Royal College of Obstetricians and Gynaecologists

Setting standards to improve women's health

Guideline No. 23
Revised June 2004

METHODS AND MATERIALS USED IN PERINEAL REPAIR

This is the second edition of this guideline, which was previously published in January 2000.

1. Aim

The aim of this guideline is to provide up-to-date information for medical and midwifery staff on the most effective methods and materials for use in the repair of perineal trauma sustained during childbirth.This topic still remains controversial with wide variations in suturing techniques and materials used.

This guideline does not cover the repair of third- and fourth-degree perineal tears, which is the subject of a separate guideline.[1]

2. Definition of perineal trauma

Anatomically, the perineum extends from the pubic arch to the coccyx and is divided into the anterior urogenital and posterior anal triangle. Anterior perineal trauma is defined as injury to the labia, anterior vagina, urethra or clitoris. Posterior perineal trauma is defined as any injury to the posterior vaginal wall, perineal muscles or anal sphincters and may include disruption of the anal epithelium.

Perineal trauma may occur spontaneously during vaginal birth or by a surgical incision (episiotomy) made intentionally to increase the diameter of the vulval outlet to facilitate delivery. It is possible to have an episiotomy and a spontaneous tear (for example an episiotomy may extend into a third-degree tear).

Spontaneous tears are defined as shown in Table 1; this accepted classification allows differentiation to be made between injuries to the external anal sphincter (EAS), internal anal sphincter (IAS) and anal epithelium.[2,3]

Table 1. Definition of spontaneous tears

Degree	Trauma
First	Injury to the **skin only**
Second	Injury to the perineum involving **perineal muscles** but not involving the anal sphincter
Third	Injury to perineum involving the **anal sphincter complex**:
	3a: less than 50% of EAS thickness torn
	3b: more than 50% of EAS thickness torn
	3c: IAS torn
Fourth	Injury to perineum involving the anal sphincter complex (EAS and IAS) and **anal epithelium**

3. Identification and assessment of evidence

The Cochrane Library and the Cochrane Register of Controlled Trials were searched for relevant randomised controlled trials (RCTs), systematic reviews and meta-analyses. A search of Medline and PubMed electronic databases from 1966 to 2003 was also carried out. The date of the last search was November 2003.

The databases were searched using the relevant MeSH terms including all subheadings. This was combined with a keyword search using: 'human', 'female', 'childbirth', 'episiotomy', 'tear', 'perineum', 'perineum/surgery', 'postpartum-period', 'puerperium', 'morbidity', 'wound healing', 'suture technique', 'catgut/adverse effects', 'catgut/use', 'sutures', 'biocompatible materials/use', 'polyglycolic acid/adverse effects', 'polyglactin 910/adverse effects', 'randomised controlled trials' and 'meta-analysis'.

The definitions of the types of evidence used in this guideline originate from the US Agency for Health Care Research and Quality. Where possible, recommendations are based on, and explicitly linked to, the evidence that supports them. Areas lacking evidence are highlighted and annotated as 'Good practice points.'

The recommendations in this guideline are based on the principles endorsed by the NHS Executive.[4]

4. Background

In the UK, it is estimated that over 85% of women who have a vaginal birth will sustain some degree of perineal trauma and of these 60–70% will experience suturing.[5,6] Maternal factors that may contribute to the extent of trauma sustained during childbirth are ethnicity, age, tissue type and nutritional state in the pre-pregnancy years.[6–8] Other risk factors include primiparity, fetal birth weight greater than 4000 g, prolonged second stage of labour, instrumental delivery, direct occipitoposterior position and precipitate birth.[9]

Antenatal perineal massage may reduce the risk of perineal damage.[10,11] In addition, aspects of intrapartum care, such as support during labour, position for delivery, epidural anaesthesia, type of pushing, mode of delivery and the use of episiotomy, all have a direct effect on both the prevalence and degree of perineal damage sustained during childbirth.[12–17]

Clinicians' experiences, practices and preferences in terms of intrapartum interventions may also influence the rate and severity of perineal trauma. Episiotomy rates vary considerably according to individual practices and policies of staff and institutions. The overall rates of episiotomy in different countries range from 8% in the Netherlands, 14% in England, 50% in the USA to 99% in the Eastern European Countries.[18–21] These diverse rates suggest either that the practice of episiotomy is not always justified or that it is not used when it is actually appropriate.

Meta-analysis of data from six randomised controlled trials found that restricting the use of episiotomy to specific fetal and maternal indications, compared with routine use during vaginal birth, was associated with lower rates of posterior perineal trauma, less suturing and fewer healing complications.[17] Rates of anterior vaginal and labial trauma were slightly increased but this was associated with less morbidity. Implementation of a restrictive episiotomy policy would lead to lower rates of maternal morbidity and a significant saving on the cost of suture materials.[5,17]

One population-based observational study of 284 783 vaginal births in the Netherlands between 1994 and 1995 found that within the spontaneous delivery group, mediolateral episiotomy was strongly associated with reduced risk of anal sphincter damage.[22] The overall rate of third-degree tears reported by the study was 1.94% therefore it would be unreasonable to advocate a policy of routine episiotomy for every spontaneous vaginal delivery to prevent this relatively uncommon obstetric injury occurring; there may be a role for selective episiotomy, but the selection criteria need to be defined.

Morbidity associated with childbirth may affect women's physical, psychological and social wellbeing both in the immediate and long-term postnatal period. One UK study demonstrated the extent of maternal morbidity, of which a vast amount is unreported to health professionals.[23] Perineal discomfort may disrupt breastfeeding, family life and sexual relations.[24] In the UK, approximately 23–42% of women have perineal pain and discomfort for 10–12 days following childbirth[6,23] and 8–10% of these will continue to have long-term pain for 3–18 months following delivery.[6,23] It is estimated that 23% of women experience superficial dyspareunia up to three months postpartum; 3–10% will report faecal incontinence[25,26] and 19% report some degree of urinary incontinence.[6] Complications depend upon the severity of perineal trauma and on the effectiveness of treatment. The type of suturing material, the technique of repair and the skill of the operator are the three main factors that influence the outcome of perineal repair.

5. Non-suturing

The practice of leaving first- and second-degree perineal tears unsutured is associated with poorer wound healing and nonsignificant differences in short-term discomfort. **A**

There have been two small RCTs and two small retrospective studies carried out to compare the effects of no suturing versus suturing of first- and second-degree tears. A Scottish RCT[27] (n = 74 primiparous women) found no significant difference between no suturing and suturing in terms of perineal pain but significantly more women in the sutured group had good wound approximation at 6 weeks postpartum. A Swedish RCT[28] (n = 78 primiparous women) found a nonsignificant increase in short-term discomfort with no suturing but no difference in wound healing between groups. Two small retrospective trials[29,30] (n = 162) found no difference in short-term morbidity or wound healing rates.

Evidence level Ib and III

The latter three studies were of poor quality.[28–30] More good-quality evidence is required to inform clinical practice regarding the short- and long-term effects associated with no suturing versus suturing of perineal trauma.

6. Suture material

The use of absorbable synthetic material (polyglycolic acid and polyglactin 910) for repair of perineal trauma is associated with less perineal pain, analgesic use, dehiscence and resuturing, but increased suture removal, when compared with catgut. **A**

A Cochrane systematic review of eight RCTs[31] involving 3642 primiparous and multiparous women found that absorbable synthetic material (polyglycolic acid and polyglactin 910), when compared with catgut suture material, was associated with less short-term morbidity. All of the trials showed consistently lower rates of perineal pain, analgesia use, suture dehiscence and resuturing in the polyglycolic acid and polyglactin 910 groups. There was no clear difference in terms of long-term pain and dyspareunia. Two of the trials (n = 2129 women) found that polyglycolic acid and polyglactin 910 were associated with an increased risk of suture removal up to three months postpartum.[32,33]

Evidence level Ia

Catgut suture material has been withdrawn from the UK market since 2002.

The use of a more rapidly absorbed form of polyglactin 910 for repair of perineal trauma is associated with a significant reduction in pain and a reduction in suture removal when compared with standard absorbable synthetic material. In the light of current evidence, rapid-absorption polyglactin 910 is the most appropriate suture material for perineal repair. **A**

The main problem with standard polyglactin 910 is the length of time it takes to be absorbed. Approximately 60% of the suture material remains up to 21–28 days after insertion and it is not totally absorbed from the wound until 60–90 days.[34] A more recently available suture material has the same chemical composition as standard polyglactin 910 but is more rapidly absorbed owing to a change in the sterilisation process using gamma irradiation. The tensile strength of this material is reduced at 10–14 days and it is completely absorbed from the tissue by 42 days.[35]

Three RCTs[36–38] (n = 2003 women) comparing rapid-absorption polyglactin 910 to standard polyglactin 910 found no clear difference in short-term pain between groups. However, two of the RCTs[36,38] (n = 1850 women) found a significant reduction in 'pain when walking' at 10–14 days postpartum. Only one of the trials[37] (n = 153 women) reported a reduction in superficial dyspareunia at three months postpartum. All three RCTs found that rapid-absorption polyglactin 910, when compared with standard polyglactin 910 suture material, was associated with a significant reduction in the need for suture removal up to three months following childbirth.

Evidence level Ib

7. Method of repair

The use of a continuous subcuticular technique for perineal skin closure is associated with less short-term pain than techniques employing interrupted sutures.

A

A Cochrane systematic review of four RCTs[39] involving 1681 primiparous and multiparous women found that a continuous subcuticular technique of perineal skin closure, when compared with interrupted transcutaneous stitches, was associated with less short-term pain. Three of the trials presented data on pain up to day 10 in a suitable format for inclusion in the analysis and only one study actually demonstrated any statistical significance between the two intervention groups. There was no clear difference between analgesia use in the immediate postpartum period. One trial (n = 916 women)[32] presented data regarding long-term pain, which found a nonsignificant increase in the continuous subcuticular group. There was no difference in dyspareunia at three months postpartum between the two groups.

Evidence level Ia

A loose, continuous non-locking suturing technique used to appose each layer (vaginal tissue, perineal muscle and skin) is associated with less short-term pain compared with the traditional interrupted method.

A

Perineal trauma is conventionally repaired in three layers. Traditionally, a continuous locking stitch is inserted to close vaginal epithelium, commencing at the apex of the wound and finishing at the level of the fourchette with a loop knot. The rationale for using a locking stitch is to prevent shortening of the vagina but there is no good quality evidence to support this. Next, the deep and superficial muscles are reapproximated with three or four interrupted sutures; sometimes a continuous stitch is used. Finally, the skin is closed using continuous subcutaneous or interrupted transcutaneous techniques.

Evidence level III

One observational study[40] reported a low incidence of postpartum perineal pain when continuous nonlocking technique was used to reapproximate the vagina, perineal muscle and skin (stitches were not pulled too tight). The skin sutures were placed in the subcutaneous tissue, thus avoiding the profusion of nerve endings in the superficial skin surface. The rationale behind the continuous technique is that stitch tension due to reactionary oedema is transferred throughout the whole length of the single knotless suture in comparison to interrupted stitches, which are placed transversely across the wound.

One large RCT[38] (n = 1542 women) compared the loose nonlocking continuous technique for all layers to the more traditional interrupted method of perineal repair. The study found a significant

Evidence level Ib

reduction in short-term pain, which persisted up to 12 months after childbirth but did not reach statistical significance. There was no statistical difference in the rates of superficial dyspareunia (among women who had resumed intercourse) between the intervention groups at 3 months following birth. Suture removal was significantly less frequent in the continuous suturing group.

Evidence level Ib

The use of a two-layer procedure of perineal repair, where the skin is apposed but not sutured, is associated with an increase in wound gaping up to 10 days following birth but less dyspareunia at 3 months postpartum than a three-layer technique involving skin closure.

A

Two large RCTs[41,42] compared leaving the perineal skin unsutured but apposed (the vagina and perineal muscle were sutured) to the traditional repair whereby all three layers (vagina, perineal muscles and skin) were sutured. One of the RCTs carried out in a single centre in the UK (n = 1780 women)[41] found no difference in short- or long-term pain between the two groups. However, the other RCT carried out in Nigeria[42] (n = 823 women) found that leaving the skin unsutured was associated with a reduction in perineal pain up to 3 months postpartum. Both trials reported lower rates of dyspareunia at 3 months postpartum in the groups that had the perineal skin left unsutured. Both studies found that leaving the perineal skin unsutured was associated with a significant increase in wound gaping up to 10 days following birth.[41,42]

Evidence level Ib

8. Principles of repair

The following basic principles should be observed when performing perineal repairs.

- Suture as soon as possible following delivery to reduce bleeding and risk of infection.
- Check equipment and count swabs prior to commencing the procedure and count again following completion of the repair.
- Good lighting is essential to visualise and identify the structures involved.
- Ask for more experienced assistance if in doubt regarding the extent of trauma or structures involved.
- Difficult trauma should be repaired by an experienced operator in theatre under regional or general anaesthesia – insert an indwelling catheter for 24 hours to prevent urinary retention.
- Ensure good anatomical alignment of the wound and give consideration to cosmetic results.
- Rectal examination after completing the repair will ensure that suture material has not been accidentally inserted through the rectal mucosa.

Following completion of the repair, inform the woman regarding the extent of trauma and discuss pain relief, diet, hygiene and the importance of pelvic-floor exercises.

9. Training

Practitioners who are appropriately trained are more likely to provide a consistent, high standard of perineal repair.

✓

Twenty-four-hour cover should be provided by an experienced practitioner to facilitate training and to provide support and supervision.

✓

A survey carried out at a London hospital clearly highlighted the deficiency and dissatisfaction among trainee doctors and midwives with their training in perineal anatomy and repair.[43] There has been limited research carried out to evaluate methods of teaching and assessing surgical skills in obstetrics. Training may be improved by implementation of structured surgical skills courses with the use of models, perineal repair simulators, case scenarios and audiovisual material. Practitioners who are appropriately trained are more likely to provide a consistent, high standard of perineal repair. This should contribute to reducing maternal morbidity and litigation associated with this procedure.

10. Risk management

Audit of perineal repair practice ensures high standards of clinical care. ✓

Perineal damage can have a major adverse impact on women's health. Long-term morbidity associated with anatomically incorrect approximation of wounds or unrecognised trauma to the external anal sphincter can lead to major physical, psychological and social problems. Mismanagement of perineal trauma is a source of obstetric litigation.

Accurate and comprehensive documentation is vital; records should be made in black ink, including a diagram to illustrate the extent of the trauma, and the operator should sign and print their name.

Women who explicitly request not to have sutures inserted must be given the opportunity to discuss their concerns with the person providing care.The perineal tear must be thoroughly inspected, using good lighting and the extent of injury must be carefully documented in the hospital case notes. For those women who refuse to be examined it is essential to inform them of potential risks which may occur if trauma to the sphincters remains undetected.

Women should be given information regarding the extent of perineal trauma sustained and how and when to seek advice if problems occur. It is important that women are encouraged to report any problems and that they receive sensitive, appropriate and effective treatment.

11. Audit topics

- Rate of episiotomy and perineal tears in primiparous women delivering spontaneously.
- Training of staff performing perineal repair.
- Review of case notes for quality of record keeping relating to perineal repair.

References

1. Royal College of Obstetricians and Gynaecologists. *Management of third- and fourth-degree perineal tears following vaginal delivery.* Guideline No. 29. London: RCOG Press; 2001.
2. Sultan AH. Obstetrical perineal injury and anal incontinence. *Clinical Risk* 1999;5:193–6.
3. Norton C, Christiansen J, Butler U, Harari D, Nelson RL, Pemberton J, *et al*. Anal Incontinence. In: Abrams P, Cardozo L, Khoury, Wein A, editors. *Incontinence*. 2nd ed. Plymouth: Health Publication; 2002. p. 985–1044.
4. Mann T. *Clinical guidelines: using clinical guidelines to improve patient care with the NHS*. London: NHS Executive; 1996.
5. McCandlish R, Bowler U, Van Asten H, Berridge G, Winter C, Sames L, *et al*. A randomised controlled trial of care of the perineum during second stage of normal labour. *Br J Obstet Gynaecol* 1998;105:1262–72.
6. Sleep J, Grant A, Garcia J, Elbourne D, Spencer J, Chalmers I. West Berkshire perineal management trial. *BMJ* 1984;289:587–690.
7. Klein MC, Janssen PA, MacWilliam L, Kaczorowski J, Johnson B. Determinants of vaginal-perineal integrity and pelvic floor functioning in childbirth. *Am J Obstet Gynecol* 1997;716:403–10.
8. Renfrew MJ, Hannah W, Albers L, Floyd E. Practices that minimise trauma to the genital tract in childbirth: a systematic review of the literature. *Birth* 1998;25:143–60.
9. Wood J, Amos L, Rieger N. Third degree anal sphincter tears: risk factors and outcome. *Aust N Z J Obstet Gynaecol* 1998;38:414–7.
10. Shipman MK, Boniface DR, Tefft ME, McCloghry F. Antenatal perineal massage and subsequent perineal outcomes: a randomised controlled trial. *Br J Obstet Gynaecol* 1997;104:787–91.
11. Labrecque M, Eason E, Marcoux S, Lemieux F, Pinault JJ, Feldman P, *et al*. Randomized controlled trial of prevention of perineal trauma by perineal massage during pregnancy. *Am J Obstet Gynecol* 1999;181:593–600.
12. Hodnett ED, Gates S, Hofmeyr GJ, Sakala C. Continuous support for women during childbirth. Cochrane Database Syst Rev 2003;CD003766.
13. Gupta JK, Nikodem VC. Position for women during second stage of labour. *Cochrane Database Syst Rev* 2003;CD002006.
14. Howell CJ. Epidural versus non-epidural analgesia for pain relief in labour. *Cochrane Database Syst Rev* 2002; CD000331.
15. Nikodem VC. Sustained (Valsalva) vs exhalatory bearing down in 2nd stage of labour. *Cochrane Database Syst Rev* 1994;(2).
16. Johanson RB, Menon BKV. Vacuum extraction versus forceps for assisted vaginal delivery. *Cochrane Database Syst Rev* 2002;CD000224.
17. Carroli G, Belizan J. Episiotomy for vaginal birth. *Cochrane Database Syst Rev* 2003;CD000081.
18. Wagner M. *Pursuing the Birth Machine: The Search for Appropriate Birth Technology*. Camperdown, Sydney: ACE Graphics; 1994. p. 165–74.
19. Department of Health. Statistical Bulletin - NHS Maternity Statistics, England: 2001–2002. London: DH; 2003. [www. publications. doh. gov. uk/public/sb0309. htm].
20. Graves EJ, Owings MF. *Summary: National Hospital Discharge Survey. Advance Data from Vital Health Statistics of the Centers for Disease Conrtol and Prevention/National Center for Health Statistics*. No. 291. Washington DC: US Department of Health and Human Services; 1997 [www.cdc.gov/nchs/products/pubs/pubd/ad/300-291/ad291.htm].
21. Graham ID, Graham DF. Episiotomy counts: trends and prevalence in Canada, 1981/1982 to 1993/1994. *Birth* 1997;24:141–7.
22. de Leeuw JW, Struijk PC, Vierhout ME, Wallenburg HCS. Risk factors for third degree perineal ruptures during delivery. *BJOG* 2001;108:383–7.
23. Glazener CMA, Abdalla M, Stroud P, Naji S, Templeton A, Russell IT. Postnatal maternal morbidity: extent, causes, prevention and treatment. *Br J Obstet Gynaecol* 1995; 102:286–7.
24. Sleep J. Perineal care: a series of five randomized controlled trials. In: Robinson S, Thomson A, editors. *Midwives, Research and Childbirth*. London: Chapman and Hall; 1991. p. 199–251.
25. Sleep J, Grant A. Pelvic floor exercises in postnatal care. *Br J Midwifery* 1987;158–64.
26. Sultan AH, Kamm MA, Hudson CN. Anal sphincter disruption during vaginal delivery. *N Engl J Med* 1993; 329:1905–11.
27. Fleming EM, Hagen S, Niven C. Does perineal suturing make a difference? The SUNS trial. *BJOG* 2003;110:684–9.
28. Lundquist M, Olsson A, Nissen E, Norman M. Is it necessary to suture all lacerations after a vaginal delivery? *Birth* 2000;27:79–85.
29. Head M. Dropping stitches. Do unsutured tears to the perineum heal better than sutured ones? *Nursing Times* 1993;89:64–5.
30. Clement S, Reed B. To stitch or not to stitch? A long term study of women with unsutured perineal tears. *Practising Midwife* 1998;2:20–8.
31. Kettle C, Johanson RB. Absorbable synthetic vs catgut suture material for perineal repair. *Cochrane Database Syst Rev* 1999;CD000006.
32. Mahomed K, Grant A, Ashurst A, James D. The Southmead Perineal Suture Study. A randomised comparison of suture materials and suturing techniques for repair of perineal trauma. *Br J Obstet Gynaecol* 1989;96:1272–80.
33. Mackrodt C, Gordon B, Fern E, Ayers H, Truesdale A, Grant A. The Ipswich Childbirth Study: 2. A randomised comparison of suture materials and suturing techniques for repair of perineal trauma. *Br J Obstet Gynaecol* 1998; 105:441–5.
34. Coated vicryl Polyglactin 910. Product information. Ethicon Ltd., UK.
35. Vicryl Rapide. Product information. Ethicon Ltd., UK.
36. Gemynthe A, Langhoff-Roos J, Knudsen SS. New VICRYL formulation: an improved method of perineal repair? *Br J Midwifery* 1996;4:230–4.
37. McElhinney BR, Glenn DRJ, Dornan G, Harper MA. Episiotomy repair: vicryl versus vicryl rapide. *Ulster Med J* 2000;69:27–9.
38. Kettle C, Hills RK, Jones P, Darby L, Gray R, Johanson R. Continuous versus interrupted perineal repair with standard or rapidly absorbed sutures after spontaneous vaginal birth: a randomised controlled trial. *Lancet* 2002;359:2217–23.
39. Kettle C, Johanson RB. Continuous versus interrupted sutures for perineal repair. *Cochrane Database Syst Rev* 2003;CD000947.
40. Fleming N. Can the Suturing Method make a Difference in Postpartum, Perineal Pain. *J Nurse-Midwifery* 1990; 35:19–25.
41. Gordon B, Mackrodt C, Fern E, Ayers H, Truesdale A, Grant A. The Ipswich Childbirth Study: 1. A randomised evaluation of two stage postpartum perineal repair leaving the skin unsutured. *Br J Obstet Gynaecol* 1998;105:435–40.
42. Oboro VO, Tabowei TO, Loto OM, Bosah JO. A multicentre evaluation of the two-layer repair of postpartum perineal trauma. *J Obstet Gynaecol* 2003;1:5–8.
43. Sultan AH, Kamm MA, Hudson CH. Obstetric perineal trauma: an audit of training. *J Obstet Gynaecol* 1995; 15:19–23.

APPENDIX

Clinical guidelines are: 'systematically developed statements which assist clinicians and patients in making decisions about appropriate treatment for specific conditions'. Each guideline is systematically developed using a standardised methodology. Exact details of this process can be found in Clinical Governance Advice No. 1: *Guidance for the Development of RCOG Green-top Guidelines* (available on the RCOG website at www.rcog.org.uk/clingov1). These recommendations are not intended to dictate an exclusive course of management or treatment. They must be evaluated with reference to individual patient needs, resources and limitations unique to the institution and variations in local populations. It is hoped that this process of local ownership will help to incorporate these guidelines into routine practice. Attention is drawn to areas of clinical uncertainty where further research may be indicated.

The evidence used in this guideline was graded using the scheme below and the recommendations formulated in a similar fashion with a standardised grading scheme.

Classification of evidence levels

Ia	Evidence obtained from meta-analysis of randomised controlled trials.
Ib	Evidence obtained from at least one randomised controlled trial.
IIa	Evidence obtained from at least one well-designed controlled study without randomisation.
IIb	Evidence obtained from at least one other type of well-designed quasi-experimental study.
III	Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.
IV	Evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities.

Grades of recommendations

A	Requires at least one randomised controlled trial as part of a body of literature of overall good quality and consistency addressing the specific recommendation. (Evidence levels Ia, Ib)
B	Requires the availability of well controlled clinical studies but no randomised clinical trials on the topic of recommendations. (Evidence levels IIa, IIb, III)
C	Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates an absence of directly applicable clinical studies of good quality. (Evidence level IV)

Good practice point

✓	Recommended best practice based on the clinical experience of the guideline development group.

This Guideline was produced on behalf of the Guidelines and Audit Committee of the Royal College of Obstetricians and Gynaecologists by:
Dr C Kettle, research midwife, Stoke-on-Trent, and Professor PMS O'Brien FRCOG, Stoke-on-Trent
and peer reviewed by:
Miss EJ Adams MRCOG, Liverpool; Dr S Bewley FRCOG, London; Dr AD Cameron MRCOG, Glasgow; Dr AM Mathers FRCOG, Glasgow; Professor RE McCandlish, School of Nursing and Midwifery, University of Southampton; Miss HJ Mellows FRCOG, Worksop; Professor JP Neilson FRCOG, Liverpool; RCOG Consumers Forum; Mr AH Sultan MRCOG, Croydon.

The final version is the responsibility of the Guidelines and Audit Committee of the RCOG.

The previous version of this guideline was produced on behalf of the Royal College of Obstetricians and Gynaecologists by:
Dr Kettle and Mr RB Johanson MRCOG.

Valid until June 2007
unless otherwise indicated