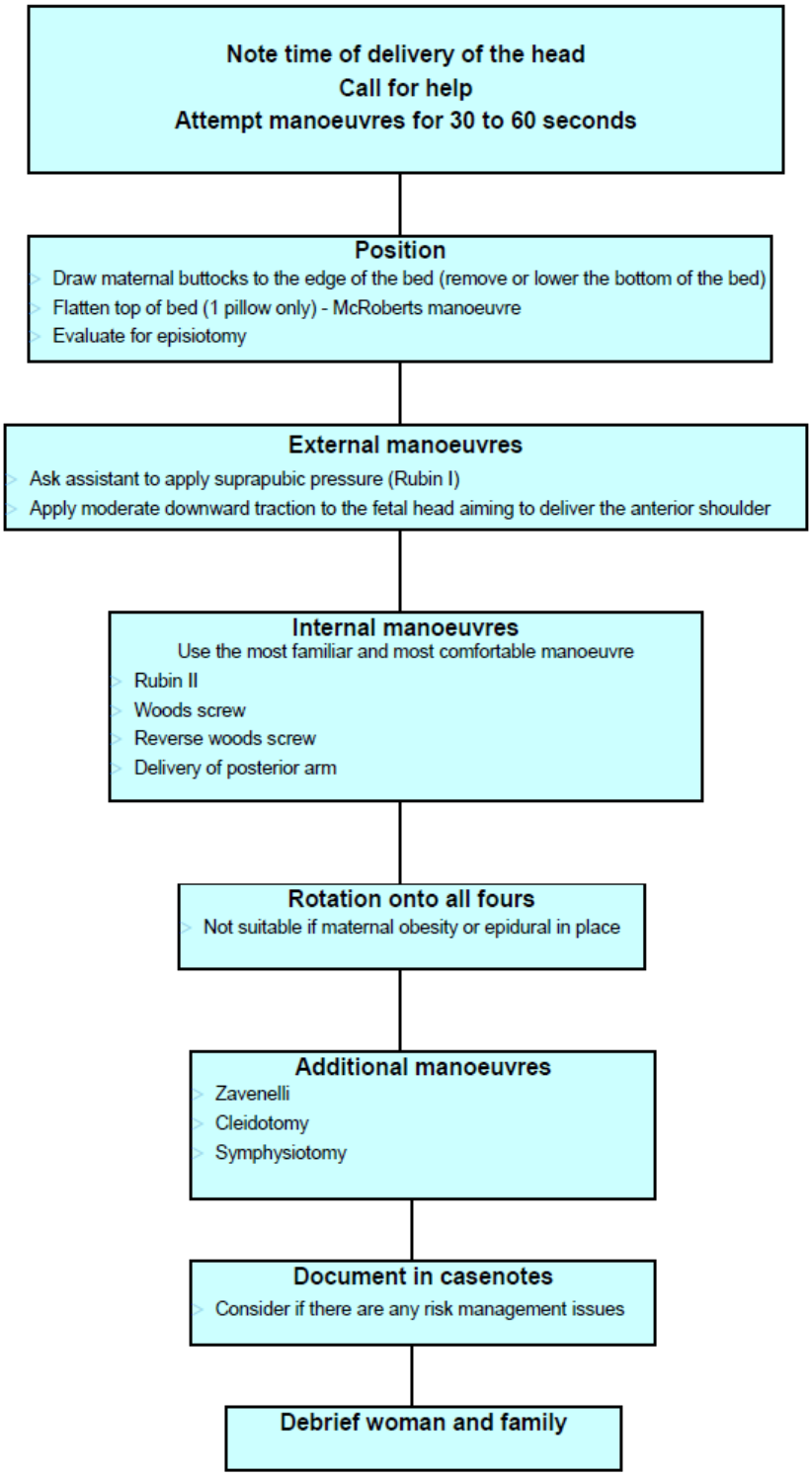
South Australian Perinatal Practice Guidelines

Shoulder dystocia

Management of shoulder dystocia



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Contact: South Australian Perinatal Practice Guidelines workgroup at: cywhs.perinatalprotocol@health.sa.gov.au

Shoulder dystocia

Literature review

- In shoulder dystocia, disproportion occurs between the bisacromial diameter of the fetus and the antero-posterior diameter of the pelvic inlet, resulting in impaction of the anterior shoulder of the fetus behind the symphysis pubis
- Difficult delivery of the shoulders ensues, requiring the use of additional manoeuvres beyond downward traction of the head and an episiotomy.
- Perinatal morbidity includes asphyxia, birth trauma, and permanent neurologic injury (Ginsberg and Moisidis 2001)
- Despite numerous studies, there is still no prospective method of accurately predicting shoulder dystocia (Ginsberg and Moisidis 2001; Sriemevan et al. 2000; Beall et al. 1998)
- Although many manoeuvres are described for the successful alleviation of shoulder dystocia, there have been no randomised controlled trials or laboratory experiments that have directly compared these techniques (Gherman et al. 2006)

Risk factors

- An increased risk of shoulder dystocia is reported in association with:
    - Prolonged late active phase
    - Prolonged second stage of labour
    - Mid-pelvic instrumental delivery
    - Maternal diabetes with or without macrosomia (Beall et al. 1998)
    - Previous shoulder dystocia
    - * A large infant (> 4.5 kg)
    - * History of a previous large infant
    - * Maternal obesity
    - * Multiparity

* *These associations have not been consistently validated.*

- Any combination of the above factors may significantly increase the risk of shoulder dystocia. Anticipation and preparation are recommended
- A well-organised drill to deal with the obstetric emergency of shoulder dystocia should be regularly practised in all major delivery units

Antenatal counselling

Discuss the risks and management options with women who have identified risk factors for shoulder dystocia and document in detail in the case notes:

- Points discussed
- Woman's choice regarding method of delivery
- Agreed birthing plan

Suspected fetal macrosomia

- A large for gestational age infant should be anticipated in the following:
    - The Symphyseal fundal height (SFH) is > 90th percentile
    - History of large for gestational age infant (irrespective of gestation)
    - Predicted estimated fetal weight on ultrasound is > 90th percentile
- Estimation of fetal weight is unreliable and the large majority of macrosomic infants do not experience shoulder dystocia (RCOG 2005)

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- However, there is evidence to suggest that larger infants are more likely to suffer a permanent, rather than transient, brachial plexus injury after shoulder dystocia (RCOG 2005)
- There is no evidence to support induction of labour in nulliparous women without a medical indication (such as diabetes) at term where the fetus is thought to be macrosomic
- Elective caesarean section is not recommended for suspected fetal macrosomia (estimated fetal weight over 4.5 kg) without diabetes

Previous shoulder dystocia

- The recurrence rate of shoulder dystocia is reported to be between 1% and 16%
- Debrief the woman regarding her experience of shoulder dystocia and advise steps that can be taken to reduce the risk of recurrence such as:
  - Control of diabetes (as applicable)
  - Timing of delivery to ensure fetal size is not larger than in her previous pregnancy with a shoulder dystocia
  - Document a request in the case notes for the presence of an accoucher experienced in the management of shoulder dystocia at the time of birth and immediate access to medical and midwifery backup
- Whilst elective caesarean section is not routinely advised; factors such as the severity of any previous neonatal or maternal injury, fetal size and maternal choice should all be considered when offering recommendations for the next birth

Management

- Shoulder dystocia usually becomes obvious after the fetal head emerges and retracts up against the perineum, failing to undergo external rotation (turtle sign)
- Shoulder dystocia is confirmed when standard delivery manoeuvres (downward traction) fail to deliver the fetus and the head to body delivery interval is prolonged ≥ 60 seconds (Sriemevan et al. 2000; Gherman et al. 2006)
- Time keeping is vital because after delivery of the head, the umbilical artery pH falls by 0.04 / min until respiration is established (Benedetti et al. 1987)
- A detailed description of the manoeuvres employed when managing a shoulder dystocia should be documented in the maternal case notes. The use of a 'Shoulder Dystocia Management' form, such as in Appendix I, may assist the accoucher to accurately document the event as well as providing valuable information for the care of the woman in any subsequent pregnancy

Call for help:

- Notify the senior obstetrician on duty, anaesthetist and paediatrician to attend immediately
- At least two experienced assistants may be required to achieve the following manoeuvres

Exaggerated manoeuvre for delivery of the anterior shoulder

- Place the maternal buttocks at the edge of the bed by lowering the bottom half of the delivery bed or repositioning the woman. Apply ***moderate*** downward traction to the fetal head with the aim of delivering the anterior shoulder

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McRoberts manoeuvre

- The woman's legs should be maximally flexed on her abdomen
- 1 pillow only beneath the woman's head and flatten the top of the bed
- Apply additional moderate downward traction to the fetal head with the aim to deliver the impacted anterior shoulder
- McRoberts manoeuvre results in a straightening of the lumbar spine allowing the posterior shoulder to fall into the hollow of the sacrum and the impacted shoulder to rotate under the symphysis pubis
- This manoeuvre is successful in more than 40 % of cases (over 50 % when combined with supra-pubic pressure) and can be continued with other manoeuvres

Rubin I (supra-pubic pressure)

- While the accoucheur continues mild downward traction to the fetal head, an assistant applies downward pressure on the fetus' anterior shoulder above the symphysis pubis, applying pressure in a "CPR" style for 30 to 60 seconds (may use rocking motion if continuous pressure is unsuccessful)
- The heel of the assistant's hand should be over the back (scapula side) of the fetus' anterior shoulder
- The aim is to push the anterior shoulder into the oblique diameter of the pelvic inlet, allowing it to escape under the symphysis pubis

Rubin II manoeuvre

- The assistant applies a downward press in a "CPR" style above the symphysis pubis (Rubin I)
- The accoucheur inserts the fingers of one hand into the vagina and applies pressure behind the anterior shoulder so that the anterior shoulder is displaced towards the fetal chest (Rubin II)
- Once in the oblique diameter, attempt delivery
- The McRoberts manoeuvre may also be applied throughout

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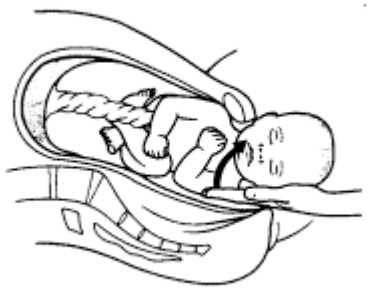
Woods screw manoeuvre

- The fingers of the first hand remain behind the anterior shoulder (Rubin II). The accoucheur then inserts the fingers of his / her second hand in front (chest side) of the posterior shoulder (Woods screw)
- Apply pressure as in Rubin II in combination with additional pressure to the front of the posterior shoulder to rotate into the oblique. If delivery is not achieved, continue rotation through 180° if able
- Attempt delivery

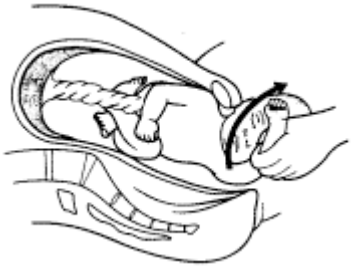
Reverse Woods screw manoeuvre

- Pressure is now applied behind the posterior shoulder with two fingers
- The posterior shoulder is then rotated 180° forward towards the fetal chest wall
- The aim is to release the anterior shoulder from under the symphysis
- The posterior shoulder passes beneath the symphysis and delivery is attempted



Delivery of the posterior arm

- The accoucheur's hand is inserted well into the vagina across the fetal chest to locate the fetal elbow
- The elbow of the fetal arm is flexed and swept across the fetal chest and maternal perineum. This often allows the anterior shoulder to be displaced and delivered



Rotation onto all fours

- All fours position (rotating the pregnant woman onto her hands and knees) increases the pelvic diameters allowing better access to the posterior shoulder
- Consideration should be given to the time taken to achieve this position especially if the woman is obese and / or has an epidural (Sriemevan et al. 2000)
- If already in all fours position, assist the woman to adopt the McRoberts manoeuvre and attempt to deliver the posterior shoulder

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Additional manoeuvres

Zavanelli manoeuvre

- This is a manoeuvre of last resort
- Administer tocolytic (IV salbutamol) before attempting. Give intravenous salbutamol slowly in 50 microgram boluses up to 250 micrograms in total (often 100 micrograms will be sufficient) Ventolin® obstetric injection contains 5 mg / 5 mL (1,000 micrograms / mL)
    - Draw up 0.25 mL of salbutamol in a 1 mL syringe
    - Add this to 9 mL of 0.9 % sodium chloride in a 10 mL syringe to provide 25 micrograms / mL
- The fetal head should be replaced back into the uterus by depressing the posterior perineum and applying the palm of the hand to the vertex and applying upward pressure
- Once the head is replaced, use firm and constant pressure and proceed to caesarean section (Johanson et al. 2003)

Cleidotomy (fracture of fetal clavicle)

- Consider cleidotomy if all other measures have failed. It may be considered earlier if the fetus has succumbed

Symphysiotomy (incision and division of the symphyseal ligament)

- Only to be considered by those with experience with this procedure

Morbidity

Maternal

- Postpartum haemorrhage
- Vaginal and perineal lacerations (3rd and 4th degree tears)
- Uterine rupture

Fetal

- Cerebral hypoxia
- Cerebral palsy
- Fracture clavicle and / or humerus
- Brachial plexus injuries (e.g. Erb's palsy)

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Abbreviations

et al.	And others
kg	Kilogram(s)
SFH	Symphyseal fundal height
pH	Minus log hydrogen ion concentration
min	Minute
CPR	Cardiopulmonary resuscitation
IV	Intravenous
mL	Millilitre(s)
e.g.	For example
RCOG	Royal College of Obstetricians and Gynaecologists

Version control and change history

PDS reference: OCE use only

Version	Date from	Date to	Amendment
1.0	18 Feb 04	27 Dec 07	Original version
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