatal resuscitation.

Current evidence and international guidelines support the routine use of delayed cord clamping in both term and preterm infants whenever feasible. Its integration into standard neonatal care practices may contribute to improved short- and long-term outcomes.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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