LEAVING WELL ALONE:
A NATURAL APPROACH TO THE THIRD STAGE OF LABOUR

A previous version of this paper was first published in Lotus Birth by Shivam Racahana, Greenwood Press, Melbourne Australia 2000.

A new expanded version of this article, which updates all information and adds extra information about cord blood banking, cord clamping with caesarean birth and a list of recommendations for a gentle third stage, is published in Sarah's book Gentle Birth, Gentle Mothering: The wisdom and science of gentle choices in pregnancy, birth, and parenting.

The medical approach to pregnancy and birth is so ingrained in our culture that we have forgotten the way of birth of our ancestors, a way that has ensured our survival as a species for millennia. In the rush to supposedly protect mothers and babies from misfortune and death, modern Western obstetrics has neglected to pay its dues to Mother Nature, whose complex and elegant systems of birth are interfered with on every level by this new approach, even as we admit our inability to understand or control these elemental forces.

Such medical intervention, which is now being applied to the entire birthing population rather than to those few mothers and babies who genuinely require assistance, has sequellae for pregnancy, labour and birth that are increasingly recognised. These include, for example, the cascade of intervention, where one medical procedure creates the need for another.

However, the sequellae of medical management of the third stage of labour—the time between the baby’s birth and the emergence of the placenta—are less recognised, and perhaps more insidious. At the time when Mother Nature prescribes awe and ecstasy, we have injections, examinations, and clamping and pulling on the cord. Instead of body heat and skin-to-skin contact, we offer separation and wrapping. Where time should stand still for those eternal moments of first contact as mother and baby fall deeply in love, we have haste to deliver the placenta and clean up for the next case.

This management of the third stage has been taken even further in recent years with the popularity of active management of the third stage (see below), which has its own risks for mother and baby. While much of the activity is designed to reduce the risk of maternal bleeding or postpartum haemorrhage (PPH), which is certainly a serious event, it seems that, as with the active management of labour, the medical approach to labour and birth actually leads to many of the problems that active management is designed to address.

Active management also creates specific problems for mother and baby. In particular, use of active management can lead to the deprivation of up to half of a newborn’s expected blood volume. This extra blood, which is intended to perfuse the newly functioning lungs and other vital organs, is discarded along with the placenta when active management is used, with possible sequellae such as breathing difficulties and anaemia, especially in vulnerable babies.
The drugs used in active management have well-documented—and potentially serious—risks for the mother, which are further explored here. Active management also poses risks to the baby, as below, and we do not know the long-term effects of these drugs, which given at a critical stage of brain development.

Hormones in the Third Stage

As a mammalian species—defined by our mammary glands and the milk that they produce for our young—we share almost all features of labour and birth with our fellow mammals. We also have in common the complex orchestration of labour hormones, produced deep within our middle (mammalian) brain, which aid us and ultimately ensure the survival and well-being of mother and baby. (Buckley 2003)

We are helped in birth by three of these mammalian hormone systems, which all play important roles in the third stage as well. The hormone oxytocin causes the uterine contractions that signal labour, as well as helping us to enact our instinctive mothering behaviours. Endorphins, the body’s natural opiates, produce an altered state of consciousness and aid us in transmuting pain; and the fight or flight hormones adrenaline and noradrenaline (epinephrine and norepinephrine, also known as catecholamines or CAs) give us the burst of energy that we need to push our babies out. All of these hormones are also important the baby after, as well as during, the birth process.

During the third stage of labour, the new mother’s uterus continues to contract strongly and regularly under the continuing influence of oxytocin. Her uterine muscle fibres shorten (retract) with each contraction, leading to a gradual decrease in the size of her uterus, which helps to shear the baby’s placenta away from its attachment site. Third stage is complete when the placenta is delivered.

During the third stage, the new mother begins to reap the rewards of labour. Mother Nature provides peak levels of oxytocin, the hormone of love, and endorphins, hormones of pleasure, for both mother and baby. Skin-to-skin contact and the baby’s first attempts to breastfeed further augment maternal oxytocin levels, strengthening the uterine contractions that will help the baby’s placenta to separate and the mother’s uterus to contract down. In this way, oxytocin acts to prevent haemorrhage, as well as to establish, in concert with the other hormones, the close bond that will ensure a mother’s care and protection, and thus her baby’s survival.

The fight-or-flight hormones are also important at this time. During an undisturbed birth, levels of these hormones increase during the transition from first to second stage, and, through their positive influence on oxytocin, catalyse several strong contractions, known as the fetal ejection reflex. This reflex helps the mother to give birth quickly and easily. High levels of these hormones also ensure that mother and baby are wide-eyed and alert at first contact.

However, soon after birth, there is another shift. Hormone levels decline within 15 minutes after the birth and revert to their original negative influence, inhibiting oxytocin release and so decreasing contractions. A warm, relaxed and private atmosphere is therefore necessary at this stage, and will help to prevent postpartum haemorrhage by minimizing levels, and negative effects, of the CA hormones (Odent 1992).
For the baby as well, the reduction in fight or flight hormones, which have also peaked at birth, is critical. If, because of extended separation, these hormones are not soothed by contact with the mother, the baby can go into psychological shock, which, according to author Joseph Chilton Pearce, will prevent the activation of specific brain functions that is nature’s blueprint for this time. Pearce believes that the separation of mother and baby after birth is ‘...the most devastating event of life, which leaves us emotionally and psychologically crippled.’ (Pearce 1992)

One might wonder whether the modern epidemic of stress (a term that was invented by researchers in the 1950s) and stress-related illness in our culture is a further outcome of current third-stage practices. It is scientifically plausible that our entire hypothalamic-pituitary-adrenal (HPA) axis, which mediates long-term stress responses and immune function, as well as short-term fight-or-flight reaction, could be permanently mis-set by the continuing high stress hormone levels that ensue when newborn babies are routinely separated from their mothers.

Odent, in his review of research on the primal period (the time between conception and the first birthday), concludes that interference or dysfunction at this time affects the development of our capacity to love, which is particularly vulnerable around the time of birth, being connected hormonally to the oxytocin system (Odent 1999). Research by Jacobsen (1990, 1997) and Raine (1994), among others, suggests that contemporary tragedies such as suicide, drug addiction and violent criminality may be linked to problems in the perinatal period such as exposure to drugs, birth complications and separation or rejection from the mother.

A crucial role for birth attendants in these times is to ensure that a woman’s mammalian instincts are valued and protected during pregnancy, birth and afterward. Ensuring unhurried and uninterrupted contact between mother and baby after birth; adjusting the temperature to accommodate a shivering mother and to allow skin-to-skin contact and breastfeeding; and not removing the baby for any reason; are all practices that are sensible, intuitive and safe. These practices also help to synchronise our hormonal systems with our genetic blueprint, giving maximum success and pleasure for both partners in the critical function of child-rearing.

The Baby, the Cord and Active Management

Adaptation to life outside the womb is the major physiological task for the baby in third stage. In utero, the wondrous placenta fulfills the functions of lungs, kidney, gut, skin and liver for our babies. Blood flow to these organs is minimal until the baby takes a first breath, at which time huge changes begin in the organisation of the circulatory system.

Within the baby’s body, blood becomes diverted away from the umbilical cord and placenta over several minutes and, as the baby’s lungs fill with air, blood is sucked into the pulmonary (lung) circulation. (Redmond 1965). Mother Nature ensures a reservoir of blood in the cord and placenta that provides the additional blood necessary for these newly-perfused pulmonary and organ systems.

The transfer of this reservoir of blood from the placenta to the baby happens in a stepwise progression, with blood entering the baby during each third-stage contraction, and some blood returning to the placenta between contractions. Crying slows the intake of blood, which is also
controlled by constriction of the vessels within the cord (Gunther 1957), both of which imply that the baby may be able to regulate the transfusion according to their individual need.

Gravity will affect the transfer of blood, with optimal transfer occurring when the baby remains at or slightly below the level of the uterus, until the cessation of cord pulsation signals that the transfer is complete. This process of “physiological clamping” typically takes three minutes but may be longer, or it can be complete in only one minute (Linderkamp 1982).

This elegant and time-tested system, ensuring that an optimum but not a standard amount of blood is transferred, is rendered inoperable by the current practice of early clamping of the cord, which usually occurs within 30 seconds of birth.

Early clamping has been widely adopted in Western obstetrics as part of the package known as active management of the third stage. Active management includes the use of an oxytocic agent—a drug that, like oxytocin, causes the uterus to contract strongly—which is usually given by injection into the mother’s thigh as the baby is born. Active management also includes early cord clamping (but see below) and controlled cord traction, that is, pulling on the cord to deliver the placenta as quickly as possible.

Haste becomes necessary because the oxytocic injection will, within a few minutes, cause very strong uterine contractions that can trap an undelivered placenta, making an operation and manual removal necessary. It has also been erroneously believed that, if the cord is not clamped before the oxytocic effect commences, the baby is at risk of having too much blood pumped from the placenta by the stronger contractions. In fact, the oxytocic drug will hasten the baby’s placental transfusion, as research using the oxytocic drug methylergometrine has shown, but the baby will not get too much blood. (Yao 1968).

And while the aim of active management is to reduce the risk of haemorrhage for the mother, “…its widespread acceptance was not preceded by studies evaluating the effects of depriving neonates [newborn babies] of a significant volume of blood.’ (Piscane 1996 p 137)

Usher (1963) estimated that early clamping deprives the baby of 54 ml to 160 ml of blood, which represents up to half of a baby’s total blood volume at birth. Morley (1997 p33) comments

Clamping the cord before the infant’s first breath results in blood being sacrificed from other organs to establish pulmonary perfusion [blood supply to the lungs]. Fatality may result if the child is already hypovolemic [low in blood volume].

Where the baby is lifted above the uterus before clamping, for example, during caesarean surgery, blood will drain back to the placenta by gravity, making these babies especially liable to receive less than their expected blood volume. The consequence of this may be an increased risk of respiratory (breathing) distress; several studies have shown this condition, which is common in caesarean-born babies, to be eliminated when a full placental transfusion was allowed (Peltonen 1981; Landau 1953).

The baby whose cord is clamped early also loses the iron contained within that blood; early clamping has been linked with an increased risk of anaemia in infancy. A recent review suggests that delayed cord clamping reduces the risk of anaemia by 15% at two to three months, for babies
in both developing and industrialised countries (Van Rheenan 2004). The 30-35mg of additional iron in an average placental transfusion is equivalent to the amount of iron in 100 litres of breast milk (Zloten 2002).

These sequelae of early clamping were recognised as far back as 1801, when Erasmus Darwin wrote:

Another thing very injurious to the child is the tying and cutting of the navel string too soon; which should always be left till the child has not only repeatedly breathed but till all pulsation in the cord ceases. As otherwise the child is much weaker than it ought to be, a part of the blood being left in the placenta which ought to have been in the child. (Darwin 1801)

In one study, premature babies who experienced a delayed in cord clamping of only 30 seconds showed a reduced need for transfusion, less severe breathing problems, better oxygen levels and indications of probable improved long-term outcomes compared with those whose cords were clamped immediately (Kinmond 1993).

Some studies have shown an increased risk of polycythaemia (more red blood cells in the blood) and jaundice when the cord is clamped later. Polycythaemia may be beneficial, in that more red cells mean more oxygen being delivered to the tissues. The risk that polycythaemia will cause the blood to become too thick (hyperviscosity syndrome), which is often used as an argument against delayed cord clamping, seems to be negligible in healthy babies (Morley 1998, Van Rheenan 2004).

Jaundice is almost certain when a baby gets his or her full quota of blood, and is caused by the breakdown of red blood cells to produce bilirubin, the pigment that causes the yellow appearance of a jaundiced baby. Physiological jaundice--that is, jaundice due only to the breakdown of excess red blood cells--is present in almost all human infants to some extent, and may be prolonged by breastfeeding (breastmilk jaundice).

Recent research suggests that bilirubin may be beneficial to the newborn because its antioxidant properties (Seldak 2004). An older study also found that bilirubin has antibiotic properties sufficient to kill the pneumococcal bacteria. (Najib-Farah 1937).

Early cord clamping carries the further disadvantage of depriving the baby of the oxygen-rich placental blood that Mother Nature provides to tide the baby over until breathing is well established. In situations of extreme distress—for example, if the baby takes several minutes to breathe—this reservoir of oxygenated blood can be life-saving. Ironically, standard practice is to cut the cord immediately if resuscitation is needed.

When the cord is intact, the placental circulation acts as a conduit for any drug given to the mother, whether during pregnancy, labour or third stage. Garrison (1999) reports a positive use for this conduit. He notes that Narcan--which is sometimes needed by the baby to antidote the sedating effect of drugs such as pethidine (Demorol) given to the mother in labour--can be administered effectively via the mother’s veins in third stage, flowing to, and waking up, the newborn baby in a matter of seconds.
The recent discovery of the amazing properties of cord blood, in particular the stem cells contained within it, heightens, for me, the need to ensure that a newborn baby gets a full quota. Newborn stem cells are unique to this stage of development, and will migrate to the baby’s bone marrow soon after birth, transforming themselves into various types of blood-making cells.

Cord blood harvesting, which is currently being promoted to fill cord blood banks for future treatment of children with leukaemia, involves immediate clamping, with up to 100 mls of this extraordinary blood taken from the baby to whom it belongs. This is equivalent to loss of 1.5 to 2 litres of adult blood. Perhaps this is justifiable where active management is practiced and the blood otherwise would be discarded, but unfortunately, cord blood donation is incompatible with a physiological (natural) third stage.

Active Management and the Mother

Active management (oxytocic, early clamping and controlled cord traction) represents a further development in third-stage interference that began in the mid-17th century when male attendants began confining women to bed and cord clamping was introduced to spare the bed linen.

Pulling on the cord was first recommended by Mauriceau in 1673, who feared that the uterus might close before the placenta was spontaneously delivered (Inch 1984). In fact, the bed-bound horizontal postures increasingly adopted under medical care meant that spontaneous delivery of the placenta was less likely: an upright posture, which women and midwives have traditionally used, encourages the placenta to fall out with the help of gravity.

The first oxytocic to be used medically was ergot, derived from a fungal infection of rye. Ergot was known to be used by 17th and 18th century European midwives; its use was limited, however, by its toxicity. It was refined and revived as ergometrine (ergonovine US) in the 1930s, and by the late 1940s, some doctors were using it preventatively, as well as therapeutically, for postpartum haemorrhage (Inch 1984).

Potential side effects from ergot derivatives include a rise in blood pressure, nausea, vomiting, headache, palpitations, cerebral haemorrhage, cardiac arrest, convulsion and even death.

Synthetic oxytocin, known as syntocinon or Pitocin (US), mimics the effects of natural oxytocin on the uterus, and was first marketed in the 1950s. Synthetic oxytocin has largely replaced ergometrine for use in third stage, although a combination drug called syntometrine is still used, especially for severe haemorrhage. Syntocinon causes an increase in the strength of contractions, whereas ergometrine causes a large continuous (tonic) contraction, which significantly increases the chance of trapping the placenta. Ergometrine also interferes with the process of placental separation, increasing the chance of partial separation (Sorbe 1978).

Active management has been proclaimed ‘…the routine management of choice for women expecting a single baby by vaginal delivery in a maternity hospital.’ (Prendville 1999 p1), because of the results of the 1998 Hinchingbrooke trial comparing active and expectant (non-active, or physiological) management.
In this trial (Rogers 1998), which involved only women at low risk of bleeding, active management was associated with a postpartum haemorrhage (blood loss greater than 500 ml) rate of 6.8 percent, compared with 16.5 percent for expectant management. Rates of severe PPH (blood loss greater than 1000 ml) were low in both groups: 1.7 percent active and 2.6 percent expectant.

The authors note also that, based on these figures, ten women would need to receive active management to prevent one PPH. They add,

Some women … may rate a small personal risk of PPH of little importance compared with intervention in an otherwise straightforward labour, whereas others may wish to take all measures to reduce the risk of PPH. (Rogers et al p698)

Reading this paper, one must wonder how it is that almost one in six women bled after physiological management, and whether one or more components of Western obstetric practices might actually increase the rate of haemorrhage.

Botha (1968 p 30), who attended more than 26,000 Bantu women over the course of 10 years, reports, ‘…a retained placenta was seldom seen … Blood transfusion for postpartum haemorrhage was never necessary.’ Bantu women deliver both baby and placenta while squatting, and the cord is not attended to until the placenta is delivered by gravity.

Some evidence shows that the practice of clamping the cord, which is not practiced by indigenous cultures, contributes both to PPH and retained placenta, by trapping extra blood within the placenta. This increases placental bulk, which the uterus cannot contract efficiently against and which is more difficult to expel (Walsh 1968).

Other Western practices that may contribute to PPH include the use of oxytocin for induction and augmentation (accelaration) of labour (Brinsden 1978; McKenzie 1979 Stones 1993, Philip 2004), episiotomy, perineal trauma, forceps delivery, caesarean and previous caesarean (Hemminki 1996).

Gilbert (1987) notes that PPH rates in her UK hospital more than doubled, from 5 percent in 1969-70 to 11 percent in 1983-5, and concludes

The changes in labour ward practice over the last 20 years have resulted in the re-emergence of PPH as a significant problem.

In particular, she links an increased risk of bleeding to the following: induction using oxytocin; forceps delivery; long first and second stages (but not prolonged pushing); and epidurals, which increase the chances of a long second stage and/or forceps.

As noted, Western practices neither facilitate the production of a mother’s own oxytocin, nor pay attention to reducing adrenaline levels in the minutes after birth, both of which are physiologically likely to improve uterine contractions and therefore reduce haemorrhage.

Clamping the cord, especially at an early stage, may also cause the extra blood trapped within the placenta to be forced back through the placenta into the mother’s blood supply during the third stage contractions (Doolittle 1966; Lapido 1971). This feto-maternal transfusion increases the chance of future blood group incompatibility problems, which occur when the current baby’s
blood enters the mother’s bloodstream and causes an immune reaction that can be reactivated in a subsequent pregnancy, destroying the next baby’s blood cells and causing anaemia or even death. Such reactions can be largely prevented by the routine use of anti-D products such as Rhogam, but because they are blood products, these treatments can expose the mother to other risks.

The use of oxytocic drugs, which strengthen contractions, either during labour or in third stage, has also been linked to an increased risk of feto-maternal hemorrhage and blood group incompatibility problems (Beer 1969; Weinstein 1971).

The World Health Organization, in its 1996 publication Care in Normal Birth: a practical guide, argues:

In a healthy population (as is the case in most developed countries), postpartum blood loss up to 1000 ml may be considered as physiological and does not necessitate treatment other than oxytocics…

In relation to routine oxytocics and controlled cord traction, WHO cautions: Recommendation of such a policy would imply that the benefits of such management would offset and even exceed the risks, including potentially rare but serious risks that might become manifest in the future.

Recent developments in third stage management

In the five years since this article was first published, there have been some welcome developments in the thinking and practice of third stage. US authors Morley, Mercer (2001, 2002) and others have published papers that have deepened our understanding of neonatal physiology during third stage and the dangers of early clamping for the baby.

In the UK, the influential Cocharane database, the best source of evidence-based medicine, has reviewed the literature on early versus delayed umbilical cord clamping in preterm infants, and concluded

Delaying cord clamping by 30 to 120 seconds, rather than early clamping, seems to be associated with less need for transfusion and less intraventricular haemorrhage. (Rabe 2004)

The Canadian Pediatric Society have recently recommended delayed umbilical cord clamping to reduce the need for blood transfusions in premature babies.

It is also heartening to read the recent joint statement by the International Confederation of Midwives and the International Federation of Gynaecologists and Obstetricians, as part of the Safe Motherhood project. This statement advocates routine active management, but, in a major shift for ICM/FIGO, now recommends that the baby’s cord should not be cut until pulsation has ceased. (ICM/FIGO 2004).

Choosing a Natural Third Stage

A woman’s choice to forego preventative oxytocics, to clamp late (if at all) and to deliver the placenta by her own effort all require forethought, commitment and the selection of birth attendants who are comfortable and experienced with these choices.
A natural third stage is more than this, however. We must ensure respect for the emotional and hormonal processes of both mother and baby, remembering how unique this time is. Odent stresses the importance of not interrupting, even with words, and believes that, ideally, the new mother should feel unobserved and uninhibited in the first encounter with her baby (Odent 1992). This level of non-interference is uncommon, even in home and birth-centre settings. Lotus birth [in which the placenta remains attached to the baby until the cord drops off naturally] gives us another way to “slow the fire drill” after birth, as midwife Gloria Lemay puts it, and allows our babies the full metaphysical, as well as physical, benefit of prolonged contact with the placenta. Like a good midwife, lotus birth secludes mother and baby in the early hours and days, ensuring rest and keeping visitors to a minimum.

Third stage becomes a first meeting between mother and baby, creating a powerful imprint upon their relationship. When both are undrugged and quiet, fully present and alert, new potentials are invoked, and we all discover more about ourselves and the sacred origins of our capacity to love.

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