



Is the use of water in labour an option for women following a previous LSCS?



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This paper reports the methodology and results from a small audit undertaken in 2002 for women with a history of a previous lower segment caesarean section (LSCS) who were hoping to have an active vaginal birth and wished to use water in their labour. The main focus of the audit was the use of a risk assessment tool designed by Maidstone Hospital, Kent and introduced in 1998. The approach to the audit was to compare outcomes for a group of women who wished to use water for labour with those who had dry land care and management following a previous LSCS. Results from the audit and recommendations are based around whether water is a 'safe and realistic' option for women who have had a previous LSCS.

Background to the audit

Waterbirths have been offered at Maidstone Hospital, Kent since 1987; the use of water for labour and

birth is both an accepted and expected choice for women which we believe sits comfortably within our ethos of care. The department has approximately 2400 deliveries each year, of which around 100 are waterbirths. The use of water has always been well supported by midwives, obstetricians, paediatricians and managers of the service and its use in our unit has been widely reported upon (Garland 2000) and publicised through audit presentations and publications (Garland 2002).

Pregnant women with a history of a previous LSCS were referred to the practice development midwife regarding the use of water in their next labour. From the very beginning the unit, like many, had a stringent plan of care for these women. However, this framework did not reflect the reason for the previous LSCS, and therefore, all women who wanted to try for a vaginal birth were cared for in the same manner and under an umbrella management of trial of scar (TOS).

Other authors have attempted to highlight and risk assess which groups of women have the most successful vaginal birth after caesarean (VBAC) rates. Enkin *et al* (2000) attempted to risk assess women who have had previous LSCS and highlighted five factors that could be utilised. This suggested that where women had a history of more than one previous LSCS there appeared to be little data to suggest that outcomes for these women was poorer than a woman with a history of only one LSCS. Enkin *et al* suggest that on this limited data, these women should not be treated any differently from women who have had one LSCS. Of the women who had had a LSCS, between 50–75% went on to have a vaginal birth; this included all reasons for previous LSCS, with the largest group for primary LSCS being a breech presentation. Where there is a history of a previous vaginal birth there is an associated increase in rates for VBAC. A classical or vertical incision of the uterus is quoted at a rate of 2.2% dehiscence whilst lower segment scars are quoted as 0.5% dehiscence. Problems have been identified where the previous LSCS had been performed at an early gestational age (usually stated as 32 weeks) prior to the formation of the lower segment.

The RCOG Clinical Effectiveness Support Unit (2001) describes in the recent Sentinel audit report that the chance of successful VBAC was 33%, although it was noted that there was a wide variation of 21.8–38.2% between regions. Goer (1995) reviewed the literature of studies on women having vaginal labours/births after LSCS. These studies from America, UK, Europe and Australia between 1980 and 1993 showed VBAC rates ranging from 60–90%. Goer writes that in most of the studies the highest success for VBAC was following previous LSCS for breech (as high as 93% in one study).

It became apparent by 1997 that this situation was causing problems at Maidstone in that where we could individualise care for other women, the care of TOS women was prescriptive. In conjunction with the obstetricians, an audit was carried out during 1997 of all vaginal births after LSCS.

Results

1. Data collection was undertaken using the Euroking maternity database. Normal delivery rates for TOS and the vaginal birth after caesarean (VBAC) rates were collected. Results for scar dehiscence were also incorporated. Table 1 shows the data from both the

original audit in 1997 and incorporating data from 1996–2002.

2. Our perception was that the largest number of women being referred were those who had a previous LSCS for breech presentation. External cephalic version was not routinely offered at that time and most women opted for elective LSCS.
3. The next phase of the review was to consult with other units who were undertaking VBACs and/or using water for these women. It became apparent that other units were already offering water as an alternative to 'traditional' dry land labour, although none had a formal risk assessment guideline.
4. In November 1998 a risk assessment tool and process was designed and launched with the cooperation of the obstetric team.

Risk assessment tool

Women who wish to try for a VBAC are referred through three avenues — a midwife, obstetrician or self-referral. The practice development midwife contacts the mother and explains the process, highlighting the two main criteria 'safety and realism'. The risk of scar dehiscence and probability of a repeat scenario are fully discussed.

The mother then decides if she wishes to proceed with the assessment process. If so, her relevant maternity records are reviewed by a consultant obstetrician and the practice development midwife. The consultant and the midwife then sign the risk assessment tool and one copy is filed in woman's hospital notes and another copy is sent to the mother for her own records. The practice development midwife will then discuss with her how the labour is managed according to the risk assessment 'flow chart', see Fig 1.

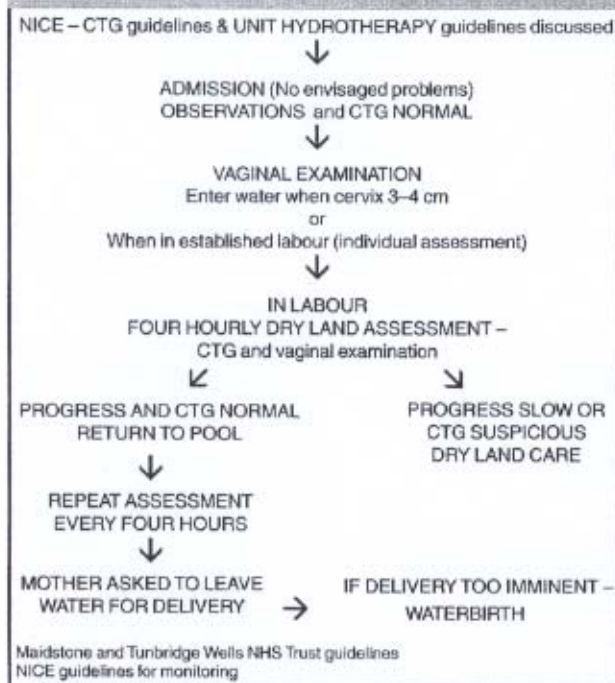
The NICE guidelines published in 2001 recommended that women with a previous LSCS should be monitored continuously in labour. However they also highlighted that '*consideration should be given to maternal preference and priorities*' (NICE 2001). As the guidelines were published after the assessment tool was introduced, it is imperative that a full discussion is undertaken with each mother highlighting deviation from their recommendations.

During 2002, the number of women who chose to be risk assessed was 27. This equates to 8.6% of the 315 women who had a previous LSCS. Having developed the risk

Table 1. Data for 1996–2002

| Year | No of women with previous CS | No entering labour as TOS (%) | VBAC rate for all women who laboured (%) | VBAC rate for all previous CS women (%) | No of scar dehiscence |
|------|------------------------------|-------------------------------|--|---|-----------------------|
| 1996 | 225 | 118 (52.4) | 89 (75.4) | 89 (39.6) | 2 |
| 1997 | 220 | 115 (52.3) | 85 (73) | 85 (38.6) | 0 |
| 1998 | 269 | 137 (50.9) | 103 (75.2) | 103 (38.3) | 1 |
| 1999 | 261 | 114 (43.7) | 78 (68.4) | 78 (29.9) | 1 |
| 2000 | 259 | 107 (41.3) | 75 (70.1) | 75 (29) | 0 |
| 2001 | 311 | 143 (46) | 111 (77.6) | 111 (35.7) | 0 |
| 2002 | 315 | 134 (42.5) | 100 (74.6) | 100 (31.8) | 0 |

Fig 1. Flow Chart



assessment tool, it was essential to audit its use. Therefore an audit was designed with the following aims.

1. To evaluate the risk assessment tool used to provide a 'safe and realistic' alternative for women with a trial of scar (TOS), who wish to use water in labour.
2. To increase the body of knowledge to other health professionals.

Methodology

Phase one of audit

The risk assessment tool was used to identify women suitable for water labour. During this process the 'safety and realism' aspect of assessment was important, as some women who fell outside this group chose at various stages of their pregnancies to opt for elective LSCS. During 2002, no women were deemed to be unsuitable; however, since its inception and subsequent to this audit, other women have been assessed as unsuitable. In 2003, 25 women chose to be risk assessed of whom five were deemed to be unsuitable for a variety of reasons. These included a baby small for gestational age, women whose last LSCS was a difficult operation, and where the last LSCS was performed at a gestational age of 30 weeks.

Risk assessed group 2002

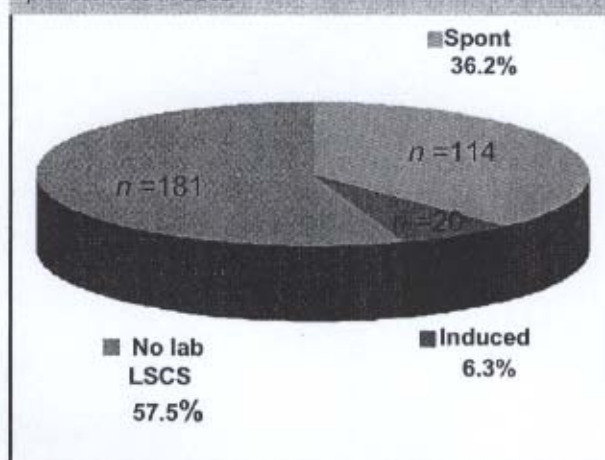
Information was obtained about the reasons for the previous LSCS and whether the caesarean was elective or emergency. The majority of the information collected related to the events of labour itself. These included the onset of labour, the type of pain relief used and the delivery outcome. From this audit, out of 314 women eligible for the risk assessment only 27 chose to be risk assessed.

- The onset of labour was spontaneous for 20 women, four were induced and three did not labour.
- Eight women used water (33.3%); three subsequently left the water – two to have pethidine and one to have an epidural. Of the sixteen who did not use water, four used entonox, six had pethidine and six required epidurals. With regard to pain relief for these women, maternal choice was generally the first consideration; secondly, the ability to feel in control; thirdly, the freedom to move and find comfortable positions; and lastly, finding the degree of pain relief that the mother finds acceptable.
- These women achieved a high VBAC rate of 81% (15 spontaneous vaginal delivery (SVD), seven instrumental). We analysed this further according to whether it was an elective or emergency caesarean section previously and found VBAC rates of 83.3% (10/12) and 80% (12/15) respectively.

Results of all women who laboured following TOS in 2002

1. Onset of labour for all women with a previous LSCS in 2002. Of the 315 women included in the audit, 181 (57.5%) did not labour, see Fig 2.

Fig 2. Onset of labour for all women (n=315) with a previous LSCS in 2002



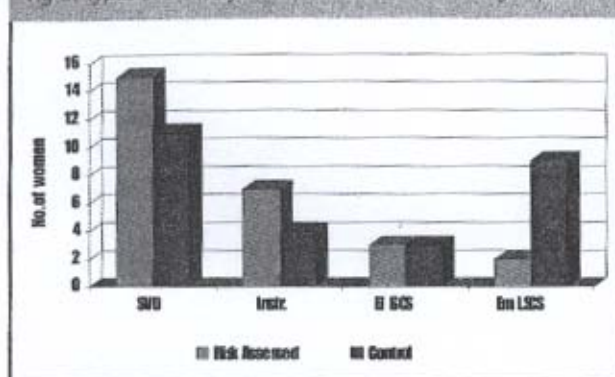
2. Delivery outcome for all TOS in 2002. Of the 134 women with a TOS who laboured, 80 (60%) had a normal delivery, 21 (16%) instrumental delivery and 33 (24%) emergency LSCS.

It became apparent that comparing data with women who did not use water would be a more robust audit and a second audit was designed using matching criteria for a comparative group of women.

Phase two of audit

Matching criteria were discussed, records identified through the Euroking computer system and used as follows:

Fig 3. Types of Delivery risk assessed n=27, control group n=27



Matching criteria

1. The number of previous LSCS. This match required 25 women who had one previous LSCS, one woman who had a SVD then LSCS, and finally one woman who had two previous LSCS.
2. The average ages were comparable. In the risk-assessed group, the average age was 32.5 years whilst the control group the average age was 32.3 years.
3. The onsets of labour were matched.
4. Parity and the number of previous LSCS also corresponded.

The authors fully realise that this type of matching criteria could be open to bias. The first match identified by the computer was always used.

Findings from audit

Nine factors were considered for the audit, these included past history of operative birth and the same outcomes as for the previous audit with regard to onset, length of labour and type of delivery. Additional information was obtained about pregnancy gestation, birth weight, the five minute Apgar score and the mother's BMI.

1. Previous LSCS — emergency versus elective

Despite several attempts we were unable to completely match previous emergency or elective reasons for the two groups. In the risk-assessed group, 12 women had a previous elective CS compared with four in the control group, and 15 women had an emergency CS in the risk group compared to 21 in the control group. In addition, there were two women in the control group but none in the risk-assessed group who had an emergency CS without a history of labour.

2. Reason for previous LSCS

Having a CS for a breech presentation was more common in the risk-assessed group than the control (13/27 compared to 6/27). The frequencies were otherwise fairly similar, apart from failure to progress (first or second

stages) which was higher in the control group (10/27 compared to 3/27).

In this audit, 13 risk-assessed women had a previous LSCS for breech presentation. We therefore decided to scrutinise the outcomes for this group of women. The results, although only on a small number of women, are interesting. Eleven women had a vaginal birth of whom eight were spontaneous vertex births, two were ventouse and one forceps. Two women had operative births, one emergency and one elective. There were six women in the control group, four of these women had a vaginal birth, three were spontaneous and one a forceps. Again, two women in this group had operative births, one emergency, and one elective.

This gives a VBAC rate for the risk-assessed group (previous breech LSCS) 84.6% and SVD rate of 61.5%, and the control group VBAC rate of 66.6% and SVD rate of 50%.

3. Type of delivery

There is a slightly higher rate of vaginal birth (normal and instrumental) in the risk-assessed group. Out of 27 risk-assessed women, 15 had a normal birth, seven had an instrumental delivery, three had elective LSCS and two emergency LSCS. A higher number of control women had emergency LSCS, see Fig 3.

4. Length of first stage

The practice within the unit is for the consultant obstetrician to discuss a labour 'time factor' with women when undertaking a trial of scar. This time varied between 8–12 hours. Six women (four risk-assessed and two controls) had first stage labours longer than 12 hours. Analysis of the outcomes for these six women show in the risk-assessed group two normal deliveries and two ventouse, whilst both women in the control group had normal deliveries.

5. Length of active second stage

The general parameter for length of active second stage is that it lasts no longer than one and a half hours. Four women had longer active second stages (two in each group). In the risk-assessed group, the women had a ventouse and a forceps delivery and both women in the control group had normal deliveries.

6. Gestational age

The gestational age at delivery showed a range was from 36 to 42 weeks with the majority, as expected, taking place between 38 and 41 weeks. Fig 4 shows this variance.

7. BMI

The BMIs were fairly well matched except for BMIs of 30–34, see Fig 5. The authors wish to audit further the relationship between BMI and outcomes.

8. Newborn weights

The majority of babies weighed between 3000–3999g. There were six babies in the risk-assessed group and three babies in the control group who were less than 3000g, and three babies in the control group and only one baby in the risk-assessed group who weighed between 4000–4999g.

9. Apgar scores

Apgar scores were recorded as 8 or greater at 5 minutes. No babies were admitted to SCBU.

Summary

Despite the number of women potentially eligible, only a few women chose to use water for labour and hence undergo the process of risk assessment. As a department we need to ask the question 'Is this an option highlighted and discussed to all TOS women under our care?'

However, for those who used water, it was a 'safe and realistic' alternative, and the women achieved a high vaginal delivery rate.

Quality issues from audit

Women have always shown great interest and support in the process of risk assessment and the discussion regarding 'safety and realism' has been well accepted. In addition, they appear to respect our professional attitude towards supporting 'choice and control' in planning their care. There has not been any negative feedback from any woman since the process started. This is also true for women for whom we believe water is not an option.

Enkin *et al* (2000) write that women with high motivation for vaginal birth were much more likely to be successful, irrespective of the type of education programme that they received, so does the process of risk assessment in itself reinforce the mothers' belief in her own ability to give birth?

Recommendations

During the audit it became apparent that there is still a need for ongoing education regarding using water for labour and birth and the choices offered to women. This encompasses issues and application of the risk assessment process.

We are continuing with this process. We wish to develop a tool that may assist the department in risk-assessing *all* previous LSCS women, and not just those who mention water as a labour option. We plan to re-audit at the end of 2003.

Fig 4. Delivery Gestation risk assessed n=27, control group n=27

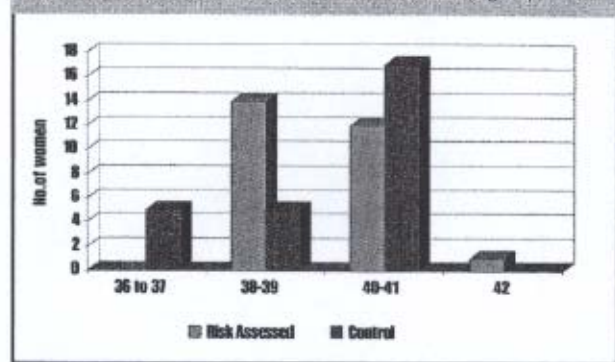
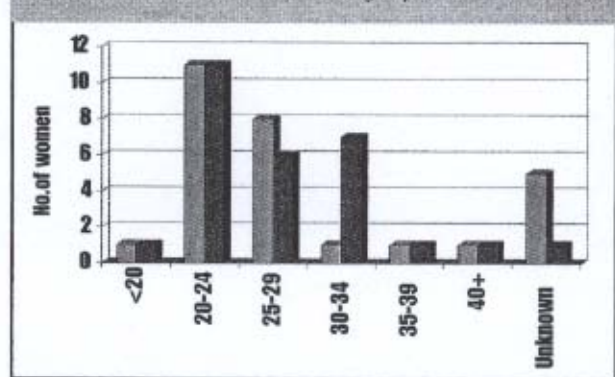


Fig 5. BMI risk assessed n=27, control group n=27



This audit would not have been possible without the assistance of consultants, midwives and mothers at Maidstone Hospital, Kent.

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- Original article written for *MIDIRS* by Diane Garland and Sue Crook, Maidstone. © *MIDIRS* 2004.