Mother Nature's Most Successful Lie: How psychotherapy concepts can inform obstetrics in the prevention of birth trauma

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Abstract

In the flurry of an obstetric emergency, such as the one I witnessed, the distress of a mother can be left to spiral with dire consequences. Birth trauma is an under recognized consequence of high-risk births that has far-reaching effects for both the mother and her infant. By examining psychotherapy concepts such as Polyvagal theory, the Defence Cascade, the 5-part model, Co regulation and Mentalisation, the development of trauma can be recognised and addressed quickly. Applying these concepts in this clinical context can identify methods of maintaining engagement of the patient throughout the intrapartum period and mitigate the looming burden of Post-partum PTSD.

Introduction

"I will greatly multiply your pain in childbirth, in pain you will bring forth children" [(1)]. In this quote God enacts his punishment upon Eve for her sins. It has informed women for thousands of years that childbirth will be a brutal debt to pay for achieving the coveted goal of bearing children. Despite the generational anecdotes of the realities of childbirth, in 2021 in England and Wales 624,828 live births were recorded [(2)]. Current international statistics reveal that 45% of mothers of live children describe their birth as traumatic and up to 9% of all mothers develop Post Traumatic Stress Disorder (PTSD) directly related to the birthing process. Birth trauma is defined as events that occur in labour that threaten or cause injury or death to the mother or her infant [(3)]. Reflecting on these statistics, I realised there is a possibility that medical students may witness this trauma occurring during their obstetrics and gynaecology attachment. Whilst on placement I followed a patient in labour from the delivery room to theatres for an instrumental trial with the possibility of caesarean section. I came away from this experience having witnessed a trauma take place in a patient's life and have since understood the need to acknowledge the impact birth trauma can have on patients, their families and healthcare staff. By viewing my experience through the lens of psychotherapy I can better understand the emotion and cognitive processes of birth, and how these processes are influenced by birth trauma. From doing so

it may be possible to identify and apply the most relevant concepts of psychotherapy to a speciality in much need of addressing the realities of trauma.

Discussion

Women and their reproductive ability have long been associated with psychological trauma. The first studies of trauma stemmed from an attempt to understand the causes of hysteria, which was almost exclusively diagnosed in women in the later part of the nineth century. Jean-Martin Charcot posited that hysteria was psychological in origin and linked to trauma, particularly relating to a females sexual and reproductive function [(4)]. His work served as a foundation for further contemporaries to build the psychoanalytic movement. The earliest exploration of the psychological consequences of traumatic birth was published in the 1950s, detailing how pregnancy and childbirth can lend a patient to be susceptible to psychological disturbances such as anxiety, depression, and psychosis. By the 1980's the implications of trauma had been recognised and the term PTSD was circulating the medical domain. The feminist movement highlighted the experience of PTSD in women through sexual and domestic violence, and how it was akin to the symptoms displayed by those affected by war [(5)]. The study of birth trauma was cultivated in the psychiatric sphere, but such concepts could be applied to Obstetrics where health providers are present when the trauma occurs.

The study of trauma has advanced enough to begin to explain the psychological and biological mechanisms that result from the immediate impact of trauma. The initiation of trauma begins when the perception of threat is first registered in the thalamus. The thalamus relays information to the brain stem which increases the activity of the autonomic nervous system with a preference for sympathetic nervous system activation. Autonomic nervous system arousal can precipitate physical reactions to trauma such as increase heart rate, sweating, blood pressure and respiratory rate. At the same time the thalamus relays information to the amygdala where the emotion of fear is formed in response to the threat. These processes occur in tandem and offer a quick registration of a threat, offering a greater chance of survival. The cerebral cortex also registers signals from the thalamus and can modulate the emotional the physiological responses. This known as the 'top- down' approach to central nervous system functioning where cognition can modulate the thalamic excitation, effectively filtering between true and false threats. [(6)]. In the case of childbirth, the sympathetic nervous system is already primed as the pain of contractions are perceived as a physical threat to the body.

The registration of threat for the patient in this clinical scenario was not immediate. Following two painful vaginal examinations (VE) in quick succession by the attending and senior midwife a decision to artificially rupture the membranes (ARM) was reached. This was explained to the patient, citing it

would ‘make the baby come quicker’. Once the membranes were ruptured the patient’s pain level initially decreased. I was under the impression that this was a promising clinical sign. However, after monitoring the CTG the midwife called the register as fetal hart rate had not recovered. This prompted another VE from the registrar. At this point the patient had begun to perceive that threat to her or her child was mounting due to the increase in medical interventions. The patient was still fully engaging in her care and could communicate her needs clearly, depending on the medical staff for reassurance and guidance.

Following the VE, the Registrar made the decision to move to theatres for a trial of assisted delivery with the possibility of a caesarean section. This decision ensued a flurry of activity to bring the patient to theatres that signalled to me that this was an emergency. The tension of the situation was steadily growing, and I felt my role of participation in the delivery shift to strictly observation. Although this was an unexpected turn of events, I readily accepted the decision made by senior medical staff as I had limited experience of the birthing process. However, the patient had three previous children, all of which were induced and delivered vaginally with no other complications. Therefore, the patient would have had preconceived idea of how the events of this labour ought to unfold based on her experience. For this patient there would have been an element of rehearsal of events regarding the previous births, solidifying the expectations of the current labour process. This decision to move to theatres could have been perceived as a loss of control during the birth as control was then transferred to the medical team to achieve birth. Ayers and Ford [(7)] identified factors that if present during the intrapartum period could leave a woman vulnerable to developing Post-natal PTSD, even without a history of trauma. These factors included lack/loss of control, fear for the baby’s life/ health and high intensity of pain. This patient experienced each of these during her labour. While being wheeled to theatres various members of staff offered fragmented explanations as to what was happening, primarily that there was a concern over the baby’s wellbeing. All three factors hit in quick succession for the patient, setting her up for the development of birth trauma.

From this point I witnessed a rapid deterioration in the ability of the patient to be receptive incoming information, recall the information and engage with the team. This deterioration could be explained by Stephen Porges’ Polyvagal theory. The theory identifies a relationship between the autonomic nervous system and social behaviour. Environmental ques can activate the parasympathetic nervous system producing socially engaging behaviour in patients or activate the sympathetic nervous system which produces socially defensive behaviour. This system has developed as a compromise between the need to respond to threats and the need to socially engage as humans depending on the environment. Porges’ theory has been used to describe the resistance that a client may display in

psychotherapy towards their therapist. Resistance may be displayed by the client if they perceive the therapy environment as unsafe.

Porges' theory includes 3 levels of autonomic arousal that underpin the behavioural responses of patients in stressful situations. The first is the Ventral Vagal pathway, mostly directed by the parasympathetic nervous system. The patient experiences this state of arousal when the environment is safe. It allows for decision making, problem solving and social engagement. In the clinical context of labour this state may be diminished due to pain, lack of sleep and social factors.

The next state is dictated by the sympathetic nervous system. In this state of arousal in the patient detects a threat, triggering a fight or flight response. This type of response is evolutionary helpful as it is necessary for survival. During this state resistance might be presented by patients and their decision making and communication may diminish. Once a safe environment has been restored, either through fight or flight, the individual can begin to move back into the Vagal Ventral pathway with the threat effectively resolved. The aim of this response is to restore homeostasis to the nervous system and discharge any emotional impact the threat has caused. Although this was an imminent response for this patient, the mechanisms of fleeing or fighting were not available as she was physically incapacitated by the labour and socially incapacitated by the number of staff moving her to theatres.

During the journey between initial threat recognition and move to theatres the patient could have entered the third state of Polyvagal theory called the Dorsal Vagal pathway, colloquially known as 'freeze'. Without the possibility of escape from the threat, the patient becomes so overwhelmed that physical and mental changes occur. Observations of humans in this state note a transient bradycardia and reductions in resting body movements in favour of muscle rigidity. Mentally there is an enhancement of vigilance and attention which heightens the awareness of threatening cues. In this state parasympathetic and sympathetic activation co-exist [(8)]. This can be a transient pre traumatic response that lasts seconds. I didn't observe a dorsal vagal response in this patient. However, if this state had occurred, the patient would have registered the full gravity of the threat facing her and her baby as her perception for threat would have been heightened. Polyvagal theory may be helpful in obstetrics to explain a patient's observable physical reactions to obstetric complications. It can also help staff recognise the onset of birth related trauma. By employing this concept from psychotherapy, obstetric staff could be afforded a unique opportunity to intervene while the trauma is occurring to offset long term sequelae.

However Polyvagal theory holds the assumption that each state occurs in a stepwise sequence as the patient's fear of the threat increases. It also assumes that patients begin in a Ventral Vagal state and descends into a Dorsal Vagal pathway. It maintains a stepwise progression through the assumption

that as fear increases the newly evolved ways of tackling a threat, such as social engagement, fail and older mechanisms are then relied upon. While the overarching themes of the theory held true for this patient, it does not explain the full range of reactions she displayed and lacks in-depth analysis to the mental processes occurring during trauma.

The Defence Cascade could give more insight to further states seen in this patient. The Defence Cascade includes five instinctual responses to threat that can be displayed by a patient who is confronted by current or past trauma. It includes arousal, fight or flight and freeze responses of the Polyvagal theory. However, it also includes 2 further states which may help to explain this patient's deterioration of engagement during labour. Following on from Polyvagal Theory, the fourth state of arousal is Tonic Immobility. In this state a physical detachment from the body occurs resulting in paralysis. This state is believed to occur when the sympathetic nervous system has reached its capacity. Full capacity may be seen when there is no further activity in the amygdala which is responsible for controlling the HPA axis in stress responses [(9)]. This state can also be conceptualised as a subset of dissociation that occurs in trauma, often reported by patients as derealisation and depersonalisation. In dissociative states the amygdala activity decreases and patients describe a feeling of emotional numbness. This is a particularly useful state in this patient's case as a last resort protective mechanism from the overwhelming fear. However, the amygdala also has a role in processing emotionally charged situations like this clinical scenario. When amygdala activity decreases processing cannot occur. Some studies have posited this may be due to cerebral hypoxia caused by bradycardia. At the same time the neurotransmitters that had been produced by the amygdala up until this point have flooded the hippocampus, rendering the retrieval of declarative memory (facts and evets) incapacitated. In the hippocampus short term memories are processed into long term memories. If the patient had entered a state of Tonic Immobility this could explain her inability to move as witnessed by the need for staff to manually move and position her onto the theatre bed. It might also help to explain this patient's inability to effectively retain information about the situation being relayed by staff. This was demonstrated by the patient repeatedly asking for information that had recently been given, asking another question during the previous question's explanation, and speaking in short fragmentary sentences. Entering this state during trauma can increase the risk of developing PTSD after the traumatic event as dysfunction continues in the amygdala and hippocampus after the trauma event. The fifth state included in the Defence Cascade is Collapsed Immobility. Due to overwhelming cerebral hypoxia the patient experiences a vasovagal response. This is more prominent in animal studies as a response to overwhelming threat, often associated with physical restraint. A common example of this response in humans is fainting due to the sight of blood [(10)]. This state was not observed in this patient. The Defence Cascade is a useful concept when applied to

obstetrics. It can give staff the awareness of why communication with a patient may begin to break down and her recall diminish. This may mitigate the feelings of frustration and difficulty felt by staff when trying to communicate with a patient during a crisis. By having this foundation of understanding as to why this state occurs it may allow for greater discussion and learning on how to move forward in maintaining good communication with patients in such distress, thus acting as a protective factor for women in developing birth trauma.

The studies recognise the importance of labour pain in the development of birth trauma. In this case the patient had 3 pervious experiences of labour pains accompanying vaginal deliveries. I observed a fluctuation in the patient's level of pain, with the pain of contraction increasing as her distressed increased. This observation may have a physical explanation. The patient had an IV infusion of Remifentanil, a strong opioid analgesia with a half-life of 3 to 10 minutes. This method of pain relief was administered via a Patient Controlled Analgesia (PCA) system, complete with base line infusion and bolus dosing at the patient's request. However, a study by Van de Velde [(11)] highlighted the possibility of decreased fetal heart rate variability on CTG due to Remifentanil which can be misunderstood as fetal distress. This initial decrease in variability was what prompted the rupture of membranes in order to speed up labour because the CTG had indicated fetal distress. After the artificial rupture of membranes, the fetal heart rate did not recover, promoting the need for a trial. From the moment fetal distress was picked up on CTG, the patient was discouraged from using the PCA to administer bolus doses during contractions. As her distress began to increase and her need for analgesia also increased. The PCA was physically removed from the patients reach to avoid use. From this point onwards, despite a continuous infusion of the analgesia, her pain level hugely expanded as evidenced through screaming, moaning, crying and begging for analgesia. PCA attributes its high patient preference to the subjective feeling of control that it affords a patient in pain [(12)]. It could be possible that the increase in pain for this patient was cognitively influenced as she may have interpretated the manual removal of her access to PCA as also a removal of her control in labour.

Along with this physical contribution to pain there is a well-recognised psychological component to pain discussed in psychotherapy. The physiological sensation of a painful stimuli is carried via nociceptors to the anterior cingulate cortex (ACC) and the anterior insula (aINS). The ACC is part of the limbic system, responsible for emotional regulation and mood, but also direction of a patient's attention. The anterior insula is a core area for the integration of bodily sensation and the emotional and cognitive interpretation of these sensations. Studies have found that emotional states, either positive or negative, influence the descending inhibitory pathways that can modulate the nociceptive signals to the brain [(13)]. However, the process of sensation interpretation and emotional reactions to the sensation are dynamic and influenced by wider factors.

This can be conceptualised by the 5-part model often used in cognitive behavioural therapy. This theory describes how thoughts, feelings, physical sensation, and behaviour are able to influence each-other. However, the situation the patient finds themselves in influences each of these factors. A study exploring the relationship between labour pain and cognitions of women revealed valuable qualitative evidence supporting the concept of cognitive and emotional influence on pain. The study found that women who were able to focus on the present moment with each contraction were able to mindfully accept the bodily sensation and effectively cope despite whatever pain relief was used. This method, similar to the concept of mindfulness, left women with a positive impression of their birth despite the intensity of their pain. However, this state requires focus and distractions from the woman's environment can influence this process, particularly auditory distractions such as alarms and the reactions of those around them. Preferences for vaginal delivery influenced participant's cognitions. They described their contractions as purposeful and felt better equip to accept them as physiologically normal. In fact, in the same study a participant describes a shift in her pain levels following the decision to proceed with a caesarean section, citing that "it felt more painful because I knew I wasn't working towards giving birth" [(14)]. This correlates to what I witnessed in this clinical scenario. The patient's interpretation of her pain may have shifted to pathological instead of physiological as the reaction from those in her environment and their communication informed her perception. The recognition that the pain of labour is greatly influenced by the environment of the patient is an important concept for obstetrics that could benefit from use of Co- Regulation to aid patients in distress.

Coregulation is a concept often used in relation to child and adolescent or couple's therapy. Coregulation describes how humans can receive and project subtle social ques that signal to other humans our internal state, with the goal to advertise our lack of threat towards other humans to achieve social engagement. It encompasses all conscious and unconscious aspects of social behaviour from vocal tone and inflection to posture and breathing. It is often used in conjunction with attachment theory where humans first learn co-regulation from their primary care giver. A child in distress can find the ability to attune to a primary care givers internal state and signals of safety through the process of coregulation. Therefore, attachment style can heavily influence the ability of adults to regulate themselves and others [(15)]. This concept could be useful in this clinical scenario as the patient first picked up the signals of danger from the staff around her. They may have been indicated in their haste of movement, short and medicalised language, and disregard of her distress. As these signals of threat escalated as did the patient's sense of danger. Here the use of coregulation could afford staff the awareness that, although there is an emergency, the patient's mental and

emotional wellbeing is also a priority. By modifying their approach through calmer and singular communication, purposeful pacing and self-regulation staff could prevent overwhelming the patient with signals of danger. However effective co-regulation requires more than a simple modification of behaviours as patients can pick up on genuine empathy for their situation [16]. Therefore, with the assumption that true empathy comes from a relationship that has matured over time, I posit that one midwife should be the channel through which the patient is communicated with. In this case the midwife who had sat with the patient from early labour could have acted as the conduit in which the team communicate through. This role would be responsible for good self-regulation, clear compassionate communication and considering maternal mental wellbeing throughout birth. This designated midwife would allow the patient to hang their need for safety and empathy on one person. This would provide the patient with someone who accompanies them alongside them in their emotional challenge. These skills require self-awareness of internal emotional states and cognitive processes and can be honed similar a therapist who develops these skills for the benefit of their client, but also themselves.

The next time I saw this patient she was extremely distressed indicated by continuous wailing and growling. She was propped up on the theatre bed by 3 staff members who were trying to facilitate the correct position for the anaesthetist to perform a spinal anaesthetic. This was proving difficult as the patient continued to writhe in pain and was not able process the verbal instructions. Conceptualising this using the 5-part model found in CBT, the patient has been severely cognitively impaired and therefore was only perceiving this experience through emotions, physical sensation and thoughts. Polyvagal theory can also explain this patient's behaviour as a reflection of how unsafe she felt, retreating from all social engagement. The patient's only communication during this scenario was a refusal for any medical procedure going forward, including a spinal anaesthetic, assisted delivery or caesarean section. Medical staff found it challenging to communicate their reasons as to why the intervention was necessary. To understand this withdrawal of consent it is worthwhile investigating the concept of mentalisation.

Mentalisation is the ability to consider and understand the mental state of self and others. It encompasses the ability to distinguish between an individual's own mental state and others. It also includes the ability to consider the behaviour of others as a product of their motivations, thought, feelings, intentions, and desires. This ability develops from the attachments experienced in childhood. It is also a cognitive process that is influenced by environmental, emotional, physical, and psychological factors [16]. In this scenario the patient and staff are not able to mentalise each other's

internal state. The patient, because of her level of distress and vulnerability, may have misinterpreting the staff's behaviours as malicious. This may the reason behind her withdrawing consent, and therefore her resistance is a way of reclaiming control of her situation. The staff were seeing this behaviour as obstructive to their goal that they share with the patient for a safe and successful delivery. They may have not considered that her behaviour was a result of the high level of distress she was experiencing at this time. This was evidenced as after a few attempts at inserting a spinal anaesthetic, the Anaesthetist called over the patient's shoulder to the Consultant "Do you just want me to put her to sleep?". To communicate with the patient, the senior midwife placed both her hands on the side of the patient's head and shouted that she needed to have the spinal anaesthetic performed. Perhaps in this moment the concept of mentalisation could have afforded staff the ability to register their own internal state and mentally adjust themselves to align with the patient in order to encourage her participation in the process. This would have dispelled the patient's need to defend herself by withdrawing consent. Eventually consent was gained, and the patient underwent an assisted delivery with no further physical complications.

Addressing birth trauma not only has implications for patients but also their infants. In psychotherapy the attachment style a client shares with their parents often influences their future mental health. Although evidence is limited, a link between postpartum PTSD and anxious attachment styles in children has begun to emerge. This is due to a disruption in the bonding process which begins in pregnancy and continues after birth [(17)]. Studies have particularly focused on the effect of trauma on a parent's ability to mentalise with their child [(18)]. By addressing birth trauma, it may be possible to mitigate the impact that insecure attachment styles have on future adult social functioning and wellbeing.

Reflection

When I visited this patient in Recovery she was physically shaking, detached from her surroundings and could only reply to any verbal interaction that she was cold. Although I was informed this was an effect of the spinal anaesthetic, I sensed that I was observing someone in the immediate aftermath of significant trauma. Instantly I felt guilty. Even though I was attending the birth as a medical student, I felt as though I had intruded on a moment in her life that highly personal and vulnerable. I thought I needed to apologise for being a bystander in this situation with no practical skills to aid her. I also felt that the patient and I shared the idea that a tragedy had occurred for her and a mutual sense of loss over the situation she had found herself in. I didn't feel I could voice these concerns with anyone in

the team because once the emergency was over normality resumed. I was taken aback by how the Registrar congratulated the patient on the birth and happily informed her that she hadn't sustained a perineal tear. I was annoyed how the nurses cheerfully encouraged the mother to breast feed moments after arriving in recovery when the patient didn't have the capacity to have those expectations placed on her. It appeared the mental wellbeing of the patient was sacrificed to achieve the safety of the mother and child, and this was to be celebrated. On reflection I found this insensitive but didn't feel competent enough to voice my concerns. This made me question if my reaction to witnessing this birth was appropriate considering the reaction of other staff members. This experience occupied my mind in the days that followed as I was unsure of how to make sense of it. I settled on writing this essay to reflect on what I had witnesses and learn about the mental health burden associated with high-risk births. I believe that by writing this essay it afforded me some agency to alleviate the feelings of inertia I experienced and pay tribute to the gravity of this patient's situation.

From this experience I learnt how communication and facilitating control for the patient protects their mental health. I was confronted with a case of shoulder dystocia followed by a significant post-partum haemorrhage the week after this event. The situation was similar as I was in the observing role while watching the team focus on their responsibility during the emergency. As the partner was occupied with the child, I noticed a lapse in support for the mother. By reflecting on my previous experience of this case I felt competent enough to step in. I supported her by providing gas and air when needed, speaking to her in a calm and close manner about what was currently happening and relying information to the patient from staff. Although this carried a heavy emotional toll, my motivation was to prevent the level of distress I had previous seen. Despite complications, mother and baby survived. The mother seemed shaken but coherent and remained in an engaging state after the birth. This assuaged some of my residual feelings of the previous birth experience.

On reflection I realise that emergencies are common, with the need for physical concern to take persistence at that moment. This has compounded my *reserve* to pursue Psychiatry as a career, with particular interest in understanding the development of trauma and the treatment of trauma through psychotherapy. From this experience I have arranged to shadow a perinatal mental health team to investigate the long-term effects of birth trauma and the treatment that is offered to these women.

Conclusion

Birth trauma is a common phenomenon that is an unrecognised contributor to post-partum mental health issues. Women who experience a loss of control, medical intervention to achieve birth and uncontrolled pain are at risk of developing Post-Partum PTSD. While physical wellbeing of the mother

and baby naturally take precedence in emergency situations, it is worthwhile considering putting measures in place to forgo a negative impact these situations can have on maternal mental health. Concepts from psychotherapy can assist in creating these measures. An awareness of the stress response and how environmental factors influence this, such as in Polyvagal theory and the Defence Cascade, could provide staff with an early recognition of maternal distress. Integrating skills such as Co-regulation and Mentalisation could improve the relationship between the patient and healthcare staff in emergency situations, leading to more cooperative decision making. The concepts borrowed from psychotherapy could be applied in the obstetrics to address and prevent the development of birth trauma and act as a protective factor for the future mental health of infants born under these circumstances.

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