



## *Delayed Cord Clamping Requires a New Table for Stressed Newborns*

by Mary Esther Malloy

**A** female doctor with a shaven head and beautiful eyes stood between Lily's legs, studying the monitor. We all heard the slow thudding. In an even tone, a Mary Poppins-like midwife said, "Get peds." A pediatrician and a gaggle of pediatric residents entered the room as if they'd been standing at the door waiting for an invitation. The doctor picked up the vacuum and quietly announced that the time had come to use extra force. "The baby is so close," she told us as she readied her equipment.

With her hands gripping her thighs, Lily called out, "We want to delay clamping the cord."

I stood at Lily's side with my hand on her chest for support as I'd done through the night as her doula. I wondered how her request would be heard. The doctor's eyes didn't leave the monitor. The midwife replied to Lily

in a kindly voice, "In this case, they won't be able to delay because the pediatricians will likely want to see the baby right away."

Lily is an actress who for years has paid the rent with a position at a teaching hospital where she straps on a belly, lies on a hospital bed and evaluates residents' bedside manner as they role-play their way through obstetrical emergencies. Without anyone telling her, Lily knew she had three go's with the vacuum in this real-life birth of her own. If the third attempt failed, a birth by cesarean would follow.

"We want to delay the cord clamping," Lily called out again. "I don't want the cord cut," Lily persisted. "Please. I really don't want to cut the cord!"

The midwife offered a reassuring nod and said, "If the baby is in good shape, maybe we can delay."

With calm authority, the doctor interrupted. "Push. Now."

Lily pushed with a wild force as the doctor pulled a cord attached to a suction device on the baby's head. The vacuum popped off. Twice more, she pushed and the vacuum came off.

Lily had had the allotted three tries. We stood in silence around her bed. Unexpectedly, the doctor placed the vacuum on the baby's head for a fourth pull. With an effort beyond anything we'd seen, Lily bore down. But, again, the vacuum came off. "You'll have to sign a consent for a cesarean," the doctor said.

Ignoring the doctor, Lily called, "I'm having a contraction! What do I do?" The doctor quickly stepped in close. "Go for it," she said. Lily pulled back on her thighs and pushed. I whispered to Lily, "The baby's

coming.” Lily’s son’s head emerged into the doctor’s hands.

Seconds later his body slid gracefully out. I was relieved to see he had good color and good movement and happy to hear him holler his way into this world. Almost immediately, the doctor held the baby against her body in the bend of her arm and single-handedly clamped and cut the cord. There was a gush of red blood from the cord. The baby cried even louder as he was handed to a pediatrician.

But another cry drowned out the baby’s. “No!”

It was Lily.

“Don’t...cut...the...cord!” Lily burst into tears as her son, also crying, was taken to the warmer in the corner. “Why did they cut the cord?” Lily sobbed. “Why? He’s in good shape! Why couldn’t they wait?”

The baby was about seven feet away, kicking and making noises. Lily’s eyes were on her baby. “Why did they cut the cord?” she asked no one in particular at this point.

The midwife explained, “If I call in peds, I have to use them. And they want to see the baby right away.”

The table that held her baby was within Lily’s line of vision but too far away for the umbilical cord that moments ago had connected Lily and her son. For years I’d joked that birth partners should carry a 12-foot extension cord so if a pediatrician or nurse needed to see a baby, the partner could use the extension cord to wheel the table over to the mother’s bedside and keep the umbilical cord intact. A cord for the cord, I’d said. But my clumsy retrofit was a joke, not a practical solution, and of no help to Lily and her baby. If we are to offer delayed cord clamping to stressed babies born in hospitals who may require medical care, a new piece of furniture is needed in the delivery room.

### The Warmer

The table to which Lily’s son was taken is known as *the warmer*. It is a specially designed free-standing padded surface with heating, oxygen and suction capability. For most babies, these aren’t needed. But sometimes they are. Warmers can be found in almost every delivery suite in every hospital in the US.

The warmer was built in response to a problem. As birth moved from home to hospital in the early-to-mid-twentieth cen-

tury, most women from the 1940s through the 1960s were given a mix of scopolamine, morphine and ether, leaving them unable to reliably hold their babies. This presented a problem: Where would the babies go? For decades, newborns—whether healthy or in need of extra care—were taken immediately to a central nursery and placed in small plastic boxes known as *isolettes*.

Eventually, as times changed and women were awake for the births of their babies, the table was moved and re-fashioned for the delivery room. This table gave nurses and doctors access to the baby for everything from resuscitation to souvenir newborn footprints, while keeping the newborn in some proximity to the mother. Babies would usually go directly to the table at the moment of birth. No one worried about the quick clamp and cut of the cord that was required for a baby to be taken to the warmer because research led doctors to believe it was in fact safest and best for newborns if the cord was immediately clamped and cut at birth.

With the influential writings of Dr. Frédéric Leboyer in the mid-1970s, and with a rising interest in offering babies gentle beginnings, doctors in the following decades began delivering newborns directly to their mother’s bellies. Still, cords were clamped—usually within seconds of the baby’s birth—and dads, now in the delivery room, were invited to cut the cord soon thereafter, a practice that continues to this day. However, if the baby was born with meconium, or in need of extra help with startup, the cord would be cut and the newborn would be taken immediately to the warmer, a practice that also continues to this day. (Leboyer 1975)

New research, however, is up-ending twentieth century beliefs in the safety of immediate cord clamping, demonstrating the value of keeping mother and baby connected, cord intact, for the minutes following birth.

In utero, the cord is an essential part of a baby’s circulatory system. When the newborn emerges at birth, the cord—almost finished with its work, but not quite—transports anywhere from 20 to 40% of the baby’s total blood volume from placenta and cord to the baby’s body (Farrar 2010). In nature, researchers are observing that placental mammals are born down onto a surface below the mother, and a placental transfusion moves a volume of iron-rich

red blood cells, immunologically important white blood cells, and perhaps most important of all, pluripotent stem cells to aid the development of immature organs meant for the newborn (Tolosa et al. 2010). The oxygen-rich blood also provides a secondary source of oxygen at the delicate time of transition from gas/cord oxygenation to lung breathing. Humans are the only mammals who interfere with this process by clamping and cutting the cord almost immediately at birth, depriving their young of a significant proportion of their blood and a backup supply of oxygen. Studies are currently demonstrating that what happens in the minutes following the birth of a human may have an impact on the baby’s health for years to come, especially if that baby is a boy.

In 2011 in the *British Medical Journal*, Ola Andersson, a pediatrician at the Department of Women and Children’s Health at Uppsala University in Sweden, published with colleagues a randomized, controlled study in which a research team looked at the impact of delayed cord clamping on infants born at full term in a high-income society (previous high quality research had focused primarily on premature infants, or those in low-income societies). Andersson found that delaying the clamping and cutting of the umbilical cord for two to three minutes significantly improved iron status and reduced anemia and iron deficiency for the four months they tracked the babies (Andersson et al. 2011). Iron deficiency, the primary cause of anemia, is of concern because it can negatively impact a child’s cognitive and motor development. With a quarter of the world’s population experiencing anemia, the study’s authors postulate that a simple shift in practices at the time of birth may potentially help our next generation start life on the outside with iron levels that support optimal brain development.

In 2015, Andersson and colleagues released a follow-up study with evidence of neuro-developmental benefits from delayed cord clamping that extend well beyond the newborn period. The researchers tracked the children from the original 2011 study for an additional four years. They found that those who had been randomized into the group where the cord was left intact for up to three minutes, as compared to the group whose cords were cut within 10 seconds of birth, showed improved fine motor and so-

cial skills at four years of age, with the most notable benefits found among the boys. “It’s incredible to see what a difference an extra three minutes and one-half cup of blood can have on the overall health of a child, especially four years later,” said Dr. Andersson in an interview with CNN (Ansari 2015).

As impressive as the results of Andersson’s studies are, when a baby is born limp, pale, and showing no effort at respiration, these longer-term benefits of course take a back seat to resuscitation. Current protocols such as those issued by the World Health Organization (WHO) in 2012 endorse delayed cord clamping but state that if a newborn needs help with breathing at birth, the cord is to be cut so the baby can be taken for ventilation. Yet, evidence shows that most babies born in a compromised state also experience important short-term benefits from delayed cord clamping.

If a doctor immediately clamps and cuts a newborn’s cord to take the baby to a warmer for ventilation, that newborn is likely to experience hypovolemia, an abnormally low volume of blood circulating in its body. Mercer and Erikson-Owens (2014) maintain that low blood volume as a result of immediate cord clamping further stresses a stressed baby. They suggest that postponing the clamping of the cord until after ventilating a baby can reduce significant swings in cardiovascular function and help stabilize the newborn. “For the newborn needing resuscitation,” they write, “the blood volume gained from delayed cord clamping or umbilical cord milking has the potential to stabilize the cardiovascular system, reduce the severity of an inflammatory response, reduce or prevent damage from hypoxia/ischemia and help keep the newborn from harm.” The WHO’s 2012 guidelines on optimal timing of cord clamping approve of this practice. The guidelines include a remark stating that for providers with experience in “providing effective positive-pressure ventilation without cutting the umbilical cord, ventilation can be initiated before cutting the cord.” But how might this happen in a hospital?

Delayed cord clamping is easily accomplished when a baby is born in great shape, as most newborns are. The doctor (or partner) may hold the baby below the mother for a minute or so or the doctor may place the baby on the mother’s chest and wait a few min-

**A**n essential traditional midwifery teaching is that an intact umbilical cord aids in resuscitation of a stressed newborn. The still-functioning placental circulation can buy precious time before the baby begins to breathe. The routine practice of premature cord ligation deprives the baby of needed blood volume, making it more difficult for the heart to circulate oxygenated blood to crucial areas of the brain.

Midwives have considered bedside resuscitation as crucial to survival without damage and have always spoken out against severing the cord to take the baby to a separate area for resuscitation. Keeping the baby with the mother, in skin-to-skin contact, keeps the baby warm. Bringing the baby below the level of the placenta can aid in transfer of blood volume or even a transfusion of oxygenated blood which strongly aids resuscitation.

I am very pleased to see some modern studies to confirm this important midwifery technique.

—Gail Hart

utes for the cord to finish its job (Ferrar et al. 2010; Raju 2014). However, if like Lily’s son, a baby is born with an obstetric intervention, such as a vacuum, and a pediatrician requires a close look, or if a baby is born in need of suctioning or resuscitation, this presents a different problem. How will nurses and doctors have access to a baby who requires extra support while simultaneously keeping the baby close enough to keep the cord intact? “Bringing the resuscitation to the mother’s bedside is a novel concept,” write Mercer and Erikson-Owens (2014, 635). “Adopting a policy for resuscitation with an intact cord in a hospital setting will take concentrated effort and team work by obstetrics, pediatrics, midwifery, and nursing” (Ibid.). To this list, I would add “furniture designers.”

#### **Delayed Cord Clamping Requires a New Table for Stressed Newborns**

Lily was aware of the benefits of delayed cord clamping, and like many others, she was asking her providers to leave the cord intact. As a New York City doula, I am seeing more doctors willing to delay cord clamping to 30 seconds. Sometimes doctors will delay up to two or three minutes; midwives will usually do so for much longer. But no one that I’ve observed—obstetrician or midwife—in our New York City hospitals delays cord clamping if there is meconium or breathing difficulties at birth or if a baby is born by cesarean. In New York City hospitals, if, like Lily’s son, a baby has to be seen by a pediatrician or nurse at birth for extra care, he or she does not get delayed cord clamping.

Never mind my idea for a 12-foot extension cord. A new piece of furniture in Lily’s hospital room would have given everyone what they wanted: Lily and her son, an intact umbilical cord; the pediatricians, access to the baby at birth.

The warmer is a product of its time, reflecting twentieth-century obstetrical beliefs and practices. Hospitals are now in need of a new, movable table in every delivery and operating room that reflects our growing twenty-first century understanding of the importance of keeping mother and baby connected for the first few minutes after birth, even when a baby is born with meconium and might require suctioning; even when a baby might be slow to start breathing and need assistance; even when a baby is born by cesarean, and especially when that stressed newborn is a boy.

The Inditherm Company based in the UK has designed a sleek, mobile table called the Life Start System that facilitates access to a baby for resuscitation while leaving the cord intact. On their website, they note that doctors currently have to choose between resuscitation and delayed cord clamping; the Life Start table is an attempt to make both possible at the same time. Like warmers, the table can be fitted with suction capability and other features, but the adjustable height, slim design and mobility mean a baby can receive the placental transfusion while simultaneously benefiting from any necessary suctioning, resuscitation efforts or other procedures. I don’t know



if this particular table is the best solution, but I was pleased to learn that someone has taken up the challenge of creating a new surface for the delivery room. I hope others follow. Should Lily have another baby, I hope the Life Start or another similar table will be available in case the midwife needs to call in the pediatricians and the pediatricians need to see the baby.

In 2014, the American College of Obstetricians and Gynecologists published an editorial in their journal *Obstetrics and Gynecology* in which Dr. Ryan McAdams recommends that babies should be held at the level of the vagina for vaginal births and on the mother's thighs during cesarean births while waiting two to three minutes to clamp the umbilical cord. He cites the benefits of decreased iron-deficient anemia and increased iron stores, including potential valuable improvements in long-term neurodevelopment. In his strongly worded editorial, Dr. McAdams cautions, "Reluctance to implement delayed cord clamping nationally may place thousands of children

born this year at unnecessary risk for neurodevelopment delays, cerebral palsy, and behavior problems." He continues, saying, "Failure to implement beneficial practices, especially evidence-based ones, may constitute unnecessary harm" (McAdams 2014, 549–552).

A new surface in the delivery and operating rooms would help doctors offer this to even those babies who need extra medical support. Surely, with all our technology, we are capable of designing a new table for the delivery room so that most every newborn can benefit from delayed cord clamping.

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