

The Meaning and Functions of Labour Pain - by Verena Schmid

INTRODUCTION

Physiological birth is linked to the experience of pain. Our fear of pain and the disappearance of physiological birth is linked to our lifestyles. A frenetic pace, the pressure to be efficient, competition, the quest for success, the need for immediate gratification, refusal to suffer: all these factors leave little room for listening, feeling and assuming a proactive attitude in the face of difficulties.

The rapid development of technology has created an illusion of well being and safety and has favoured withdrawal from danger, weakening our ability to adjust to circumstances. We have dismissed the importance of human relations, forgetting that our relationships with others determine the state of our health. As a society, we no longer have the ability to promote good health and have little more capacity to cure illness. What we can do, rather, is assess the damages through sophisticated diagnostic processes (Tew 1998).

Italian midwives are going through a crisis. The caesarean rate has increased dramatically, giving Italy the second highest rate in the world and the highest in Europe. In addition, mortality, but above all maternal and neonatal morbidity, have also increased. The advent of technology in childbirth has not produced any significant improvement in perinatal mortality rates and, if anything, has diminished the quality of mother-baby bonding, producing a negative impact on the life and health of the baby (Tew 1998, Beech 2000, Wagner 2001, Relier 1993). The appearance in recent years of an unprecedented number of problems related to children of all ages should stimulate reflection about this phenomenon.

Natural and pharmacological analgesia express the two polarities of today's midwifery: a tension between the use of technology and the activation of the women's endogenous resources, between empowerment and disempowerment.

THE FUNCTIONS OF PAIN

One of the main characteristics of physiological labour is its rhythmic nature. Rhythm is made of highs and lows, of acceleration and deceleration. Above all, it is individual. This means that it is solely determined by the personality and experiences of the woman giving birth. It is, therefore, highly unpredictable. The aspect of childbirth in which the nature of rhythm is best represented is pain. Pain in childbirth is intermittent. It is worth spending a minute to consider the meaning of this concept in physiology, as in intermittency lies one of the biggest secrets of physiological labouring.

Physical functions of pain

Pain as a guide through childbirth and as protector of the mother and the baby: The physiological function of pain is to protect the body by sending alarm signals to warn it of aggressors, so we can act to protect ourselves from danger. Action is key.

Childbirth is a physiological paradox. The woman, in order to bring another being to life, has to oppose her own body. She has to endure a visceral "attack" on the part of her baby, which goes against every principle of self-conservation. This perceived attack against her integrity puts the woman's body in a state of alarm, signalling danger through pain and inducing physiological defence reactions (such as the "fight or flight" instinct).

The moment of birth for the woman represents, in a certain way, a dilemma between self-conservation and self-abandonment. The process of opening her body to the baby and the strong pressure she experiences on her articulations and her sacral nerves are not, in fact, free from danger, either for the mother or the baby. Pain becomes, therefore, a valuable guide for warning both mother and baby of dangers, giving the woman the possibility of rectifying potentially dangerous situations by acting out an appropriate and instinctive answer.

In the context of labour, every action of the woman translates into "attacking," as in moving towards something, towards the "danger." In a female perspective of physiology, fight means surrendering, opening up (Taylor 2002). The most important physiological answer to labour pain is, as we will see, movement.

Freedom of movement allows the woman to instinctively assume positions in which resistance and compression are reduced. The woman thus protects herself from damage to her pelvis, her cervix and her perineum, while, at the same time, protecting the baby from unfit positions that would cause excessive pressure on his head. By acting this way, the woman can reduce the baby's stress levels, as well as her own pain.

Pain as an endocrine stimulator:

The oxytocin necessary to start labour is produced first by the baby, following placental and foetal hormonal changes; it is subsequently produced by the mother. Stimulation of the cervix, caused by foetal and uterine activity, elicits an initial release of oxytocin. At this point, the prodromal contractions are still irregular and inconstant. For the labour to enter its most active phase, characterised by long and powerful contractions, the body needs regular stimulation, in proportion with a constant and increasing production of oxytocin.

Such regular stimulation is provided by intermittent pain. Pain momentarily creates a peak of acute stress for the woman. Her body reacts by increasing the production of catecholamines, which, if produced in peaks, elicit a paradoxical oxytocin response, stimulating at the same time the production of endorphins. This process starts a gradual increase of contractions, together with an ever-increasing tolerance of pain.

When catecholamines, on the other hand, are produced not intermittently, but constantly, they inhibit the production of oxytocin and endorphins. This can have the effect of slowing down the labour or prolonging the prodromal contractions, without ever resulting in active labour and more acute pain. In many cases of labour "frozen" at 3 cm of dilatation we can observe a permanent state of tension in the mother, often accompanied by symptoms of excessive stimulation of the sympathetic nervous system.

Having considered these facts, we can appreciate how fundamental pain is in childbirth. Translated into practice, this awareness should bring much more attention to the pauses between contractions. Complete relaxation between contractions allows the woman to momentarily re-enter a state of stress-free, deep calm. This state

facilitates the activation of the parasympathetic nervous system and allows the woman's body to prepare for another rush of catecholamine, with subsequent production of oxytocin. Oxytocin stimulates prolactin, which has an important role in protecting the baby's metabolism during labour and helping him in the transition to extra-uterine life. Prolactin also stimulates endorphins. The woman thus has four sources of endorphins (endogenous painkillers): catecholamines, oxytocin, prolactin and the parasympathetic nervous system, which all interact with the woman's body during the breaks between contractions. Because endorphins stop contractions, they are responsible for the rhythm of labour.

The harmonic cooperation of the two autonomic systems is particularly important in childbirth. The sympathetic system is, in fact, responsible for the uterine contractions, while the parasympathetic system regulates the distension of the lower uterine segment and of the cervix. When the two systems are not working together harmoniously, there is an increased risk of spastic contractions without dilatation, of dystocia between corpus and cervix and of uterine hypotonia with so-called "passive" dilatation and unproductive pain. The harmonious alternation of the two systems is, again, favoured by the correct alternation of pain and relaxation.

The midwife can use many techniques to facilitate this alternation and guide the woman through the pain. The midwife can, for example, offer the woman tools to contain the pain, thus transforming it into something the woman is able to cope with, as Dick-Read said in the '30s (Dick-Read 1933).

Another important aspect of pain as endocrinal stimulator regards the production of endorphins. The function of endorphins is not only to reduce the pain but also to induce, in the second part of dilatation, an altered state of consciousness, similar to a hypnotic state. This state facilitates the inhibition of the cortical-rational part of the brain, allowing the functions of the autonomic nervous system to take over. Furthermore, it allows the woman to completely abandon her ego and her own limits, leading her to complete dilatation and enabling her to let go of her baby and welcome him with joy. In the culminating moments of birth, when the baby is out and the stimulation of pain

ceases, the levels of endorphins are so high in the woman's body that she will experience intensely pleasurable feelings of ecstasy, with which she will welcome the baby and begin her experience of motherhood.

To the endorphins are also attributed the qualities of dependence and bonding. Attachment is the soil in which a child can root, grow and live. Physiological birth, thus, establishes the foundation for the baby's survival and growth.

The Psychological Functions of Pain

Pain as the expression of the psychological pain of separation: One of the most emotionally challenging tasks of giving birth for the mother is the necessity of separating from the baby. The baby is perceived by the woman both as an individual and as a part of her. In some ways he is still imaginary, yet he is becoming increasingly real to the mother. Separating from a part of ourselves or from someone very close to us is always a difficult and painful process.

In childbirth, this separation is often partly desired and partly feared. The unknown of the "real" baby contributes to such mixed feelings. The less the mother familiarises herself with her unborn baby during pregnancy, in fact, the more difficult the separation process will be. In this context, pain has a double function. On one hand, it forces the woman toward a necessary separation, leaving no room for hesitation. Since many women would probably never undertake this separation process voluntarily, pain helps them to acknowledge the unavoidable necessity of giving birth, by concentrating all their attention on the parts of the body most involved in the process. On the other hand, physiological pain becomes the expression of the emotional pain of separation. Intermittent pain, the rhythm of labour with its accelerations and slow transitions, marks the time. In separation processes, time is important and individual.

Once again, the midwife can have an important role in facilitating this process. Encouraging a good mother-baby bond even before the birth and encouraging a process that makes the baby more real

and less imaginary to the mother will help make the separation process more fluid, the birth faster and the pain of birth less intense.

Pain as an element of personal transformation: Facing great physical and psychological pain creates fear and anxiety. To endure it for so many hours represents a huge challenge to a woman's strength. This process induces an existential crisis, in which all the woman's emotional resources are mobilized. At the same time, old issues, buried in the subconscious, might suddenly re-emerge.

As well as giving the woman the chance to unload old psychologically painful experiences, this crisis pushes her to her extreme limits, to the point where she is sure of having exhausted all her internal resources. This moment usually corresponds to "surrender," when the woman affirms, "I cannot do this any longer." Yet it is exactly at this moment that she becomes finally capable of abandoning herself to the strong energies running through her body.

Surrender, in this case, translates into going beyond one's personal limits; it represents the last step in the progress of labour and birth, while at the same time it activates new resources in the woman. Her personal strength is increased as a result of this experience, her personal and social status changed forever. This increased personal strength, resulting from an experience at the limits of her capabilities (present even in problematic births), will raise her self esteem and equip the woman with the necessary attributes to be a parent and a guide to her child.

The Energetic Functions of Pain

Pain as a sexual stimulator: According to Reich (1942), orgiastic capacity is the capacity to abandon oneself to the flux of biological energies and to unload accumulated tension through involuntary rhythmic contractions. One of the great strengths of childbirth, which is neither well-known nor widely understood but greatly feared nonetheless, is that it is a powerful expression of the woman's sexual energy. This energy is of an exclusively female nature, independent of men.

A woman who gives birth using all her sexual power will come out of this experience a stronger woman in every sense; her "orgiastic power," as Reich (1942) described it, will be particularly increased. The mediator of thisorgiastic experience during birth is, again, intermittent pain. With its ever-increasing stimulation, it builds tension in the woman's body, particularly in the genital area.

At the same time, endorphins, whose production is induced by pain, help the woman flow with the flux of biological energies, favouring a deeper relaxation in the intervals between contractions. When the tension induced by the contractions reaches a certain level, the woman prepares to unload it through involuntary pressing urges, which shake, at first, her whole body and, at the peak of the contractions, concentrate in the perineum muscles.

The pressure of the baby's head on the perineum is a signal for the woman to start unloading the accumulated tension through further increased involuntary, peristaltic contractions of the perineum and long expirations, which continue until the actual birth takes place. After birth, the energy that had been concentrated in the genital area refluxes into the whole body, eliciting a feeling of gratification and well-being in the mother. These sensations, in turn, rapidly give place to feelings of tenderness and gratitude, welcoming the baby in the first hours after birth.

In conclusion, women who employ their sexual energy to give birth unload the tension of labour at the moment of birth, regain their energies after birth, do not experience shivering after birth and feel satisfied and full of tenderness.

The Affective Functions of Pain

The high levels of endorphins produced during labour and the deep emotional experience induced by the pain stimulate the limbic system of the primary brain, which is responsible for the brain's affective functions. Endorphins thus induce in the woman a "sensitive state" for the birth of her baby. They allow her to concentrate all her

instincts and senses on the imminent birth, enabling her to welcome her baby deep within her unconscious, instinctive part.

This kind of bond is established at the most intimate level of the mother's and the baby's psyches. It is instinctive, biological and indissoluble. It is not possible in births with analgesia. The "sensitive state" is very similar to being in love. In fact, a woman is programmed to fall in love with her child, ensuring the caring process by making it enjoyable. In sum, we can see how the pleasure of having and taking care of a baby comes from the very experience of physiological pain, as does the desire to repeat the experience and have other children.

FROM THE PHYSIOLOGY OF PAIN

Peripheral Sensitive Stimuli of Pain

Local pain results from visceral pains caused by overstretching, lacerations and ischemia of the uterine muscles:

- stretching and microlacerations of the cervix\
- stretching of the lower uterine segment
- stretching of the ligaments and the tubo-ovarian organs
- compression of the nerves of the lumbosacral plexus
- compression of the pelvis joints
- ischemia of the uterine muscle because of metabolic acidosis, uterine hyperactivity or uterine spasm

Central Stimuli of Pain

The experience of pain is affected by negative conditioning (Nikolaiev 1953 and Velvoski 1953 in Chertok, et al, 1969): unfavourable cultural factors; traumatic past experiences or fear-inducing recounts of the experience by others; a difficult relationship with pain; having had a traumatic experience of one's own birth or other physical pains; difficulty with one's role as a woman, etc. It is also influenced by cultural imprinting: how pain is valued in a culture; the social experience of giving birth and of being a woman; the consideration and the treatment given to socially shared or removed

pain; or social support for the experience of pain. The significance of these factors is further explained below.

The Three Physiological Dimensions of Pain

The sensorial discriminative dimension: This dimension is based on neospinotalmic projections from the spine to the thalamus and the sensory cortex; it enables the physical perception of quality and localisation of pain.

The motivational-affective dimension: This dimension is based on the limbic reticular system, receiving information from the multisynaptic system in the spine. The reticular system is connected with all the sensorial and motor systems of the brain, particularly the extrapyramidal ones and with the autonomic nervous system. It is responsible for fight or flight reactions, as well as for reactions of muscular rigidity, fear and autonomic nervous reactions.

The limbic system reacts with pleasure or displeasure, depending on its load. The direct link between the limbic system and the cerebral cortex seems to be responsible for the affective reactions of acceptance or refusal.

The cognitive-valuative dimension: This dimension is based on cortical processes. The cortex receives sensorial and affective information, analysing it and comparing it with past experiences, cultural values and the woman's level of anxiety at that moment. It then activates the sensorial-discriminative and the motivational-affective systems, inhibiting them or exciting them even further.

If the motivational-affective system is suppressed by positive experiences or knowledge, the woman will simply perceive the physical pain, without being further aggravated by reactions of sadness, aversion or autonomic nervous reactions. If the system is stimulated by anxiety or negative conditioning, as described above, the woman is more likely to have a negative experience, with increased perception of pain, even in the absence of a negative stimulus or in the presence of a very small one.

The individual expression of pain is determined by its psychosomatic interpretation, as it is a sensitive perception with an active emotional reaction, and therefore an individual experience (Melzak 1973).

CONTAINMENT OF PAIN

An important objective in the preparation of women for physiological birth is to offer them tools to contain the pain, so that it is reduced to its physiological minimum and not further amplified by fear and tension or medical intervention.

Tools for Containing Peripheral Pain Factors

- deep breathing with long expiration
- vocalization (with an open throat)
- pelvis movement
- capacity of discerning between states of tension and relaxation
- capacity to rapidly relax contracted parts: A relaxed muscular tone sedates the alarm signals pain sends to the brain, thus closing the gate control of pain in the posterior spine. Pain stimuli are perceived at a lower level by the brain.
- movement during labour
- massage, warm packs, warm shower or bath during labour
- respect for the laws of physiology in labour

Tools for Containing Central Pain Factors

- cultural de-conditioning: changing views on the value of pain; creating motivation and choice
- personal de-conditioning: expressing one's lived experiences; positive conditioning aimed at reducing fear of pain and creating expectations appropriate for the individual
- working on rhythms and on active and passive attitudes in relation to pain and other events
- making the existence and the importance of pauses between contractions known to the woman
- favouring instinct and intuition
- positive affective communication with the partner and/or other support figures
- the support of a trusted midwife, preferably known throughout the pregnancy

- keeping the environment where birth takes place intimate and protected, in order to favour the emergence of instinctive behaviour and exclude disturbing and/or aggressive factors

Above all, favouring the production of endorphins.

CONCLUSION

We have seen that pain in childbirth is an often unwanted element, but fundamental to physiological labour. In fact, it activates the woman's resources and makes her stronger, while preparing her to bond with her baby. Pain is fundamental in promoting health. Its suppression creates considerable complications. Most of all, it inhibits the woman's reactive power, making her weaker.

Furthermore, without pain the woman would miss the chance for an important self-discovery experience. A knowledgeable midwifery practice should weigh these factors and consider whether it would not be worth working more intensively on the themes discussed above before the birth, investing more in natural analgesia and therefore in the figure of the midwife.

Surely physiological birth, with its accompanying pain, is only sustainable with the support and guidance of the wise and patient midwife who actually has some time to spare for this process.

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