Sultanate of Oman
Ministry of Health
The Royal Hospital
Department of Obstetrics and Gynecology

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**Title:** Shoulder Dystocia

**Shoulder dystocia** is a life-threatening emergency. It must be recognised and treated quickly to avoid significant morbidity and even mortality.

**1.0 Definition**

Shoulder dystocia is any cephalic delivery where manoeuvres other than gentle traction are required to deliver the baby after the head has delivered. It is a bony impaction, usually of the anterior shoulder of the baby, on the maternal pelvis (usually the symphysis).

It occurs in up to 1% of deliveries.

**2.0 Maternal morbidity**

- Shoulder dystocia is associated with an increased risk of vaginal trauma and anal sphincter damage (Occurs in almost 4% of shoulder dystocia cases)
- Postpartum haemorrhage (11%, mostly from atony and trauma.)
- The psychological impact must not be ignored.

**3.0 Fetal/neonatal morbidity and mortality**

**3.1 Brachial plexus injuries**: complicate 4–16% of all shoulder dystocia deliveries. The majority resolve without permanent injury. Fewer than 10% result in

permanent dysfunction.

- Erb palsy (C5, C6) presenting with internal rotation and adduction of the shoulders and extension and pronation of the elbow.
- Klumpke palsy (C8, T1) occurs less frequently but has more risk of permanent dysfunction**.**

**3.2 Skeletal fractures (approximately 10% of shoulder dystocia deliveries will have a fracture) – especially of the humerus and clavicle**

**3.3 Pneumothorax**.

**3.4 Hypoxic ischemic encephalopathy and death**. Hypoxia related to shoulder dystocia is unlikely before 5 mins, although may occur quicker in an already

hypoxic baby.

A small number (approximately 0.4%) of babies will die - although 45% of babies who die already had a pathological CTG before the shoulder dystocia.

**4.0 Prediction of shoulder dystocia:**

Prediction of shoulder dystocia is difficult and inaccurate. Only 25% of deliveries complicated by shoulder dystocia have a significant risk factor.

Certain factors are more likely in cases where shoulder dystociaincluding:

***Macrosomia,*** although 52% of cases occur in birth weight < 4kg.

It is worth bearing in mind that sensitivity of ultrasound for macrosomia is low (60%) with at least a 10% margin of error.

**4.1 Maternal factors**

***Maternal obesity***

There is a relative risk of 2.3 of shoulder dystocia in women with a pre-pregnancy weight of more than 82 kg. Majority of the risk is because of the higher rates of diabetes and macrosomia in obese women, and reduced accuracy of scans.

***Multiparity***

Multiparity increases the risk of larger babies, obesity and diabetes. Also,it does increase the number of precipitous deliveries so it may be a primary risk factor.

***Maternal diabetes is an independent risk factor.***

| Estimated fetal weight | Rate of shoulder dystocia in mothers who do not have diabetes | Rate of shoulder dystocia in mothers with diabetes |
|---|---|---|
| **<4000** | 1.1% | 3.7% |
| **4000–4500 g** | 10% | 30.6% |
| **>4500 g** | 22.6% | 50% |

***Previous shoulder dystocia:***

The recurrence risk in a subsequent pregnancy is reported to be between 1% and 25%. Most studies quote a 20-fold increase in risk.

***Post-dates***

Although fetal growth slows in the last weeks of pregnancy, some growth continues and there is an increased risk of macrosomia. In total, 25.5% of babies delivered at 41 weeks of gestation have been shown to be macrocosmic, compared with only 6% delivered between 38 and 40 weeks of gestation.

***Labour abnormalities***

The literature is divided on whether disorders of labour are correlated with shoulder dystocia and, even if they are, whether this would be an independent risk factor or only due to the baby being macrosomic. **There does not seem to be any independent correlation between the use of syntocinon and shoulder dystocia.**

***Instrumental delivery***

Shoulder dystocia occurs more frequently in assisted vaginal deliveries as compared to spontaneous vaginal delivery (SVD).

- **Ventouse deliveries are more likely to be complicated by shoulder dystocia than a forceps delivery although the pathophysiology for this is unclear.**
- **Among forceps deliveries, the mid cavity rotational forceps are associated with increased risk.**

**5. 0 Prevention of shoulder dystocia**

***In women without diabetes where the fetus is thought to be macrosomic:***

- There is no evidence that early induction of labour (IOL) prevents shoulder dystocia
- Elective caesarean section is not recommended. Estimation of fetal weight is unreliable and the majority of macrosomic infants do not experience shoulder dystocia
- An additional 2345 caesarean sections would need to be performed to avoid one permanent injury from shoulder dystocia.
- Because of the higher mortality associated with caesarean over vaginal birth, a policy of caesarean section for macrosomia would result in one maternal death for every 3.2 permanent brachial plexus injury prevented.

***In women with diabetes and a suspected macrosomic fetus****:*

- Induction of labour at term can reduce the incidence of shoulder dystocia
- Elective caesarean section should be considered if the estimated fetal weight is greater than 4.5 kg.

***In women who have had a previous shoulder dystocia*****:**

- When discussing mode of delivery with a woman that has sustained a previous shoulder dystocia, factors such as the severity of any previous neonatal or maternal injury, the size of the fetus and maternal choice should be taken into consideration.

**6.0 Mechanism of shoulder dystocia**:

It is vital to realize that the problem is at the pelvic **inlet**. The posterior shoulder enters the pelvis, but the anterior shoulder gets hooked below the symphysis pubis &fails to rotate into a larger pelvic diameter.

**It is important to anticipate shoulder dystocia**:

## 7.0 Management of shoulder dystocia

The majority of cases of shoulder dystocia cannot be anticipated or predicted so all birth attendants should be familiar with the techniques required to facilitate delivery. Any risk factors, however, should be highlighted in the case notes.

Certain warning signs may occur during delivery:

- 'head bobbing' – this is when the head consistently retracts back between contractions during the active second stage
- difficult delivery of the face and chin
- 'turtle-sign' – the delivered head becomes tightly pulled back against the perineum and there is difficulty delivering the chin
- failure of restitution of the head
- shoulders fail to descend.

## 7.1 Important considerations.

- All staff in the unit should work to the same protocol and there should be regular drills/practice sessions.
- The event should be practised and managed along similar lines to a cardiac arrest.
- Time should not be wasted with either fundal pressure or excessive traction. These manoeuvres do not help and can cause morbidity.
- Encouraging maternal effort before movement of the anterior shoulder encourages further impaction and stretching of the brachial plexus.
- Manoeuvres that twist the neck or excessively pull down on the head at an acute angle should be avoided as these may result in brachial plexus injuries. Traction should be applied in an axial direction (i.e in line with the fetal spine).
- Hypoxic ischaemic damage risk is low if delivery is achieved within 5 minutes from the time of delivery of the head.

Healthcare professionals dealing with a shoulder dystocia should decide which order to perform internal manoeuvres according to their training and clinical experience, as well as the clinical circumstances.

There is no evidence that internal rotation or removal of the posterior arm is a superior intervention, although internal rotation has been associated with fewer humeral fractures.

## 7.2 Primary management of shoulder dystocia

The woman should be laid flat and placed in **McRoberts' position**: flexion and abduction of the maternal hips with thighs on the abdomen. This straightens the lumbosacral angle, rotates the pelvis and increases the relative AP diameter of the pelvis.

Normal axial traction should then be attempted. This manoeuvre alone will resolve 90% of cases of shoulder dystocia.

If delivery is not achieved, **McRoberts' combined with suprapubic pressure** will increase success rates further. Suprapubic pressure should be applied by an assistant from behind the fetal shoulder in a downward and lateral direction just above the maternal symphysis pubis in either a continuous or rocking motion. This reduces the bisacromial diameter of the fetal shoulders.

**7.3 Secondary management of shoulder dystocia (internal manoeuvres)**

- ***Episiotomy*** does not help resolve shoulder dystocia but can facilitate internal manoeuvres if suprapubic pressure fails to achieve delivery.
- Entry for internal manoeuvres should be made posteriorly – as the most space can be found in the sacral hollow – with the woman on the end of the bed.
- There is no specific order in which to attempt the internal manoeuvers. They all aim to rotate the shoulders into the larger oblique diameter of the pelvis and/or reduce the bisacromial diameter of the baby by adduction of the shoulders.
- ***Rotation*** **by pressure on the posterior aspect of the posterior shoulder (also adducts shoulder) / or simultaneous application of pressure to the posterior aspect of the anterior shoulder and anterior aspectof the posterior shoulder.**
- ***Removal of the posterior arm*** **(reduces bisacromial diameter) by grasping the fetal wrist and gently removing the arm in a straight line through the vagina or hand packed into hollow of the sacrum, fetal elbow identified, forearm flexed and delivered by sweeping across the chest.**
- If these manoeuvres are unsuccessful you should ***roll the woman over*** and repeat the manoeuvres, as this changes the angle of the impacted shoulder and changes the angle of the pelvis.

**7. 4 Third line management of shoulder dystocia**

Further strategies are associated with an increase in morbidity and mortality and should be considered carefully. These include:

- fracture of the fetal clavicle using digital pressure to reduce the bisacromial diameter
- symphysiotomy to divide anterior fibres of the symphysis ligament
- Zavanelli manoeuvre with replacement of the fetal head and caesarean section.

**7.5 Cord Management:**

Shoulder dystocia, either without or with the presence of a nuchal cord places the infant at risk of hypovolemia.

Compression on the cord or body, of a tight-fitting fetus may cause more fetal blood than usual to be extruded into the placenta. This situation may contribute to the poor condition of a number of infants at birth.

Cutting a tight nuchal cord prior to the birth of the shoulders has the potential to increase the infant's risk of asphyxia, cerebral palsy and even death if there is severe should dystocia.

It is advisable to maintain an intact cord as far as possible. Once the shoulders are free there are several options for management.

· Slip the cord over the head or down around the shoulders and slide the baby through the cord.

· Initiate the 'Somersault Manoeuvre'. Deliver the baby slowly and bring the head as it is born towards the mother's thigh. Keep the baby low near the perineum while the body is delivered so that little traction is exerted on the cord.

· Avoid cutting the nuchal cord immediately after birth as the dynamics of cord compression will likely have resulted in an increased transfer of blood to the

placenta. Pale colour and poor fetal tone equate with hypovolaemia of the infant. A delay in cord clamping is required for blood volume to equalize after

birth and assist with the transition to neonatal life.

· If the cord needs to be divided immediately after birth the restoration of the infant's blood volume can be assisted by rapidly milking the cord two to four

times from the introitus to the infant's umbilicus before cutting the cord.

**8. 0 Complications**

- Postpartum Hemorrhage 11%
- Fourth degree laceration 3.8 %
- Brachial plexus palsies 4-15%
- Fracture of clavicle and humerus
- Hypoxic injury or death (in severe cases )

9.0 **Risk Management:**

Accurate documentation of actions taken to address this obstetric emergency is essential.

Level II evidence supports the use of a standardized checklists for shoulder dystocia as this significantly improves the documentation of critical elements of the birth. Documentation includes:

- The time of birth of the head
- Maneuvers performed, the timing and sequence
- The direction the baby is facing, and which shoulder is impacted (right or left)
- The time of delivery of the body
- Staff in attendance

- Estimation of the time from delivery of head to the body.
- The condition of the baby at birth; Apgar score, cord pH, any trauma.
- Neonatologist presentand any evidence of neurologic impairment of the infant
- Once delivery is completed, document the discussion with patient and family counseled as to the nature of the problem, what was done and why.

10.0 **References:**


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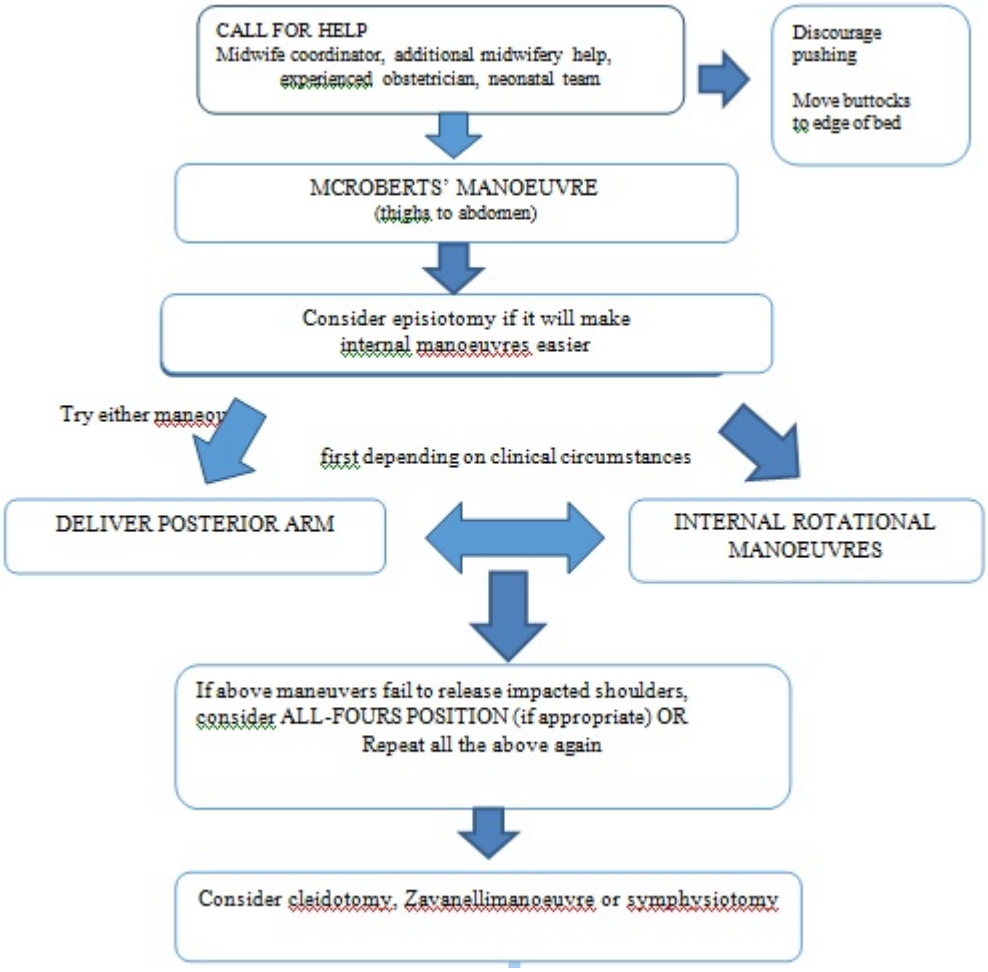
**ALOGRITHM FOR MANAGEMENT OF SHOULDER DYSTOCIA**




**Baby to be reviewed by neonatologist**

DOCUMENT ON PRO FORMA AND COMPLETE CLINICAL INCIDENT REPORTING FORM

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