J Matern Fetal Neonatal Med. 2010 Jan 11. [Epub ahead of print]

Timing of umbilical cord clamping: New thoughts on an old discussion.

Arca G, Botet F, Palacio M, Carbonell-Estrany X.

Service of Neonatology.

The optimal time to clamp the umbilical cord in preterm and full-term neonates after birth continues to be a matter of debate. A review of randomised controlled trials comparing the effects of early versus late cord clamping on maternal and infant outcomes was performed to assess data in favor of immediate or delayed clamping. Although there is no conclusive evidence, delayed cord clamping seems to be beneficial in preterm and full-term neonates without compromising the initial postpartum adaptation phase or affecting the mother in the short term. However, further randomised clinical studies are needed to confirm the benefits of delayed cord clamping.

PMID: 20059441 [PubMed - as supplied by publisher]

J Perinatol. 2010 Jan;30(1):11-6. Epub 2009 Oct 22.

Seven-month developmental outcomes of very low birth weight infants enrolled in a randomized controlled trial of delayed versus immediate cord clamping.

Mercer JS, Vohr BR, Erickson-Owens DA, Padbury JF, Oh W.

College of Nursing, University of Rhode Island, Kingston, RI 02881, USA. jmercer@uri.edu

Comment in:

- J Perinatol. 2010 Jan;30(1):1.

OBJECTIVE: The results from our previous trial revealed that infants with delayed cord clamping (DCC) had significantly lesser intraventricular hemorrhage (IVH) and late-onset sepsis (LOS) than infants with immediate cord clamping (ICC). A priori, we hypothesized that infants with DCC would have better motor function by 7 months corrected age. STUDY DESIGN: Infants between 24 and 31 weeks were randomized to ICC or DCC and follow-up evaluation was completed at 7 months corrected age. RESULT: We found no differences in the Bayley Scales of Infant Development (BSID) scores between the DCC and ICC groups. However, a regression model of effects of DCC on motor scores controlling for gestational age, IVH, bronchopulmonary dysplasia, sepsis and male gender suggested higher motor scores of male infants with DCC. CONCLUSION: DCC at birth seems to be protective of very low birth weight male infants against motor disability at 7 months corrected age.

PMID: 19847185 [PubMed - in process]

PMCID: PMC2799542 [Available on 2010/7/1]

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J Obstet Gynaecol. 2009 Apr;29(3):223-4.

Attitude of obstetricians towards delayed cord clamping: a questionnaire-based study.

Ononeze AB, Hutchon DJ.

Lead Clinician in Obstetrics & Labour Ward, Consultant in Obstetrics & Gynaecology, Darlington Memorial Hospital, Hollyhurst Road, Darlington, England. Benjimin.Ononeze@cddft.nhs.uk

There is no consensus amongst medical and midwifery staff on the optimum time to cut the umbilical cord following childbirth. Studies have shown that delaying cord clamping for at least 30 seconds is associated with less need for blood transfusion and respiratory support. In 2004, Rabe et al. recommended delayed cord clamping for up to 120 seconds in preterm birth. The aim of our study was to ascertain whether or not obstetricians adopt this recommendation. Questionnaires were given to obstetricians from 43 different units in UK, other EU countries, USA, Canada, Australia etc. There was a 100% response rate. 53% adopted the recommendation only occasionally whereas 37% have never. Difficulty with implementation in clinical practice was the main reason for failure to adopt recommendation. Unawareness

of the evidence of the benefits of delayed cord clamping was the reason in half of the non-compliant group. Obstetricians are reluctant to adopt the recommendation. Difficulty in clinical practice was the main reason. There is need for the Royal College of Obstetricians and Gynaecologists to produce guidelines for delayed cord clamping in obstetric practice.

PMID: 19358030 [PubMed - indexed

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J Perinat Med. 2009;37(3):281-7.

Immunologic and infectious consequences of immediate versus delayed umbilical cord clamping in premature infants: a prospective, randomized, controlled study.

Kugelman A, Borenstein-Levin L, Kessel A, Riskin A, Toubi E, Bader D.

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AIM: To evaluate the immunologic and infectious consequences of delayed versus immediate cord clamping in premature infants (<35 weeks) during the neonatal period. METHODS: This was a prospective, masked, randomized, controlled, single-center study. Prior to delivery 35 infants were randomly assigned to immediate cord clamping (ICC) at 5-10 s and 30 infants to delayed cord clamping (DCC), at 30-45 s (14 and 15 infants in each group were <1500 g, respectively). RESULTS: Neonatal characteristics of the ICC and DCC groups were comparable. There was no significant difference between the ICC and DCC groups in the complement or in the immunoglobulin levels. All were within the normal range for age. All infectious parameters (events of sepsis or "rule-out sepsis", days of antibiotic therapy, and number of antibiotic courses during hospitalization and infections within the first month of life in cases of earlier discharge) were comparable in both groups. Similar results were found in the subgroup of infants <1500 g. Gender analysis showed only modest differences. CONCLUSIONS: Delayed compared to immediate cord clamping did not affect the immunologic or the infectious status of infants born at <35 weeks during the neonatal period.

PMID: 19196206 [PubMed - indexed for MEDLINE**Display Settings:**

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Am J Perinatol. 2009 Mar;26(3):179-83. Epub 2008 Dec 15.

A management guideline to reduce the frequency of blood transfusion in very-low-birth-weight infants.

Rabe H, Alvarez JR, Lawn C, Seddon P, Amess PN.

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Very-low-birth-weight (VLBW) infants often require blood transfusions for anemia. Studies have investigated the preventative effect of delayed cord clamping, high-dose iron, and costly recombinant erythropoietin. As part of our unit clinical governance framework to improving patient care, we audited the effect of a preventative management guideline that combines delayed cord clamping for 30 seconds with early protein intake and early oral iron supplementation (6 mg/kg from days 7 to 10 of life, if milk feeds 60 mL/kg/d) combined with a restrictive transfusion policy in infants < 32 weeks' gestation and < 1500 g birth weight. Data on blood transfusions in VLBW infants during the first 6 weeks of life collected before the start of the new regimen (period I) were compared with data in consecutively born VLBW infants after the introduction of the management guideline (period II). Age (in days) when milk feeds and oral iron supplements were introduced was recorded. Statistical analysis used Wilcoxon signed-rank test. VLBW infants in period I (N = 18, median birth weight 1001 g [727; 1158]) received a median of four transfusions (0.75; 9) compared with 1.5 (0.75; 5, P = 0.01) VLBW infant transfusions in period II (N = 22, median birth weight 967 g [792; 1131]). Milk feeds of 60 mL/kg/d were achieved on median day 12 (6; to 16), and iron was introduced on median day 38 (21; to 44) in period I compared with milk feeds on day 9 (7; 15, P = 0.05) and oral iron on day 16 (11; 21, P < 0001) in period II. The combination of a 30-

second delay in cord clamping, early protein and iron, and a change of transfusion thresholds reduced the number of blood transfusions by half.

PMID: 19085812 [PubMed - indexed

J Nutr. 2008 Dec;138(12):2542-6.

Research needed to strengthen science and programs for the control of iron deficiency and its consequences in young children.

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The purpose of this article is to highlight critical research needs for the effective prevention and control of iron deficiency and its consequences in children living in low-income countries. Four types of research are highlighted: The first involves scaling up interventions that we know are effective, namely iron supplementation of pregnant women, delayed cord clamping at delivery, immediate and exclusive breast-feeding, and continued exclusive breast-feeding for approximately 6 mo. The second entails evaluation research of alternative interventions that are likely to work, to find the most cost-effective strategies for a given social, economic, and epidemiological context. This research is especially needed to expand the implementation of appropriate complementary feeding interventions. In this area, research needs to be designed to provide causal evidence, to measure cost-effectiveness, and to measure potential effect modifiers. The third is efficacy research to discover promising practices where we lack proven interventions. Examples include how to detect infants younger than 6 mo who are at high risk of iron deficiency, efficacious and safe interventions for those young high-risk infants, and best protocols for the treatment of severe anemia. The fourth includes basic research to elucidate physiological processes and mechanisms underlying the risks and benefits of supplemental iron for children exposed to infectious diseases, especially malaria. Strategic research in all 4 areas will ensure that interventions to control pediatric iron deficiency are integrated into national programs and global initiatives to make pregnancy safer, reduce newborn deaths, and promote child development, health, and survival.

PMID: 19022987 [PubMed - indexed

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BJOG. 2008 May;115(6):697-703.

Delayed umbilical cord clamping at birth has effects on arterial and venous blood gases and lactate concentrations.

Wiberg N, Källén K, Olofsson P.

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Comment in:

- BJOG. 2008 Aug;115(9):1190-1.

OBJECTIVE: To estimate the influence of delayed umbilical cord clamping at birth on arterial and venous umbilical cord blood gases, bicarbonate (HCO3-), base excess (BE) and lactate in vigorous newborns. SETTING: University hospital. DESIGN: Prospective observational. SAMPLE: Vaginally delivered term newborns. MATERIAL AND METHODS: Umbilical cord arterial and venous blood was sampled repeatedly every 45 seconds (T(0)= time zero; T(45)= 45 seconds, T(90)= 90 seconds) until the cord pulsations spontaneously ceased in 66 vigorous singletons with cephalic vaginal delivery at 36-42 weeks. Longitudinal comparisons were performed with the Wilcoxon signed-ranks matched pairs test. Mixed effect models were used to describe the shape of the regression curves. MAIN OUTCOME MEASURES: Longitudinal changes of umbilical cord blood gases and lactate. RESULTS: In arterial cord blood, there were significant decreases of pH (7.24-7.21), HCO3- (18.9-18.1 mmol/l) and BE (-4.85 to -6.14 mmol/l), and significant increases of PaCO(2) (7.64-8.07 kPa), PO(2) (2.30-2.74 kPa) and lactate (5.3-5.9 mmol/l) from T(0) to T(90), with the most pronounced changes at T(0)-T(45). Similar changes occurred in venous blood pH (7.32-7.31), HCO3- (19.54-19.33 mmol/l), BE (-4.93 to -5.19 mmol/l), PaCO(2) (5.69-5.81 kPa) and lactate (5.0-5.3 mmol/l), although the changes were smaller and most pronounced at T(45)-T(90). No significant changes were observed in venous PO(2). CONCLUSION: Persistent cord pulsations and delayed cord clamping at birth result in significantly different measured values of cord blood acid-base parameters.

PMID: 18410652 [PubMed - indexed

Lancet. 2009 May 9;373(9675):1615-22. Epub 2009 Apr 20.

Resuscitation at birth and cognition at 8 years of age: a cohort study.

Odd DE, Lewis G, Whitelaw A, Gunnell D.

Clinical Science at North Bristol, University of Bristol, Bristol, UK. david.odd@nbt.nhs.uk

Comment in:

- Lancet. 2009 May 9;373(9675):1581-2.
- Lancet. 2009 Aug 1;374(9687):377-8.

BACKGROUND: Mild cerebral injury might cause subtle defects in cognitive function that are only detectable as the child grows older. Our aim was to determine whether infants receiving resuscitation after birth, but with no symptoms of encephalopathy, have reduced intelligence quotient (IQ) scores in childhood. METHODS: Three groups of infants were selected from the Avon Longitudinal Study of Parents and Children: infants who were resuscitated at birth but were asymptomatic for encephalopathy and had no further neonatal care (n=815), those who were resuscitated and had

neonatal care for symptoms of encephalopathy (n=58), and the reference group who were not resuscitated, were asymptomatic for encephalopathy, and had no further neonatal care (n=10 609). Cognitive function was assessed at a mean age of 8.6 years (SD 0.33); a low IQ score was defined as less than 80. IQ scores were obtained for 5953 children with a shortened version of the Weschler intelligence scale for children (WISC-III), the remaining 5529 were non-responders. All children did not complete all parts of the test, and therefore multiplied IQ values comparable to the full-scale test were only available for 5887 children. Results were adjusted for clinical and social covariates. Chained equations were used to impute missing values of covariates. FINDINGS: In the main analysis at 8 years of age (n=5887), increased risk of a low IQ score was recorded in both resuscitated infants asymptomatic for encephalopathy (odds ratio 1.65 [95% CI 1.13-2.43]) and those with symptoms of encephalopathy (6.22 [1.57-24.65]). However, the population of asymptomatic infants was larger than that of infants with encephalopathy, and therefore the population attributable risk fraction for an IQ score that might be attributable to the need for resuscitation at birth was 3.4% (95% CI 0.5-6.3) for asymptomatic infants and 1.2% (0.2-2.2) for those who developed encephalopathy. INTERPRETATION: Infants who were resuscitated had increased risk of a low IQ score, even if they remained healthy during the neonatal period. Resuscitated infants asymptomatic for encephalopathy might result in a larger proportion of adults with low IQs than do those who develop neurological symptoms consistent with encephalopathy. FUNDING: Wellcome Trust.

PMID: 19386357 [PubMed - indexed for MEDLINE]

PMCID: PMC2688587

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J Nutr. 2008 Dec;138(12):2529-33.

Setting the stage for child health and development: prevention of iron deficiency in early infancy.

Chaparro CM.

Pan American Health Organization, Washington, DC 20037, USA. cchaparro@aed.org

Iron deficiency is estimated to be the most common nutritional deficiency worldwide and is particularly persistent among infants and children. The high prevalence of anemia in 6- to 9-mo-old children raises the concern that birth iron stores in some infants are inadequate to sustain growth and development through the first 6 mo of life, and postnatal factors are contributing to early depletion of iron stores and development of anemia. At the same time, there are concerns about negative effects of excess iron in infants. Maternal iron status, infant birth weight and gestational age, as well as the timing of umbilical cord clamping at birth all contribute to the establishment of adequate total body iron at birth. Postnatally, feeding practices and growth rate are factors that will affect how quickly birth iron is depleted during the first 6 mo of life. Under conditions in which maternal iron status, birth weight, gestational age, and umbilical cord clamping time are optimal, and exclusive breast-feeding is practiced, infants should have adequate iron stores for the first 6-8 mo of life. Under suboptimal conditions, infants may not reach this goal and may need to be targeted for iron supplementation before 6 mo of age.

PMID: 19022984 [PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms, Substances

Publication Types:

- Review

MeSH Terms:

- Anemia, Iron-Deficiency/prevention & control
- Birth Weight
- Child Development/physiology*
- Dietary Supplements
- Female
- Gestational Age
- Humans
- Infant
- Infant, Newborn
- Iron/deficiency*
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Substances:

- Iron, Dietary
- Iron

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- Swets Information Services

Medical:

- Infant and Toddler Development - MedlinePlus Health Information

Molecular Biology Databases:

- IRON - HSDB

Pediatrics. 2008 May; 121 (5) :875-81.

Raggiungimento dei valori di saturazione mirati in età gestazionale estremamente bassa neonati resuscitato con basse concentrazioni di ossigeno o alta: a prospective, randomized trial.

Escrig R, Arruza L, I izquierdo, Villar G, Sáenz P, Gimeno A, Moro M, Vento M.

Neonatalogy Service, La Fe materno-infantile University Hospital, Valencia, Spagna.

OBIETTIVO: Bassissima neonati di età gestazionale è molto bassa saturazione di ossigeno in utero e un sistema di difesa antiossidante immatura. Brusco aumento della saturazione di ossigeno dopo la nascita, può causare stress ossidativo. Abbiamo confrontato raggiungimento di una saturazione di ossigeno mirata del 85% a 10 minuti di vita, quando la rianimazione è stato avviato con le frazioni a basso o alto di ossigeno ispirato e livelli sono stati adeguati in base ai valori di ossigeno preductal impulso di saturazione. METODI: Un prospettico, randomizzato, studio clinico è stato eseguito in 2 unità di referral III livello neonatale. Pazienti di <o = 28 settimane di gestazione che hanno richiesto la rianimazione attiva sono stati randomizzati al gruppo a basso ossigeno (frazione di ossigeno ispirato: il 30%) o del gruppo ad alto ossigeno (frazione di ossigeno ispirato: 90%). Ogni 60 a 90 secondi, la frazione di ossigeno ispirato è stato aumentato a passi di 10%, se si è verificato bradicardia (<100 battiti al minuto) o è stata ridotta in una procedura simile, se la saturazione di ossigeno impulso raggiunto valori> 85%. Saturazione di ossigeno Preductal impulso è stato continuamente monitorato. RISULTATI: La frazione di ossigeno ispirato nel gruppo a basso ossigeno è stata aumentata gradualmente al 45% e che nel gruppo ad alto ossigeno è stata ridotta al 45%, per raggiungere una saturazione di ossigeno stabile di impulso di circa il 85% a 5 a 7 minuti in entrambe le gruppi. Nessuna differenza nella saturazione dell'ossigeno nel minuto-per-minuto registri sono stati trovati indipendenti della frazione iniziale di ossigeno ispirato usato 4 minuti dopo il cavo di bloccaggio. Nessuna differenza nei tassi di mortalità nel primo periodo neonatale sono stati rilevati. CONCLUSIONI: la rianimazione può essere iniziato in sicurezza per bassissima età gestazionale neonati con una bassa frazione di ossigeno ispirato (circa il 30%), che poi devono essere adeguati alle esigenze del bambino, riducendo il carico di ossigeno per il neonato.

PMID: 18450889 [PubMed - indexed for MEDLINE]

Tipi di pubblicazione Termini maglia, Sostanze, fonte secondaria ID

Tipi di pubblicazione:

- Randomized controlled trial
- Sostegno alla ricerca, non U.S. Gov't

MeSH Terms:

- Femminile
- L'età gestazionale
- Frequenza cardiaca
- Esseri umani
- Infant, Newborn
- Infant, Premature / sangue *
- L'intubazione endotracheale
- Maschile
- Ossimetria *

- Ossigeno nel sangue
- L'inalazione di ossigeno terapia * / metodi
- Rianimazione *

Sostanze:

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Fonte secondaria ID:

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Medico:

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- I bambini prematuri - MedlinePlus Health Information

Biologia Molecolare Database:

- OSSIGENO - HSDB

Early Hum Dev. 2008 Mar;84(3):195-200. Epub 2007 May 21.

Early versus late cord clamping: effects on peripheral blood flow and cardiac function in term infants.

Zaramella P, Freato F, Quaresima V, Secchieri S, Milan A, Grisafi D, Chiandetti L.

Department of Pediatrics, Neonatal Intensive Care Unit, University of Padova, Via Giustiniani, 3, 35128 Padova, Italy. zaramella@pediatria.unipd.it

BACKGROUND: In the debate on the best cord clamping time in newborn infants, we hypothesized that late cord clamping enables an increased volemia due to blood transfer to the newborn from the placenta. AIM: To assess whether clamping time can affect limb perfusion and heart hemodynamics in a group of 22 healthy term newborn infants. STUDY DESIGN: A case-control study. SUBJECTS: Eleven early-clamped (at 30 s) vaginally-delivered newborn infants were compared with eleven late-clamped (at 4 min) newborns. OUTCOME MEASURES: The two groups were studied using near-infrared spectroscopy and M-mode echocardiography. RESULTS: Late cord clamping coincided with a higher hematocrit (median 62% versus 54%) and hemoglobin concentration (median 17.2 versus 15 g/dL), whilst there were no changes in bilirubin level. Echocardiography showed a larger end-diastolic left ventricle diameter (1.7 cm median value versus 1.5) coupled with unvaried shortening and ejection fraction values. There were no changes in calf blood flow,

oxygen delivery, oxygen consumption or fractional oxygen extraction calculated from the NIRS measurements, or in foot perfusion index. CONCLUSIONS: Our results demonstrated that late cord clamping coincides with an increased placental transfusion, expressed by higher hematocrit and hemoglobin values, and larger left ventricle diameter at the end of the diastole, with no changes in peripheral perfusion or oxygen metabolism.

PMID: 17513072 [PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms

Publication Types:

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- Case-Control Studies
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- Female
- Heart Function Tests*
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