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Managing perineal trauma after childbirth

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Every year millions of women worldwide sustain trauma to the perineum when giving birth. Around 6% of these women will have short term wound complications such as infection and dehiscence.¹ Some are also at risk of long term problems such as dyspareunia, pain, urinary and faecal incontinence, pelvic organ prolapse, and psychosocial problems. Correct assessment and repair of this trauma is therefore essential to help reduce long term complications. In this review we focus on the management of childbirth related perineal trauma that does not involve injury to the anal sphincter complex (this has been dealt with previously²)—that is, first and second degree perineal trauma. We provide healthcare professionals caring for women during childbirth and the postnatal period with an overview of the current best evidence for the assessment, repair, and postnatal management of perineal trauma to reduce the incidence of complications in the short and long term.

What is perineal trauma?

Childbirth related perineal trauma is classified into degrees depending on the anatomical structures involved (box 1, see thebmj.com).^{3,4} First degree perineal trauma involves the perineal skin only, while second degree perineal trauma involves the perineal muscles, but not the anal sphincter complex. The perineum is commonly referred to as the area between the vagina and the anus; however, the correct anatomical definition encompasses the area reaching from the symphysis pubis to the coccyx and across between both ischial tuberosities (fig 1). Consequently, women may also sustain other trauma to the perineal area during childbirth such as labial, anterior vaginal wall, and para-urethral tears.

How common is it?

Because of differences in definitions and practices, the reported rates of childbirth related trauma vary widely between countries.⁵ In the United Kingdom, of the 85%

SOURCES AND SELECTION CRITERIA

We searched Medline and Embase from 1980 to date, limited to publications in English and to studies in women. Our search strategy used a combination of MeSH, textwords, and appropriate word variants of "perineal" or "trauma" and "obstetric" or "labour". We supplemented these sources with selected systematic reviews. Additional information cited includes evidence based guidelines and published consensus statements.

of women who sustain childbirth related perineal trauma (through either surgical episiotomy or spontaneous tear), 70% require suturing.⁶

What are the risk factors?

Several maternal and fetal factors are reported to be associated with perineal trauma (box 2). The association between trauma and intrinsic risk factors varies. Although the risk associations are well established, there is still lack of clarity about the actual contributing risk of other factors such as very restrictive episiotomy policies, maternal birthing position, optimal length of second stage of labour, or, indeed, the effect of multiple concomitant risk factors (for example, a large baby in the occipito-posterior position about to be delivered by a ventouse because of a prolonged second stage of labour).^{w6-w11}

How should perineal trauma be managed in the immediate post-delivery period?

Recommended repair technique and material for perineal trauma

A thorough, systematic examination of the perineum immediately after childbirth is essential to ensure recognition of the trauma, correct categorisation of the tear, and optimal management.⁷ If trauma is identified, a digital rectal examination is essential to exclude involvement of the anal sphincters or epithelium. A Cochrane systematic review exploring surgical repair of first and second

THE BOTTOM LINE

- 85% of women will sustain perineal trauma after childbirth, and at least 70% of these will require suturing
- Around 6% of affected women will experience important short term complications such as infection and wound dehiscence
- Problems can extend into the long term, such as dyspareunia, urinary and faecal incontinence, pelvic organ prolapse, psychosocial problems, and postnatal depression
- Timely assessment and repair of perineal trauma are necessary to ensure accurate repair
- Women should be given help and advice about perineal care after the birth
- Midwives, doctors, and health visitors caring for women in the postnatal period should ask appropriate questions and review the wound to ensure adequate healing

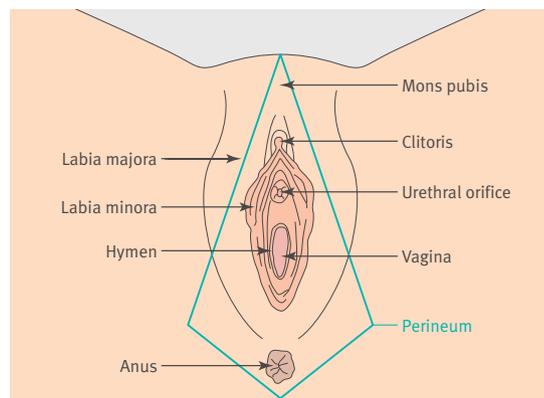


Fig 1 | Anatomical area defining the perineum. Adapted from image at natural.mamanz.blogspot.co.uk

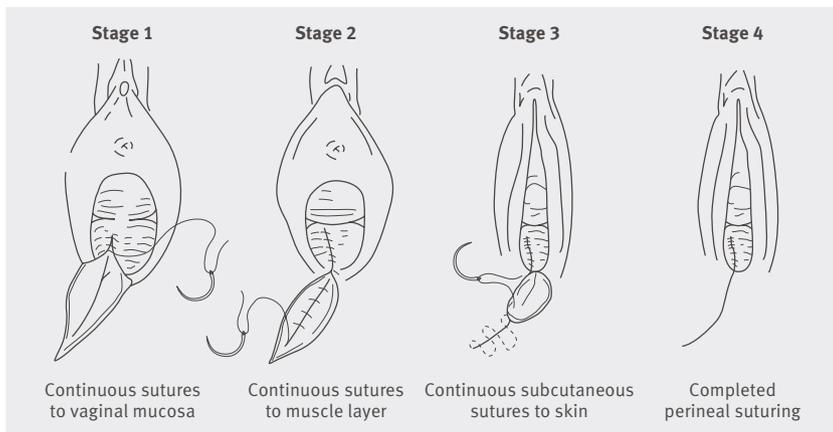


Fig 2 | Repair of second degree perineal injury/episiotomy using continuous suturing method. Adapted from image at helid.digicollection.org

Box 2 | Possible antenatal risk factors for childbirth related perineal trauma^{w1-w11}

- Race—Asian women seem to have a higher risk for severe perineal trauma
- First vaginal birth
- Infant weight >4000 g
- Female genital mutilation
- Previous perineal repair—scar tissue
- Fetal malposition
- Operative vaginal delivery
- Prolonged second stage of labour

degree tears compared with no intervention reported no difference in pain up to eight weeks post partum between the two groups (two trials, 154 women, no pooling of data). However, in one trial there was a significant difference in wound closure and poor wound approximation at six weeks post partum in the non-sutured group (16/36 (44%) v 26/31 (86%), P=0.001).⁸ The UK National Institute for Health and Care Excellence recommends that in order to improve healing women should be advised of the need to suture first degree trauma, unless the skin edges are well opposed, and that in the case of second degree trauma, the muscle should be repaired.⁷

If a repair is required, this should be undertaken or supervised by a skilled clinician. Use of appropriate methods and materials for repair is vital to achieve best outcomes. A series of Cochrane systematic reviews have consistently reported that the use of a subcutaneous continuous suture for skin closure is associated with less short term pain than an interrupted repair method. This benefit was greater when the continuous technique was used for all layers of the tear (vagina, muscles, and skin) (relative risk 0.76, 95% confidence interval 0.66 to 0.88, nine trials, 8184 women)⁹ (fig 2). Systematic reviews of randomised controlled trials investigating suture materi-

als for repair showed that rapidly absorbable polyglactin suture material significantly reduced the need for suture removal postnatally (relative risk 0.24, 95% confidence interval 0.15 to 0.36, two trials, 1847 women), and was associated with less short term pain and need for analgesia within the first 10 days post partum (0.57, 0.43 to 0.77, one trial, 1539 women).¹⁰ Both of these recommendations have been incorporated into the NICE intrapartum guidelines and are considered standard practice in the United Kingdom.⁷ Tears of the labia minora should be sutured whenever possible to promote healing and to avoid long term physical discomfort and dissatisfaction with the aesthetic outcome. Evidence is currently limited about the optimal methods and materials for repair of labial tears. The authors' preference is to use a fine rapidly absorbable polyglactin suture. The use of one or two layers and continuous or interrupted sutures depends on the shape, size, and depth of tear. Superficial labial or paraurethral grazes that do not bleed may not require suturing; however, women should be encouraged to part the labia on a daily basis to avoid formation of bands of adhesions.

Perineal repair training

The management of perineal trauma is an essential component of training in midwifery and obstetrics. In the United Kingdom, midwives undertake most of the assessments for childbirth related perineal trauma and repairs. Nevertheless, studies have reported a lack of knowledge of pelvic floor anatomy, assessment, and repair techniques in both midwives and doctors.⁹⁻¹¹ Bick and colleagues highlighted a gap between current evidence and its implementation into midwifery practice for perineal repair technique, owing to lack of training opportunities.¹² Later, the same group found that it was possible to close this gap by means of a multiprofessional training package, when tested within a cluster randomised controlled trial. Moreover, implementation of evidence was associated with improved patient reported outcome measures for perineal trauma.¹³ This intervention is now available as an online training package and accessible through the Royal College of Obstetricians and Gynaecologists (<https://stratog.rcog.org.uk>) and the Royal College of Midwives (www.rcm.org.uk/content/i-learn-and-i-folio) e-learning systems.¹⁴

A PATIENT'S PERSPECTIVE

I had an episiotomy during delivery that became infected and broke down. I saw my GP who gave me antibiotics but it wasn't until I came to the specialist perineal clinic that I felt I received the support I needed to cope with what I had experienced. I was made to feel "normal" again. The specialist perineal midwife helped me understand why I had the cut, about the infection, and the healing process. I was relieved to be told that the infection wasn't due to anything I had or hadn't done and that lots of women go through similar experiences. The first few weeks were overwhelming. The pain and worry with my stitches meant I had to stop breast feeding as it was too uncomfortable to sit and hold baby and I felt so worried that it would never heal. It took a lot longer to heal than I thought it would, three months in total, but regular check-ups at the perineal clinic reassured me that things were moving in the right direction. This has given me so much confidence and reassurance and after initially feeling too scared to have sex, I now feel prepared to have another baby.

What is the approach to assessment and management in primary care?

For most women, perineal tears heal reasonably quickly with no long term morbidity.⁴ Women should be advised to keep the wound dry and clean, with regular baths or showers, and to ensure good hand hygiene and regular changes of sanitary protection to avoid contamination of the perineum (box 3).

Several systemic factors may delay healing, such as anaemia, poor diet, smoking, and underlying health conditions (box 4).¹⁹

It is important to make women aware of the signs and symptoms of possible infection, such as an increase in pain, swelling, heavier blood loss, and offensive smelling discharge (box 3), and who to contact for prompt review if any problem is suspected. Midwives or general practitioners should offer to examine a woman's perineum

Box 3 | Postnatal advice for women with perineal trauma⁴

- Ensure good perineal hygiene, keeping the area clean and dry as much as possible and changing sanitary protection regularly
- Wash hands regularly, especially before and after changing sanitary protection or during cleaning of the perineum
- Take a daily bath or shower, making sure the perineum is washed with gentle soap and water only and rinsed with clear water. It is important that the wound is dried as much as possible either by patting gently with a soft, clean towel or using a hairdryer on a “cool” setting
- Be vigilant for signs and symptoms of perineal infection, such as an increase in pain, excessive discharge that has changed in colour or smells offensive, swelling, suture breakdown, and haematoma
- Take any prescribed analgesia regularly, and as directed
- Maintain a well balanced diet with adequate fluid intake to help promote healing and assist with breast milk production if required
- Undertake regular, gentle physical activity such as walking and start pelvic floor muscle exercises within 5-7 days of delivery

Box 6 | Possible complications of childbirth related perineal trauma

- Complications in the immediate postnatal period
- Perineal pain
- Infection
- Wound dehiscence—partial or complete
- Adhesions
- Areas of over-granulated tissue
- Postnatal depression—interruption to breast feeding and disruption of bonding
- Longer term morbidity
- Dyspareunia
- Psychosexual problems—altered body image or embarrassment, or both
- Nerve pain
- Urinary dysfunction
- Incontinence of faeces or flatus, or both
- Pelvic organ prolapse
- Financial implications—delay in returning to work
- Fear of repeat vaginal birth

Box 4 | Factors that may affect perineal wound healing¹⁹

- Obesity
- Malnutrition
- Smoking
- Stress and lack of sleep
- Underlying medical condition or need for ongoing drug treatments that can compromise wound healing
- Poor initial suturing repair—materials or methods, or both
- Misdiagnosis or inaccurate classification of the extent of trauma

Box 5 | Signs and symptoms of perineal wound infection⁴

- Increase in pain
- Oedema
- Abscess formation
- Cellulitis
- Excessive or offensive discharge
- Feeling generally unwell
- Pyrexia
- Wound dehiscence

at each postnatal visit, but the perineum should always be inspected whenever women present with concerns about their perineal wound to exclude signs of infection (box 5).⁴

The REEDA (Redness, oEdema, Ecchymosis, Discharge, and Approximation) assessment tool is formulated to detect infection. It also provides a good framework for assessment of all wounds to gauge normal healing (table). Although an increase in pain is an indicator of possible infection, most women experience varying degrees of perineal pain or discomfort in the first two weeks after vaginal birth that can affect their ability to mobilise. Women should be reassured that such symptoms are normal at particular stages of healing. It is reported that up to 20% of women who sustain perineal trauma continue to experience some pain at eight weeks post partum.^{15 16} Hence it is important to discuss adequate analgesia, taking into account women’s medical history and the chosen method for breast feeding. Non-drug treatments such as topical application of ice and cold gel packs applied to the perineal area can provide short term pain relief.¹⁷ Figure 3 illustrates “normal” healing of an episiotomy wound at three days after birth.

What are the complications of childbirth related perineal trauma?

Fear of perineal injury that requires suturing and worries about infection and wound breakdown are major concerns for women worldwide.^{18 19} In addition to infection, complications such as adhesions and areas of over-granulated tissue may arise and lead to longer term morbidity, which can have detrimental effects on women’s physical, psychosocial, and sexual wellbeing (box 6).¹

Infection

Reported rates of wound infections vary widely, with estimates ranging from 0.1% to 5.5%.^{15 20} In the United Kingdom the lack of integration of information technology systems between community, primary, and secondary care makes it difficult to capture such data accurately.¹⁹ Use



Fig 3 | “Normal” healing of episiotomy wound at day 3 after birth

of the REEDA scoring tool, alongside documentation of any signs and symptoms suggestive of infection, allows a more objective assessment of the perineal wound (table). Infection is suspected when there is excessive exudate that is discoloured (rather than normal yellow) or smells offensive, abscess, erythema, or cellulitis. In such cases, wound swabs should be taken to identify causative organisms and antibiotics started in line with local guidelines.^{4 w12} We would recommend the use of broad spectrum antibiotics that cover a range of organisms, including anaerobes. Taking routine wound swabs in the absence of clinical signs of infection is likely to reveal non-causal bacteria and flora and is therefore not recommended.^{w13}

Wound dehiscence

Wound dehiscence, either partial or complete, is often reported to be a consequence of infection. Current practice in the United Kingdom favours expectant management,

REEDA wound assessment tool

Score	Redness	oEdema	Ecchymosis	Discharge	Approximation
0	None	None	None	None	Closed
1	Mild: <0.5 cm	Mild: <1 cm	Mild: <1 cm	Serum	Skin separation ≤3 mm
2	Moderate: 0.5-1 cm	Moderate: 1-2 cm	Moderate: 1-2 cm	Serosanguineous	Skin and subcutaneous fat separation
3	Severe: >1 cm	Severe: >2 cm	Severe: >2 cm	Purulent	Skin and subcutaneous fat and fascial layer separation

Severity is measured in distance (cm) from each side of wound edges.

with antibiotic cover, allowing the dehisced wound to heal by secondary intention.¹⁹ However, some clinicians recommend secondary suturing once infection has been excluded or treated. Advocates of resuturing claim that expectancy is a protracted process whereby granulation tissue fills the open space between the skin edges, increasing the risk of over-granulated tissue, scarring, and further infection. In contrast, clinicians who support expectant management argue that resuturing is an additional surgical procedure that carries the risk of recurrence of wound infection and breakdown. A Cochrane systematic review reported that there is currently no high level evidence in support of either management option.²¹ In response to this, a randomised controlled trial was designed to ascertain the feasibility of conducting a full scale trial evaluating both management options.²² Regardless of the management option chosen, and to avoid the risk of systemic sepsis and its detrimental effects,²³ it is imperative that women with perineal infection are reviewed urgently, have their wound assessed, have relevant microbiological swabs taken, are prescribed appropriate antibiotics if required, and are regularly monitored throughout the healing process (fig 4). Ongoing observation should be by either the general practitioner

or the midwife in the primary care setting or by referral to a specialised perineal clinic, which some tertiary hospitals provide for both short and long term perineal complications.

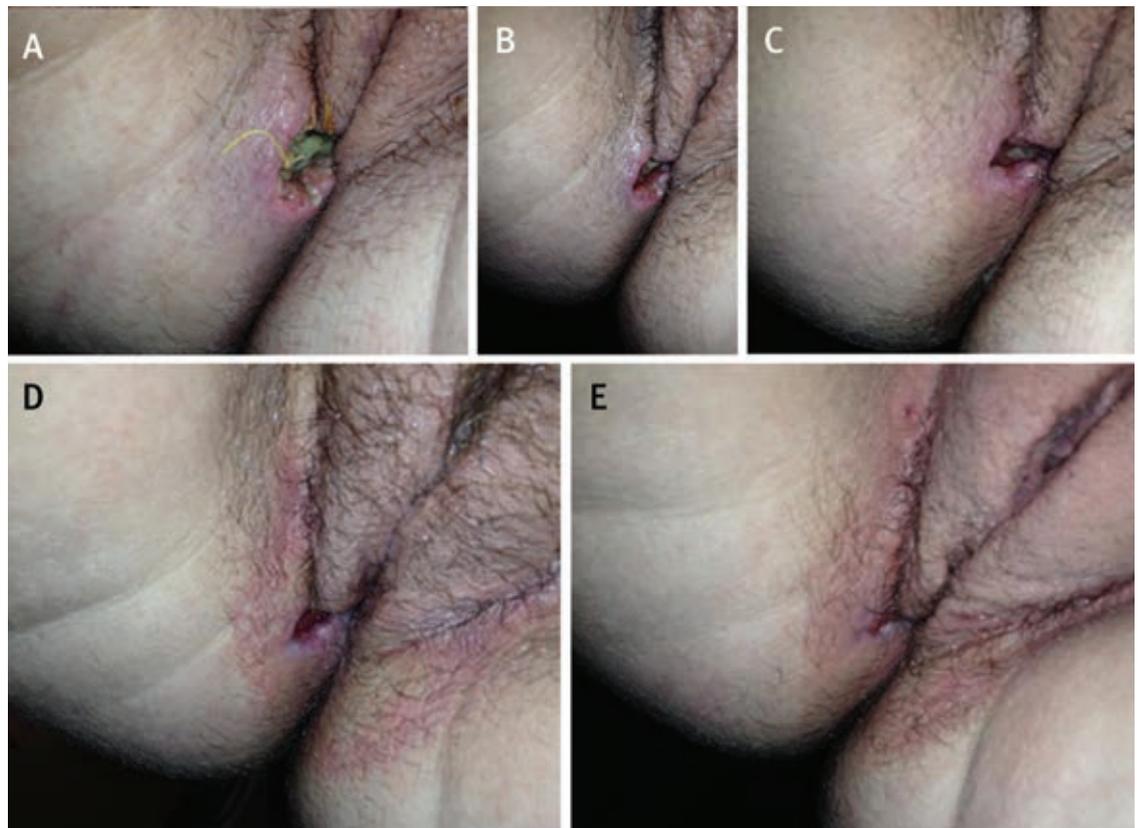
Excessive granulation tissue formation

The healing of perineal wounds by primary or secondary intention may result in the formation of excessive granulation tissue (fig 5, see thebmj.com). Women commonly mention what is perceived to be a skin tag that bleeds easily on touch and produces excessive discharge. In most cases this can be easily managed by a gynaecologist using silver nitrate in an outpatient setting. Rarely, it requires surgical excision or cauterisation under anaesthetic. In contrast, excessive scar tissue formation or poor alignment of tissues in the initial repair might require additional reconstructive surgery in the form of modified Fenton's procedure, perineal refashioning, or perineorrhaphy.²⁴

What is the impact of childbirth related perineal trauma on sexual function?

Perineal pain, associated dyspareunia, and impaired sexual drive can continue for up to six months after childbirth related perineal trauma and occasionally for up to three years.^{25 26} The suggested timing for resumption of sexual

Fig 4 | Episiotomy wound dehiscence after infection. This woman presented to her doctor with an increase in pain from her perineal sutures and offensive smelling discharge. She was initially prescribed a course of oral co-amoxiclav but a wound swab revealed a high growth of anaerobic organisms. The oral antibiotic was changed to metronidazole with good response: (A) postnatal day 7, (B) postnatal day 9, (C) postnatal day 13, (D) postnatal day 17, and (E) postnatal day 21



ADDITIONAL EDUCATIONAL RESOURCES

Resources for healthcare professionals

NICE. Intrapartum care: care of healthy women and their babies during childbirth. (www.nice.org.uk/CG55)—Evidence based guidance and advice for health, public health, and social care practitioners on the provision of intrapartum care

NICE. Postnatal care: routine postnatal care for women and their babies (www.nice.org.uk/CG37)—Evidence based guidance and advice for health, public health, and social care practitioners on the provision of postnatal care

MaternityPEARLS. Accessed through Royal College of Obstetricians and Gynaecologist (available to all, fee applies) or Royal College of Midwives (members only) (<https://stratog.rcog.org.uk> and www.rcm.org.uk/content/i-learn-and-i-folio)
—An online evidence based training package for perineal repair

Royal College of Midwives. Evidence based guidelines. No16. Care of the perineum. (www.rcm.org.uk/clinical-practice-and-guidance/evidence-based-guidelines)
—Online evidence based guidelines for postnatal perineal care, available through the Royal College of Midwives (members only)

Royal College of Midwives. Evidence based guidelines. No17. Suturing the perineum. (www.rcm.org.uk/clinical-practice-and-guidance/evidence-based-guidelines)
—Online evidence based guidelines for perineal repair, available through the Royal College of Midwives (members only)

Resources for patients

NICE. Postnatal care: routine postnatal care for women and their babies (www.nice.org.uk/guidance/qs37/resources/qs37-postnatal-care-information-for-the-public2)—Evidence based guidance and advice for women about routine postnatal care

NICE. Intrapartum care: care of healthy women and their babies during childbirth. (www.nice.org.uk/guidance/CG55/InformationForPublic)—Evidence based guidance and advice for women about routine intrapartum care

NHS Choices. (www.nhs.uk/conditions/pregnancy-and-baby/pages/you-after-birth.aspx#close)—Provides a range of information on pregnancy and the postnatal period

Chartered Society of Physiotherapy. (www.csp.org.uk/your-health/conditions/pregnancy-related-incontinence)
—Provides advice and assistance for pelvic floor exercises after childbirth

Bowel and Bladder Foundation (www.bladderandbowelfoundation.org/)
—Provides a range of information for women with bowel and bladder problems

activity and intercourse varies depending on country, cultural patterns, and beliefs.²⁶ Women often wait for reassurance from their doctor before resuming sexual intercourse and that the wound has fully healed.²⁷ Women can be reassured that changes to sexual function and desire are normal. One prospective cohort study of women with perineal trauma found that most had reported sexual activity by three months after delivery.²⁸ Women should be offered advice on contraception within the first 2-3 weeks after birth to ensure they have adequate precautions.⁴

What is the role of pelvic floor muscle exercises for women with perineal trauma?

Strong evidence supports the recommendations for structured pelvic floor muscle exercises during the antenatal period and after birth in cases of a large baby (>4000 g), operative vaginal delivery, or a prolonged second stage of labour.^{29 30} Although perineal trauma is not specifically targeted within this recommendation, these factors are strongly associated with perineal trauma.

No specific research has been carried out into the use of pelvic floor muscle exercises in first and second degree trauma, so physiotherapy should follow the principles of soft tissue healing. Initial management of perineal trauma concerns “RICE”—Rest, Ice, Compression, and Exercise. Early muscular contraction and relaxation enhances healing by revascularisation of damaged muscle fibres,

TIPS FOR NON-SPECIALISTS

Before discharge home, offer advice on hygiene to ensure that women understand how to care for their perineal wound

If women voice concerns or experience an increase in pain, always undertake a thorough perineal examination and inform the women of the findings

Always listen to women and answer all their concerns with reassurance and compassion

If a perineal wound appears infected prescribe a broad spectrum antibiotic and await swab results; schedule a follow-up appointment to review healing

Encourage gentle pelvic floor activation within 48 hours of delivery, followed by regular pelvic floor muscle exercises beginning 5-7 days after delivery

Take time to discuss resumption of sexual activity and the changes that women may experience

If women present with longer term problems that require referral to secondary care (for example, surgical removal of over-granulated tissue, excision of bands of adhesions, or skin tags) this should be done as soon as possible to ensure any necessary treatment is not delayed

QUESTIONS FOR FUTURE RESEARCH

What is the incidence of perineal wound infection and its longer term sequelae?

What is the best method for the management of perineal wound dehiscence in the immediate postnatal period?

Are there any antenatal or intrapartum interventions that can reduce the risk of childbirth related perineal trauma?

What are the psychosocial effects of perineal wound breakdown in women?

promotion of muscle growth factors, and resorption of the connective tissue scarring. Activation of pelvic floor muscle should therefore begin within 24 hours of birth to enhance soft tissue healing. Nonetheless, active pelvic floor muscle exercises might not be feasible for a few days after perineal repair. Later stage rehabilitation of the pelvic floor then follows muscle retraining principles of matching training with the function required of the pelvic floor. The aim of pelvic floor muscle exercises after perineal trauma is to re-establish fully functioning pelvic floor muscles that are able to contract and relax at will, have endurance to hold during any prolonged activity, and have the strength to match any reasonable force.³⁰

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References are in the version on thebmj.com.