

Risk factors for and management of obstetric anal sphincter injury

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Abstract

Obstetric anal sphincter injury is the leading cause of faecal incontinence in women. Concerns have been expressed that some sphincter injuries are missed at the time of vaginal childbirth. There has also been a steady increase in the number of medico-legal cases associated with obstetric sphincter injury.

Accurate diagnosis of third and fourth degree tears at the time of childbirth followed by primary repair by experienced personnel, in the correct setting, and using the correct technique has been shown to improve outcome and reduce faecal incontinence rates.

This article provides a comprehensive review of the risk factors for obstetric anal sphincter injury, together with the diagnosis, management and follow up of these women, based on the best available evidence.

Keywords anal sphincter injury; faecal incontinence

Introduction

Approximately 70% of women will experience some degree of perineal injury following vaginal delivery and require suturing. Injury which involves the anal sphincter is common, diagnosed clinically in 0.4–2.5% of vaginal deliveries where medio-lateral episiotomy is practised and in up to 19% of women following midline episiotomy.

Anal sphincter injury sustained during childbirth is recognized as the leading cause of faecal incontinence in women. Concerns have been expressed that sphincter injuries are missed clinically at time of delivery.

There has been a steady increase in medico-legal cases associated with anal sphincter. Most cases relate to failure to recognize sphincter injury at time of delivery. The aim of this review therefore is to provide a comprehensive review of the risk factors for, diagnosis and evidence for the management of perineal injury to the anal sphincter.

Classification of perineal injury

Wide variation in the classification of clinically recognized perineal trauma amongst obstetricians has been highlighted by many authors. Since 2001, the same accepted classification has been used by the Royal College of Obstetricians (RCOG UK) and International Consultation on Incontinence (Table 1).

Obstetric anal sphincter injury encompasses both third and fourth degree 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. To standardize classification third degree tear have therefore been classified as 3A, 3B or 3C. A fourth degree tear is defined as a disruption of the anal sphincter muscles with a breach of the rectal mucosa.

Consequences of anal sphincter injury

Childbirth has a significant impact on the physical and psychological wellbeing of women; with up to 91% of women reporting at least one new symptom eight weeks following delivery. Women with recognized anal sphincter injury have increased morbidity compared with those with first and second-degree tears.

Anal incontinence (AI) is defined as the involuntary loss of flatus or faeces which becomes a social or hygiene problem. It is reported to affect 4–6% of women up to 12 months following delivery which equates to 40 000 mothers affected each year in the UK. 30–50% of women with obstetric anal sphincter injury report symptoms of faecal incontinence, faecal urgency, dyspareunia and perineal pain and symptoms may persist for many years.

Anal incontinence can be affected by many factors including stool consistency and volume, colonic transit, compliance of the rectal reservoir and mental function. The most important factor in maintaining continence however, is an anatomically normal anal sphincter complex and its intact neurological function. It was previously thought neuropathic injury to the pelvic nerves and pudendal nerve was the leading cause of incontinence following childbirth. It has only been since the advent of endoanal ultrasound that sphincter defects were diagnosed in women who were previously diagnosed with a neurogenic cause for their faecal incontinence.

In addition to anal incontinence the longer term consequences of ano-rectal injury include perineal pain, dyspareunia and ano-rectal fistula.

Perineal pain can lead to significant morbidity following vaginal delivery. It can interfere with the women's ability to bond with her newborn. If severe, may lead to problems with voiding of urine and defecation. Perineal pain and dyspareunia have been

Classification of perineal trauma

Type of tear	Definition
First degree tear	Injury to perineal skin.
Second-degree tear	Injury to perineum involving perineal muscles but not involving the anal sphincter.
Third degree tear	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 tear	Injury to perineum involving the anal sphincter complex (both EAS & IAS) and anal epithelium.

Table 1

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reported in many studies to affect up to 50% of women following anorectal injury and may persist for many years. There is a considerable impact on women's psychosexual health, with many avoiding intercourse for many years.

Abscess formation, wound breakdown and recto-vaginal fistula are serious but fortunately rare consequences of anorectal injury. It is thought that most recto-vaginal fistulae following sphincter repair are caused by failure to recognize the true extent of the initial injury which leads to wound breakdown.

Wound breakdown rates of 10% had previously been reported after sphincter repair. However the recent randomized control trials (RCT) assessing method of repair failed to report any cases of wound breakdown. This may be a reflection of the routine use of broad spectrum antibiotics in protocols for sphincter repair.

Risk factors for anal sphincter injury

In order to prevent anal sphincter injury, it is important to attempt to identify risk factors. The majority of research assessing risk factors relates to third degree tears. Based on the overall risk of third degree tears as 1% of vaginal deliveries, a number of risk factors have been identified by retrospective studies. These include induction of labour (up to 2%), epidural analgesia (up to 2%), birth weight over 4 kg (up to 2%), persistent occipito-posterior position (up to 3%), primiparity (up to 4%), second stage longer than 1 h (up to 4%), forceps delivery (up to 7%). These risk factors were confirmed by systematic review of 14 studies. Other risk factors, such as shoulder dystocia have been suggested but evidence is contradictory (Box 1).

Parity

The first vaginal delivery carries the greatest risk of new onset faecal incontinence (FI) as shown in population-based studies of FI. Each subsequent delivery adds to that risk.

Episiotomy

Published evidence on the role of episiotomy is contradictory. Traditional teaching is that episiotomy protects the perineum from uncontrolled trauma during delivery. Although several authors have demonstrated a protective effect with medio-lateral episiotomy, others have reported the converse.

The type of episiotomy is important. Evidence reports medio-lateral episiotomy (favoured in UK and European practice) to have a significantly lower risk of sphincter injury compared with a midline episiotomy (favoured in USA) 2% versus 12%. This confusion may be explained by variations in clinical practice that

Summary of risk factors for obstetric anal sphincter injury

- Primiparity
- Induction of labour
- Birth weight over 4 kg
- Persistent occipito-posterior position
- Second stage longer than 1 h
- Epidural analgesia

Box 1

are not reflected in the studies. There will be differences in the experience of the accoucheur for a normal delivery and the rate of episiotomy also varies. The differences between medical and midwifery staff in conducting a medio-lateral episiotomy have been studied, with doctors performing episiotomies that are longer and at a wider angle compared with midwives. An important learning point is that current evidence is unable to support the routine use of episiotomy to prevent anal sphincter injury.

Assisted vaginal delivery

The incidence of anal sphincter damage and faecal incontinence symptoms following instrumental delivery is higher than following normal vaginal delivery. Over the last few years, vacuum extraction or ventouse has become the favoured instrument for assisted vaginal delivery rather than forceps. This is based on the evidence from many studies, including a Cochrane review of 10 trials which showed the use of the vacuum extractor instead of forceps was associated with significantly less maternal trauma (odds ratio 0.4, 95% confidence interval 0.3–0.5).

However, compared with forceps delivery, vacuum extraction is significantly more likely to fail with its own implications. (OR 1.7 CI 1.3–2.2). In addition the neonatal risks associated with ventouse delivery are greater, with increased risks of cephalohaematoma and retinal haemorrhage.

Other risk factors

Studies assessing the risk factors for neuropathy following childbirth have reported injury to be more common in the presence of a prolonged labour particularly the second stage, large size of the foetal head. Many of these factors may result in the need for an assisted vaginal delivery. Further vaginal delivery may result in further pudendal nerve damage.

Many of the risk factors identified are components of normal vaginal delivery and cannot be avoided. The majority of women with these risk factors deliver without anal sphincter injury. Attempts to develop an antenatal risk scoring system for sphincter injury have so far been unsuccessful. Studies are needed to assess the effect of interventions to prevent sphincter injury.

Protection against anal sphincter injury

Elective caesarean section as opposed to emergency caesarean has been shown to be protective against faecal incontinence. Caesarean section late in the first stage of labour (more than 8 cm dilatation) or in the second stage does not protect the function of the anal sphincter.

Increased awareness of the complications of childbirth is fuelling patient's request for elective caesarean section in otherwise low risk pregnancies. Indeed a survey of female obstetricians in 1996 revealed 31% would themselves request elective caesarean section due to the potential risk of perineal trauma. This view contrasts with the recent NICE guidelines which report an increased risk of maternal morbidity with caesarean section compared with vaginal delivery.

Clinical recognition of anal sphincter injury

Occult anal sphincter injury

In one of the first studies to use endoanal ultrasound following vaginal delivery, Sultan reported anal sphincter injury in up to

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