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Fetal Pain: Do We Know Enough to Do the Right Thing?

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Abstract: *Raising the possibility of fetal pain continues as a tactic to undermine support for abortion in the US and the UK. This paper examines anatomical and psychological developments in the fetus to assess the possibility of fetal pain. Neurobiological features that develop at 7, 18 and 26 weeks gestation suggest an experience of pain in utero. Pain, however, cannot be inferred from these features because they are not informative about the state of consciousness of the fetus and cannot account for the content of any presumed pain experience. We may be confident the fetus does not experience pain because unique in utero neuroinhibitors and a lack of psychological development maintain unconsciousness and prevent conscious pain experience. Before an infant can experience sensations and emotions, the elements of experience must have their own independent existence in the infant's mind. This is achieved after birth through discoveries made in action and in patterns of adjustment and interaction with a caregiver. Recommendations about anaesthetic practice with the fetus and the newborn or young infant should not focus on pain but on outcomes with obvious, and measurable, importance. In the case of an unwanted pregnancy, the health of the woman should guide anaesthetic practice. In the case of a wanted pregnancy, the survival and long-term health of both the woman and fetus should guide anaesthetic practice. In any case, current evidence does not support efforts to inform women of the potential for fetal pain. Any policy to mitigate fetal pain could expose women to inappropriate intervention, risk and distress.*

Keywords: pain, nociception, development, infant, fetal, neuroanatomy, abortion law and policy

THE possibility of fetal pain continues to be raised as a tactic to undermine support for abortion in the US and the UK. In the US, federal legislation requiring discussion of fetal pain before an abortion has been proposed and recently defeated.[1] In the UK, images of the fetus produced by 4-D ultrasonography have fuelled a reassessment of fetal capabilities and suggestions that the fetus can respond emotionally and cognitively, with the implication that the current UK abortion law should require procedures mitigating against fetal pain.[2,3]

This debate raises several important questions about the nature of fetal pain and proper forms of treatment. It has been known for some time that neonates receiving fentanyl anaesthesia in preparation for surgery have improved clinical outcomes compared with neonates receiving nitrous oxide and curare.[4] This finding, and later reports,[5,6] led to a major reconsideration of analgesic practice on neonates. In 1992, the *New England Journal of Medicine* ran an editorial calling on clinicians to "Do the Right Thing" concluding that "it is our responsibility to treat pain in neonates and infants as effectively as we do in other patients".[7] Since then it has become usual to assume that neonates feel pain and this assumption has led inevitably to speculation that the fetus may also experience pain.[8] Consequently there are calls for also reconsidering analgesic practice on fetuses and to provide pain relief for the fetus before an abortion. The assumption of fetal pain, however, should not go unchallenged: the available evidence regarding neuronal development and pain perception raise questions about whether fetal pain is

possible and the appropriateness of legislation to prevent fetal pain.

To address whether fetal pain relief is appropriate, I propose to divide the question of fetal pain into its two component parts: the first addresses the developing neurobiology of the fetus and the second the developmental psychology of pain. With regards to neurobiology, there are a series of important points in fetal development that may be relevant to pain processing. Although fetal development is continuous, new features have been observed at 7, 18 and 26 weeks gestation and used to suggest an experience of pain *in utero*. These new features are tremendously interesting and exciting, but they do not tell us the fetus is experiencing pain. It is here that my critique diverges from some of the current discussion about fetal pain and sentience.[7–9] In my view, it is a mistake to infer subjective experience, including pain, from measures of anatomy, stress hormones and fetal movements, because this approach fails to account for the contents of experience in general, and of pain in particular.

Although we normally think of pain as something automatic and private, and therefore natural, such a view is mistaken. Firstly, pain is dependent on general cognitive processes that characterise our mental lives because pain itself contains sensory and affective components, which we attend to and process. Secondly, when we are in pain we remain self-located within that experience: you know that it is you that hurts. Pain is therefore dependent on psychological developments that support cognition, and self-awareness and these psychological developments need time to appear. Fetal pain is not possible because of the lack of development necessary to support the experience.

The neurobiology of the fetus: anatomical pathways

It is heuristically useful to view the pain system as an alarm system. In this view, a noxious stimulus is an event that activates free nerve endings in the skin similar to pushing an alarm button. The electric cable from the button to the alarm is similar to the connection between the nerve endings and the brain. Finally, the brain is similar to the alarm ringing out pain. Whether the fetus is responding to a noxious stimulus with pain can then be decided in part by asking when the alarm to ring out pain is developed. For this review, a noxious stimulus includes any sensory insult that might normally cause pain in a conscious adult.

Free nerve endings, the "alarm buttons", begin to develop from about seven weeks gestation and projections from the spinal cord, the major "cable" to the brain, can reach the thalamus (the lower "alarm") from seven weeks gestation.[10–12] An intact spinothalamic projection might reasonably be viewed as the minimal necessary anatomical architecture to support pain processing. These facts place a lower limit for fetal pain at seven weeks gestation.

At seven weeks gestation, however, the nervous system is highly immature. There is no indication of a laminar structure, a defining feature of maturity, in either the thalamus or the cortex.[13,14] The external wall of the brain is about 1mm thick and consists of an inner and outer layer with no cortical plate from which cortical layers will later develop. The cell density of the outer layer is much higher than that of a newborn or adult but contains large neurons that resemble those described in the older fetus. Thalamic fiber penetration stimulates development and maturation of these large neurons beginning from about 12 weeks gestation. Without thalamic projections these neurons cannot be processing noxious information from the periphery.

The first projections from the thalamus towards the cortex (the higher "alarm") are apparent from 12-16 weeks gestation. By this stage, the outer layer of the brain has undergone a secondary split to provide for development of the outer cortical rim with the subplate developing below. The subplate contains several neuronal types and is a wide zone developing below the cortical plate in the human fetal brain. The thalamic projections that develop from 12–16 weeks are into the subplate. Spinothalamic projections into the subplate have been described as providing a minimal necessary anatomy for pain experience,[9] but this view has to account for the transient nature of the subplate and its apparent role in the maturation of functional cortical connections. The subplate is generally regarded as a "waiting compartment" where neurons wait before migrating and forming mature cortical connections in the cortical plate above.[15–17] This maturational process gradually causes dissolution of the subplate.

While it has been suggested that the subplate may be a substrate for functional and behavioural phenomenon that occur in the womb,[15]

noxious processing and pain experience clearly extend beyond this timeframe. The dissolution of the subplate is difficult to explain if the subplate provides a mature function. Possibly, the maturational role of the subplate involves placing neuronal connections that are already fully functional. This speculation, however, is inconsistent with what is known about cortical development.[15–17] A lack of functional neuronal activity within the subplate undermines the claim to fetal pain experience before spinothalamic projections arrive in the cortical plate.

Most current theories of pain consider an intact cortical system to be necessary for pain experience.[18–20] In support are functional imaging studies demonstrating activation within a network of cortical regions to correlate with reported pain experience.[20,21] Furthermore, cortical activation can create the experience of pain even without actual noxious stimulation.[20,22] These observations suggest thalamic projections into the cortical plate as a minimal necessary anatomy for pain experience. Currently it is believed that these projections begin to form from 23 weeks gestation, which means the lower limit of fetal pain experience might be 23 weeks. It remains possible, however, that thalamic projections into the cortical plate are developing before 23 weeks and that earlier projections might carry signals indicating injury or potential tissue damage, known technically as nociception.

23–25 weeks gestation is also the time at which the peripheral free nerve endings and their projection sites within the spinal cord reach full maturity,[10] and when noxious stimulation clearly evokes haemodynamic changes in the somatosensory cortex.[23] By 26 weeks gestation the characteristic layers of the thalamus and cortex are becoming visible with obvious similarities to the future adult brain.[16,17]

The subplate reaches its developmental peak at 28 weeks gestation and is followed by massive transfer of subplate fibers into the cortical plate. After that point, the cortical plate undergoes tremendous growth – increasing in volume by 50% between 29 weeks gestation and term.[15]

The neurobiology of the fetus: the hormonal "stress response"

A stress response is characterised by the hormonal and metabolic changes that follow physical injury or psychologic trauma and does not include any conscious components that may accompany the stress response.[24] Anand's seminal work with neonates undergoing surgery demonstrated that fentanyl added to the anaesthetic regimen significantly reduces the stress response to invasive practice.[4] Specifically, plasma adrenalin, noradrenaline, glucagon, aldosterone, corticosterone, 11-deoxycorticosterone and 11-deoxycortisol levels were significantly increased in the non-fentanyl group up to 24 hours after surgery. Reducing the normal stress response was considered to be responsible for the improved clinical outcome of the fentanyl group who required less post-surgical ventilator support and had reduced circulatory and metabolic complications.

More recently, the stress response to invasive practice has been examined in the fetus to demonstrate increased cortisol and β-endorphin circulation following intrauterine needling of the fetus beyond 18 weeks gestation.[25] Further studies have demonstrated that the fetal stress response includes haemodynamic changes in blood flow to protect essential organs, such as the brain, and blunting the stress response when providing opioid analgesia to the fetus.[26,27]

The changes in cortisol and β-endorphin have been interpreted as due to direct fetal hypothalamic-pituitary-adrenal axis (HPA) activation. The presence of an intact HPA axis at 18 weeks gestation is a suitable conclusion, but the HPA axis is a subcortical system and so its activity is not evidence for cortical awareness or conscious pain perception. Stress hormones increase during surgical procedures carried out under general anaesthesia,[28,29] and in brain-dead patients during organ harvesting,[30,31] despite suppression of cortical activation.[32]

Behavioural responses have also been used as indicators of a stress response.[7,33,34] Responses to touch begin at 7–8 weeks gestation when touching the peri-oral region results in a contralateral bending of the head. The palms of the hands become sensitive to stroking at 10-11 weeks gestation and the rest of the body becomes sensitive around 13-14 weeks gestation.[35] These are spinal reflex responses, not dependent on brain activity, and thus not indicators of pain experience.

Shortly after developing sensitivity, repeated skin stimulation results in hyperexcitability and a generalised movement of all limbs. After

26 weeks, this generalised movement gradually gives way to more coordinated behavioural responses that signal improved organisation within the nervous system. Infants delivered at 26–31 weeks, for example, show coordinated facial expressions in response to heel prick that are not present in younger infants.[33] Although these later behavioural responses are not spinal cord reflexes, the responses are still unlikely to involve higher cortical centres. An anencephalic fetus withdraws from noxious stimulation, demonstrating behavioural mediation at a subcortical level.[36] Similarly, infants with significant neonatal neurological injury because of a parenchymal brain injury respond to noxious stimulation with a pattern of biobehavioural reactions similar to infants without brain injury.[37]

Exploring fetal "psychology"

Without verbal report or other direct access to the fetal "mind", inferences about what the fetus may experience depend on interpreting secondary evidence. As discussed above, neuroanatomical pathways necessary for processing pain, similar to those observed in adults and older children, could be in place by 23 weeks gestation. The stereotypical stress response of an adult or older child reporting pain is also observable in the fetus at 18 weeks gestation. Behavioural reactions to noxious stimulation, comparable to the adult or older child, can be observed from 26 weeks gestation. These and other observations support the suggestion that the capabilities of the fetal mind include an experience of pain from at least 26 weeks gestation.[7,9,25]

Inferring fetal pain based on these indirect sources of evidence, however, presents notable difficulties. The first difficulty is to account for the many features of the fetal brain that are not similar to that of the adult and older child. The cell structure of the immature brain differs from that of a mature one, and the fetal brain has several prominent structures that are transient in nature. These structures likely regulate developmental events in the womb that become unnecessary after birth. The thalamic reticular nucleus, for example, appears as inconspicuous in the adult human brain but is prominent in the fetal brain. In the fetal brain, a high packing density of neurons characterises this reticular nucleus, which undergoes cell death after birth. A potential function of the thalamic reticular nucleus could be to suppress fetal arousal through inhibition of thalamocortical activation.[15] Inside the womb, alertness and motion can only cause the expenditure of energy with little possibility of escape or other advantage. Outside the womb, limits on behaviour become detrimental to survival.

Further obstacles to equating the fetal mind with that of an adult or older child are the many environmental factors inherent to the womb that distinguish the fetal and neonatal environment, and have been the subject of review elsewhere.[38] The environment of the womb consists of warmth, buoyancy and a fluid-cushioning of tactile stimulation. The fetus and placenta provide a chemical environment to preserve continuous sleep-like unconsciousness and to suppress higher cortical activation in the presence of intrusive external stimulation. The fetal response to hypoxia and asphyxia, for example, is characterised by apnea, cessation of fetal body movements and a shift to hypometabolic EEG states indicative of profound unconsciousness.[38] In the newborn, similarly threatening situations lead rapidly to full arousal, even in the preterm neonate. In contrast to the buffered fetal environment, the intense tactile stimulation of birth, the resulting separation of the neonate from the placenta as a major source of *in utero* neuroinhibitors, and the onset of breathing facilitate the usually rapid onset of behavioural activity and wakefulness in the neonate. Birth marks the transition from laying down brain tissue in the womb to organising that tissue with regard to the wider world outside the womb.

A final obstacle to equating fetal pain experience with that of an adult or older child is the developmental process that begins immediately after birth. Theories of human development assume the early mind has minimal content that gradually evolves into the rich and effortless experience of older children and adults.[39–42] Although the view of a neonate as a blank slate, or *tabula rasa*, is generally rejected, it is broadly accepted that psychological processes have content about people, objects and symbols, which initially exist outside the brain.[43,44] To uphold that the fetal mind has direct access to pain, it must first be upheld that the content of pain is inherent to neural tissue

available in the womb. That is, at some point during fetal development, there is developing neural tissue directly coding pain experience. It must second be upheld that the developmental process, which enriches psychological experience, does not materially alter the pain experience coded directly into neural tissue.

The content of pain

Few living creatures do not respond to a noxious stimulus, such as a pinch or a burning flame. Light a flame next to humble fruit fly larvae, for example, and they will bend and roll away from the flame.[45] These responses are dependent on the presence of specialised sensory neurons, similar to the free nerve endings in humans, which preferentially respond to stimuli with the potential to cause tissue damage. The larvae clearly have a biological apparatus to detect and respond to potentially dangerous stimulation but do they feel pain?

If pain is the response to noxious stimulation then the answer is yes, the larvae feel pain. This definition, however, would also mean that a thermostat feels pain because it responds to excessive heat by changing its internal state. By this logic, rocks might also feel pain as they respond to excessive force by shattering. Indeed, interpretations of consciousness and pain that view sentience or pain as an intrinsic quality of life or nature lead to suggestions that larvae and rocks have a conscious life.[46,47] Such conclusions, however, seem much too permissive. Furthermore, defining pain based on response may also lead to a tautological understanding of pain: pain is defined in terms of a stimulus considered to be painful because it elicits the pain response. Put simply, pain is defined as pain.[48,49]

In other words, without an accurate definition of pain the conclusion whether the fetus feels pain ends in circularity. An accurate definition of pain is crucial. Definitions of pain that avoid circularity usually include cognition, sensation and affective processes, such as that provided by the IASP (International Association for the Study of Pain). The IASP have defined pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage".[50]

By this definition, pain is no longer regarded as merely a physical sensation of noxious stimulus and disease, but is a conscious experience, modulated by mental, emotional and sensory mechanisms, with both sensory and emotional components. If this "multidimensionality" is the basis of conscious pain experience, can we apply this experience to the fetus? If the fetus lacks the neural systems that support the cognitive, affective and evaluative experiences necessary for pain awareness, and anyway remains unconscious until after birth,[38] then the answer is no. Reinforcing this conclusion, the IASP definition further states that "pain is always subjective. Each individual learns the application of the word through experiences related to injury in early life".[52] By this definition, the neural tissue of the fetus at any stage of development cannot support pain experience. For this reason there have been attempts to challenge and modify the definition of pain.[47] There is good reason, however, to support the definition of pain as originally constructed. It allows us to define and understand pain as an emergent property of social awareness, rather than as a deterministic or spiritual phenomenon.

The developmental process

Without consciousness, there can be a response to noxious stimulation, technically referred to as nociception, but there cannot be pain. Thus, to understand how pain experience in particular becomes possible, it is necessary to understand the origin and course of development of conscious experience in general. It is reasonable to assume that conscious function can emerge only if the proper neural circuitry necessary to carry out that function develops fully and functionally.[51] Changes in frontal cortex activity, for example, arrive when cognitively related behaviours, such as the phenomenon of stranger anxiety and improvements in memory, begin to appear. Similarly the first coordinated motor movements require the further development of specialised motor regions of the brain.[52]

It is also reasonable to assume that conscious function emerges only with suitable psychological content provided in a suitable environment.[39–44] Sensations are not something that we experience raw and then interpret *post hoc*. The interpretation is the experience. Distinguishing sensations from thoughts from emotions requires a conceptual basis to allow the

distinction. Neuropsychological development is more than hooking "alarms" to "buttons", it facilitates conscious experience.

For the development of neural connections and circuitry supporting conscious experience, birth is a critical event. At birth and afterwards there is an increase in sensory input, which contributes to neuronal organisation. Repeated sensory input during this critical period of development results in generation and stabilisation of functional brain circuits and elimination of disused and unused pathways.[51] This internal organisation of inputs is based on sensory input that is external to the brain.

Before an infant can think about objects or events, or experience sensations and emotion, the elements of thought must have their own independent existence in the infant's mind. This is achieved via continued brain development with discoveries made in action and in patterns of mutual adjustment and interactions with the infant's caregiver. The development of representational memory, which allows an infant to respond and learn from stored information rather than respond to material directly available, is a building block, if not a cornerstone, of conscious development. Representational memory begins to emerge as the frontal cortex develops between 2 and 4 months of age. From this point on there is the possibility of tagging in memory, or labeling as a "something", all the objects, emotions and sensations that appear or are felt. When a primary caregiver points to a spot on the body and asks, "Does that hurt?" they are providing content and enabling an internal discrimination and with it experience. This interaction thus provides for content and symbols that allow the infant to locate and anchor emotions and sensations. It is only in this way that the infant can arrive at a particular state of being within their own mind. Although pain experience is clearly individual, a process that extends beyond the individual creates pain.[39,44]

This is likely to strike any reader as strange because it is simply not how we intuitively feel pain to be. Because pain is automatic and personal we feel it to be both natural and private. But the fact that we become able to experience pain as a personal event does not mean that, in the first place, we gained the ability to experience pain entirely on our own. Nor does it mean that the psychological mechanisms by which we experience pain are things that arose within our own brains by some individual biomechanistic process such as neuronal maturation.[39,44]

This is not to deny the fetus and neonate have the neural apparatus to discriminate information. Clearly, the fetus and neonate do not respond to tactile stimuli in the same way as they do to auditory stimuli, for example. Indeed, this discriminatory processing is the raw material for a primary caregiver's assessments of their infant's needs and for the interactions and behavioural adjustments that will occur in the forthcoming months. Innate neural and behavioural discrimination are part of the material for developing experiential discrimination, but experiential discrimination is yet to develop and relies critically on interactions with a primary caregiver, as described previously. For the fetus and neonate, these interactions are still to occur.

The experience of pain, understanding that *I am in pain*, demands that we formulate the experience as involving concepts – "sore", "stabbing", "damage", "threat", "body" – that are themselves rooted in general beliefs that no fetus could have. We can be sure the fetus does not have a conceptual understanding of their sensory circumstances because there is no medium in which to hold, challenge and adjust these concepts.[53] This problem extends beyond a mere lack of language to express and individuate conceptual understanding to a recognition that there is no complex, segmented, mediated psychological self that could harbour conceptual beliefs.

Whether it is possible the fetus can sense a noxious event without understanding that *I am in pain* remains open to debate. There is a profound and profoundly important difference, however, between knowledge about a sensation and sentience. The former is not merely reducible to samples of the latter as there is no fact-based form of painful experience sitting inside the stimulus waiting to erupt inside the fetus. Over 350 years ago, Descartes demonstrated that the eye is a kind of *camera obscura* that inverts entering light. Although Descartes made marked steps in understanding physiology via a mechanical interpretation of bodily existence, he rejected the idea that vision is merely the effect of physical action in the eye and brain. In the *Second Meditation*, Descartes explains that "perception is neither an act of vision, nor of

touch. . . but only an intuition of the mind".[54] The orderly and calculable penetration of light rays through the *camera obscura* exposes the light to the reason of the mind. The senses do not dazzle the mind. We may be sensorily immersed but we do not drown or dissolve in sensation. Our intuition of ourselves as particular things with particular location and experience opens, rather than collapses, into our senses. Consequently, even if an unknowable sentience can logically exist for the fetus, it is a mistake to suggest a continuum or equivalence between passive sensation and active experience.

By this line of reasoning alone, apart from persisting fetal unconsciousness, the fetus cannot experience pain. Not only do its biological development and state of neuroinhibition prevent it from experiencing pain, but the post-birth consciousness and environmental influences, necessary to developing pain experience, are yet to occur.

Clinical and policy implications: surgery

Earlier beliefs by paediatric anaesthetists that neonates and young infants could not feel pain led to an under-utilisation of analgesic medication in these populations.[5,7] Before controlled trials,[4,5] however, there were reasonable concerns about intra-operative hypotension caused by the anaesthesia of infants, and about post-anaesthesia apnea and respiratory depression that might result from narcotic analgesia. There is now enough evidence that clinical benefits outweigh risks from anaesthetic or analgesic intervention during procedures on neonates and infants, regardless of whether evidence supports or denies neonatal pain. Should paediatric anaesthetists return to a view that the neonate and young infant cannot feel pain, the clinical benefits of anaesthetic intervention will remain. A lack of pain experience provides no ethical or practical reason to justify returning to a regimen of lesser anaesthetic or analgesic intervention, unless that intervention itself were shown to be harmful.

Accordingly, if evidence were to reveal that introducing an anaesthetic or analgesic regimen undermines clinical outcomes then a presence of pain experience may still be inadequate to mandate use of that anaesthetic or analgesic regimen. The major clinical outcomes that are important to neonates and their families are survival and normal long-term neurodevelopment.[55] This is in distinction to the trajectory of some policy suggestions where the primary concern of the paediatric health care provider is seen to be treating the stress or pain experience.[56] Such an approach neglects the functional purposes of physiological stress responses to noxious stimuli, including, for instance, modulation of inflammation. Moreover and importantly, in at least some cases stopping pain is not the priority; rather it is preventing death and long-term complications. A primary concern of preventing pain and stress during paediatric health care would, for example, have blocked early efforts to cure childhood leukaemia because the treatments were exceptionally painful.[57]

Several centres have now begun to perform open and closed fetal surgeries for conditions such as lower urinary tract obstruction, hydrothorax, cystic adenomatous malformation of the lung, congenital diaphragmatic hernia and large sacrococcygeal teratomas.[58] The possibility of adverse effects on the fetus when it is undergoing dramatic neural development should temper enthusiasm for use of analgesia and anaesthetic in the fetus undergoing such procedures. The possibility of adverse effects on the fetal environment that may disturb the conditions that promote normal neural development should also temper extrapolation from experiences with premature infants to the fetus. It is tempting to assume that what has been proven to be of clinical benefit in the neonate will also be of benefit in the fetus. However, the greater immaturity of the fetus and its very different hormonal and physical environment[38] indicate that clinical trials should be performed with fetal patients to demonstrate improved outcomes. So far, there is no evidence-based fetal anaesthesia or analgesia protocol defined for these procedures.

Clinical and policy implications: abortion

The medical goals of survival and long-term normal development of the fetal patient should not influence medical decisions when the patient is a pregnant woman seeking an abortion. Under these circumstances, the need for fetal analgesia or anaesthesia can be directly addressed via an examination of the possibility for fetal pain and the effects of fetal pain relief for the health and well-being of the pregnant

woman. The case against fetal pain, as documented earlier, suggests that a requirement to provide fetal pain relief before abortion is not supported by evidence of what is known about the neurodevelopment of systems that support pain. Proposals to directly inject the fetus with fentanyl,[26] or to provide pain relief via increased maternal administration of fentanyl and/or diazepams can be rejected. These procedures increase risks to the woman and costs to the health provider, undermine the interests of the woman, and are unnecessary for the fetus who has not yet reached a developmental stage that would support the conscious experience of pain.

Conclusion

We can be confident the fetus does not experience pain prior to about 23 weeks gestation because the neural circuitry for pain in the fetus is immature. More importantly the developmental processes necessary for experience are not yet developed in the fetus at any gestation before birth. Evidence-based approaches that assess outcomes of greatest importance to the parents and the future of the fetal patient, survival and long-term adverse consequences, should guide anaesthetic practice with the fetus during any procedure intended to benefit the fetus. Current investigations of the possibility for long-term negative outcomes from injury in early life should eventually provide evidence-based guidance for such procedures in future.[59]

It is important to note that an absence of fetal pain does not resolve the question of whether abortion should be legal. Debate over life, rights and the sovereignty of a woman's body cannot be resolved with evidence of fetal immaturity that dictate the conditions of a clinically acceptable abortion. Nevertheless, current evidence does not support efforts to inform women seeking abortions of the potential for fetal pain. Any future legislation to mitigate fetal pain could expose women to inappropriate intervention, risk and distress.

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Résumé

La possibilité de la souffrance fœtale continue d'être utilisée comme tactique pour miner le soutien à l'avortement aux États-Unis et au Royaume-Uni. Cet article examine le développement anatomique et psychologique du fœtus pour évaluer la possibilité de douleur fœtale. Les caractéristiques neurobiologiques qui se développent à 7, 18 et 26 semaines de gestation suggèrent une expérience de la douleur *in utero*. Ces caractéristiques ne permettent cependant pas de prouver que cette douleur existe car elles ne rendent pas compte de l'état de conscience du fœtus ni du contenu d'une perception présumée de la douleur. Il semble assuré que le fœtus ne connaît pas la douleur car des neuro-inhibiteurs *in utero* uniques et un manque de développement psychologique maintiennent l'inconscience et évitent l'expérience consciente de la douleur. Pour qu'un nourrisson expérimente des sensations et des émotions, les éléments de l'expérience doivent avoir leur propre existence indépendante dans son esprit. Cela s'accomplit après la naissance par les découvertes faites dans l'action et les schémas d'ajustement et d'interaction avec la personne qui s'occupe de l'enfant. Les recommandations sur la pratique de l'anesthésie du fœtus et du nouveau-né ou du jeune nourrisson ne doivent pas se centrer sur la douleur, mais sur des résultats d'une importance évidente, et mesurable. Pour une grossesse non désirée, la santé de la femme doit guider la pratique de l'anesthésie. Pour une grossesse désirée, c'est la survie et la santé à long terme de la femme et du fœtus qui doivent la guider. Dans tous les cas, rien dans les données dont nous disposons n'indique qu'il faille informer les femmes de la possibilité de douleur fœtale. Toute politique destinée à soulager la douleur fœtale pourrait exposer les femmes à des interventions indues, des risques et des souffrances.

Resumen

Incrementar la posibilidad de dolor fetal continúa siendo una táctica para debilitar el apoyo para el aborto en EE.UU. y el RU. En este artículo se examinan los desarrollos anatómicos y psicológicos del feto para determinar la posibilidad de dolor fetal. Las características neurobiológicas que se desarrollan a las 7, 18 y 26 semanas de gestación indican una experiencia de dolor *in utero*. No obstante, no se puede inferir dolor de estas características porque no informan sobre el estado de conocimiento del feto y no se les puede atribuir el contenido de una supuesta experiencia de dolor. Podemos estar seguros de que el feto no siente dolor porque los neuroinhibidores únicos *in utero* y la falta de desarrollo psicológico mantienen la inconsciencia e impiden una experiencia consciente de dolor. Antes que un recién nacido pueda experimentar sensaciones y emociones, los elementos de la experiencia deben tener su propia existencia independiente en su mente. Esto se logra después del nacimiento mediante descubrimientos realizados en acción y en patrones de ajuste e interacción con un cuidador. Las recomendaciones sobre la práctica anestésica con el feto y el recién nacido o bebé no deben centrarse en el dolor sino en los resultados con importancia obvia y mensurable. En el caso de un embarazo no deseado, la salud de la mujer debería guiar la práctica anestésica; en el de un embarazo deseado, ésta debería ser guiada por la supervivencia y salud a largo plazo de la mujer y el feto. En todo caso, la evidencia actual no corrobora los esfuerzos por informar a las mujeres del potencial de dolor fetal. Toda política para mitigar el dolor fetal podría exponer a las mujeres a una intervención inadecuada, riesgo y aflicción.