

When will we change practice and stop directing pushing in labour?

By Alison Cooke

Abstract

There have been many papers written about the issue of pushing in the second stage of labour, and yet anecdotally some midwives are still restricted by labour ward policies of timed second stages, active pushing once fully dilated and subsequent interventions when time runs out.

Research is fraught with frustration on occasion; some studies stop early because of preliminary findings indicating obvious benefits, while others, although offering beneficial findings, are often ignored and traditional practices continue. This article considers the research supporting spontaneous pushing in labour; it asks why change is so difficult and then considers what could be done to encourage a change in practice.

The article finds that women should be allowed to push spontaneously. A change in clinical practice is recommended. It considers whether further research is necessary, or whether a change in the definitions used for the stages of labour would allow midwives to let women dictate when to push.

A literature review was undertaken to determine any consistencies or inconsistencies in the literature, identify any gaps or flaws in research available and consider recommendations for clinical practice and future research. The review aims to be unbiased.

When the Royal College of Midwives (RCM) launched the 'Campaign for Normal Birth' in 2005, one of the first issues to be considered by the steering group was directed pushing in the second stage of labour (Byrom and Downe, 2005). Directed pushing is common practice by many midwives (Roodt and Nikodem, 2002), and yet before midwives, women successfully birthed their babies unaided (Sutton, 2000). These words of directed pushing might sound familiar:

'you're fully dilated, you can push...hold your breath...push...keep going...chin on your chest...push down into your bottom...count to ten...quick breath in and push again...'

The aim of this review is to consider the literature in order to

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determine which pushing method constitutes best practice, as it is the role of the midwife to give care that is evidence-based (Nursing and Midwifery Council (NMC), 2008).

Search strategy

The preliminary search for randomized controlled trials (RCTs), being the 'gold standard' (Gallo et al, 1995) of research studies, yielded several papers. Databases searched included Cochrane, CINAHL, BNI, Embase, Medline, PubMed, TRIP, OMNI, NeLH and PsycInfo. A MIDIRS search confirmed saturation as papers were duplicated. The National Research Register confirmed no ongoing trials and SIGLE confirmed no unpublished work. Various professional journals were hand-searched to find any relevant papers with obscure titles. Textbooks generated from a library catalogue search were hand-searched, although findings were older.

The Internet search engine Google did not generate any new/relevant information. Department of Health (DH), Royal College of Obstetricians and Gynaecologists (RCOG), RCM, World Health Organization (WHO) and National Institute for Health and Clinical Excellence (NICE) websites were accessed for recommended practices/guidelines.

The initial search was begun in 1995, however, owing to two RCTs (Parnell et al, 1993; Thomson, 1993) and one prolific author (Roberts et al, 1987), this was amended to 1987. Older research discovered during review was obtained to aid comprehension. Descriptive papers were included if relevant and only English-translated papers, because of financial and/or time constraints. The number of papers generated was 105, of which 55 were suitable for consideration. As the subject area is so vast exclusion criteria were defined for studies relating to epidural anaesthesia, pushing before full dilatation, instrumental/operative outcomes (because of the focus on midwife-led care) and maternal satisfaction. Maternal satisfaction is a subject which requires review in its own right. A meta-synthesis would be appropriate.

The various evolving themes were: duration of second stage of labour, perineal trauma and episiotomy, and fetal wellbeing. These themes will be reviewed.

Literature review

Duration of the second stage of labour

The second stage of labour is defined as the period from full dilatation of the cervix to expulsion of the fetus (Enkin et al, 2000). Timing therefore relies on identification of full dilatation by vaginal examination. Consequently there is wide variation in duration based on the carer's decision to examine or not. Some midwives may refrain from examining the woman

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to avoid the ‘clock starting’ for the second stage (Petersen and Besuner, 1997; Niesen and Quirk, 1997), however, Roberts (2002), reviewing the evidence surrounding management of second stage, suggests that this may result in failure to diagnose lack of labour progress and necessary intervention. Roberts also suggests that the obstetric team should consider not only time elapsed since full dilatation, but also time spent actively pushing, and ongoing maternal and fetal condition.

The primary rationale for directing women to push is to shorten the second stage (Barnett and Humenick, 1982; Petersen and Besuner, 1997). Barnett and Humenick (1982) suggest that limiting the second stage minimizes risk to the fetus. As health trusts may have policies determining duration of second stage related to research by Friedman (1954), midwives may feel under pressure to help a woman deliver her baby quickly before doctors make a decision to intervene when time allowed has elapsed. What is surprising is that these limits are in place at all when evidence suggests that duration of the second stage should be flexible providing there is progression and maternal and fetal well-being are satisfactory (Petersen and Besuner, 1997; Zhang et al, 2002; Cesario, 2004).

The RCM (2005) state that there is no good evidence to justify arbitrary time limits on the length of the second stage of labour. Contrary to this, a retrospective cohort study (Cheng et al, 2004) of 15 759 nulliparous, term, cephalic, singleton births found that, although the length of second stage is not associated with poor neonatal outcome, a prolonged second stage of greater than four hours is associated with increased maternal morbidity, including extensive perineal trauma; and for a second stage of greater than three hours, postpartum haemorrhage and chorioamnionitis. These results were statistically significant after controlling for confounding variables of operative delivery, episiotomy, birth weight and fetal position. Roberts (2002) suggests that postpartum haemorrhage as an outcome should be treated with caution as estimated blood loss of >500 mls was found to be statistically significant only in women who used a birthing stool. Roberts suggests that the way blood loss is collected in a container under a birthing stool may have allowed more accurate assessment.

In her recent re-evaluation of Friedman’s research using a descriptive and anonymous cross-sectional survey, Cesario (2004) found primigravid women could experience 8 hours in the second stage and multigravid women 4.5 hours with good birth outcomes. Zhang et al (2002) found that the average duration was 3 hours. Although the advantage of surveys is the relative ease of recruiting a large sample, Cesario had a return rate of only 17.8%; motivation to respond being

the major disadvantage of this method. Kadar et al (1986) cautioned that although evidence does not support imposing time limits on second stage of labour, they do not support an open-ended approach to management as long-term consequences of such management are unknown.

The NICE (2007) guidance on intrapartum care recommends that women should be guided by their own urge to push. Nulliparous women are expected to give birth within 3 hours of the start of the active second stage of labour, which is defined as when:

- The vertex is visible, or
- Expulsive contractions are evident after confirmation of full dilatation, or
- Active maternal effort is evident following confirmation of full dilatation.

Referral to the obstetric team is recommended when 2 hours of active second stage have elapsed, in order for them to make a decision regarding instrumental delivery. Multiparous women are expected to deliver within 2 hours and should be referred after 1 hour of active second stage.

Some research (Fraser et al, 2000; Roberts, 2002) suggests a ‘rest and descend’ policy, comparable to the way women using epidural analgesia are advised currently, allowing fetal descent before expulsion effort. This recommendation also arose from research on maternal fatigue (Schneider et al, 1990; Aldrich et al, 1995; Mayberry et al, 1999) where it was highlighted that the stress of excessive and prolonged pushing may have detrimental effects on the fetus.

Paine and Tinker (1992) and Sampsel and Hines (1999) suggest no difference in duration of second stage for directed or spontaneous pushing, however, Parnell et al (1993) found that those in the spontaneous pushing group who used an open glottis technique did have a shorter second stage; this finding is supported by a later RCT (Yildirim and Beji, 2008). Thomson (1993) found the opposite, reporting a shorter second stage for those in the directed pushing group, however, the small sample in this pilot study may have influenced this difference in findings. The RCT by Bloom et al (2006) also found a statistically significant shorter length of second stage for those in the directed pushing group, but only by 13 minutes; the clinical relevance of this requires consideration.

In summary, there is increasing evidence that the exact timing of the duration of second stage is not as important as its progression (Roberts, 2002).

Perineal trauma and episiotomy

Beynon (1957) conducted a study comparing outcomes of spontaneous *vs* directed pushing and found that directed pushing increased perineal trauma and instrumental delivery rate. However, this study was not randomized and the numbers allocated to the sample groups were quite different ($n=100$ spontaneous pushing group; consecutive cases booked under one female consultant, $n=393$ control group; other vaginal deliveries occurring in that hospital over the same period). There could therefore be some bias in the figures with regard to the characteristics of the intervention sample group. This is not clear within the paper.

In contrast, three RCTs (Parnell et al, 1993, Thomson, 1993; Yildirim and Beji, 2008) and a quality-assessed sys-

tematic review (Eason et al, 2000) have found no statistically significant difference in perineal trauma or episiotomy rate. Some research suggests that spontaneous pushing results in less perineal trauma (Yeates and Roberts, 1984; Sampsel and Hines, 1999). The retrospective survey by Sampsel and Hines (1999) also found that fewer women had received an episiotomy. Although this study had an 83% response rate; retrospective studies rely on participant memory. To overcome this, however, Sampsel and Hines compared the women's responses with their medical records. Roberts (2002) suggests that the passive fetal descent that occurs with spontaneous pushing protects the perineum by allowing time for increased tissue compliance. Other research (Beynon, 1957; Yeates and Roberts, 1984; Handa et al, 1996) suggests that directed pushing increases the risk of perineal trauma. A randomized trial by Schaffer et al (2005) found that women who were directed to push suffered short- and long-term pelvic floor dysfunction, resulting in increased urodynamic stress incontinence and a negative impact on first urge to void and bladder capacity.

In summary, although research at the top of the hierarchy of evidence (Parnell et al, 1993; Thomson, 1993; Eason et al, 2000; Yildirim and Beji, 2008) has found no difference between pushing methods with regard to perineal trauma, other quality research (Schaffer et al, 2005) has shown that pelvic floor dysfunction is an issue for women who are directed to push and therefore, on balance of the available evidence, spontaneous pushing should be encouraged.

Fetal wellbeing

Mayberry et al (1999) reviewed maternal fatigue in labour and found that the diaphragm became fatigued during directed pushing resulting in reduced maternal, and consequently fetal, oxygenation. Thomson (1993) found that although a prolonged second stage adversely affected cord blood values, it was only disadvantageous to the fetus if the mother was using a directed pushing technique.

Caldeyro-Barcia (1978) found that bearing down for more than five seconds resulted in late fetal heart decelerations, fetal hypoxia and acidosis. Schneider et al (1990) found (in their prospective study of 69 women) that increased maternal lactate owing to voluntary pushing led to an increase in fetal hypoxia, and Nordstrom et al (2001) also found a correlation between maternal lactate in active second stage with increased fetal lactate and acidaemia.

Aldrich et al (1995) found that directed pushing led to fetal acidosis, reduced fetal oxygenation and an increase in cerebral blood volume. In contrast, the RCT by Parnell et al (1993) found no difference in levels of oxygenation in babies born by either pushing method; a finding supported by other research (Yeates and Roberts, 1984; Roberts et al, 1987, Paine and Tinker, 1992).

The baby had better outcomes with spontaneous pushing in the recent RCT in Turkey by Yildirim and Beji (2008). This study only sampled 100 women, however, a sample of 90 had been assessed by power calculation to be sufficient to represent the population.

An interesting study by Piquard et al (1989) concluded that there were two phases to the second stage of labour.

Box 1. Lewin (1952) Model for Change

Unfreezing

Education and training for all midwives and student midwives. Focus groups of all grades of midwives and the multidisciplinary team to discuss the issue and convince those concerned of the need to change practice. Liaison with university programmes of midwifery education to ensure correct theory taught.

Moving

Act on outcomes of focus groups. Develop new practice and policies to ensure new practice is maintained.

Refreezing

Regular audit of clinical practice.

They defined the first phase as the passive part and found that during this phase, fetal condition (acid base status) is not affected. It was only in the second phase, when the woman is bearing down, that fetal condition deteriorates. This suggests that spontaneous pushing, but also a shorter pushing phase, is beneficial to fetal outcome.

In summary, research with regard to fetal wellbeing is variable, although in general spontaneous pushing in the second stage of labour is the preferable option.

Recommendations for clinical practice and future research

Research does not support a policy of directed pushing, and some evidence suggests it may be harmful. Enkin et al (2000) suggest that the practice of directed pushing should be abandoned. Some of the evidence available in this area is out of date and limited by small sample size; results are therefore inconclusive.

After consideration of the available evidence, the author must conclude that the recommendation for clinical practice is that midwives should not direct pushing. This recommendation arises particularly from evidence suggesting that perineal trauma may be reduced, but also that directed pushing may be harmful to fetal wellbeing. As medical practitioners use fetal wellbeing as one of the indicators on which to base their decision regarding the need for instrumental or operative delivery, it would be beneficial to avoid directed pushing where possible.

It is also important not to impose time limits on the second stage of labour as there is no good evidence to justify this (RCM, 2005). Providing maternal and fetal observations are satisfactory and there is clear progress of descent of the presenting part, there is no justifiable reason for intervention (Paterson et al, 1992; Menticoglou et al, 1995; Janni et al, 2002).

It is often difficult to implement change. However, midwives should be prepared to accept and implement change where this has been proven to be in women's best interests. Precise management of a change can ultimately lead to its success or failure. Lewin's (1952) 3-step model could be used to implement the change in the labour ward environment (*Box 1*).

Box 2. Re-definition of the second stage of labour (Long, 2006)

First stage

From the onset of regular contractions to when the presenting part has passed through the cervix and is below the ischial spines.

Transitional stage

Occurs towards the end of the first stage, characterized by a change in the woman's behaviour—becoming intolerant of those around her, restless, despairing and wanting to go home.

'Rest and be thankful' or 'pause for rotation' stage

This occurs after transition, characterized by the woman becoming drowsy, and relaxed. The presenting part completes rotation, until it is in the anterior–posterior diameter and has passed through the cervix.

Second stage

From when the presenting part has passed through the cervix (and therefore below the ischial spines) to the baby being born.

A planned change is likely to be easier for individuals, where a feeling of involvement, understanding and a sense of control is generated. Focus groups can involve staff, giving them information in order to help understanding of the need for change, the implications for them and to resolve any issues that arise so that staff can take ownership of the change. A structured change in practice, allowing for thorough planning, development, implementation and evaluation is required, to provide successful evidence-based and woman-centred maternity care.

One recent paper (Roberts et al, 2007) highlighted the difficulty midwives face in refraining from using directed pushing in the second stage of labour. The authors studied ten video recordings of caregivers in the second stage of labour. They found that caregivers react to maternal distress, changing from encouragement for spontaneous effort, to direction to push. It is true that some of the caregivers used directed pushing without any obvious reason for doing so, indicating that it was their preference, and while doing so the study authors noted that the birth partner copied the caregiver and therefore also directed their partner's efforts in pushing. Roberts et al (2007) suggest that further research is required on the outcomes of caregiver direction, particularly when the care given changes in response to the perceived maternal need. They suggest that other strategies may be required rather than directed pushing, such as change of position or a period of rest.

An earlier study by Sampson et al (2005) which considered 20 video recordings also found that the predominance of care-provider communication style, either directed or spontaneous, contributed substantially to the type of maternal pushing used. The authors of this study commented on how uncomfortable it was to listen to the 'drill sergeant' directions of 'Push, Push, PUSH!' These two studies highlight the importance of communication technique in the second stage of labour and the difficulty midwives seem to have in continuing to encourage a woman to trust her body's ability to birth her baby.

Available evidence in the area of directed pushing *vs* spontaneous pushing is out of date and some is methodologically limited. There is a dearth of good quality research

in this area, particularly in the last decade. In the absence of a large prospective RCT which takes into account confounding variables, it is difficult to convince health professionals of the need to change practice, even with current recommendations from NICE and the RCM not to direct pushing in the second stage of labour. Evidence to date supports the practice of spontaneous pushing, however, it is not overwhelming and therefore the author recommends that future research should ideally include:

- A meta-synthesis of those studies relating to type of pushing and maternal satisfaction
- A qualitative study of health professionals' views and experiences (to inform the following)
- A large prospective RCT using the pilot study by Thomson (1993) for guidance.

There are many questions that arise from this review of this area of maternity care. The author believes that a new definition of the phases of labour is needed. Long (2006) has put forward a sensible view of how this should perhaps be pursued. The revised definition for the second stage of labour is shown in *Box 2*. Its use would successfully take away the pressure on midwives in confirming the start of the second stage, and the need to use 'delaying tactics' by finding a 'rim of cervix' to buy time (anecdotal evidence). This would allow passive descent and a woman's urge to push rather than pushing from diagnosis of full dilatation. There is no high-quality RCT in this area, which health professionals would immediately recognize as necessary evidence-based care and implement throughout the maternity service. The pilot RCT (Thomson, 1993) would provide a basis to follow. It has been left to midwives providing the service to try their best to allow women to follow their instinct in the second stage of labour. In the absence of a good RCT, perhaps a change in national labour ward definitions of the phases of the second stage of labour would allow spontaneous pushing to naturally take place.

Conclusion

'To direct or not to direct' should no longer be disputed, as evidence suggests that spontaneous pushing in the second stage of labour should be encouraged for optimal fetal outcomes. The duration of second stage is not as important as its progression, and there is evidence that there is no significant difference in extent of perineal trauma between pushing methods. Hence, spontaneous pushing in the second stage of labour appears to have no adverse effect on maternal wellbeing. Directed pushing has been shown to result in fetal hypoxia and acidosis and, therefore, pushing method does have an effect on fetal wellbeing. It should be noted that every woman should be given individualized care and the holistic clinical picture should be considered in each case. Where there is a need for intervention because of deteriorating maternal and fetal condition, this should of course take place.

As women in the past gave birth unaided (Sutton, 2000) by following their bodies to birth their babies, the role of the midwife should be to support the woman in her choice of pushing method and to encourage confidence in her maternal instinct of when and how to push. In the absence

of any complications, midwives should not be controlling this stage of labour, but empowering women to achieve a satisfying experience.

Midwives have a duty to protect (NMC, 2008) and this involves providing evidence-based care to women, with a willingness to change practice when research indicates a change in practice is necessary. **BJM**

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Key Points

- Midwives must support women to push spontaneously when they feel the urge to push, not just because they are fully dilated.
- Redefining the phases of the second stage of labour could enable midwives to help women push spontaneously, without time limitations.
- If a change in practice is not forthcoming, a large randomized controlled trial is needed, which should take account of confounding variables in order to gain national recognition.
- Labour ward guidelines should be changed with regard to timing of the phases of labour, preventing midwife pressure to direct pushing.