



Brief facts about umbilical cord clamping and our research

At birth, approximately 1/3 of the child's blood is in the placenta. If you then clamp the umbilical cord immediately (early cord clamping), the blood will remain in the placenta and go to waste (or can be stored in stem cell banks). If instead clamping is postponed for 3 minutes, most of the blood can flow back to the child as an extra blood transfusion, consisting of about one deciliter (1/2 cup) of blood, equivalent to about 2 liters (half a US gallon) of an adult. A blood donor leaves 0.4-0.5 liters of blood.

Blood contains red blood cells that contains hemoglobin. Hemoglobin carries oxygen to the tissues of the body. Hemoglobin contains a lot of iron, and the extra deciliter of blood may contain iron that correspond to 3-4 months of the need for an infant.

Our research

We randomized 382 children to early (≤ 10 seconds) or delayed cord clamping (≥ 180 seconds).

Previously, we have demonstrated that delayed clamped children had more iron in the body at 4 months of age and that the proportion of children with iron deficiency decreased by 90%, from 5.7% to 0.6%.

Children were asked to return at age four; a psychologist performed intelligence tests (WPPSI-III), and let the kids do tests on their fine motor skills (Movement ABC). The parents were asked to complete two questionnaires, one on the child's overall development (ASQ) and one on their behavior (SDQ).

We could then see that the children's general intelligence and development did not differ, but the delayed clamped children had better fine motor skills both when described by parents and in one of the fine motor tests done by the psychologist.

When we divided the children into boys and girls, it turned out that the improvement in the test results was among the delayed clamped boys, among whom the results were clearer, and more results became statistically significant.

Why was it the boys who improved?

During the first year of life, from birth, the girls have generally better iron stores in the body, and when the boys are clamped later, they come up to the girls' levels of iron stores. The early clamped boys have thus slightly higher risk of having low iron stores. We believe this might explain the findings in our study.

Why does improved iron stores lead to better fine motor skills?

After birth the brain needs iron, among other things, to develop, and during infancy much of the neural wiring that govern motor skills later in life is developed.

Previous studies have shown that low iron stores at birth and at one year of age is associated with poorer fine motor skills at the age of 5-6 years.

What are fine motor skills?

All precise movements we make, such as writing, fastening buttons, etc. The questionnaire had parents assess if the child could cut with scissors, adding a 5-7 bit puzzle, fastening buttons, draw simple geometric shapes (circle, cross), if they drew people with at least three parts of the body and if the child remained within the lines when they painted in coloring books.

What are the research implications?

The children in the Swedish study were full-term babies to healthy mothers in a society where most people have good nutrition. We believe that cord clamping may have an even greater significance in societies where there are more children who have iron deficiency. We hope that those who write recommendations regarding cord clamping will take our results into consideration in the future and that larger studies will help to add more knowledge.

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