



Mr Stergios K.
Doumouchtsis

- Consultant Obstetrician
Gynaecologist &
Urogynaecologist

Childbirth Trauma & Its Complications

Over eighty per cent of women sustain some degree of perineal trauma during childbirth. Pelvic floor trauma commonly occurs at the time of the first vaginal delivery. The incidence is over 90% in nulliparous and over 70% in multiparous women. Childbirth trauma can result in maternal morbidity both physical and psychological in the short and long term.

Historically, childbirth trauma was considered to involve the anal sphincter complex and the perineal body only. A clinical diagnosis of obstetric anal sphincter injury (OASIS) is made in between 1 and 11% of women following vaginal delivery.

However, advances in imaging with three-dimensional (3D) ultrasound and magnetic resonance imaging (MRI) have improved our understanding on the extent of trauma to the pelvic floor associated with childbirth, including the involvement of levator ani muscle (LAM) trauma, in the natural history of pelvic floor disorders such as prolapse and urinary incontinence. Levator ani avulsions occur in 13 to 36% of women mainly during the first vaginal delivery.

Twenty three per cent of women experience superficial dyspareunia at 3 months, 3-10% report faecal incontinence, 24% have urinary problems after perineal trauma.

Risk Factors for Perineal Injury

The non-modifiable risk factors are ethnic origin, nulliparity and maternal age. The potentially modifiable ones are mainly obstetric: macrosomia, epidural anaesthesia, prolonged second stage, instrumental delivery, episiotomy. Instrumental deliveries particularly forceps are associated with a higher risk of perineal trauma. Ventouse deliveries are associated with a lower risk compared to forceps, although the risk of failed instrumental delivery is higher with ventouse. Forceps use is associated with a higher risk of levator trauma. The role of episiotomy in preventing OASIS in instrumental deliveries is debatable.



Types of Perineal Injury During Vaginal Delivery

The following classification (RCOG) has been recommended for the assessment of perineal trauma:

First Degree

Laceration of the vaginal epithelium or perineal skin only.

Second Degree

Involvement of the superficial perineal muscles (bulbospongiosus, transverse perineal) and sometimes the pubococcygeus muscle, but with no involvement of the anal sphincter.

Third Degree

Involvement of the anal sphincter complex.

Can be further subdivided into:

- 3A Less than 50% thickness of external anal sphincter torn
- 3B More than 50% thickness of external anal sphincter torn
- 3C External and internal anal sphincters torn

Fourth Degree

A third degree tear with additional involvement of the anal epithelium.

A *buttonhole* tear refers to an isolated tear of the anal epithelium into the vagina, without involvement of the anal sphincters. These injuries may be difficult to detect without a digital rectal examination. Diagnosis is essential in order to avoid debilitating consequences such as rectovaginal fistula.

In anal sphincter injuries, primary repair involves suturing of the sphincter muscles whereby the torn ends of the external anal sphincter are held with Allis tissue forceps and sutured using either an overlap (if the muscle is completely torn, i.e. 3B/3C) or end-to-end approximation.

There is no difference in perineal pain, dyspareunia, faecal incontinence or flatal incontinence between the two techniques, although there is some evidence of a lower incidence of faecal urgency and lower anal incontinence symptom scores in the overlap group.

LEVATOR ANI MUSCLE (LAM) INJURIES

LAM injuries can be diagnosed clinically by digital palpation. Imaging techniques like MRI, transperineal ultrasound and endovaginal ultrasound are helpful in the confirmation of diagnosis of levator trauma and the detailed imaging of the extent of trauma. Levator avulsion appears to double the risk of significant anterior and apical compartment prolapse, with less effect on posterior compartment prolapse. There is a direct correlation between the size of the defect and the symptoms and/or signs of prolapse.

PUBIC BONE INJURIES

Injuries to the pubic bones and pubic symphysis, are known to occur, and can be evaluated by magnetic resonance imaging (MRI).

Separation of the pubic symphysis is a recognized complication of childbirth with a varied incidence of 1 in 500 to 1 in 30,000 deliveries.

These injuries are often associated with significant pain and disability for prolonged periods of time postnatally. Although conservative treatment often leads to resolution, invasive treatments are sometimes required if pain is significant or the diastasis fails to resolve.



Healing Complications

POSTPARTUM HAEMORRHAGE

Instrumental delivery, especially forceps, is a well-known cause of cervical and vaginal trauma, which may in turn be a cause for postpartum haemorrhage. Postpartum haemorrhage due to trauma can be managed with surgical repair and vaginal packing. However, in cases of ongoing bleeding after suturing, pelvic embolization may be considered.

HAEMATOMAS

Paravaginal (infralelevator and supralelevator) haematomas are typically confined to the supralelevator or infralelevator fossa. Haemorrhage into an infralelevator space causes massive swelling and ecchymosis of the labia, perineum and lower vagina on the affected side with severe vulval and perineal pain.

Anorectal tenesmus may result from extension into the ischiorectal fossa, while urinary retention may result from extension of the haematoma into the paravesical space.

A supralelevator haematoma is not visible but can be palpable as a mass protruding into the vaginal wall and potentially occluding the canal. It may cause vaginal and rectal pain or pressure symptoms.

In small infralelevator haematomas, ice packs, analgesia and bladder catheterization may be effective, whereas surgical management is indicated for large or expanding haematomas, in order to prevent pressure necrosis, infection and further haemorrhage.

Treatment options for supralelevator haematomas are conservative with vaginal packing for 12 to 24 hours and haemoglobin check, but if bleeding is intractable, internal iliac artery embolization or ligation may be indicated.

Forceps are a well-known cause of cervical and vaginal trauma



VULVAL HAEMATOMA

Vulval haematoma usually results from injuries to the branches of the pudendal artery during spontaneous vaginal or operative delivery or in conjunction with episiotomy. These vessels are typically located in the superficial fascia of the anterior (urogenital) or posterior pelvic triangle.

Superficial haematomas can extend from the transverse perineal muscle anteriorly over the mons to the fusion of fascia at the inguinal ligament. Necrosis caused by pressure and rupture of the tissue surrounding the haematoma may lead to external haemorrhage. Large haematomas usually require exploration in the operating theatre.

Following a skin incision, the haematoma is evacuated and bleeding points are identified and ligated. The dead space is obliterated with interrupted sutures and the skin incision is closed appropriately. Prophylactic antibiotics, urinary catheter, rectal examination and adequate postoperative analgesia are advisable.

PAIN

For most women, pain and discomfort is temporary but in a minority it persists.

Perineal pain may persist up to 6 months after vaginal delivery, with 20% women experiencing discomfort for more than 2 months. Pain following obstetric anal sphincter injury (OASIS) can be severe. Treatment options include oral and in severe cases rectal analgesia. Following primary repair of OASIS, laxative use is recommended for prevention of faecal impaction and risk of damage to the repair. Also, laxatives lead to an earlier and less painful first bowel motion and earlier discharge. Perineal massage postnatally results in reduced perineal pain. Antenatal massage enables women understand the anatomy of the perineum and manage effectively postnatal perineal pain. Persistent perineal pain that does not respond to analgesics and massage may require perineal injections with local anaesthetic and steroids.

DYSPAREUNIA

Dyspareunia secondary to scarring or introital narrowing following suturing can be initially managed with dilators and topical oestrogens.

Significant scarring and anatomical constriction may require a surgical revision of the perineum. This will generally involve excision of scar tissue and suturing transversely. Botulinum toxin injections to the levator muscles may relieve vaginismus and associated levator muscle spasm.

PERINEAL WOUND INFECTION AND BREAKDOWN

Approximately one in ten women who sustained a perineal tear at vaginal delivery that required suturing, develop perineal wound infection. Instrumental deliveries and prolonged rupture of membranes predispose women to this complication. By 2 weeks postpartum, women who received prophylactic antibiotics at the time of 3rd or 4th degree tear repair had a lower rate of perineal wound infectious complications than those who did not. Infection may result in wound breakdown, fistula formation and anal incontinence. It is therefore essential to prescribe antibiotic cover for aerobic and anaerobic bacteria following primary OASIS repair.

Perineal wound breakdown has an incidence of 0.1–4.6%. Although uncommon, it can lead to significant morbidity. Up to 80% of wound dehiscence cases are secondary to wound infection. Risk factors of infection can be divided in antepartum, intrapartum and postpartum.

Antepartum risk factors include extremes of maternal age, smoking, poor maternal hygiene, poor nutrition and medical conditions such as diabetes, immunodeficiency, severe anaemia and bacterial vaginosis, chlamydia, gonorrhoea or trichomoniasis.

Intrapartum factors include prolonged rupture of membranes, thick meconium, prolonged labour, intrapartum pyrexia, frequent vaginal examinations, instrumental delivery, poor aseptis, manual removal of placenta and retained placenta or membranes. Postpartum factors include lack of or insufficient prophylactic antibiotics, suboptimal haemostasis, haematoma, contamination of wound and residual dead space following wound closure.

Human papilloma virus (HPV) infection is associated with poor healing of episiotomy repairs, as HPV was detected in up to 30% of patients with episiotomy breakdown.

The management of wound breakdown varies. The traditional approach is to allow healing by secondary intention; however, this is a slow process and can take several weeks for the wound to heal completely. This approach may result in a protracted period of significant morbidity for women.

FACT

Obesity is an independent risk factor for wound infection

HPV was detected in 30% of patients with episiotomy breakdown

Re-suturing of perineal wound dehiscence within the first 2 weeks following childbirth may result in a reduction of perineal pain during the healing process for up to 6 months post-delivery, an improvement of dyspareunia symptoms, continuation of exclusive breastfeeding for up to 6 months and increased satisfaction with the anatomical result of the perineal wound. There is currently insufficient evidence available to support or refute secondary suturing for the management of broken down perineal wounds following childbirth.

Even with optimal obstetric management, childbirth trauma is still common.

PREDICTION AND PREVENTION OF CHILDBIRTH TRAUMA

Even with optimal obstetric management, childbirth trauma is still common. Awareness of the risk factors does not always help to predict which women will sustain a sphincter tear. Injuries occur in women without any risk factors. An occipito-posterior position of the fetal head is present in about one in five women at the start of labour. In many of these women the fetal head rotates to an occipito-anterior position, although this may not occur until late in labour or at the time of an assisted delivery. A persistent occipito-posterior position cannot be predicted.

In summary, perineal and pelvic floor trauma is common form of morbidity in postnatal women. All practitioners caring for postnatal women require a good knowledge of the management of such trauma to avoid significant or long term morbidity. Women sustaining such injuries or further complications require assessment and management of ongoing symptoms. Complications such as perineal wound breakdown can be hugely distressing for women and require careful management.

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