Royal College of Obstetricians and Gynaecologists

Setting standards to improve women's health

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THE MANAGEMENT OF THIRD- AND FOURTH-DEGREE PERINEAL TEARS

This is the second edition of this guideline, which was originally published in July 2001 under the same title.

1. Purpose and scope

The purpose of this guideline is to provide evidence-based guidance on the diagnosis, management and treatment of obstetric anal sphincter injury. Anal incontinence is defined as any involuntary loss of faeces, flatus or urge incontinence that is adversely affecting a woman's quality of life.

2. Introduction and background

The overall risk of obstetric anal sphincter injury is 1% of all vaginal deliveries. With increased awareness and training, there appears to be an increase in detection of anal sphincter injury. Obstetricians who are appropriately trained are more likely to provide a consistent, high standard of anal sphincter repair and contribute to reducing the extent of morbidity and litigation associated with anal sphincter injury.

Obstetric anal sphincter injury encompasses both third- and fourth-degree perineal tears.

A third-degree perineal tear is defined as a partial or complete disruption of the anal sphincter muscles, which may involve either or both the external (EAS) and internal anal sphincter (IAS) muscles.

A fourth-degree tear is defined as a disruption of the anal sphincter muscles with a breach of the rectal mucosa.

3. Identification and assessment of evidence

The Cochrane Library and Cochrane Register of Controlled Trials were searched for relevant randomised controlled trials, systematic reviews and meta-analysis. A search of Medline and PubMed (electronic database) from 1966 to 2006 was also carried out. The date of the last search was May 2006.

The databases were searched using the relevant MeSH terms, including all subheadings, and this was combined with a keyword search including: 'human', 'female', 'childbirth', 'obstetric', 'perineum', 'third degree', 'fourth degree', 'anal sphincter', 'tear', 'injury', 'rupture', 'damage', 'incontinence', 'faecal', 'anal', 'repair', 'surgery', 'sutures'.

The definitions of the types of evidence used in this guideline originate from the US Agency for Health Care Policy and Research. 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'.

4. Prediction and prevention of obstetric anal sphincter injury

Can obstetric anal sphincter injury be predicted and prevented?

Clinicians need to be aware of the risk factors for obstetric anal sphincter injury but also recognise that known risk factors do not readily allow its prediction or prevention. ✓

Where episiotomy is indicated, the mediolateral technique is recommended, with careful attention to the angle cut away from the midline. B

Risk factors for third-degree tears have been identified in a number of retrospective studies. Taking an overall risk of 1% of vaginal deliveries, the following factors are associated with an increased risk of a third degree tear:

- birth weight over 4 kg (up to 2%)
- persistent occipitoposterior position (up to 3%)
- nulliparity (up to 4%)
- induction of labour (up to 2%)
- epidural analgesia (up to 2%)
- second stage longer than 1 hour (up to 4%)
- shoulder dystocia (up to 4%)
- midline episiotomy (up to 3%)
- forceps delivery (up to 7%).[1–19]

Most of the risk factors identified cannot readily be used to prevent or predict the occurrence of a third- and fourth-degree tear.[20] Studies are required to investigate the effect of interventions to prevent third-degree tears in women with risk factors.

Evidence level IIb, III

Severe perineal tears that involve the anal sphincter complex and/or the anal epithelium (obstetric anal sphincter injury) are identified in 0.6–9.0% of vaginal deliveries where mediolateral episiotomy is performed.[21] However, since the introduction of endoanal ultrasound, sonographic abnormalities of the anal sphincter anatomy has been identified in up to 36% of women after vaginal delivery, in prospective studies.[22–24]

A lower risk of third-degree tear is associated with a larger angle of episiotomy. In a prospective case–control study there was a 50% relative reduction in risk of sustaining third-degree tear observed for every 6 degrees away from the perineal midline that an episiotomy was cut.[25]

Evidence level IIa

5. Classification and terminology

How should obstetric anal sphincter injury be classified?

It is recommended that the classification outlined in this guideline be used when describing any obstetric anal sphincter injury. C

If there is any doubt about the grade of third-degree tear, it is advisable to classify it to the higher degree rather than lower degree. ✓

The following classification, described by Sultan, has been adopted by the International Consultation on Incontinence and the RCOG.[26,27]

First degree	Injury to perineal skin only.
Second degree	Injury to perineum involving perineal muscles but not involving the anal sphincter.
Third degree	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: Both EAS and IAS torn.
Fourth degree	Injury to perineum involving the anal sphincter complex (EAS and IAS) and anal epithelium.

Evidence level IV

The first edition of this guideline suggested adopting uniform definitions for perineal and anal sphincter injuries during childbirth.This will reduce under-reporting of true obstetric anal sphincter injury and facilitate future audit, and risk management.

The IAS plays a role in the maintenance of continence.[28] One study has reported that the incidence of anal incontinence is increased in women who had both IAS and EAS damage compared with those who had EAS damage alone.[13] Inclusion of the IAS in the classification below would allow differentiation between future incontinence related to IAS injury rather than EAS alone. It is, however, recognised that in acute obstetric trauma, identification of the IAS may not be possible but a record of the degree of EAS damage (more or less than 50%) should be possible in all cases.

If the tear involves only anal mucosa with intact anal sphincter complex (buttonhole tear) this has to be documented as a separate entity. If not recognised and repaired this type of a tear may cause anovaginal fistulae.

6. Identification of obstetric anal sphincter injuries

How can the identification of obstetric anal sphincter injuries be improved?

All women having a vaginal delivery with evidence of genital tract trauma should be examined systematically to assess the severity of damage prior to suturing. **C**

All women having an operative vaginal delivery or who have experienced perineal injury should be examined by an experienced practitioner trained in the recognition and management of perineal tears. ✓

With increased awareness and training there appears to be an increase in the detection of obstetric anal sphincter injuries. One observational study showed that increased vigilance about anal sphincter injury can double the detection rate.[29] In another study where endoanal ultrasound was used immediately following delivery, the detection rate of anal sphincter injury was not significantly increased compared to clinical examination alone.[30] As there are clear difficulties with availability, access to staff trained in endoanal ultrasound on the labour ward, image quality and patient acceptability, the use of endoanal ultrasound in detecting anal sphincter injury immediately after delivery should be viewed as a research tool at present.

Evidence level III

7. Surgical techniques

Which techniques should be used to accomplish the repair of obstetric anal sphincter injury?

For repair of the external anal sphincter, either an overlapping or end-to-end (approximation) method can be used, with equivalent outcome. Where the IAS can be identified, it is advisable to repair separately with interrupted sutures. **A**

Repair of third- and fourth-degree tears should be conducted in an operating theatre, under regional or general anaesthesia.

A systematic review on the method of repair for third-degree tears[31] examined three trials involving 279 women. This review showed that there was no significant difference in perineal pain (RR 0.08, 95% CI 0.00–1.45, dyspareunia (RR 0.62, 95% CI 0.11–3.39, flatus incontinence (RR 0.93, 95% CI 0.26–3.31 and faecal incontinence (RR 0.07, 95% CI 0.00–1.21,) between the two repair techniques at 12 months but showed a significantly lower incidence in faecal urgency (RR 0.12, 95% CI 0.02–0.86, one trial, 52 women) and lower anal incontinence score (weighted mean difference –1.70, 95% CI –3.03 to –0.37) in the overlap group. Overlap technique was also associated with a significant lower risk of deterioration of anal incontinence symptoms over 12 months (RR 0.26, 95% CI 0.09–0.79, one trial, 41 women). There was no significant difference in quality of life. The reviewers concluded that the limited data available show that compared with immediate primary end-to-end repair of obstetric anal sphincter injuries, early primary overlap repair appears to be associated with lower risks for faecal urgency and anal incontinence symptoms. As the experience of the surgeon is not addressed in the three studies reviewed, it would be inappropriate to recommend one type of repair over another. However, most of these conclusions were based on one study.[32]

Evidence level Ib

A separate randomised controlled trial[33] of 41 women with complete third- and fourth-degree perineal tears were randomised to overlap and end-to-end groups and followed up for 3 months. No significant difference was found between the groups in terms of symptoms of faecal incontinence or transperineal ultrasound findings.

In another randomised controlled trial[34] of secondary repair, 24 women were randomised to either end-to-end or overlap repair. At median follow-up of 26 months, there were no significant differences in anal continence. Other studies have evaluated secondary sphincter repair for anal incontinence in colorectal patients and showed a significant increase in continence rate with overlap repair.[35,36] One study, however, has shown a deterioration of anal continence 5 years following secondary repair for obstetric anal sphincter injuries.[37]

Repair in an operating theatre will allow the repair to be performed under aseptic conditions with appropriate instruments, adequate light and an assistant. Regional or general anaesthesia will allow the anal sphincter to relax, which is essential to retrieve the retracted torn ends of the anal sphincter. This also allows the ends of the sphincter to be brought together without any tension.[8]

Evidence level IV

8. Choice of suture materials

Which suture materials should be used to accomplish repair of obstetric anal sphincter injuries?

When repair of the EAS muscle is being performed, either monofilament sutures such as polydiaxanone (PDS) or modern braided sutures such as polyglactin (Vicryl®) can be used with equivalent outcome. A

When repair of the IAS muscle is being performed, fine suture size such as 3-0 PDS and 2-0 Vicryl may cause less irritation and discomfort. C

When obstetric anal sphincter repairs are being performed, burying of surgical knots beneath the superficial perineal muscles is recommended to prevent knot migration to the skin. ✓

Women should be warned of the possibility of knot migration to the perineal surface, with long-acting and non-absorbable suture materials. ✓

There are no systematic reviews to assess the best suture material for repair of the external anal sphincter. Use of fine suture size such as 3-0 PDS and 2-0 Vicryl may cause less irritation and discomfort. The only randomised controlled trial comparing Vicryl and PDS reported no significant difference in morbidity from anal incontinence, perineal pain or suture migration with 12 months follow-up.[32]

Evidence level Ib

There are no systematic reviews or randomised studies to evaluate the type of suture materials use for the repair of IAS. Similar to EAS, use of fine suture size such as 3-0 PDS and 2-0 Vicryl may cause less irritation and discomfort.

Evidence level IV

9. Surgical competence

Who should repair obstetric anal sphincter injury?

Obstetric anal sphincter repair should be performed by appropriately trained practitioners. ✓

Formal training in anal sphincter repair techniques is recommended as an essential component of obstetric training. ✓

Inexperienced attempts at anal sphincter repair may contribute to maternal morbidity, especially subsequent anal incontinence. A survey of UK consultant obstetricians and trainee obstetricians in two regions highlighted the deficiency and their dissatisfaction with their training in the management of third-degree tears.[38] Many regions now conduct training workshops and different approaches to teaching these skills should be evaluated. Training may be improved by the implementation of surgical skills workshops with the use of models and audiovisual material. A report on the effect of hands-on training workshops on repair of third- and fourth-degree perineal tears showed that there is increased awareness of perineal anatomy and recognition of anal sphincter injury following attendance at hands-on training workshops.[39]

10. Postoperative management

How should women with obstetric anal sphincter injury be managed postoperatively?

The use of broad-spectrum antibiotics is recommended following obstetric anal sphincter repair to reduce the incidence of postoperative infections and wound dehiscence. ✓

The use of postoperative laxatives is recommended to reduce the incidence of postoperative wound dehiscence. C

Local protocols should be implemented regarding the use of antibiotics, laxatives, examination and follow-up of women with obstetric anal sphincter repair. ✓

All women should be offered physiotherapy and pelvic-floor exercises for 6–12 weeks after obstetric anal sphincter repair. ✓

All women who have had obstetric anal sphincter repair should be reviewed 6–12 weeks postpartum by a consultant obstetrician and gynaecologist. ✓

If a woman is experiencing incontinence or pain at follow-up, referral to a specialist gynaecologist or colorectal surgeon for endoanal ultrasonography and anorectal manometry should be considered. A small number of women may require referral to a colorectal surgeon for consideration of secondary sphincter repair. ✓

A systematic review addressing the antibiotic prophylaxis for fourth-degree perineal tear comparing prophylactic antibiotics with placebo or no antibiotics did not find any randomised controlled trials.[40] However intraoperative and postoperative broad-spectrum antibiotics are recommended because the development of infection will pose a high risk of anal incontinence and fistula formation in the event of breakdown of the anal sphincter repair.[8] Inclusion of metronidazole is advisable to cover the possible anaerobic contamination from faecal matter.

No systematic reviews were identified which evaluated the use of postoperative laxatives and stool softeners. Laxatives are recommended during the postoperative period as passage of a hard stool can disrupt the repair.[8] Use of stool softener such as Lactulose® and a bulking agent such as Fybogel® is recommended for about 10 days after the repair. One randomised control study compared laxatives and constipating agents in the postoperative period following primary obstetric anal sphincter repair.[41] In this study, women in the laxative group had a significantly earlier and less painful bowel motion and earlier postnatal discharge. There was no difference in the symptomatic or functional outcome of repair between the two regimens.

Evidence level IV

There were no systematic reviews or randomised controlled trials to suggest the best method of follow-up after obstetric anal sphincter repair. It is helpful to review women in the postnatal period to discuss injury sustained during childbirth, assess for symptoms and offer advice on how to seek help if symptoms develop, offer treatment and/or referral if indicated and advice on future mode of delivery.

If facilities are available, follow-up of women with obstetric anal sphincter injury should be in a dedicated perineal clinic with access to endoanal ultrasonography and anal manometry, as this can aid decision on future delivery.

Evidence level IV

11. Prognosis

What is the prognosis following surgical repair?

Women should be advised that the prognosis following EAS repair is good, with 60–80% asymptomatic at 12 months. Most women who remain symptomatic describe incontinence of flatus or faecal urgency.

A

Several prospective case–control[42–48] and retrospective,[5–7,13,23,49,50] studies have looked at the outcome of primary repair in terms of reported symptoms and results of anal sphincter investigations. All of these studies describe end-to-end suturing of the EAS, using either interrupted or figure-of-eight sutures, but suturing of the IAS is reported in only some of these studies.[8,51] Initial studies report anal incontinence symptoms in 20–67% of women who have undergone primary third-degree tear repair. In these studies, the type of incontinence is mainly flatus (up to 59%) with leakage of liquid and solid stool in up to 11%, while faecal urgency occurred in 26% of these women. In one study, there was a marked increase in anal incontinence symptoms after four years of follow-up (17-42%).[3] These studies used different questionnaires to assess anal incontinence symptoms and it is therefore difficult to compare study outcomes directly. However, several recent randomised controlled studies carried out since 2000 comparing overlap and end-to-end techniques of EAS repair have reported low incidences of anal incontinence symptoms in both arms,[32,33,51,52] with 60–80% of women described as asymptomatic at 12 months.[32,37,52]

Evidence level Ib

Studies using endoanal ultrasound as part of follow-up demonstrated persistent defects in 54–88% of women after primary repair of recognised third-degree tears.[5,6,23] More recently, the published randomised controlled trials have reported fewer residual defects, about 19–36% overall.[33,51,52] The clinical relevance of asymptomatic defects demonstrated by ultrasound is currently unclear.

12. Future deliveries

What advice should women be given following an obstetric anal sphincter injury concering future pregnancies and mode of delivery?

All women who sustained an obstetric anal sphincter injury in a previous pregnancy should be counselled about the risk of developing anal incontinence or worsening symptoms with subsequent vaginal delivery. ✓

All women who sustained an obstetric anal sphincter injury in a previous pregnancy should be advised that there is no evidence to support the role of prophylactic episiotomy in subsequent pregnancies. ✓

All women who have sustained an obstetric anal sphincter injury in a previous pregnancy and who are symptomatic or have abnormal endoanal ultrasonography and/or manometry should have the option of elective caesarean birth. ✓

There were no systematic reviews or randomised controlled trials to suggest the best method of delivery following obstetric anal sphincter injury. The risks of a subsequent vaginal delivery after third-degree tear were examined in four studies,[5,49,53,54] which showed between 17% and 24% of women developed worsening faecal symptoms after a second vaginal delivery. This seemed to occur particularly if there had been transient incontinence after the index delivery.[53]

Evidence level IV

All women who have suffered an obstetric anal sphincter injury should be counselled at the booking visit regarding the mode of delivery and this should be clearly documented in the notes. If the woman is symptomatic or shows abnormal anorectal manometric or endoanal ultrasonographic features, it may be advisable to offer an elective caesarean section.[55] This is an area that should be assessed within the confines of a randomised controlled trial.

13. Risk management

What processes and policies should be in place for women who have sustained obstetric anal sphincter injury?

When third- and fourth-degree repairs are performed, it is essential to ensure that the anatomical structures involved, method of repair and suture materials used are clearly documented and that instruments, sharps and swabs are accounted for. ✓

The woman should be fully informed about the nature of her injury and the benefits to her of follow-up. This should include written information where possible. ✓

There is a steady increase in litigation related to obstetric anal sphincter injury. The majority are related to failure to identify the injury after delivery, leading to subsequent anal incontinence and rectovaginal fistulae. At present, the occurrence of obstetric anal sphincter injury is not considered substandard care because it is a known complication of vaginal delivery. However, failure to recognise anal sphincter damage and to carry out a repair may be considered substandard care. Poor technique, poor materials or poor healing may cause a repair to fail.[26] Clear documentation and patient counselling are of utmost importance. A patient information leaflet is recommended.

14. Future research recommendations

There is a clear deficit in the evidence for the short- and long-term management of obstetric anal sphincter injury. This needs to be addressed by encouraging multicentre randomised controlled trials involving a large number of women.

15. Auditable standards

NHS trusts should audit the recognition of obstetric anal sphincter injury and institute a protocol for repair and follow-up. Collection of data for audit may include:

- number of third- and fourth-degree tears, as a percentage of vaginal deliveries
- review of the documented systematic examination of the vagina, perineum and rectum prior to suturing of obstetric anal sphincter injury
- proportion repaired in theatre, type of analgesia, suture material and method of repair and grade of operator
- proportion seen for follow-up postnatally (with symptom questionnaire)
- long-term continence rate following primary repair
- provision of training.

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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.

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

The guideline review process will commence in March 2010
unless otherwise indicated