Dystocia describes difficulty during labour.

Epidemiology

Shoulder dystocia occurs in 0.58-0.70% of vaginal deliveries.\(^1\)

Aetiology

These may be remembered as 'The Powers' (uterus), 'The Passenger' (fetus) and 'The Parts' (pelvis).

- **Uterine factors:** good contractions start at the fundus and move down towards the pelvis. If uterine activity is unco-ordinated or contractions short or infrequent then labour will be difficult and prolonged. Primigravid mothers may be more at risk of dystocia as they have a degree of uterine unco-ordination which is why their labours tend to be longer. Oxytocin can enhance and co-ordinate uterine contractions.
- **Fetal factors:** position or lie (eg, transverse or breech), macrosomia (birth weight ≥ 4.5 kg), shoulder dystocia (this results from a combination of fetal factors and pelvic passage factors).
- **Pelvic passage factors:** a pelvis with a round brim is very favourable in labour; however, some women have a long and oval brim. A small pelvic brim should be suspected if, in a primigravida, the fetal head has not engaged into the pelvis by 37 weeks of gestation. Other factors that can lead to cephalopelvic disproportion are scoliosis, kyphosis and rickets. Shoulder dystocia in part results from a small or abnormal pelvic inlet.

Types of dystocia

**Cervical dystocia**

In cervical dystocia, the cervix fails to dilate during labour.

Failure of cervical dilatation can be due to previous cone biopsy or cauterisation for cervical dysplasia. Other reasons for failure to dilate include trauma. Sometimes, if there are unco-ordinated uterine contractions then the failure of cervical dilatation may be secondary to this and this should respond to oxytocin. If dystocia continues despite this then the infant will need to be delivered by caesarean section. See separate Caesarean Section article.

**Shoulder dystocia**

During the peripartum period the infant's head usually lies to the left and then rotates to the occipito-anterior position, and the head is delivered first. Following this, the shoulders lie in the anteroposterior position and then pass the pelvic brim. However, if the shoulders become stuck at this position, the infant can inhale, as the mouth and nose are out of the vagina; however, the chest cannot expand as it is stuck in the pelvic brim. This will rapidly lead to hypoxia and death of the fetus if not delivered quickly. Usually it is the anterior shoulder which impacts on the maternal symphysis. Less commonly, the posterior shoulder impacts on the sacral promontory.
Management of shoulder dystocia is discussed below.

Risk factors for shoulder dystocia

- Maternal diabetes mellitus - 2-4 x increased risk compared to similar weight babies of mothers without diabetes.
- Fetal macrosomia, though 48% occur in infants that weigh <4 kg.
- Maternal obesity - BMI >30 kg/m².
- Induction of labour.
- Prolonged labour - first or second stage, or secondary arrest.
- Oxytocin - used in induction of labour.
- Assisted vaginal delivery - forceps or ventouse.
- Previous shoulder dystocia - 10 x higher chance compared with the general population.

It is important to note that diabetes mellitus and macrosomia are also associated with each other. It is routine for mothers with diabetes to have an ultrasound scan near term to estimate fetal weight and thus anticipate difficulties. However, the reliability of estimation of fetal weight by ultrasound is not high: there is a 10% margin of error and a sensitivity of 60% for macrosomia.

Management

National Institute for Health and Care Excellence (NICE) guidance recommends that pregnant women with diabetes, who have a normally growing fetus, should be offered elective delivery by induction of labour, or caesarean section if indicated, between 37 +0 and 38 +6 weeks of gestation. Where the estimated fetal weight is greater than 4.5 kg, in women with pre-existing or gestational diabetes, the risks and benefits of elective caesarean, induction of labour and vaginal delivery should be explained.

Either elective caesarean or vaginal delivery may be appropriate after previous shoulder dystocia. The decision should be made jointly by the mother and her carers and should take into account severity of any previous injuries, maternal choice and predicted fetal size.

For shoulder dystocia

Attendants should be alert for signs of potential dystocia. In particular, they should watch for:

- Difficulty with delivery of the face.
- The head remaining tightly applied to the vulva, or retracting (turtle-neck sign).
- Failure of the head to restitute.
- Failure of the shoulders to descend.

See also the Royal College of Obstetricians and Gynaecologists (RCOG) guidelines for shoulder dystocia.

- Obtain help. In addition to a senior obstetrician and senior midwife, an anaesthetist and paediatrician should be called.
- Stop the mother pushing. This may make impaction of the shoulders worse and increase the risk of a brachial plexus injury.
- Downward traction on the fetal head should be avoided.
- McRoberts’ manoeuvre - the patient hyperflexes and abducts her hips so they are against her abdomen. This flattens the lumbosacral angle and increases the anteroposterior diameter of the pelvis. Mothers in labour may not have enough energy to do this by themselves and may need the assistance of others in the room - which is usually the case. Posterolateral pressure is applied suprapublically with axial traction on the fetal head. This is the most effective and least invasive procedure and should be performed first (success rates are up to 90%).
- If this fails, an episiotomy may be needed to facilitate the obstetrician trying second-line manoeuvres:
  - Rubin’s manoeuvre - press on the posterior fetal shoulder, thereby creating more space to allow the anterior shoulder to be delivered.
  - Woods’ screw manoeuvre - turning the anterior shoulder to the posterior position.
  - Delivery of the posterior shoulder.
  - The extra manoeuvre that is most likely to succeed should be used; it is not the individual manoeuvre that is performed that is associated with any subsequent morbidity but the severity of the dystocia and the difficulty of the delivery.

- However, at all times the need for a caesarean section should be considered and should not be delayed.

NB: fundal pressure should not be applied. It is associated with a high neonatal complication rate and may result in uterine rupture.

Complications

Fetal

- Brachial plexus injury occurs in 2.3-16% of shoulder dystocias. 90% resolve without leaving permanent disability. Greater severity of injury is associated with larger birth weight. Brachial plexus injury is the most common cause of litigation related to shoulder dystocia in the UK and the NHS Litigation Authority reported that 46% were associated with substandard care.
- Perinatal morbidity and mortality from hypoxia and acidosis.
- Fractured humerus or fractured clavicle.
- Pneumothorax.

**Maternal**

- Postpartum haemorrhage occurs in 11% of this type of delivery.[7]
- Third-degree and fourth-degree perineal tears occurs in 3.8% of dystocia deliveries.[7]
- Vaginal lacerations.
- Cervical tear.
- Bladder rupture.
- Uterine rupture.
- Symphyseal separation.
- Sacroiliac joint dislocation.
- Lateral femoral nerve neuropathy.

**Further reading & references**

1. Shoulder dystocia; Royal College of Obstetricians and Gynaecologists (2012)
2. Diabetes in pregnancy: management of diabetes and its complications from preconception to the postnatal period; NICE Clinical Guideline (February 2015)

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