Should midwives measure blood loss in the fourth stage of labour?

Abstract

The first 1 to 2 hours following delivery of the placenta is defined as the fourth stage of labour and it could be argued that blood loss during this stage is often overlooked by practitioners. In this article, it is suggested that midwives should be considering how much blood a woman loses in the fourth stage of labour as this could enhance our future understanding of third stage management. This paper presents a critical analysis of the evidence surrounding the fourth stage of labour and suggests an altered perspective about expectant, physiological or conservative management. Further research is needed to improve our understanding around the significance of the type of management adopted in the third stage of labour and the impacts of this on blood loss in the fourth stage.

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The fourth stage of labour is defined in some research as the first 1 to 2 hours following delivery of the placenta (Kashanian et al, 2010; Gungorduk et al, 2011). However, in undertaking a literature search, the fourth stage of labour often goes unmentioned. Modern midwifery textbooks define labour as having three stages and do not identify the fourth stage as a stage that exists at all (McCormick, 2009; Harris, 2012). A possible explanation for this could be that the fourth stage is deemed unimportant as it does not need to be managed in any way. However, McDonald (2009) states that the woman and infant should remain in the care of the midwife following the birth of the placenta for at least 1 hour. I believe this should be considered the fourth stage and is a period of time that demands to be considered as a separate phase of labour. I propose this should be incorporated into how we define the physiology of childbirth.

According to Fry (2007) in the UK, active management of the third stage of labour has now become routine practice. Begley et al (2011), define active management as involving administering an uterotonic drug, clamping and cutting the cord followed by controlled cord traction. Physiological management is a 'hands off' approach whereby no drugs are given and the cord is not clamped and cut, and using gravity to assist delivery, the placenta is expulsed by maternal effort (Harris 2001; Fry, 2007; Wickham, 2010; Begley et al, 2011).

In the early half of the 20th century postpartum haemorrhage (PPH) was a major cause of maternal mortality and morbidity and still remains one of the leading causes of maternal death today (Harris, 2001; Centre for Maternal and Child Enquiries, 2011). The interventions of uterotonic drugs, such as Ergometrine, for the third stage, brought about by the medicalisation of childbirth were viewed as an innovative approach at the time and were not seen to pose any risk (Fry, 2007). Despite the side effects of Ergometrine it began to be used more frequently as a preventive measure to prevent excessive bleeding after birth, rather than a treatment in the event of a PPH (Baskett, 2000).

Harris (2001) expresses the opinion that most midwives now see the third stage of labour as potentially hazardous when life threatening events may occur. This medicalised approach could be viewed as a legacy, which demands to be questioned in contemporary maternity care today (Fry, 2007).

This article will critique the evidence currently being used to inform practice in the UK regarding active versus physiological management of the third stage of labour. The current evidence regarding expectant management for women at low risk of postpartum haemorrhage (PPH) will also be evaluated. A literature search was performed using The Cochrane Database of Systematic Reviews, Cinahl, Proquest Nursing Journals, Science Direct and the Discover More search tool to collect data from a wide range of sources. Papers which looked at the fourth stage of labour, blood loss and active versus physiological management were included in the study. Criteria for exclusion included non-peer reviewed papers and articles not written in English. It was originally planned to exclude papers published more than 10 years ago. However, the most recent Cochrane review used older studies to inform current practice (Begley et al, 2011).

Points to consider

In an article by Wickham (1999), she recalls her observations from a time when she worked on a hospital postnatal ward. Wickham observed that following expectant management the women she was caring for did not seem to lose as much blood in the first few hours after birth as women who had had active management (Wickham, 1999). Wickham (1999) proposes that active management delays blood loss until the effects of the oxytocic wear off because the uterotonic drugs cause a sustained contraction, suggesting that the women

who have active management maybe losing more, or the same amount of blood in total as women who have a physiological third stage. This blood loss goes unobserved because it is after the placenta has been delivered—in the fourth stage of labour.

The article presented by Wickham (1999) is anecdotal and therefore based on observation rather than facts and scientific studies. However, it provoked thoughts around blood loss in the fourth stage of labour and whether this should be measured. An important consideration is whether the type of management adopted for the third stage impacts on blood loss in the fourth stage of labour. Although there are disadvantages to anecdotal evidence, Cluett and Bluff (2006) state that clinical experience is a fundamental source of knowledge to midwives and that learning is acheived through observation and questioning. The paper by Wickham (1999) is well written and provides a clear rationale why practitioners need to enhance their understanding of third stage management and the amount of blood lost in the fourth stage. It could be said that the opinion paper is outdated because it was published in 1999. However, we are currently using even older evidence by Prendiville et al (1988) and Rogers et al (1998) to inform our practice today about third stage management.

Blood loss in the fourth stage—current research

A review of the literature found only one study that looked into blood loss in the fourth stage of labour. Kashanian et al (2010) conducted a randomised controlled trial in Iran to compare active and expectant management of the third stage of labour and the amount of blood loss measured during the third and fourth stages. According to Hek and Moule (2006), all research should have justification and enhance knowledge. Kashanian et al (2010) provide a clear rationale for undertaking their research by explaining that previous research has not looked at blood loss in the fourth stage of labour. The study used a sample size of 200 women in a maternity unit in Iran. However, Rees (2012) suggests this sample size is too small and is a limiting factor of the study. The intervention group (n=100) had active management of the third stage with 10 IU of oxytocin injected intramuscularly and blood loss was measured at birth using collecting devices, drapes and sheets which were weighed to estimate total blood loss (Kashanian et al, 2010). In the control group the placenta was expulsed by the woman (n=100) and blood loss measured in the same way (Kashanian et al, 2010). However, after delivery of the placenta the women in the control group received an oxytocic (an infusion of 10 IU of oxytocin in 500 ml of normal saline). This is not a physiological third stage (Fry, 2007; Wickham, 2010). Therefore the title of the research, 'Comparison of active and expectant management of the third stage of labour and the amount of blood loss during the third and fourth stages of labour: a randomised controlled trial' is misleading (Kashanian et al, 2010; Bowling 2009). Furthermore, there is also no mention within the abstract that the control group received an oxytocic drug (Kashanian et al, 2010).

The conclusions drawn from this study are that active management did not reduce the amount of blood lost during the third stage of labour but it was associated with a decrease in duration and an increased blood loss during the fourth stage (Kashanian et al, 2010). Although the authors achieved significance in their analysis regarding blood loss in the fourth stage of labour as recommended by Cluett (2006), in my opinion this research cannot be used to inform practice because it is flawed. Although the hypothesis that there is a reduced blood loss in the fourth stage of labour for women who have a physiological third stage compared to those who have active management seems plausible (Wickham, 1999), Kashanian et al (2010) cannot be used as evidence to support this theory.

Should women at low risk of PPH have active management?

The main reason the National Institute for Health and Care Excellence (NICE) (2007) and the Royal College of Obstetricians and Gynaecologists (RCOG) (2009) currently recommend active management of the third stage with uterotonic drugs is to reduce the risk of bleeding. Clinical management of the third stage of labour directly impacts blood loss experienced by women. However, robust research needs to be developed to investigate the impacts of this on the amount of blood loss in the fourth stage of labour. The Code set out by the Nursing and Midwifery Council (NMC) states that midwives must deliver care based on the best available evidence (NMC, 2008). Although it is extremely important to know the recommendations from current guidelines, midwives today need to base their perspectives on best evidence and their ability to critically analyse it.

Fahy et al (2010) aimed to examine if physiological care in the third stage of labour is safe for women at low risk of PPH. A critique of this study is justified because no previous study has focused solely on women at low risk of PPH (Fahy et al, 2010). This is important because the current guidelines for third stage management (NICE, 2007; RCOG, 2009) are a blanket policy for all and do little to individualise

care for women (NMC, 2008). NICE guidelines advise that women at low risk of PPH who request physiological management should be supported in their choice (NICE, 2007). However, the word 'request' would suggest that a woman would have to ask to have a physiological third stage and this leads to questioning whether this particular guideline is advocating informed choice for the woman.

Fahy et al (2010) performed a retrospective cohort study comparing holistic physiological care and active management of the third stage of labour. The authors examined third stage management in women giving birth at a maternity unit in hospital (n=3075) with women birthing at a freestanding, midwifery-led unit (n=361) with a total of 3436 participants. The fact that this is a retrospective study could potentially be a limitation as the researchers did not have control of the interventions (Bowling, 2009) and the variation in sample sizes between the two units (Fahy et al, 2010).

There were large differences between third stage management techniques at the units. Low risk women at the free standing midwifery-led unit were more likely to have expectant third stage management (Fahy et al, 2010). Of the women who gave birth in the birth centre, 86.8% had a physiological third stage compared with just 3.5% at the hospital (Fahy et al, 2010). Current UK guidelines state that women who give birth at home or in a birth centre are more likely to have a normal birth with less intervention (NICE, 2007) and Fahy's study (2010) is further evidence of this.

Considering both units together, 11.5% of women who had active management experienced a PPH whereas PPH occurred in 1.7% of women who had a physiological third stage. The risk of having a PPH was 7 to 8 times higher if the woman had active rather than physiological third stage management (Fahy et al, 2010). These findings are in contrast to the current Cochrane Review (Begley et al, 2011). This study gives evidence that expectant management, if conducted by practitioners experienced in its approach, can lead to reduced blood loss (Fahy et al, 2010). Some readers may dismiss the findings from Fahy's study (2010) because the data was collected by a non-randomised design. However, according to Kumar (2011) a cohort study has the advantage of reflecting actual practice.

Do we have the best evidence around how to manage the third stage of labour?

A Cochrane review performed in 2011 aimed to compare the effectiveness of active versus expectant management of the third stage of labour (Begley et al, 2011). Begley et al (2011) included seven studies in their review with a total of 8247 women, giving a large total sample size consistent with quantitative research (Kumar, 2011). The selection criteria for the review included randomised and quasi-randomised controlled trials comparing active versus expectant management of the third stage (Begley et al, 2011). Spiby and Munro (2010) state that a randomised controlled trial is often viewed as the 'gold standard' in quantitative research. However, a limitation of the review by Begley at al (2011) is that the trials did not all use the same randomisation process.

There were significant differences between the studies (Begley at al, 2011). One study took place within a low income country while the other six were conducted in high income countries (Begley et al, 2011). The women in the studies could not be compared equally as there were women at both high and low risk of PPH (Begley et al, 2011). Variation within the Cochrane review leads to concerns about the conclusions drawn collectively from the studies (Holloway and Wheeler, 2010). For example, one of the trials by Jerbi et al (2007) included in the review had a sample size of 130 women in comparison to the other trials, all of which had over 1500 participants. A large sample size is usually associated with quantitative investigations because this type of research aims to generalise the findings to the whole population (Rees, 2012). A concern would be how the outcomes of the study by Jerbi et al (2007) could be applied to the whole population when the sample size was this small.

The authors acknowledged that the research trials all took place in units where active management of the third stage was routine practice (Begley et al, 2011). However, standardised practice was not established and it is not known how competent the practitioners were in physiological management, which may have influenced the outcome of some of the trials. Begley et al (2011) also emphasised differences between trials in the protocols used for third stage management, which may have occurred due to differences between settings. This questions whether the studies could have accurate conclusions drawn from them collectively when there are clear differences.

The Cochrane review concluded that active management reduced the risk of primary haemorrhage at the time of birth (defined as greater than 1000 ml) for all of the women in the studies (Begley et al, 2011). An adverse effect of active management was identified by the authors, which saw an increase in the number of women readmitted to hospital with vaginal bleeding (Begley et al, 2011). A suggestion would be that if blood loss had been measured in the fourth stage of labour, it is possible these women may have been identified earlier

rather than being readmitted to hospital. Although the authors conclude that active management reduces the risk of primary PPH (Begley et al, 2011), the women readmitted to hospital should be taken into account. Critique of the studies used in the review by Begley et al (2011) has been substantial (Royal College of Midwives, (RCM), 2012). This information, despite its age is still being used to inform our practice today (Begley et al, 2011)

In the trial by Prendiville et al (1988), 53% of the women randomised to the physiological management group received some component of active management (*n*=849). Comparisons between active and expectant third stage management would be difficult to draw from this study due to the high numbers of women in the physiological group who received active management (Prendiville et al, 1988). An interim analysis was conducted due to concerns that the incidence of PPH was notably higher in the physiological group (Prendiville et al, 1988). Following the interim analysis the authors changed their exclusion criteria and three extra reasons for exclusion from the trial were added to the researcher's protocol (Prendiville et al, 1988). These extra reasons for exclusion were any woman who had received ritodrine within 2 hours before delivery, receiving anticoagulant treatment and any condition necessitating active management (Prendiville et al, 1988). The authors give an example of one such condition as the presence of meconium (Prendiville et al, 1988). Changing the selection criteria after the interim analysis meant that women who were eligible to take part at the beginning of the study were no longer able to participate (Prendiville et al, 1988). According to Bowling (2009) the process of randomisation is the assignment of people to experimental and control groups at random. The process of randomisation created a major flaw because a disproportionate number of haemorrhages had occurred in women who were not suitable for physiological management despite random allocation to this group (Prendiville et al, 1988). As a result of skewed findings Prendiville et al (1988) recommended a policy of active management to reduce the incidence of PPH.

The Hinchingbrooke trial (Rogers et al, 1998) was undertaken at a hospital where the philosophy of care was to help women give birth with minimum intervention, including during the third stage. However, in questionnaires completed by 92 of the 153 midwives taking part in the research, 84% felt very confident regarding active management whereas only 42% felt the same about expectant management. Only 64% of women allocated to the expectant management group had a physiological third stage whereas in the active management group 93% of women had this type of management. (Rogers et al, 1998). PPH was defined as a blood loss greater than 500ml and was significantly lower with active rather than expectant management (Rogers et al, 1998). However, 2.6% of women who had expectant management and 1.7% of women in the active management group had a blood loss over 1000ml. These figures are not statistically significant (Rogers et al, 1998). This leaves the reader questioning whether the disparity in definition of PPH made a difference to the results (Rogers et al, 1998). According to Cluett (2006), in quantitative research the sample size needs to be large enough to represent the population and achieve significance in the statistical analysis. This leads to questions about the power calculation which underpins the research.

> "Practitioners should measure blood loss in the fourth stage of labour to begin to understand how the intricate management of the third stage can impact on women"

Conclusion

The fourth stage of labour is a period of time which demands to be investigated by rigorous and methodologically sound research approaches. There is a lack of high quality evidence to support best practice around third stage management (Wickham, 1999; Kashanian et al, 2010; Begley et al, 2011). However, if the woman is asymptomatic the relevance of the amount of blood lost should be questioned, especially if at low risk of PPH.

In the UK today few women die in childbirth; however, PPH still remains a cause of maternal death (Centre for Maternal and Child Enquiries, 2011). Active management is not of benefit to all women according to Edwards and Wickham (2011). Rigor around evidence is questionable therefore it is proposed that practitioners need to reflect and critically analyse their approach to third stage management, incorporating a fourth stage of labour when caring for low risk women. There is currently no extensive research that associates the third stage and blood loss in the fourth stage of labour that has been performed in the home environment. I feel that this would provide midwives with a wealth of knowledge when caring for low risk, healthy women.

Although there seems to be a plethora of research around third stage management, most of the studies focus on the amount of blood a women loses during, and immediately after the birth of the placenta (Begley et al, 2011; Edwards and Wickham, 2011). Practitioners should measure blood loss in the fourth stage of labour to begin to understand how the intricate management of the third stage can impact on women. It is important that practitioners are both competent and confident with third stage management in order to offer women informed choice and an improved outcome. BJM

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Key points

- Practitioners need to consider the impact of third stage management on blood loss in the fourth stage of labour
- The evidence that we are currently using to inform our practice today regarding third stage management is outdated and flawed
- Physiological third stage should be considered as routine practice for low risk, healthy women
- Further research needs to be undertaken to improve our understanding on how much blood a woman loses in the fourth stage of labour relating to the management of the third stage