

## Indian Academy of Pediatrics (IAP)



# nRICH

**N**ewer **R**esearch and recommendations **I**n **C**hild **H**ealth

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**Dear fellow IAPans,**

**nRICH**

**Newer Research and recommendations In Child Health**-aims to bring you the abstracts of some of the breakthrough developments in pediatrics, carefully selected from reputed journals published worldwide.

Expert commentaries will evaluate the importance and relevance of the article and discuss its application in Indian settings. nRICH will cover all the different subspecialties of pediatrics from neonatology, gastroenterology, hematology, adolescent medicine, allergy and immunology, to urology, neurology, vaccinology etc. Each issue will begin with a concise abstract and will represent the main points and ideas found in the originals. It will then be followed by the thoughtful and erudite commentary of Indian experts from various subspecialties who will give an insight on way to read and analyze these articles.

I'm sure students, practitioners and all those interested in knowing about the latest research and recommendations in child health will be immensely benefitted by this endeavor which will be published online on every Monday.

Happy reading!

*Upendra Kinjawadekar*  
*National President 2023*  
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# Resuscitation with intact cord versus clamped cord in late preterm and term neonates: A randomized controlled trial

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## BASED ON ARTICLE

Raina JS, Chawla D, Jain S, Khurana S, Sehgal A, Rani S. To compare the effect of intact cord versus clamped cord resuscitation on the physiologic transition of neonates receiving positive-pressure ventilation (PPV) at birth.

## ABSTRACT

**Study design:** This open-label, parallel-group, randomized controlled superiority trial was conducted in a tertiary care hospital in India. Neonates born at <sup>34</sup> weeks of gestation after a complicated pregnancy or labor were randomized just before birth to receive resuscitation according to the Neonatal Resuscitation Program algorithm with either an intact cord (intact cord resuscitation group) or after early cord clamping (early cord clamping resuscitation group). The allocated study intervention was administered if the neonate needed PPV at birth. The primary outcome was expanded Apgar score at 5 minutes after birth.

**Results:** Birth weight, gestational age, and the incidence of pregnancy complications were similar in the 2 study groups. The proportion of neonates who received PPV was lower in the intact cord resuscitation group (28.7% vs 36.5%,  $P = .05$ ; relative risk, 0.79; 95% CI, 0.61-1.01). Among neonates who received PPV, the expanded Apgar score at 5 minutes was significantly higher in the intact cord resuscitation group (median, 15 [IQR, 14-15] vs 14 [IQR, 13-15];  $P < .001$ ). Oxygen saturation at 1, 5, and 10 minutes were also higher in the intact cord resuscitation group.

**Conclusions:** In late preterm and term neonates, resuscitation with an intact cord results in better postnatal physiologic transition than the standard practice of resuscitation after immediate cord clamping. (J Pediatr 2022;:-:1-7).

## COMMENTARY

Perinatal asphyxia is a leading cause of neonatal morbidity and mortality in low-middle income countries. Appropriate resuscitation at birth is one of the most effective interventions to prevent complications of birth asphyxia. Currently, all depressed babies are resuscitated following immediately cutting the cord at birth. This practice is being challenged and this study provides evidence against the current practice.

Animal studies have shown better postnatal transition if the cord is kept intact with on-going resuscitation. It is postulated that by delaying the cord clamping allows extra blood flow to the heart

and lungs leading to increased cardiac preload, blood volume, pulmonary gas exchange and improved cardiac output allowing greater oxygen delivery to tissues resulting in decreased resuscitation interventions.

The authors tested this hypothesis in infants with gestation >34 weeks needing positive pressure ventilation (PPV) while the cord was clamped at least 180 seconds or when the neonate exhibited spontaneous breathing, which ever was later, with a maximum time limit of 5 minutes (intervention group) versus immediate cord cut (comparison group). The PPV was delivered using T piece resuscitator and resuscitation steps were performed by trained personals in neonatal resuscitation program (NRP) on a special resuscitation trolley. They observed intact cord resuscitation is feasible, safe and results in better physiologic transition compared to standard practice of early cord cutting in term and late preterm infants requiring resuscitation. Use of the expanded Apgar score has been recommended by the APP to improve the interpretation of the standard Apgar score. In addition to the standard measurements, the expanded Apgar score includes points for the following interventions administered during the resuscitation: oxygen, continuous positive airway pressure, PPV, intubation, surfactant, chest compressions, and medications. One point is added for each of these interventions not administered, resulting in a total possible score of 17 instead of 10. The study design was robust, study protocol strictly followed, included infants delivered by vaginal route and by C Section. The study reported clinically relevant outcomes of incidence and severity of HIE and the need for NICU admission.

## PRACTICE POINTS

- Delayed cord clamping is the standard of care for term and preterm infants not needing resuscitatio at birth
- If logistics support (a portable device to provide temperature regulation, PPV and blended air-oxygen ), resuscitation initiating ventilation before clamping the cord seem to provide greater physiological benefits to the depressed newborn at birth. If placental circulation continues during resuscitation, there may be mitigation of hypoxia, hypothermia and hypoglycemia that occur during resuscitation.
- Future trails should focus on improved clinical outcomes such as mortality, HIE and Neurodevelopment with intact cord resuscitation.