

CHAPTER 36

Complex perineal and anal sphincter trauma

Introduction

Perineal trauma resulting from childbirth remains a common problem that is associated with considerable maternal morbidity, and may have a devastating effect on family life and sexual relationships. Following vaginal birth: more than 85% of women sustain perineal trauma, up to two-thirds need suturing and up to 30% sustain obstetric anal sphincter injuries (OASIS).

Many OASIS go unrecognised, and there is considerable under-reporting with incidences quoted as low as 1–2% of vaginal deliveries. Injury increases significantly in the presence of the following risk factors which often occur in combination: birth weight > 4 kg, persistent occiput posterior position, nulliparity, induction of labour, epidural anaesthesia, prolonged second stage > 1 hour; shoulder dystocia; midline episiotomy and forceps delivery. Detection rates are increased by increased awareness and training, but 'occult' anal sphincter injury (i.e. defects in the anal sphincter detected by anal endosonography) from vaginal delivery is common and most commonly due to lack of recognition with misclassification as a second degree tear.

Definition of perineal trauma

Perineal trauma may occur spontaneously during vaginal birth or as a result of a surgical incision (episiotomy) that is intentionally made to facilitate delivery. It is also possible to have both an episiotomy and a spontaneous tear. The following classification of spontaneous perineal trauma described by Sultan has now been accepted by the Royal College of Obstetricians and Gynaecologists and also internationally by the International Consultation on Incontinence.

- *First degree:* Injury to vaginal or perineal skin only.
- *Second degree:* Injury to perineal muscles but not involving the anal sphincter.
- *Third degree:* Anal sphincter muscles torn.
Further subdivided into:
 - 3a: < 50% thickness of external sphincter torn.
 - 3b: > 50% thickness of external sphincter torn.
 - 3c: internal sphincter also torn.

- *Fourth degree:* A third-degree tear with disruption of the anal epithelium and tears where the anus and/or rectum are damaged
- *Button hole tear:* An isolated rectal mucosal tear without involvement of the anal sphincter.

Episiotomy

Episiotomy is a surgical incision of the perineum which increases the diameter of the vulval outlet to facilitate delivery. The mediolateral episiotomy (associated with fewer complications than the midline incision) extends from the midpoint of the posterior fourchette at an angle of 60 degrees from the midline at approximately 8 o'clock to avoid the anal sphincter complex.

Episiotomy should not be used routinely, but has a place in facilitating delivery in the following situations:

- fetal distress
- to allow access for internal manoeuvres during shoulder dystocia
- to minimise severe perineal trauma during an instrumental delivery, particularly forceps
- to aid vaginal delivery when the perineum appears thick and inelastic
- when prolonged 'bearing down' may be detrimental to the mother's health e.g. severe hypertension or cardiac disease.

Assessment of perineal trauma

The perineum must be examined thoroughly following the birth, with good exposure and lighting.

The assessment should include a rectal examination to exclude anal sphincter injury (Figure 36.1). This is of considerable importance, as 'buttonhole' injuries of the rectum can occur in isolation even with an intact perineum (Figure 36.2). The anal sphincter should be palpated with the index finger in the rectum and the thumb on the perineum or over the posterior fourchette while performing a pill-rolling motion. In the absence of an epidural, the woman could be asked to contract her anal sphincter to accentuate any anal sphincter disruption. The ends of a completely disrupted sphincter can retract (following the circular pattern of the external sphincter) and therefore may not be visible: care should be taken to explore any defects or 'spaces' at either side of the anus, as the torn free ends of muscle will be found in their depths (often at 8 o'clock and 4 o'clock respectively).

It is essential that, prior to examination or suturing, the procedure is explained to the woman and her partner and consent obtained.

Repair of perineal trauma

- 1 Excessive uterine bleeding should be managed appropriately prior to commencing the perineal suturing.

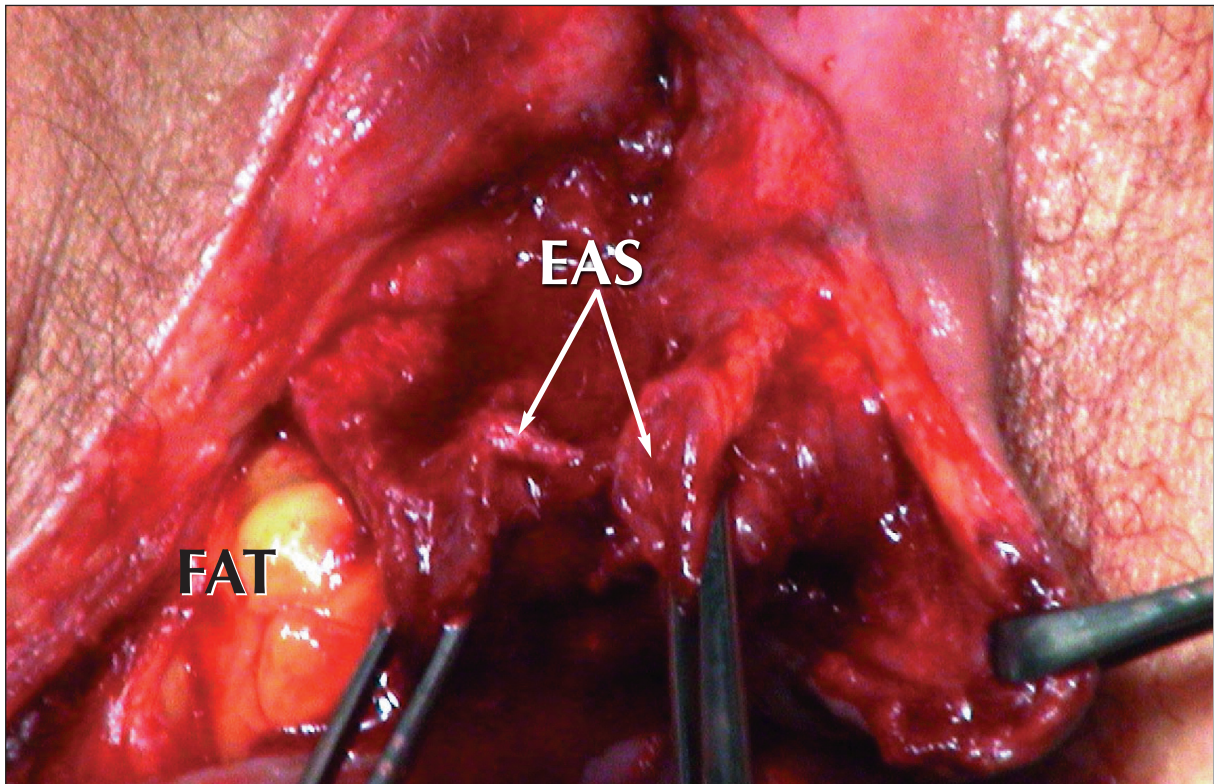


Figure 36.1 Third degree tear (Grade 3b) with the external AS (EAS) grasped by Allis forceps, the ischioanal fat is lateral to the EAS

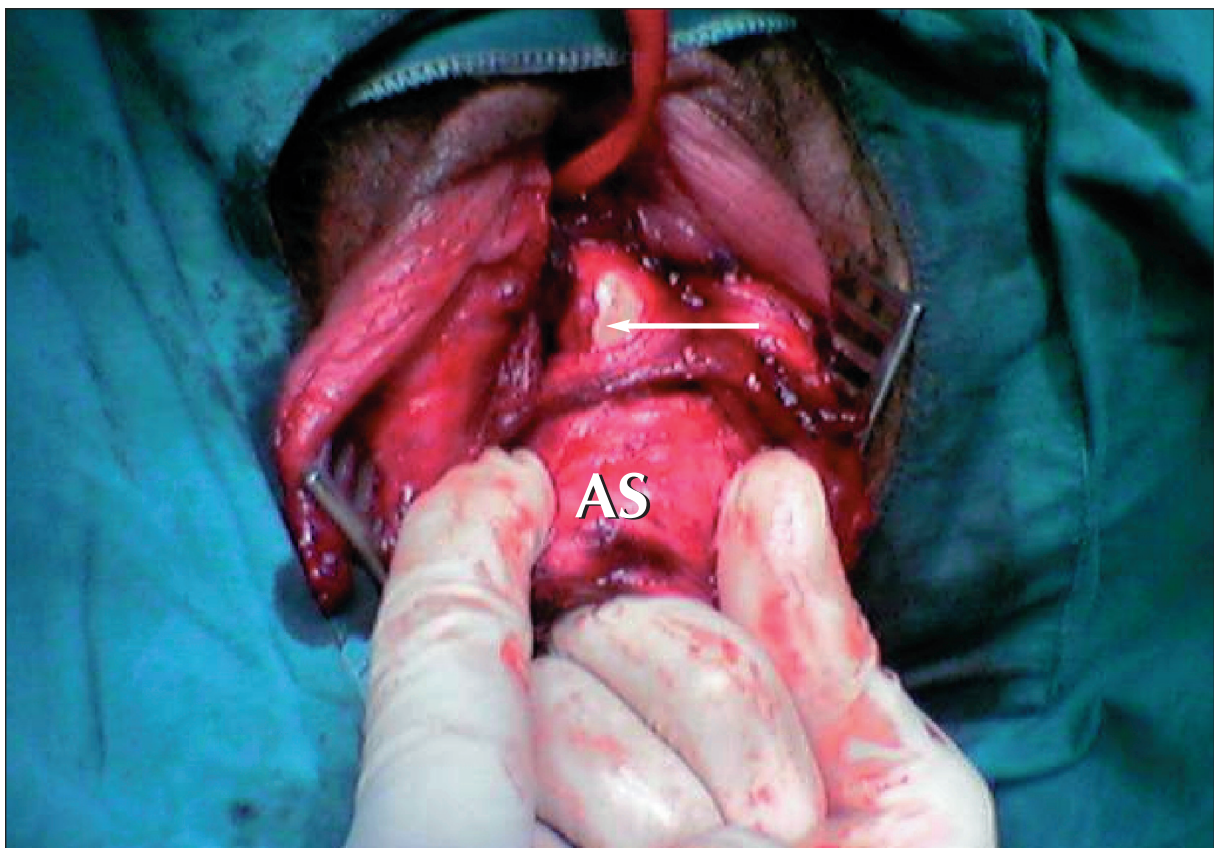


Figure 36.2 Arrow demonstrating a buttonhole tear in the rectum with an intact AS

- 2 Ensure that the wound is adequately anaesthetised prior to commencing the repair
 - a) local infiltration with 1% lignocaine is adequate for simple trauma, but extensive damage and difficult repairs may need more effective analgesia than the maximum dose of 20mls will achieve. Always be careful to avoid injecting directly into a vessel.
 - b) top up an existing epidural or administer regional anaesthesia; this is especially worthwhile for extensive trauma where access is difficult (e.g. high fornices trauma), or where the anal sphincter complex is involved.
- 3 A quick assessment should be made as to whether the operator is capable of completing the repair, as this facilitates request for senior assistance rather than struggling for ages before admitting defeat, during which time significant blood loss may have occurred.

Current research suggests that perineal trauma should be repaired using the continuous non-locking technique to reapproximate all layers in turn (vagina, perineal muscles and then subcuticular to the skin) with absorbable polyglactin 910 material (Vicryl rapide®).

- Be careful to identify the apex and check the extent of the trauma; whether the trauma is unilateral or bilateral and how deep it goes. The first stitch is inserted 5–10 mm above the apex of vaginal trauma to secure any bleeding points that may not be visible, and thence proceeds caudally. Any large bleeding vessels should be secured individually rather than ‘hiding them’ as continued bleeding can occur, concealed from view, to produce an ischiorectal haematoma.
- Check that the finished repair is anatomically correct, and complete haemostasis is achieved. Perform a vaginal examination, and check that the vagina is not stitched too tight.
- A rectal examination should be performed after completing the repair to ensure that suture material has not been accidentally inserted through the rectal mucosa.
- Check that all swabs, needles and instruments are correct.
- Following completion of the repair, the extent of the injury sustained, the suture technique and materials used must be documented in the case notes in black ink. It is also useful to include a diagram to illustrate the extent of the trauma.

Repair of third and fourth degree tears

- 1 A repair should be performed only by a doctor experienced in anal sphincter repair or by a trainee under supervision. If in any doubt about diagnosis, it would be prudent to inform the consultant and await a second opinion (see DVD – www.perineum.net).
- 2 Colorectal surgeons are not needed for straightforward third and fourth degree tears but the height of the damage when the tear is fourth degree is vital to assess; if the tear extends beyond the anal canal into the rectum *above the levator plate* then a defunctioning colostomy may be indicated and a surgical colleague should be involved (tears of this severity are rare).

- 3 Third and fourth degree tears should usually be repaired in the operating theatre where there is access to good lighting, appropriate equipment and aseptic conditions. The perineal repair pack should contain appropriate instruments (demonstrated in Figures 36.3 and 36.4).
- 4 General or regional (spinal/epidural) anaesthesia is an important pre-requisite, particularly for overlap repair, as the inherent tone of the sphincter muscle can cause the torn muscle ends to retract within the sheath. Muscle relaxation is necessary to retrieve the ends, especially if it is intended to overlap the muscles without tension.
- 5 The full extent of the injury should be evaluated by a careful vaginal and rectal examination in lithotomy, and graded according to the classification above.

Instruments	Sutures
<ul style="list-style-type: none"> ■ Weislander retractor (or Gilpin retractor) ■ Tooth forceps (fine and strong) ■ Needle holder (small and large) ■ Allis forceps (4) ■ Artery forceps (4) ■ McIndoe scissors ■ Stitch cutting scissors ■ Sims speculum ■ Deep vaginal side wall retractors ■ Sponge holding forceps (4) ■ Tampon ■ Large swabs ■ Diathermy 	<ul style="list-style-type: none"> ■ Anal epithelium <i>Vicryl 3-0, 26 mm round-bodied needle</i> ■ Internal anal sphincter <i>PDS 3-0, 26 mm round-bodied needle</i> ■ External anal sphincter <i>PDS 3-0, 26 mm round-bodied needle</i> ■ Perineal muscles <i>Vicryl rapide 2-0, 35 mm tapercut needle</i> ■ Perineal skin <i>Vicryl rapide 2-0, 35 mm tapercut needle</i>

Figure 36.3 Instruments and sutures used for repair of AS trauma

Step 1: suturing the anal epithelium

In the presence of a fourth-degree tear, the torn anal epithelium is repaired with polyglactin 3/0 (Vicryl®, Ethicon, Edinburgh, UK). Continuous or Interrupted sutures can be used (knots tied in the anal lumen).

Step 2: suturing the anal sphincter

(Prior to repairing the anal sphincter it is often worth securing the apex of the vaginal tear while access to it is facilitated by the sphincter tear, and then leave the suture with its needle protected ready to be completed later).



Figure 36.4 Instruments specifically used for repair of AS trauma. From left to right: tooth forceps; stitch cutting scissors; needle holder; McIndoe's scissors; artery forceps; Allis forceps; Weislander retractor

When torn the internal anal sphincter (IAS) should be identified and sutured separately from the external anal sphincter (EAS). The internal anal sphincter lies between the external sphincter and the anal epithelium. It is paler (raw fish-like) than the striated external sphincter (red meat-like) (Figure 36.5) and the muscle fibres run in a longitudinal fashion rather than the circular external sphincter. A torn internal sphincter should be approximated (not overlapped) with interrupted or mattress sutures using a fine monofilament suture material such as 3–0 polydioxanone (PDS) or braided 2–0 polyglactin (Vicryl). It is very important for obstetricians to identify and repair the torn internal sphincter as colorectal surgeons find it almost impossible to identify and therefore repair as a secondary procedure if these women present with faecal incontinence.

Repair of the EAS should be with either monofilament sutures such as polydioxanone (PDS) or braided sutures such as polyglactin (Vicryl).

For partial thickness tears (3a and 3b) an end to end technique should be used, while full thickness tears can be repaired with either an end to end approximation or an overlap technique, as the evidence to date indicates that there is no significant difference in anal incontinence with the end-to-end (Figure 36.6) or overlap (Figure 36.7) technique with full thickness tears.

The torn ends of the external anal sphincter are identified and grasped with Allis tissue forceps and whichever technique is used, care should be taken that the ends of the knots are buried beneath the perineal muscles, particularly when using PDS in order to minimise the risk of suture migration necessitating removal at a later date.

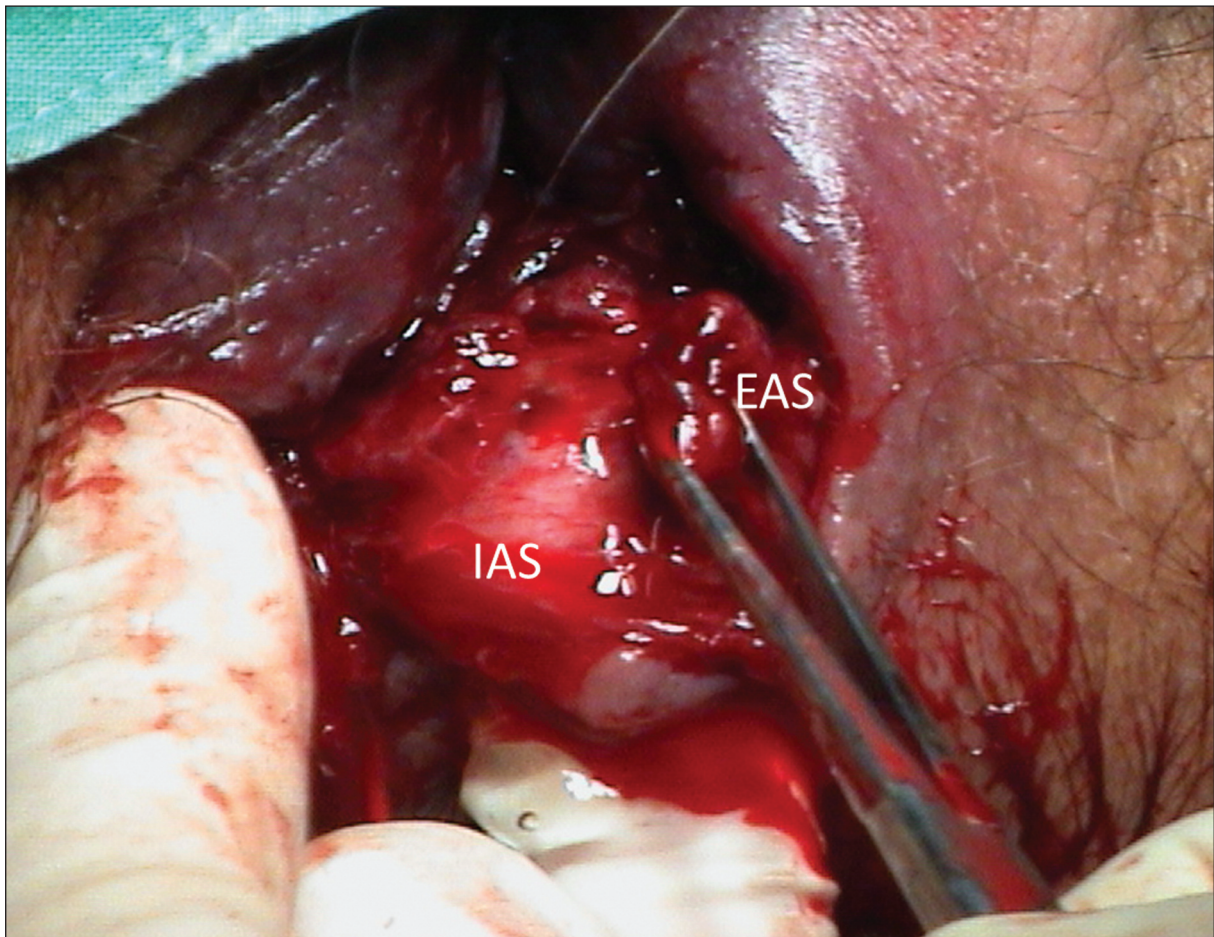


Figure 36.5 Third degree tear (Grade 3b) demonstrating intact IAS and torn ends of the EAS

If an end-to-end repair is being performed, mattress sutures are recommended (as figure of eight sutures may cause more ischaemia), two sutures are usually sufficient.

For an overlap repair, more extensive dissection is needed:

- the muscle may need mobilisation by dissection with a pair of McIndoe scissors separating it from the ischioanal fat laterally (Figure 36.1)
- then the external sphincter should be grasped with Allis forceps and pulled across to overlap in a 'double-breast' fashion
- the torn ends of the external sphincter can then be overlapped as shown
- it is important that the full length of the external sphincter is identified to ensure complete approximation or overlap

The vaginal skin is then sutured, the muscles of the perineal body are reconstructed and the perineal skin approximated (follow steps 1, 2 and 3 as for repair of episiotomy and second degree tears). Great care should be exercised in reconstructing the perineal muscles to provide support to the sphincter repair and burying the PDS sutures beneath the superficial

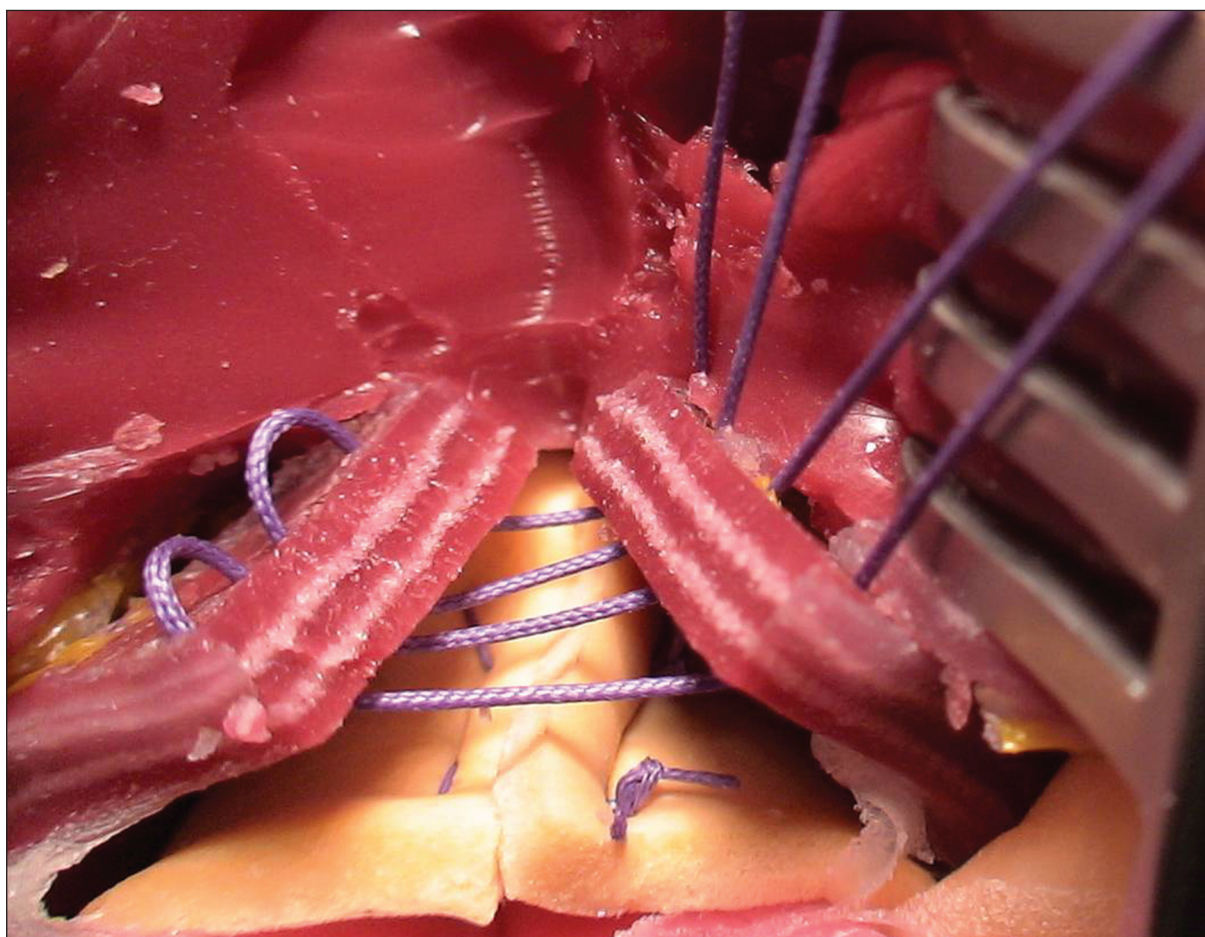


Figure 36.6 Diagrammatic representation of end-to-end repair with figure of eight sutures

perineum; muscles to avoid migration. A short, deficient perineum would make the anal sphincter more vulnerable to trauma during a subsequent vaginal delivery.

Procedure:

- As with all perineal repairs, a rectovaginal examination should be performed afterwards to confirm complete repair, make sure no sutures have inadvertently gone through the anorectal mucosa and to ensure that all tampons or swabs have been removed.
- Intravenous broad spectrum antibiotics (e.g. co-amoxiclav) should be commenced intraoperatively and continued orally for 5–7 days. Although there are no randomised trials to substantiate benefit of this practice, the development of infection could jeopardise repair and lead to incontinence or fistula formation.
- Severe perineal discomfort, particularly following instrumental delivery, is a known cause of urinary retention and following regional anaesthesia it can take up to 12 hours before bladder sensation returns. A Foley catheter should be inserted for between 12–24 hours and then midwifery staff should check that spontaneous voiding occurs on its removal.

After care:

- Regular, effective analgesia is essential to facilitate early mobilisation. Good note-keeping of the findings and repair techniques is essential. A pictorial representation of the tears may prove to be useful when notes are being reviewed following complications, audit or litigation.
- As passage of a large bolus of hard stool may disrupt the repair, a stool softener (Lactulose 10 to 15 ml twice daily) should be prescribed for 10–14 days post-operatively. The woman must be made to understand the extent of the tear and advised how to seek help if symptoms of infection or incontinence develop.
- The woman should be reviewed before she goes home, instructed in perineal care and asked to commence pelvic floor exercises when comfortable.
- Follow up is recommended in a dedicated perineal clinic.

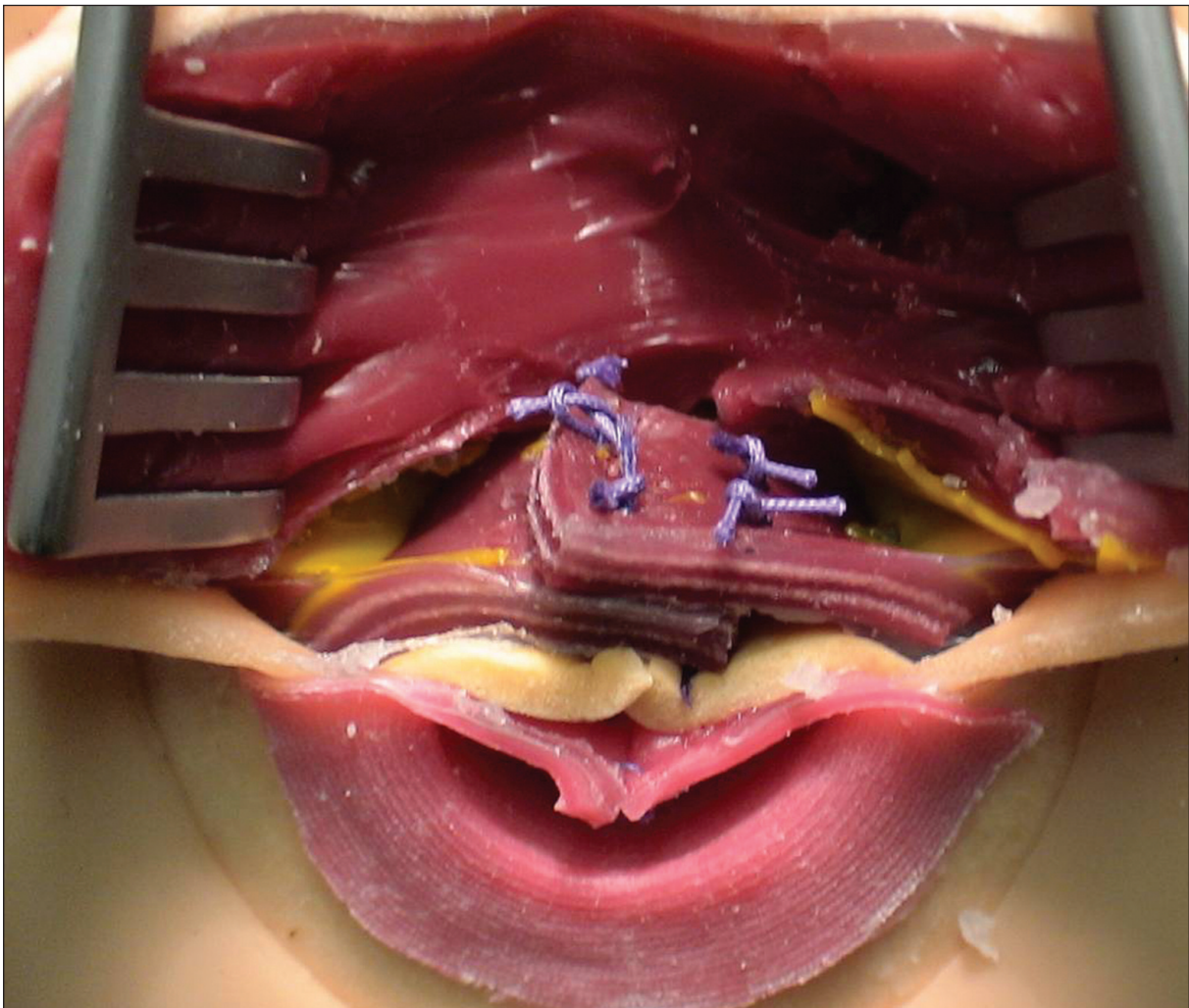


Figure 36.7 Diagrammatic representation of overlap repair of EAS

More focused and intensive training is required to improve recognition of anal sphincter trauma. This can be facilitated by establishing hands-on workshops using purpose built models (Figure 36.8) and fresh animal anal sphincters (www.perineum.net).

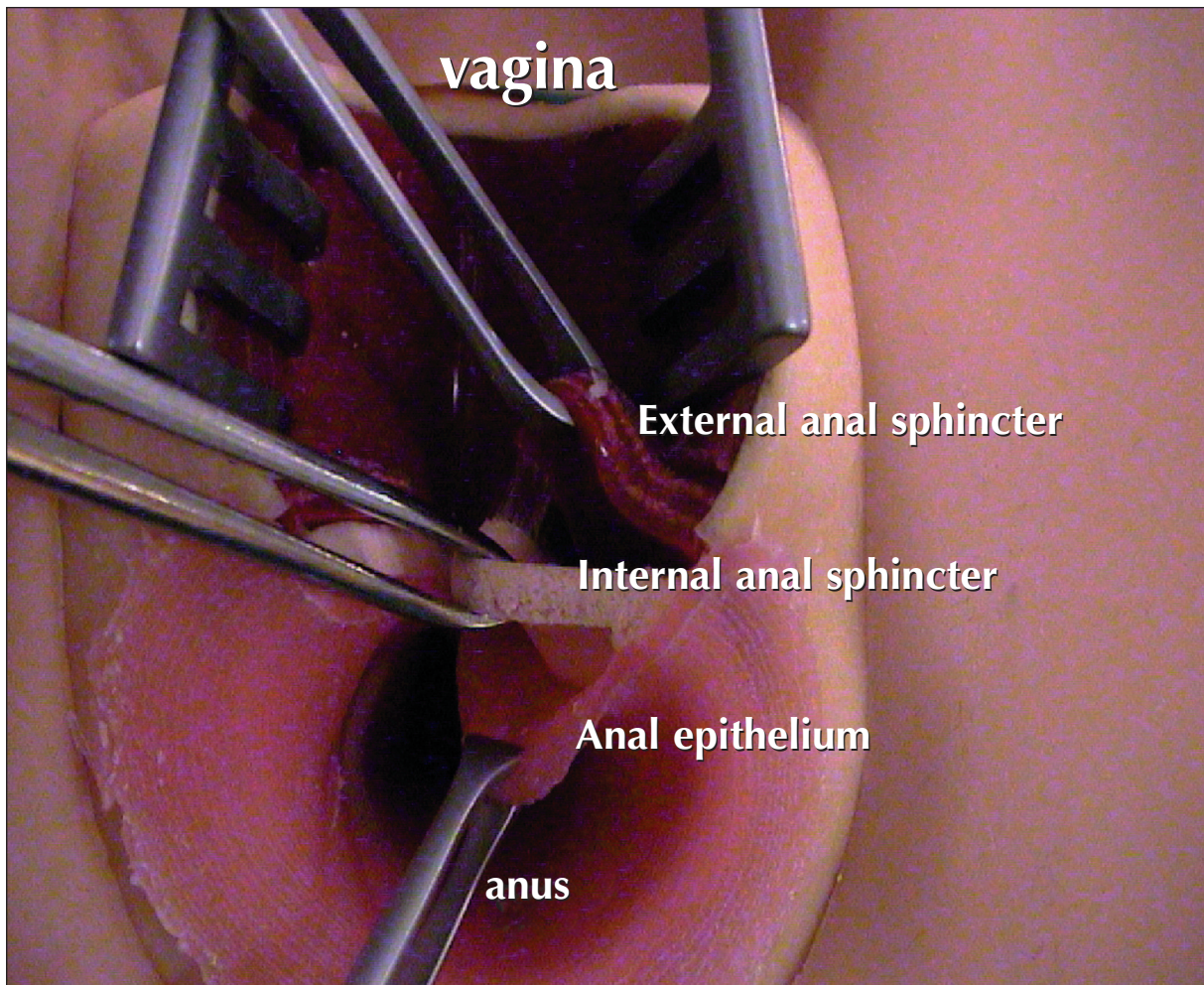


Figure 36.8 Purpose-built teaching model demonstrating AS anatomy (www.perineum.net)

Summary

- Perineal trauma is common following vaginal delivery
- Clear explanation of the extent of the injury and consent for repair are necessary
- Practitioner skills should be kept sharp by training
- Third and fourth degree trauma require senior involvement
- Meticulous technique during repair and good aftercare are necessary for a good outcome

Suggested further reading

- 1 Andrews V, Sultan AH, Thakar R, Jones PW. Occult anal sphincter injuries – myth or reality. *BJOG* 2006;113:195–200.
- 2 Andrews V, Thakar R, Sultan AH, Jones PW. Are mediolateral episiotomies actually mediolateral? *BJOG* 2005;112:1156–8.
- 3 Carroli G, Mignini L. Episiotomy for vaginal birth. *Cochrane Database of Systematic Reviews* 2009, Issue 1. Art. No.: CD000081. DOI: 10.1002/14651858.CD000081.pub2.
- 4 Andrews V, Thakar R, Sultan AH. Structured hands-on training in repair of obstetric anal sphincter injuries (OASIS): an audit of clinical practice. *Int Urogynecol J Pelvic Floor Dysfunct* 2009;20:193–9.
- 5 Fernando RJ, Sultan AH, Kettle C, Thakar R. Methods of repair for obstetric anal sphincter injury. *Cochrane Database Syst Rev* 2013;(12):CD002866.
- 6 Mahony R, Behan M, Daly L, Kirwan C, O’Herlihy C, O’Connell PR. Internal anal sphincter defect influences continence outcome following obstetric anal sphincter injury. *Am J Obstet Gynecol* 2007;196:217.e1–5.
- 7 Kettle C, Dowswell T, Ismail KMK. Absorbable suture materials for primary repair of episiotomy and second degree tears. *Cochrane Database of Systematic Reviews* 2010, Issue 6. Art. No.: CD000006. DOI: 10.1002/14651858.CD000006.pub2.
- 8 Koelbl H, Igawa T, Salvatore S, et al. Pathophysiology of urinary incontinence, faecal incontinence and pelvic organ prolapse. In: Abrams P, Cardozo L, Khoury S, Wein A, editors. *Incontinence*. 5th ed. [Arnhem]: ICUD-EAU; 2013. p. 261–359.
- 9 Royal College of Obstetricians and Gynaecologists. Management of Third and Fourth Degree Perineal Tears. Guideline No. 29. London: *RCOG Press*; 2015.
- 10 Roos A.-M., Thakar R, Sultan AH. Outcome of primary repair of obstetric anal sphincter injuries (OASIS): does the grade of tear matter? *Ultrasound Obstet Gynecol* 2010;36(3):368–374.
- 11 Sultan AH, Kamm MA, Hudson CN, Thomas JM, Bartram CI. Anal sphincter disruption during vaginal delivery. *New Engl J Med* 1993;329:1905–11.
- 12 Sultan AH, Monga AK, Kumar D, Stanton SL. Primary repair of obstetric anal sphincter rupture using the overlap technique. *BJOG* 1999;106:318–23.
- 13 Sultan AH, Thakar R, Fenner D. Perineal and anal sphincter trauma. London: Springer. 2007.