

## **A post-structuralist feminist analysis of electronic fetal monitoring in labour.**

### **Abstract**

Constant electronic fetal monitoring has become a ubiquitous part of birth management in most high-income countries, both reflecting and creating the social context. A poststructuralist feminist critique reveals that the use of the CTG in birth reinforces and reflects the logic of the separate sovereign self. It thereby creates a rupture in the intrinsic relationality of the mother-fetus and the mother-midwife on a philosophical and physiological level. A reimagining of birth that centres relationality would start by acknowledging the nature of the self as semi-permeable and the being/doing, both/and nature of the mother-placenta-fetus in pregnancy and birth. Intermittent auscultation of the fetal heart in labour is better able to centre the mother-placenta-fetus relation and the midwife-mother relation.

**Key words:** Fetal monitoring; feminist; cardiotocograph; relationality; maternal-placental-fetal unit.

### **Introduction**

Constant electronic fetal monitoring (CEFM) in the form of the cardiotocograph (CTG) has become a ubiquitous part of birth management in most high-income countries, profoundly affecting birth and often leading to interventions (Miller et al, 2016). Like any intervention in birth, it both reflects and creates its social context. I will use a poststructuralist feminist critique to interrogate the role and meaning of the CTG. I argue that the use of the CTG in birth reinforces and reflects the logic of the separate sovereign self (Irigaray and Whitford,

1991, Jones, 2016) and reveals an enactment of the symbolic 'matricide' (Irigaray, 1993a, Green, 2012) and the creation of fetal selfhood (Barat, 2007). The mother-fetus and the mother-midwife are fundamentally relational dynamics on a philosophical and physiological level. The CTG creates a false rupture in these relations. I suggest that intermittent auscultation of the fetal heart in labour is better able to centre the mother-placenta-fetus relation and the midwife-mother relation.

### **The relationality of birth**

Young (1984) describes the pregnant woman experiencing birth as a dialectic state, a fluid and changing relationality as the woman-placenta-fetus becomes mother-baby. The woman neither controls the birth as a conscious *doing* nor does it happen to her as a passive *being*; the birthing woman is the process. The holistic conception of birth articulated by Davis-Floyd (2001) centres the woman's own embodied knowledge and the dynamic processes between the woman and her fetus, and between the woman and her midwife (Kirkham, 2010). However, with the rise in hospital birth, this holistic midwifery understanding of the intrinsic relationality of birth has been steadily undermined by the authoritative knowledge of patriarchal obstetric thinking (Jordan, 1997). Martin (1987) highlighted how in modern hospital births the labour progression and fetal well-being become not a relational process, but rather a mechanistic process or task to be achieved. She draws the analogy of the mother's body as machine, the baby as product, and the midwife as machine operative. The privileged knowledge becomes not the mother's own sense of labour, but quantifiable and disassociated measurements and observations, including the CTG outputs.

### **The CTG: what's the problem?**

In the UK about 90% of women give birth in obstetric-led hospital settings (NHS England, 2021), many monitored by CTG. However, there is scant evidence of the efficacy of CEFM; the most recent Cochrane review (Alfirevic et al, 2017) concluded “no significant differences in cerebral palsy, infant mortality or other standard measures of neonatal well-being” and a rise in the risk of caesareans by 63 per cent. In her work on centralised CTG Small (2020) criticises the ‘fetal distress meta-narrative’ rationale for fetal monitoring in labour. Other critics have focused on the high number of false positives (Grimes and Peiper, 2010), the poor predictive value (Graham et al, 2014), the lack of observer agreement (Sabiani et al, 2016), a rise in iatrogenic effects (Small, 2020), litigation issues (Sartwelle and Johnson, 2014), and a principle of ‘first do no harm’ (Jansen et al, 2013). The rise in interventions resulting from CTG is correlated with higher rates of birth trauma (Perez-Botella et al, 2019) and post-natal depression (Bell and Andersson, 2016), lower breastfeeding rates (Brown and Jordan, 2012) and high costs (Birthplace in England Collaborative Group, 2011).

CTG use abounds; and although women can decline, hardly any do (Hindley et al, 2008). The decision is principally made by professionals using clinical guidelines written within an obstetric paradigm seeking technological, quantifiable solutions to improving neonatal outcomes (Small, 2020, Rattray et al, 2011, Hindley et al, 2006). Although CTG use in ‘low-risk’ labour is not recommended by NICE (2017), increasing numbers of women are on ‘high-risk’ pathways with CTG monitoring. Reasons for this include the proliferation of antenatal screening for ever-more risk factors (Cuckle and Maymon, 2016), rising acuity (Sandall et al, 2011), and rising induction of labour rates (NHS England, 2021). Hospital guidelines tend to recommend CTG for all ‘high risk’ births regardless of evidence or rationale for improved neonatal outcomes, for example for vaginal births after caesareans (Small, 2022a).

Additionally, where guidelines are open to interpretation, there is often a culture of defaulting to CTG. Habitual use by midwives is due partly to cultural norms regarding routine procedures (Greer, 2010, Odent, 2016, Davis-Floyd, 2003, Wagner, 2001), and partly to the dominant risk narrative including fear of litigation (Lyerly et al, 2009, Coxon et al, 2016, Sartwell and Johnson, 2014).

### **The CTG as a rupture of the mother-fetus relation.**

The interjection of the CTG into birth both alters and reflects not only the perception and process of the birth, but also how we conceive of both the mother and the fetus/baby. To further understand the significance of this I draw on poststructuralist feminists including Irigaray (1974) and Jones (2016) and on feminist analyses of the impact of technology in pregnancy and birth on the concept of self (Young, 1984, Mitchel, 2001, Barat, 2007).

Western philosophical thought is based on the premise of an individuated and unified self, that interacts with another one (or many ones); i.e., is bound by a membrane, and inside that membrane is the same throughout (Jones, 2016). Irigaray counteracts this by pointing out the inherently relational nature of humans, and of all living beings (Irigaray, 1985). She explains that to have the idea of the self-originating subject in the world, there has to be symbolic matricide (Irigaray, 1993a, Green, 2012, Jones, 2014). The male subject denies his interdependency, but still needs the mother for his original existence, and carries on needing other people all his life. Getting his needs met whilst denying dependency requires appropriation and exploitation. Imagining the subject as sovereign, therefore, requires erasing the mother, whilst exploiting her labour (Jones, 2016). Irigaray deconstructs Western metaphysics that form the basis of our current 'phallic imaginary'. For example, she

reveals the matricide present in the Greek myth of Athena issuing forth from the head of Zeus; in Plato's lack of acknowledgement of the cave as the womb; and in Lacan's account of the mirror stage of human development (Irigaray, 1974). She reveals that Lacan's 'mirror' is not a flat object that the lone (boy) child gazes into, but the living, relating, loving mother (Jones, 2014). It is the mother's body, work, and engagement in the relation of mother-child, that makes the child a human.

The corporal reality of the living, feeling, mother upon whom life depends, is an inherent philosophical challenge to the idea of the sovereign (male) individual. In the mother-fetus-placental unit, we can see the fallacy of the idea of the sovereign self (Irigaray and Whitford, 1991, Green, 2012, Young, 1984). Experiencing pregnancy and birth gives women a corporeal understanding of relationality. Pregnant or breastfeeding women know they can create life and nourish it from their bodies, know there is a traffic of gasses and nutrients across the membrane of their bodies, and know the dependence of their babies upon them. For them, the idea of the self as being boundaried and self-sufficient seems absurd (Jones, 2016). In her essay on pregnant embodiment Young (1984) exposes how the subjective experience of pregnancy dissolves the idea of the unity of self; the pregnant woman's self is not the same throughout, but contains elements of the 'other'. The fetus and mother are neither not one, nor two ones, but a relational dynamic made up of the mother-fetal unit, containing and transcending them both. This is not only true philosophically, but also physiologically.

The fetus as simply 'contained' within the maternal body does not sufficiently describe the biological reality (Kingma, 2019). The physiological relation of the mother-fetus is evident in the role of the placenta, in chimeric cells, and in the work of midwives. The placenta typifies

this fundamentally relational not-one-nor-two and challenges the concept of a sovereign unified self (Green, 2012, Irigaray, 1993b). It is a mediator; a temporary dynamic organ that exists only due to the relation between the mother and fetus, not aimed at fusing or subsuming one into the other.

Lynch-Lawler (2020) describes the mutual exchange of the 'placental-chimeric-maternal relations'. Chimerism is the transfer of cells and therefore DNA between the mother and fetus during pregnancy, to the benefit of both fetal and maternal health. Kelly (2012) claims these findings challenge the idea of the placental barrier as maintaining the identity integrity of the two separate subjects. Chimerism illustrates the semi-permeable membrane of self in relation to the other and disproves the classic understanding of a separate self in opposition to other selves. We are all part of our mothers, and mothers' part of their children (Kingma, 2019).

### **The CTG as a rupture of the mother-midwife relation.**

Midwives working within the biopsychosocial model (Walsh and Newburn, 2002) demonstrate a tacit knowledge of the maternal-utero-fetal unit in relation. If there are concerns for the fetus or the progress of the labour they work with the woman; encouraging movement, or a left lateral position, ensuring she is hydrated, or using reassuring touch or words. The relationality of the mother-fetus and the mother-midwife are both implicitly understood (Kirkham, 2010). The introduction of the CTG into birth represents a rupture to these relational states to the detriment of the birthing women.

When using the CTG, the fetus appears as an electronic reading, apart from and outside of the woman, as with the ultrasound scan. The expert can read its complicated coding, and

owns a knowledge about that fetus that can then be translated to the mother by attributing selfhood such as the baby is 'not happy' or 'getting tired'. Mitchell (2001) points to the ultrasound as a causal factor in the attribution of selfhood to the fetus, with sonographers attributing characteristics such as 'shy' or 'cooperative'. Barad (2007) maintains that technologies emerge co-currently with, and in relation to, any contemporary discourse or social understanding. She shows how the effective materialization of the fetus opened the way for fetal selfhood to be exploited by the pro-life movement or sex-selective abortion (Taylor and Nicky, 2019).

When a CTG machine is used, the fetus is symbolically removed from the context of the mother-placenta and represented in the form of its heartbeat on the screen. The CTG attempts to represent the fetus as an individual human separate from its relation to its mother. Thus, like Mitchell's (2001) understanding of the ultrasound scan, it is an empirical instantiation of Irigaray's matricide. Illustrated by CTG training manuals often show the fetus as a lone floating subject without a mother. Similarly, a list of 'inappropriate uses of CTGs' in a training course (cited in Small, 2020) did not include the woman declining, concerns about the iatrogenic risks to the women of the cascade of interventions (Alfirevic et al, 2017, Kitzinger et al, 2006), nor the detrimental effect on labour of the mother feeling observed and anxious (Anderson, 2002).

Qualitative research into women's and midwives' experiences of the CTG in labour reveals an alienation and the erasure of the mother. In Davis-Floyd's *Birth as an American Rite of Passage* labouring Diana states:

*“As soon as I got hooked up to the monitor, all everyone did was stare at it... I got the weirdest feeling that it was having the baby, not me” (Davis-Floyd, 2003, p119)*

Davis-Floyd goes on to describe:

*“The sound of the galloping and the vision of the needle travelling across the paper, [give] the illusion that the machines are keeping the baby’s heart beating ... Many nurses have told me so powerful is this illusion that they can’t help but feel that unhooking the woman from the monitor will cause the baby’s heart to stop.” (p121)*

Fox et al’s (2021) qualitative research into CTG usage reveals how it disrupts the corporeal experience of birth as a process from within. They found that women themselves focused on the machine which then externalized their experience of their own labours. It broke the focus of ‘doing the work’ of labour and they report women watching the digits on the screen to determine if they were having a contraction (although they did not specify how many of those women had an epidural which would hamper them from sensing their own labours). The women seem to internalise the container view (Kingma, 2019) by changing their behaviour for the benefit of the CTG itself. They report women focusing on maintaining constant monitoring (a ‘good trace’), to the extent they limit their own movement in labour, saying “I might as well just stay here ‘cause I can see my baby is monitoring well” (p390). It seems in the descriptions almost as if the loss of representation of the fetus on the machine, might somehow endanger the fetus itself. Symbolically moving the fetus from the mother-placenta-fetus relationality, into the machine, gives the illusion its existence is dependent on that machine.



Numerous studies confirm what is obvious to anyone who has been in a birth room with a CTG: the machine takes attention away from the labouring woman (Hindley, et al, 2006, Small, 2021, Fox et al, 2021, Fleming, et al, 2011). This is a far cry from the ‘watchful attendance’ of a midwife being with-woman: attentive and attuned to her clinical, emotional, and spiritual needs and responsive to any subtle changes (de Jonge, Dahlen and Downe, 2021). Medical professionals, partners, and women themselves can’t help but look at the machine and relate to it as if it is the centre of the care. Fox et al (2021) describe doctors and midwives entering a room and going straight to the CTG, looking at it even if they are talking to the woman. They quote the mother of a labouring woman berating her daughter’s caregivers:

*“Are you looking at my daughter’s face, seeing her squinting? Breathing heavy? Tossing and turning? Are you watching this? You are watching the monitor but you are not watching her.” (Fleming, et al, 2011, p114)*

The CTG also gives the midwife significant tasks of adjusting the transducer on the woman’s abdomen to ensure a constant trace, and of analysing and documenting the trace. Fox et al (2021) quote a midwife referring to adjusting a CTG:

*“[I’m] interrupting her focus, interrupting her flow, interrupting her endorphins that are happening... It’s interrupting her labour if not stopping labour” (p390).*

Needing to keep a good trace has its roots partly in the illusion that the machine is keeping the baby alive, but also in understanding the monitor as the tool of measurement and the authoritative source of information about fetal well-being. Any ‘loss of contact’ is taken to mean possible fetal distress (Small, 2020, Hindley et al, 2006), leading to a shift of labour

care to the obstetric team and starting the 'cascade of intervention' (Kitzinger et al, 2006). Small (2020) exposes how CTG technology is based on an ideology that regards the birthing women as passive and risky and the fetus as precious and at risk. Giving the fetus selfhood, as a unit separate from (and possibly in danger from) its mother allows the doctor to come in as the rescuer of the fetus. The mother is reduced to an organic incubator, rather than intrinsically related to, and inseparable from, the fetus (Small, 2022, Kingma, 2019). This ideology is implicated in the ongoing rise in birth interventions, often starting with the CTG. This introduces iatrogenic health problems for mother and baby (Birthplace in England Collaborative Group, 2011), low rates of satisfaction with birth (Keedle, Keedle and Dahlen, 2022) and a negative effect on the postnatal period and bonding, which is ultimately a public health problem (Bell and Andersson, 2016).

## **Conclusion**

Based on a premise that it is possible to quantify, predict and therefore prevent or treat any problems for the mother and the fetus (Downe, Byrom and Topalidou, 2019), hospital guidelines invariably prioritise the 'objective' data from the CTG over the multi-layered, relational knowledge of the mother or the midwife. Her subjective knowing and doing of the pregnancy and the birth, the intimate sense she has of the labour, is relegated to 'acknowledging her wishes' or 'gaining consent' for medical professionals' actions upon her (Dove et al, 2017). The women's own complex subjective relational knowledge is devalued in place of medical objective measurements. The interpretation and responsibility for the labour are transferred from the birthing woman and her midwife to the CTG data and the obstetrician; from the biopsychosocial model of care that can incorporate relationality, to the medical model that cannot. However, the baby and the mother's physical, psychological,

and emotional safety are bound together. The best improvements in neonatal outcomes are shown to be from high-quality relational care - for example, continuity of carer that promotes both midwife-mother and fetus-mother relations supports the mother's overall well-being (Sandal, 2017).

Every maternity report in the last ten years from Kirkup (2015), through Ockenden (2022) to East Kent (Kirkup, 2022), via Five X More (Peter and Wheeler, 2022), reports not listening to women as a central theme. Giving women the chance to express themselves means little if there is a lack of acknowledgement of women's feelings and senses as useful knowledge. The obstetric paradigm, exemplified by the CTG, excludes other ways of knowing; women's own knowing, midwife knowing, the fetus-in-relation-to-mother knowing. But birth is a dialectic; the fetal-placental-maternal unit in a dynamic moment of transformation and partition, "the most extreme suspension of the bodily distinction between inner and outer" (Young, 1984, p49).

The CTG ruptures mother-fetus and mother-midwife relationalities and impacts birth and our understanding of mothers and babies. It undermines women's subjective knowledge; constrains the woman through the wires and the imperative to 'keep the trace'; takes everyone's attention, and gives the midwives tasks other than attending to the woman. It externalises the fetus, gives it selfhood separate from the mother, and encourages deference to the authoritative knowledge of the medical model. The primacy of the CTG relies on and amplifies the ideal of the sovereign unified self, and the symbolic matricide woven into this phallic imaginary. This in turn relegates women to organic containers and ultimately damages the birth process and therefore women's physical, emotional, and spiritual health.

## **Recommendations**

Irigaray (1985), Young (1984) and others suggest an understanding of the world based on relational thought, imaginaries, and logic structures. A reimagining of birth that centres relationality would start by acknowledging the nature of the self as semi-permeable and the being/doing, both/and nature of the mother-placenta-fetus in pregnancy and birth; acknowledging a state of health that includes such dramatic dynamic change (Young, 1984). Specifically, this could be better facilitated using intermittent auscultation in place of CTG in many instances.

Intermittent auscultation (IA) offers comparable neonatal and maternal outcomes to CTG, with reduced caesarean rates across risk categories (Al Wattar et al, 2021, Small et al, 2019). It allows reassurance that the fetus is coping with labour with a beating heart, and can alert caregivers to fetal stress or demise (NICE, 2017, WHO, 2018). It allows the mother to move freely and stay in 'labour-land' or reach out to others without hindrance. The midwife and other birth attendants can give full attention to the mother and the messages she is giving, acknowledging information gleaned from the midwife-mother relation itself, and the mother's knowledge of herself in the process of birth. It does not try to symbolically remove the fetus from the context of its mothers' womb, but honours the mother-placenta-fetus in its wholeness and its unknowable-ness. Counting is only one way of measuring value, and IA allows for integrating the information about the fetal heart rate into a wider range of empirical information for assessing labour.

Guidelines on fetal monitoring use should therefore be revised based on evidence and rationale and should recommend IA over CTG in most cases (Al Wattar et al, 2021, Small, 2022b). Offering CTG to the woman should be discussed as an intervention with the statistics of risks and benefits clearly presented and genuine supported choice given. Challenging the habitual use on labour wards requires midwives to rekindle their respect and openness for the relational, dynamic nature of birth.

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