

MIDIRS ReView

Instruments for assisted vaginal delivery



O'Mahony F, Hofmeyr GJ, Menon V (2010).
Choice of instruments for assisted vaginal delivery.
Cochrane Database of Systematic Reviews, Issue 11.

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Background

Instrumental delivery is a frequent intervention in childbirth and is the topic of this new Cochrane review, which replaces two older reviews looking at the separate questions of how forceps compared with ventouse (Johanson & Menon 1999) and how the soft cup compared with the rigid cup ventouse (Johanson & Menon 2000). The introduction to this latest review cites the instrumental delivery rate in the UK as being 11 per cent (Department of Health 2004) but newly released maternity statistics show that, in 2009-2010, 12.3 per cent of women's births occurred with the assistance of vacuum extraction or forceps (Information Centre 2010). As the authors state in the background to their report, these interventions are 'sometimes associated with significant complications for both mother and baby' (O'Mahony *et al* 2010:1) and the objective of this review concerned the evaluation of different instruments in terms of achieving a vaginal birth and avoiding significant morbidity for women and babies.

The reviewers offer a simple précis of the three key questions contained in this objective:

- 'should forceps or ventouse be used;
- if it were forceps, which type would be best;
- if it were ventouse, which type would be best?' (O'Mahony *et al* 2010:4)



The background section includes a brief but interesting history of the instruments used to facilitate birth, and lists the advantages and disadvantages which are generally perceived to exist in relation to both forceps and vacuum extractors. Other key issues raised in this section include the fact that the likelihood of instrumental birth can be reduced where women are able to assume upright positions in labour (Gupta *et al* 2004) and have continuous support (Hodnett *et al* 2003), and the authors note that widespread variation in maternity care practice influences instrumental delivery rates. There is also discussion of the fact that, whatever the outcome of a review such as this, operator preference is the main determinant of the choice of instrument used: a point that is discussed further below.

Methods and results

O'Mahony *et al* (2010) sought randomised controlled trials which had included women in the second stage of labour who were due for assisted vaginal delivery. Primary outcomes were (a) failed delivery with allotted instrument, (b) any maternal trauma (although the term 'any' may be slightly confusing here, as they then specifically list perineal trauma, vulval and vaginal trauma) and (c) any neonatal injury. The number of secondary outcome measures considered was high, and the authors note that this was because of the complexity of the interventions and the possibility that these may affect women and babies in many different ways. The secondary outcomes included maternal pain and incontinence and a long list of neonatal outcomes including low Apgar scores, a range of injuries, jaundice and admission to neonatal intensive care. The authors advise readers to bear in mind that some of the statistically significant results among the secondary outcomes may be spurious.

The reviewers found a total of 72 references to relevant studies, excluded those which did not meet their selection criteria and carried out their analysis on the data contained in 32 studies which included the experiences of 6596 women. As is so often the case, there was wide variation in the outcome measures used in different studies, which made subgroup analysis impossible.

The reviewers presented the results of eleven different comparisons, not all of which were possible or conclusive because of the nature of the included studies. The results of the first of these (forceps versus any type of ventouse) is summarised below, and the other significant findings are then summarised.

Forceps vs any type of ventouse

- Failure was less likely with forceps (RR 0.65, 95% CI 0.45 to 0.94).
- 'Those studies that reported on caesarean section found a trend to more sections with forceps which was not statistically significant (RR 1.76, 95% CI 0.95 to 3.23). This suggests that failure with the ventouse was more commonly followed by delivery with forceps than vice versa.' (O'Mahony *et al* 2010:8)
- Forceps were more likely to be associated with maternal perineal trauma.
- The one small study that looked at altered continence found that this was more likely with forceps (RR 1.77, 95% CI 1.19 to 2.62).
- Differences between neonatal outcomes were not clear cut but forceps were more likely to be associated with facial injury (RR 5.10, 95% CI 1.12 to 23.25) and ventouse with cephalhaematoma (average RR 0.64, 95% CI 0.37 to 1.11).

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Other significant findings

- Metal cup ventouse is more likely to lead to failure than soft cup ventouse (RR 1.63, 95% CI 1.17 to 2.28) but more likely to be associated with cephalhaematoma (RR 0.61, 95% CI 0.39 to 0.95) and scalp injury (RR 0.67, 95% CI 0.53 to 0.86).
- Although data only came from two small studies, soft forceps were less likely to lead to facial injury than regular forceps (RR 1.41, 95% CI 1.06 to 1.89).
- The hand-held ventouse was associated with more failures than the metal ventouse, and there appeared to be a trend suggesting that the hand-held ventouse was associated with fewer failures than the soft ventouse, but data were not pooled for this outcome.

Discussion

The results of this review can be summarised fairly simply: there is an inverse correlation between the invasiveness of the instrument used (in relation to the potential for trauma) and the likelihood that its use will result in a vaginal birth. In other words, forceps are more likely to be successful, but also more likely to cause trauma. The reviewers have aptly used the term ‘trade-offs’ in their discussion to describe this, and they argue that comparison of the options is not simplistic and that the optimal choice will differ according to the situation. Overall, O’Mahoney *et al* (2010) suggest that:

‘There is indirect evidence that sequential use of the ventouse followed if necessary by forceps may reduce overall failure (need for caesarean section).’ (O’Mahony *et al* 2010:10)

They also offer a few specific suggestions in the light of their review of the evidence:

‘For situations in which there is no clear clinical indication for a specific instrument, the findings of this review support the

use of vacuum extraction as the first line method for assisted birth.

Where a relatively easy procedure is anticipated (for example, occipito-anterior position with no signs of relative cephalopelvic disproportion), the soft vacuum has the advantage of less scalp injury and cephalhaematoma.

For women who are infected or at high risk for infection with viral infections such as HIV and hepatitis, the risk of scalp injury with the metal vacuum cup is a particular cause for concern, and would favour the use of soft vacuum cup or forceps.

For occipito-lateral or occipito-posterior positions or where the need for greater traction force is anticipated, the metal vacuum cup has advantages.’ (O’Mahony *et al* 2010:10)

As mentioned above, one rather significant issue is the extent to which women are involved in the making of any decision around the choice of instrument for instrumental delivery. More often than not, it is the attending obstetrician who makes this choice. O’Mahony *et al* (2010) stress the importance of clinicians being familiar with and able to use several different instruments while noting that, in reality, this is often influenced by the settings in which a practitioner has trained and worked, as there are wide national and international variations in the instruments that are available and/or preferred. As a result of these factors, many midwives will work with colleagues who have a strong personal preference for a particular instrument. There are also differences in the manner in which practitioners approach instrumental birth; there exists a wide range of opinion in relation to the need for episiotomy in particular situations, for example. Anecdotally, midwives have also noted significant contrast between those practitioners who will use instruments as gently as possible to bring the baby to a place where the its mother is able to take over for the final pushes and those who see themselves as having ‘taken over’ and whose actions may relegate the woman’s efforts and feelings as a result.

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In one sense, having a preference for a particular instrument is perhaps not unreasonable; anyone who undertakes any kind of craft or manual skill is likely to develop predilections over time for one kind of tool over another, even if in principle those tools are equally suited to the task. There is a significant difference, however, between a practitioner who has a preference but is skilled in the use of a range of different kinds of instruments and focuses on advising women about the different choices according to her particular situation, and one who has a preference for a particular instrument based on a lack of experience with others. Randomised controlled trials cannot take into account issues such as operator skill, and it is also theoretically possible – although impractical to investigate in a review such as this – that women attended by an experienced obstetrician who is highly skilled in the careful and sensitive use of forceps may be less likely to experience trauma than women attended by an inexperienced obstetrician who uses a soft cup ventouse but who is not as skilled in its use. The issues surrounding operator preference and experience are complex and murky, and this complexity only increases when we consider the fact that, while women may well be able to take the findings of Cochrane reviews and other evidence into account when making decisions such as whether they will have their labour induced or consent to their baby having a particular treatment, they may not find themselves as able to engage in discussion and express a preference in this area.

As the reviewers state, there is a recognised place for all of these instruments in clinical practice. They also acknowledge that maternal choice – along with infection rates, assessment of operator training and the role of midwives and birth attendants – is an important question that needs to be explored more fully. The findings of this review will be useful for women, midwives and those involved in birth, but need to be considered within the context of the wider issues in this area, which involve a number of personal and human factors relating to the culture and choices of those attending birth as well as giving it. We also need to continue to focus on ways in which we can prevent the need for assisted delivery, as well as on ways of conducting it.

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