PERINEAL WOUNDS commonly occur in women during labour (Albers et al 2005). A cross-sectional survey of 101 randomly selected NHS trusts in the UK in the mid-1990s revealed that 83% of low risk primigravidae experienced some form of perineal trauma (Williams et al 1998). Many women also experience labial tears, grazes or vulval varicosities which are painful (Steen 2007). Perineal wounds sustained during childbirth can cause acute pain and distress (Wenderlein and Merkle 1983, Verspyck et al 2006). The intensity of the pain varies from mild to severe (Kettle 2001, Steen 2007) and appears to be related to the extent of injury (Kenyon and Ford 2004).

Interventions used during labour for delivery and pain relief that are thought to increase the risk of perineal injury and pain include (MacArthur and MacArthur 2004):

- Instrumental delivery.
- Epidural anaesthesia.
- Episiotomy.

Major themes in the literature include assessment of perineal trauma, the need for episiotomy, suturing methods and materials and treatment of the perineum in the postpartum period, but there are many gaps in the literature and the evidence base underpinning care (Calvert and Fleming 2000).

Classification of perineal wounds

Perineal wounds occur spontaneously during labour or are surgically induced by performing episiotomy. Perineal tears are classified according to the severity of the wound and the number of tissue layers involved (Box 1). They are most common in primigravidae because the perineum is more likely to be rigid, but they can occur with later births (Hanratty 2003). Most spontaneously occurring perineal tears are classified as second degree tears (Steen 2007). The incidence of third and fourth degree tears is estimated to be 0.6-9.0% (Davis et al 2003). Although numbers are small, these cases are clinically significant because of the distress they cause (Steen 2007).

The assessment and classification of genital tract injury is an important aspect of the routine care women receive as soon as the baby is born (Steen and Cooper 1997). The purpose is to identify trauma requiring intervention, stop bleeding, take measures to promote healing and restore function to the traumatised tissues. The National Institute for Health and Clinical Excellence (NICE) (2006) recommends that every postpartum woman should be asked about perineal pain at each professional contact. In the period immediately after childbirth women are most likely to receive care from a midwife or a health visitor. However, the length of time required for healing can vary according to the extent of trauma, while perception of pain is highly individual (McCandlish 2001). Thus women may continue to experience pain and discomfort beyond the early postpartum period (Hartmann et al 2005). Any nurse or midwife consulted by a new mother should ask about persistent perineal pain and be able to identify the extent of injury, the progress of healing and suggest strategies for pain relief.

Episiotomy

An episiotomy is a perineal incision made during childbirth by a doctor or a midwife to help complete the second stage of labour, ostensibly to improve...
art & science  wound care focus

fetal and maternal outcomes (American College of Obstetricians and Gynaecologists (ACOG) 2006). The clinical indications are shown in Box 2. Immediate benefits are reported to include reduced risks of perineal trauma and tearing, bleeding, infection and wound dehiscence (ACOG 2006). However, if episiotomy is performed too late, tearing of the vagina and deep perineal muscles may occur anyway. If it is attempted too early there is a risk of heavy bleeding (Hanratty 2003). Those arguing in favour of episiotomy believe that it reduces the incidence of pelvic floor dysfunction and genitourinary prolapse, sexual dysfunction and incontinence, but these longer-term benefits have also been questioned (ACOG 2006).

Episiotomy was first described by a Scottish midwife in the 1740s but was not widely used until the middle of the 20th century (Thacker and Banta 1983). It has since become a common procedure worldwide (Kettel and Johanson 1998) and is undertaken routinely in many centres (ACOG 2006). In the UK episiotomy rates vary from 26% to 67% of all mothers depending on the centre, with an overall incidence of 40% (Williams et al 1998). This reflects the lack of professional consensus about when it is considered necessary, its benefits and the associated risks to women (Hartmann et al 2005, ACOG 2006).

The likelihood of undergoing episiotomy increases with the length of the second stage of labour irrespective of whether delivery is instrumental (Williams et al 1998). Episiotomy has generated much debate and many studies have been designed to evaluate whether it improves maternal outcomes. Much of our current knowledge comes not from the results of individual trials, but through systematic literature reviews summarising the results of many studies, often with pooled analysis of their collective data. The technique used to perform episiotomy influences the extent of trauma, blood loss and healing (Steen and Cooper 1997, Steen 2007).

Surgical technique A number of different techniques are used to undertake episiotomy (Verspyck et al 2006). The incision, performed with a scalpel or surgical scissors, can be made in a mediolateral position or along the midline of the perineum (Figure 1). Right mediolateral episiotomies are most often performed in the UK because they result in a shorter wound (Bodner-Adler et al 2001). The midline of the perineum is less vascular. Thus an incision made in this area should result in less bleeding, bruising, inflammation and oedema and should, therefore, be less painful. However, perineal tears are more likely to occur after midline episiotomy (Buppasiri et al 2005). A poorly sited incision will increase scarring, which causes discomfort by friction against clothing (Wenderlein and Merkle 1983). Many women report pain when the incision is made and when it is sutured, despite local anaesthesia (Wenderlein and Merkle 1983). The evidence from a major systematic review derived from all studies published in the English language from 1950 to 2004 indicated that three months after delivery large numbers of women continued to report pain irrespective of the technique used (Hartmann et al 2005). Moreover, severity of perineal laceration was not reduced when episiotomy was performed and there was no evidence that one technique was better than another.

Wound healing This takes place in overlapping stages and is influenced by the amount of tissue that has been lost (Box 3). In cases of minimal trauma spontaneous healing is possible by first intention. Healing by first intention is also possible when a clean incision is made by a scalpel or surgical scissors, but with this more extensive trauma sutures are frequently used to promote healing by holding the wound edges together (Vuolo 2006). Scar formation is reduced when wounds heal by primary intention. Perineal wounds are usually sutured to speed tissue repair,
minimise infection and restore normal function (Fleming et al 2003). However, there is some debate about whether or not perineal tears and episiotomy wounds should be sutured because of the additional trauma and because the suture material as a foreign body increases the risk of infection, especially in an area where bacterial counts are high (Johnson 1988).

Gordon et al (1998) explored pain and healing when suturing was not attempted in 1,780 women undergoing episiotomy after first or second degree perineal tears following spontaneous or straightforward instrumental delivery. Women were allocated either to a control group, which received sutures, or to a treatment group, which did not. They were assessed by a midwife and completed a questionnaire 24 hours after delivery and again at 48 hours, ten days and three months postpartum. There were no differences in reports of pain, incidence of wound breakdown and need for re-suturing between the two groups. However, three months later, women who had not received sutures reported significantly less perineal pain and were less likely to report dyspareunia. These findings contrast with a more recent but much smaller prospective cohort study in five maternity units which followed up 282 women who had second-degree perineal tears. Women who did not receive sutures reported more urinary frequency ten days later and were more likely to seek medical help for perineal problems after 12 months (Metcalfe et al 2006).

The findings of these two studies are difficult to compare because their populations were dissimilar – one sample contained women with first and second degree tears and the other examined second degree tears only. Tissue damage following episiotomy is generally greater than for women who have first or second degree tears. The trial reported by Gordon et al (1998) combined women who had and had not experienced instrumental delivery, which is thought to contribute to perineal trauma and pain (MacArthur and MacArthur 2004). A controlled trial by Fleming et al (2003) indicated that, although suturing does not reduce pain among primigravidae six weeks postpartum following non-instrumental delivery with first or second degree tears, healing is significantly better.

**Method of wound closure**

Episiotomy wounds and third or fourth degree perineal tears are repaired in three layers using absorbable sutures (Hanratty 2003). This involves closing:

- The vaginal skin with a continuous suture.
- The underlying muscle with interrupted sutures.
- The perineal skin with either a continuous or interrupted sutures.

**BOX 3**

The stages of wound healing

- Proliferative phase: inflammation, formation of new collagen fibres, angiogenesis and epithelialisation to cover the raw wound surface.
- Maturation of the wound.

(Winter 1962)

If perineal wounds or episiotomies are not sutured, they heal by secondary intention. Scar tissue replaces the tissue lost through trauma. Healing takes place mainly by contraction brought about by specialised cells in the granulation tissue called myofibroblasts. Epithelialisation over the wound surface is less important than in wounds able to repair by primary intention (Leaper 1995). When healing takes place by secondary intention, tissue repair can be prolonged. It is more likely to result in scarring through repeated episodes of inflammation accompanied by over-granulation.

Numerous research studies and systematic reviews have been undertaken to establish which suturing techniques and materials are less likely to cause pain and discomfort. Non-absorbable sutures, such as polypropylene, are generally considered unsuitable for perineal wounds because they need to be removed, increasing pain and trauma (Bryant 1992). However, even when absorbable sutures, such as polyglycolic acid, are used to close perineal wounds, some of the suture material may have to be removed manually and there is no evidence to suggest that absorbable synthetic sutures produce better outcomes for women (Verspyck et al 2006).

The technique of suturing has received considerable research attention. A systematic review of four studies involving a total of 1,864 women compared interrupted sutures and continuous subcuticular sutures. Ten days later...
Factors influencing healing and infection

Extrinsic risk factors can be modified by women and health professionals. Women can be advised on diet during pregnancy and postpartum to avoid anaemia and to promote healing by including sufficient calories, protein and vitamins. Excess weight gain during pregnancy should be avoided because obesity is associated with poor maternal outcomes (Cedergren 2004). Dietary fibre is important to prevent constipation which could place undue tension on the healing tissue or sutures. Women who smoke should be encouraged to give up smoking and poor healing (Silverstein 1992).

Postpartum care

There are a number of aspects to be considered in the postpartum care of patients who have undergone an episiotomy. Each patient will have
different needs and preferences regarding treatment and staff should liaise with patients to assess which is most effective for each individual.

**Pain relief**

Perineal pain disrupts normal activities, makes breastfeeding more difficult because the woman cannot adopt a comfortable position and affects bowel function and sexual activity (McCandlish 2001). Yet despite the number of women who experience it, providing adequate relief continues to be a challenge. The best approach is to combine systemic and localised strategies (Steen et al 2006).

**Oral analgesia**

There has been little evaluation of the effectiveness of analgesia provided for perineal trauma and episiotomy (Verspyck et al 2006). Steen et al (2006) recommend paracetamol. However, a codeine derivative combined with paracetamol (Tylenol®) is more effective, but codeine can cause constipation (Steen and Marchant 2007).

Dextropropoxyphene with paracetamol (co-proxamol) avoids the problem of constipation (Steen and Marchant 2007). Non-steroidal anti-inflammatory drugs may contribute to bruising and inflammation so they may not be the best choice of analgesia for women with perineal pain (Steen et al 2006).

**Local pain relief**

Over the years various remedies have been suggested to help relieve perineal pain, including salt added to bath water, aromatherapy oils and witch hazel. Taking a bath can be comforting, but there is no evidence that adding salt, antiseptic (Skep and Grant 1988) or applying oils reduces pain (Dale and Cornwell 1994). Iced sitz baths, once widely recommended, are no longer popular because women dislike sitting in very cold water. Ice packs and cooling gel packs are now more widely used. They can provide relief, but the effects appear to be short-lived (Steen et al 2006). They probably achieve their effects by cooling the superficial tissues, numbing the nerve endings and reducing the effects of inflammation. They do not compromise healing (Steen et al 2006).

Women prefer gel packs because they are conformable and therefore have a cushioning effect. Cooling maternity gel pads effectively reduce oedema, bruising and pain (Steen et al 2000). Ice packs can have sharp edges which are uncomfortable to sit on (Steen and Marchant 2007). Some women get relief by sitting on special cushions.

**Longer-term pelvic floor dysfunction**

Genital prolapse and incontinence are common, though frequently unrecognized, conditions that have major implications for women’s quality of life (Bump and Norton 1998). Urinary and faecal...
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BOX 5

Meta-analysis

A statistical technique used to combine the results of several studies into a single calculation (Khan et al 2001). It involves taking the individual results from each study and calculating a single summary statistic (effect measure) for all the studies. Pooling data in meta-analysis is only worthwhile if each study has addressed the same outcome measure and undertaken the same approach to measuring it, and also if the study populations and samples are comparable.


Although perineal wounds that occur spontaneously during labour are common and frequently accompanied by interventions that have the potential to increase pain and trauma, many aspects of care continue to be under-researched. Despite numerous large-scale studies and little analysis, there is little evidence to underpin interventions intended to reduce the risk of infection, alleviate pain and avoid damage to the pelvic floor. Further research needs to be undertaken to improve short and longer-term maternal outcomes.

Conclusion


