



Government of the Republic of Trinidad and Tobago

Ministry of Health



Women's Health

*The Management of
Shoulder
Dystocia*

Clinical Guideline

*Directorate of Women's Health
Ministry of Health*

Trinidad and Tobago

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MESSAGE FROM THE DIRECTORATE

The Directorate of Women's Health was formed at the Ministry of Health to improve maternal and perinatal outcomes and address international targets for Trinidad and Tobago in achieving the milestones along the way to the 2030 Sustainable Developmental Goals (SDGs). This document is one such response in order to create standardized clinical guidelines related to Obstetrics and Gynaecology.

In line with the 2030 SDGs Agenda and the Global Strategy for Women's, Children's and Adolescent's Health (2016-2030), this document supports the objectives of "Survive, Thrive and Transform" by promoting the reduction of maternal and perinatal morbidity and mortality.

We used an 'adopt and adapt' method in the production of this guideline based on existing resources and expertise. Consensus was obtained from the recognized multidisciplinary stakeholders based on the evidence and publications at the time of producing this document.

Shoulder dystocia can result in poor fetal and maternal outcomes. **It is appreciated that it is an unpredictable and unpreventable event at times.** The document aims primarily to underscore that teams should be prepared with the skills to manage this event in a systematic manner. This includes ensuring that all team members participate in regular, recorded, simulation sessions at all units. Early diagnosis and senior-led interventions are anticipated to result in an improvement in these outcomes.

This Guideline provides updated information which replaces the advice in **Section 5.1 MANAGEMENT OF A CLIENT WITH SHOULDER DYSTOCIA** in the "SOP Manual for Obstetric and Midwifery Services," produced by the Ministry of Health in June 2011 (Pages 21-22). All routine antenatal care management guidelines apply including the Maternal and Child Health Manual (MOH, 2015) and the SOP Manual for Obstetric and Midwifery Services, unless specifically updated in this guideline. These areas are not repeated in this guideline.

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LIST OF ABBREVIATIONS

ACOG	The American College of Obstetricians and Gynecologists
BPI	Brachial Plexus Injury
GDM	Gestational Diabetes Mellitus
DM	Diabetes Mellitus
MCH	Maternal and Child Health
MCOS	Medical Chief of Staff
MOH	Ministry of Health
PAHO	Pan American Health Organization
PPH	Postpartum Haemorrhage
RCOG	The Royal College of Obstetricians and Gynaecologists
RHA	Regional Health Authority
SDGs	Sustainable Development Goals
SOP	Standard Operating Procedure
WHO	World Health Organization

DEFINITIONS

- ▶ **SHOULDER DYSTOCIA:**
A vaginal cephalic delivery that requires additional obstetric manoeuvres to deliver the fetus after the head has delivered and normal traction has failed.
- ▶ **MC ROBERTS' MANOEUVRE:**
Flexion and abduction of the maternal hips, positioning the maternal thighs on the abdomen.
- ▶ **BRACHIAL PLEXUS INJURY:**
Avulsion or rupture of the nerve roots C8-T1 after lateral neck extension during traction.
- ▶ **CLEIDOTOMY:**
Surgical division of the clavicle or bending with a finger.
- ▶ **SYMPHYSIOTOMY:**
Dividing the anterior fibres of the symphyseal ligament.
- ▶ **ZAVANELLI MANOEUVRE:**
Vaginal replacement of the fetal head.
- ▶ **TURTLE SIGN:**
Retraction of the delivered fetal head against the maternal perineum is suggestive, but not diagnostic, of the presence of shoulder dystocia.

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1.0 INTRODUCTION

Shoulder dystocia typically occurs when the descent of the anterior shoulder is obstructed by the symphysis pubis, but can also result from the impaction of the posterior shoulder on the maternal sacral promontory.

There is a wide variation in the reported incidence of shoulder dystocia ranging from 0.2% to 3%.

A persistent anterior–posterior location of the fetal shoulders at the pelvic brim can occur when there is increased resistance between the fetus and the vaginal walls (e.g. in the setting of fetal macrosomia), when there is a large fetal chest relative to the biparietal diameter (e.g. in fetuses of diabetic women), and when truncal rotation does not occur (e.g. with precipitous labour).

There can be significant perinatal morbidity and mortality associated with the condition, even when it is managed appropriately.

Brachial plexus injury (BPI) is one of the most important fetal complications of shoulder dystocia, complicating 2.3% to 16% of such deliveries.

Neonatal BPI is the most common cause for litigation related to shoulder dystocia and the third most litigated obstetric-related complication in the UK.

Not all injuries are due to excess traction by healthcare professionals, and there is a significant body of evidence suggesting that maternal propulsive force may contribute to some of these injuries.

A substantial minority of BPIs are not associated with clinically evident shoulder dystocia.

When BPI is discussed legally, it is important to determine whether the affected shoulder was anterior or posterior at the time of delivery, because damage to the plexus of the posterior shoulder is considered unlikely to be due to action by the healthcare professional.

Risk assessments for the prediction of shoulder dystocia are insufficiently predictive to allow prevention of the large majority of cases. Although there are a number of known risk factors, shoulder dystocia cannot be accurately predicted or prevented. Clinical staff must however be aware of the risk factors for shoulder dystocia in order to anticipate those deliveries at high risk and should be prepared to address this complication in all deliveries.

2.0 SUMMARY OF RECOMMENDATIONS

2.1 There is insufficient, inconsistent or limited scientific evidence in the following recommendations (Level B)

- **Consider elective caesarean delivery** for women without diabetes who are carrying fetuses with suspected macrosomia with an estimated fetal weight of at least 4.5 kg.
- **Consider elective caesarean delivery** for women with diabetes whose fetuses are estimated to weigh > 4 kg. However, shoulder dystocia risk is higher than in the general population at weights > 3.75 kg in these women.
- **McRoberts'** manoeuvre should be attempted as the first measure when shoulder dystocia is encountered.
- **Contemporaneous documentation** is recommended to record significant facts, findings, and observations about the shoulder dystocia event and its sequelae.

2.2 The following recommendation is based primarily on consensus and expert opinion (Level C):

- Consider delivery of the posterior arm as the next manoeuvre to manage shoulder dystocia.

2.3 Risk management and audit

- Each facility should have attendance-recorded, simulation exercises at a minimum on a three-monthly basis to include new relevant staff members. Each member should have documented participation in the exercise at least once per annum as part of continued professional development.
- Research and audit on shoulder dystocia especially regarding its incidence, clinical characteristics and its relationship with diabetes in pregnancy and ethnic variation in our population, are recommended.

3.0 MATERNAL COMPLICATIONS

Shoulder dystocia has been shown to be associated with an increased risk of postpartum hemorrhage (PPH) as well as higher degree perineal lacerations and an increased risk of obstetric anal sphincter injuries. It has also been noted to have a higher incidence of cervico–vaginal lacerations, uterine rupture, urethral injury, and bladder lacerations when compared with uncomplicated vaginal deliveries.

Maternal symphyseal separation and lateral femoral cutaneous neuropathy are also associated with aggressive hyperflexion of the maternal legs during McRoberts' manoeuvre.

4.0 NEONATAL COMPLICATIONS

Most shoulder dystocia cases are relieved without injury to the fetus.

The duration of the shoulder dystocia alone is not an accurate predictor of neonatal asphyxia or death. It is difficult to recommend an absolute time limit for the management of shoulder dystocia as there is no conclusive data available, but there appears to be a very low rate of hypoxic ischaemic injury up to five (5) minutes.

Intrapartum factors as well as differing mechanisms of injury specifically related to shoulder dystocia, (e.g. excessive vagal stimulation, compression of the neck decreasing cerebral blood flow) may be factors contributing to neonatal demise in these cases.

Brachial plexus injuries and fractures of the clavicle and humerus, which commonly resolve without long-term sequelae, are the most commonly reported immediate neonatal injuries associated with shoulder dystocia.

Although infrequent, some cases of shoulder dystocia may result in neonatal encephalopathy and even death.

5.0 PREDICTION OF SHOULDER DYSTOCIA

Table. Factors associated with shoulder dystocia

PRE-LABOUR	INTRAPARTUM
Previous shoulder dystocia Macrosomia Diabetes mellitus BMI > 30 kg/m ² Induction of labour	Prolonged first stage of labour Secondary arrest Prolonged second stage of labour Oxytocin augmentation Assisted vaginal delivery

- Induction of Labour does not prevent shoulder dystocia in non-diabetic women with a suspected macrosomic fetus.
- Induction of labour at term can reduce the incidence of shoulder dystocia in women with gestational diabetes GDM (see MOH- Diabetes Mellitus and Pregnancy: Clinical Guideline, 2018).
- Elective CS should be considered to reduce the potential morbidity for pregnancies complicated by Diabetes in Pregnancy (DIP) or GDM if the estimated fetal weight is > 4 kg.
- A discussion should occur regarding planning of mode of delivery in women with a history of previous shoulder dystocia. Either mode can be appropriate depending on the individual circumstances.

6.0 MANAGEMENT (See Appendices I-III)

6.1 Recognition

Timely management requires prompt recognition. The birth attendant should routinely observe for:

- Difficulty with delivery of the face and chin
- The head remaining tightly applied to the vulva or even retracting (turtle-neck sign)
- Failure of restitution of fetal head
- Failure of shoulders to descend

Routine traction in the axial direction (traction in line with the fetal spine) can be used to diagnose shoulder dystocia but any other traction should be avoided

Prophylactic McRoberts' positioning before delivery of the fetal head is not recommended to prevent shoulder dystocia.

6.2 Call for help

- Declare an “obstetric emergency for shoulder dystocia”
(Declaring the emergency early has been associated with improvement in outcomes in shoulder dystocia)
- Inform mother to stop pushing
- Call for all senior staff available including senior midwives, obstetricians, neonatal and theatre staff

6.3 Assist the woman into the McRoberts' position

The McRoberts' manoeuvre is flexion and abduction of the maternal hips, positioning the maternal thighs on her abdomen. It straightens the lumbosacral angle, rotates the maternal pelvis towards the mother's head and increases the relative anterior-posterior diameter of the pelvis. The McRoberts' manoeuvre is an effective intervention, with reported success rates as high as 90%. It has a low complication rate, is one of the least invasive manoeuvres, and should be employed first.

- Lie the woman flat, remove any pillows.
- With one assistant either side hyperflex the woman's legs, knee to chest and rotated outwards. If mother was in lithotomy at time of delivery of the fetal head then her legs should be brought down together then sharply flexed, abducted (knees to chest) and rotated outwards.
- Routine traction (the same degree of traction used during a normal delivery) in the axial direction should be used to assess whether shoulders have been released.
- If the anterior shoulder is not released with the McRoberts' position and routine axial traction, another manoeuvre should be attempted.
- **Suprapubic pressure** can improve the effectiveness of McRoberts' manoeuvre. Suprapubic pressure is applied by assistant on the same side as the fetal back in a downward and lateral direction using a cardiac massage grip just above the maternal symphysis pubis.
- Only routine traction should be applied to assess if the shoulder has been released.
- An episiotomy is not always necessary at this stage. An episiotomy will not relieve the bony obstruction of shoulder dystocia but may be required to allow the healthcare professional more space to facilitate internal vaginal manoeuvres. The use of an episiotomy does not decrease the risk of BPI with shoulder dystocia.
- **Fundal pressure should never be used and is associated with uterine rupture and a higher neonatal complication rate.**

6.4 If the above measures fail:

- Consider episiotomy to aid access for internal manoeuvres.
- Delivery of posterior arm or other internal manoeuvres, or all-fours position. Any of these options can be tried next depending on clinical circumstance and operator's experience. The individual circumstances should guide the healthcare professional as to whether to try the all-fours position before or after attempting internal rotation and delivery of the posterior arm. The all-fours position is a useful option in the community setting.
- Access for internal manoeuvres should be gained by inserting the whole hand into the sacral hollow.
- The woman should be brought to the end of the bed, or the end of the bed removed.
- The fetal wrist should be grasped, and the posterior arm should be gently withdrawn from the vagina in a straight line.
- Internal rotational manoeuvres
 - Press on the anterior or posterior aspect of the posterior shoulder.
 - Rotate the shoulders into the oblique diameter
 - If unsuccessful apply pressure on the posterior aspect of the anterior shoulder to adduct and rotate the shoulders into the oblique diameter.
- If all the described manoeuvres fail to release the impacted shoulder, consider the fours position if appropriate or repeat all the manoeuvres again.

6.5 Rarely required:

- If the shoulder remains impacted try cleidotomy (surgical or bending with a finger), Zavanelli manoeuvre or symphysiotomy (divide the anterior fibres of the symphyseal ligament). These should be attempted by someone experienced with these techniques to avoid additional maternal trauma.

6.6 Management of the woman and baby after shoulder dystocia

- PPH and severe perineal tears are the commonest complications. See the Ministry of Health's publication on the Management of Major Haemorrhage in Obstetrics (April 2019).

7.0 TRAINING, AUDIT, RESEARCH AND RISK MANAGEMENT

- Inform senior staff if not previously informed during the initial event.
- Senior staff must be present and lead the subsequent debriefing of both staff and relatives.
- The Adverse Events Policy and Guidelines reporting framework must be referenced and used to guide mandatory reporting requirements depending on the nature of the event.
- Complete an institutional clinical incident form and enter case into the departmental and institutional database for review by Quality, Risk Management and Audit teams
- Contemporaneous documentation of the management of shoulder dystocia is required to record significant facts, findings, and observations about the event and its sequelae, including the following minimum details (see sample form-Appendix III):
 - o Chronology of event, time interval to delivery of baby after delivery of the head, traction required, limb which was anterior, side of fetal back, persons called and persons present, sequence of procedures employed, episiotomy, outcomes of mother and baby, Apgar scores, cord gases, neonatal resuscitation measures employed, suspected injuries, signs of hypoxic injury or weakness
- The mandatory monthly perinatal forum must be utilized to discuss relevant cases with adverse outcomes.
- All relevant referrals and support systems are to be followed including orthopaedic and physiotherapy reviews if required. A customer service representative is to be assigned to ensure that these appointments are expedited and not left to the clients to navigate the RHA on their own.
- Using an approved algorithm (e.g. RCOG, Appendix III) is recommended rather than trying to remember mnemonics (e.g. HELPERR) and eponyms (e.g. Woods, Rubin's)
- The Human Resources Department is required to maintain a database of staff attendance at mandatory simulated emergency drills. Non-participation can be incorporated into the staff's Performance Assessment reports.
- Within the RHA, under the guidance of the Head of Department, the Training Unit (or similar unit) should ensure the purchase of a high-fidelity model and equipment capable of simulating obstetric and fetal intrapartum emergencies.
- Staff from the local maternity units in the private sector can be invited to participate at the training sessions.
- Research on shoulder dystocia especially regarding its incidence, clinical characteristics and its relationship with diabetes in pregnancy and ethnic variation in our population, is recommended. Hospitals should monitor the incidence of shoulder dystocia and the complications.
- The MOH recommends the strengthening of Audit and Research teams at the RHAs and at the Tertiary institutions.
- Healthcare students in these areas should consider this area of research as a priority e.g. postgraduate doctors, midwifery programs and other health scientists
- Auditable topics also include analysis of manoeuvres, cord gas pH, neonatal injuries, staff attendance at training, completeness of documentation.

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Figure 1.
McRoberts' manoeuvre (only one of two
assistants are demonstrated)

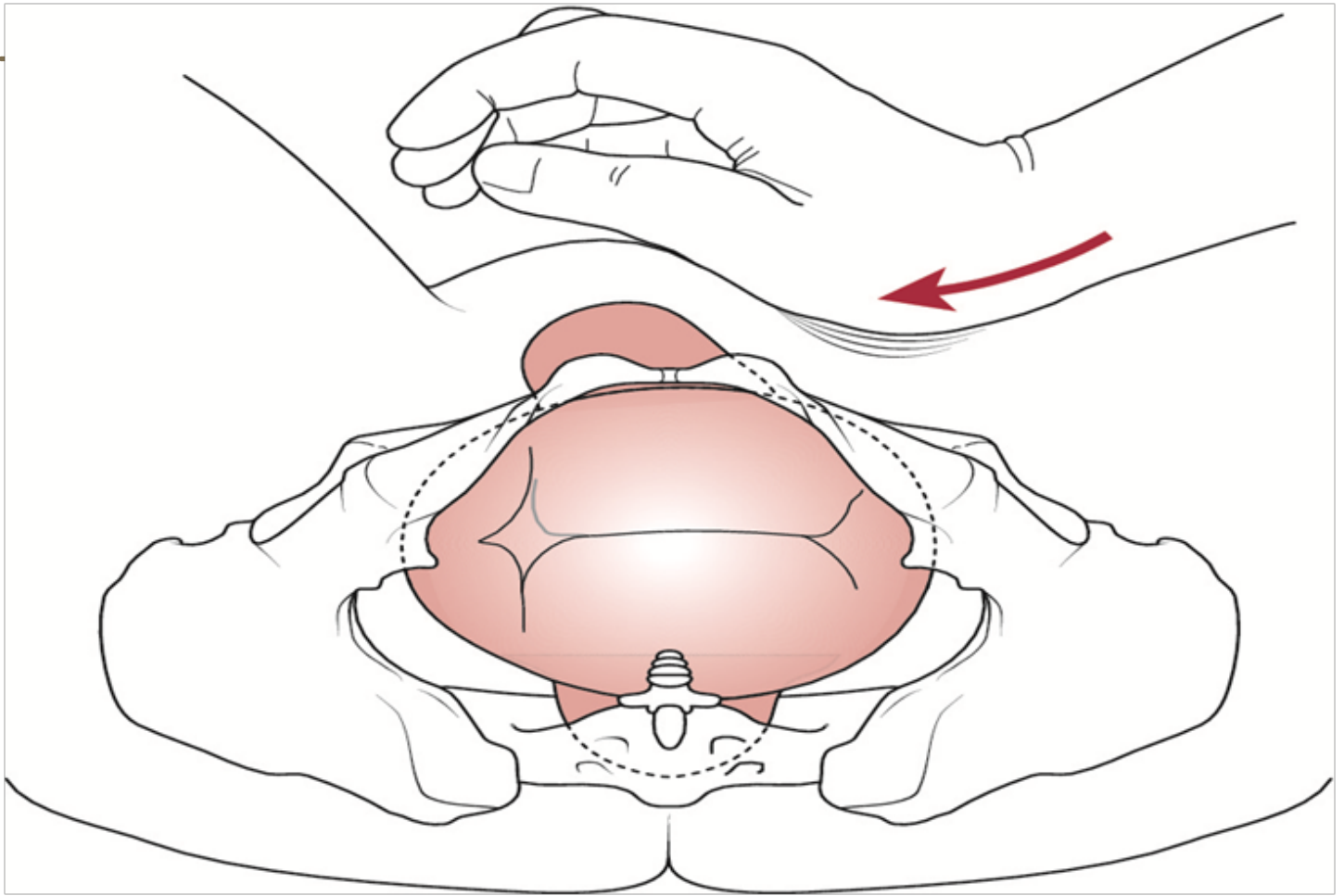


Figure 2.
Supra pubic pressure applied on upper fetal back.

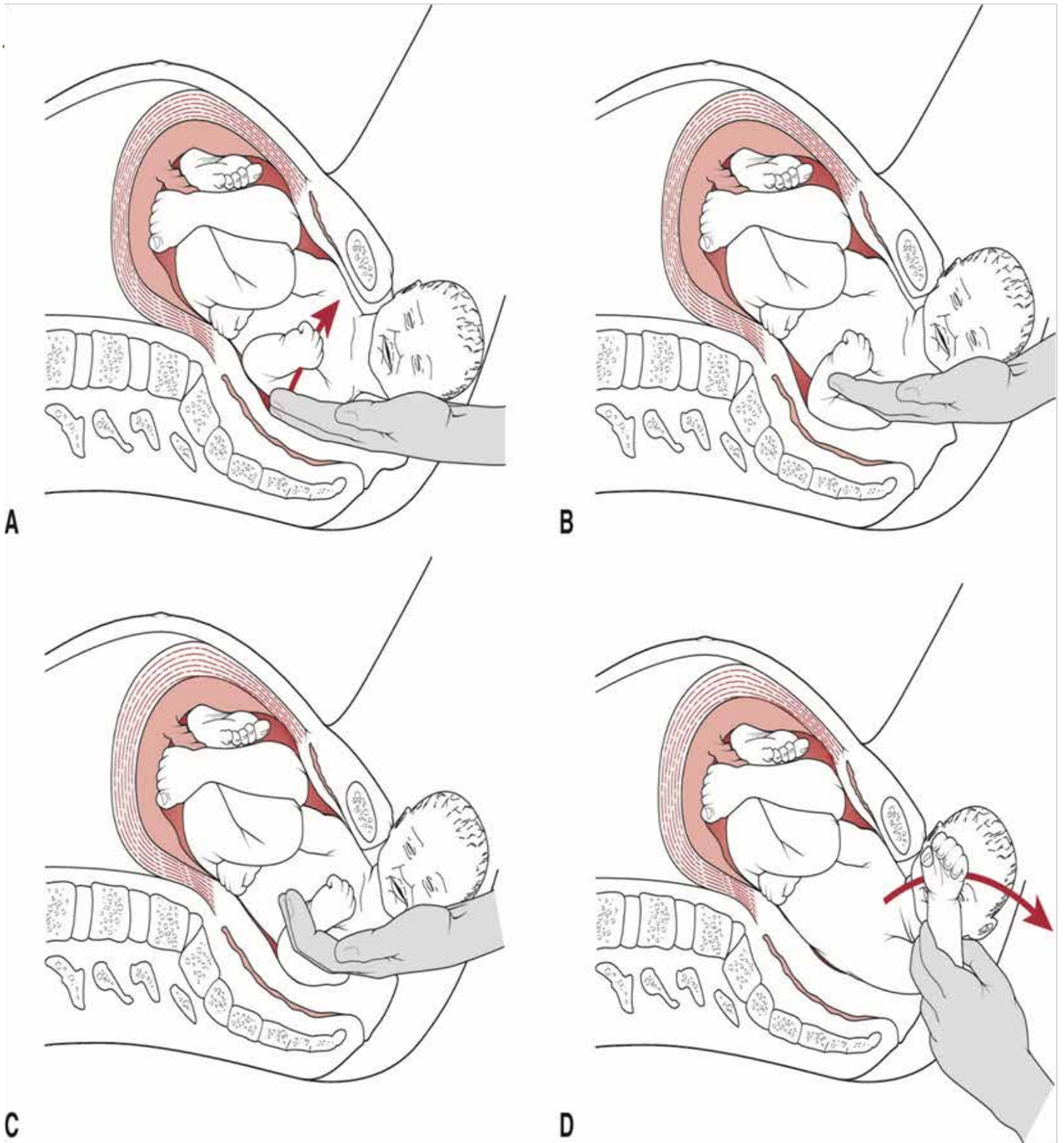
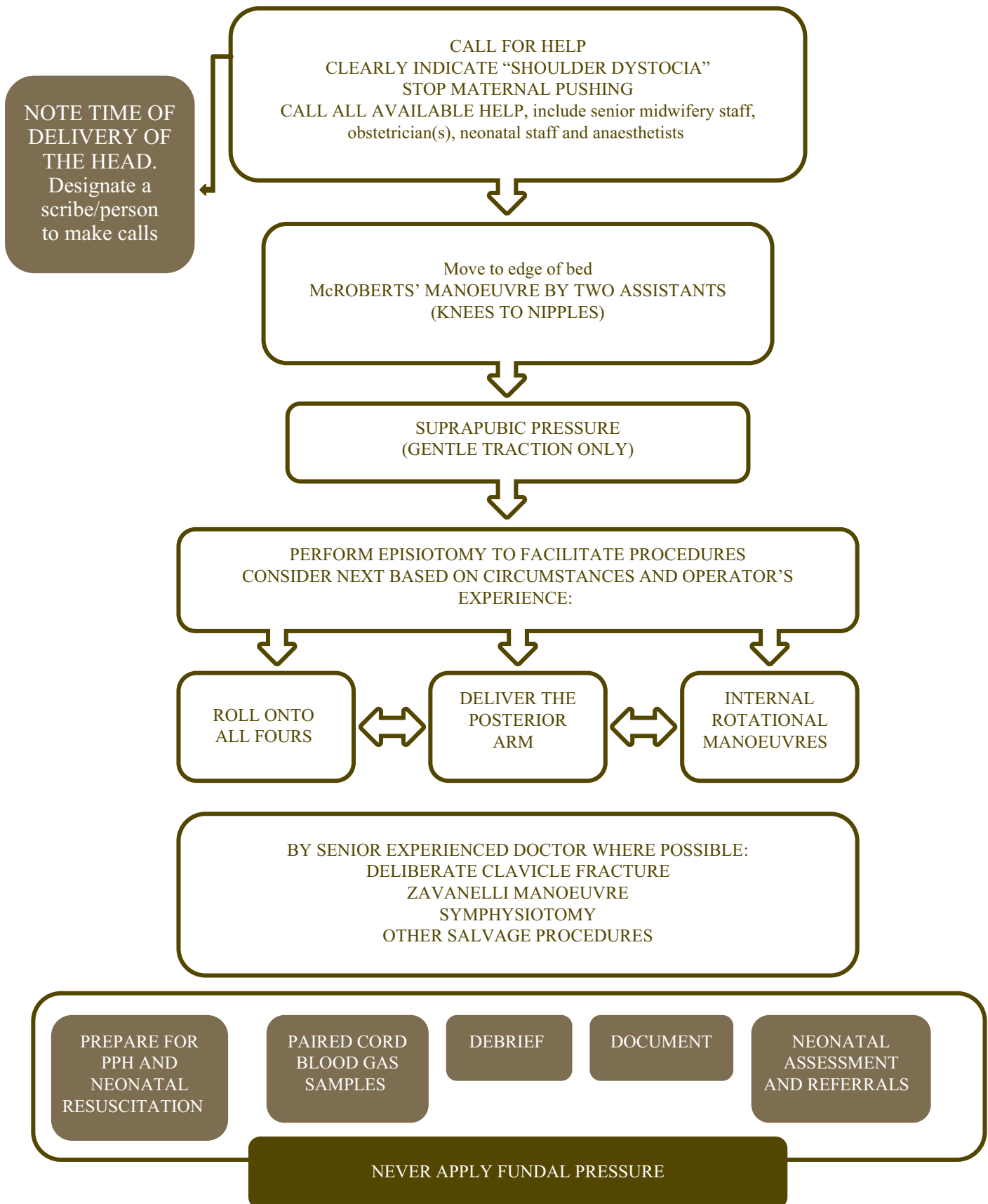


Figure 3.
Internal manoeuvres for posterior limb

ALGORITHM

The Management of Shoulder Dystocia



APPENDIX III SAMPLE FORMS

SHOULDER DYSTOCIA SUMMARY FORM (OBSTETRICS) (PAGE1/2)

Mother's Name		Reg. No	Date (dd/mm/yyyy)	
Date of Birth (dd/mm/yyyy)		Time		
Signature:		SMO on duty:		
NAME: (BLOCK LETTERS)				
Designation:				
STAFF PRESENT AT DELIVERY OF HEAD		CALLED FOR HELP AT:		
		ADDITIONAL STAFF ATTENDING FOR DELIVERY OF SHOULDERS		
NAME	DESIGNATION	NAME	DESIGNATION	TIME ARRIVED

SHOULDER DYSTOCIA SUMMARY FORM(OBSTETRICS) (PAGE 2/2)

PROCEDURES USED TO ASSIST DELIVERY	BY WHOM	TIME		COMMENT
McRoberts'				
Suprapubic pressure			From maternal Left <input type="checkbox"/> Right <input type="checkbox"/>	
Episiotomy			Enough access <input type="checkbox"/>	Performed <input type="checkbox"/> Tear <input type="checkbox"/>
Delivery of posterior arm			Left <input type="checkbox"/> Right <input type="checkbox"/>	
Internal rotational manoeuvre				
Description of rotation				
All fours position				
Description of traction	Routine axial (as in normal vaginal delivery)	Other	Reason if not routine axial:	
Other manoeuvres used				

Debriefing/Explanation to parents Yes

SHOULDER DYSTOCIA SUMMARY FORM (NEONATAL/PAEDIATRICS)

Mother's Name	Reg. No	Date (dd/mm/yyyy)
Date of Birth (dd/mm/yyyy)	Time	
Signature:	PAED/NEONATAL SMO on duty:	
NAME: (BLOCK LETTERS)		
Designation:		

Neonatologist/Paediatrician called? Yes	Arrived:
Name:	
Designation:	

Baby assessment after birth

Any sign of arm weakness?	Yes	No	If yes to any of these questions for review and follow-up by Consultant neonatologist
Any sign of potential bony fracture?	Yes	No	
Baby admitted to Neonatal Intensive Care Unit?	Yes	No	
.....			

Mode of delivery of the head	Spontaneous		Instrumental - vacuum / forceps	
Time of delivery of head	Time of delivery of baby		Head-to-body delivery interval	
Fetal position during dystocia	Head facing maternal left (Left fetal shoulder anterior)		Head facing maternal right (Right fetal shoulder anterior)	
Birth weight kg	Apgar	1 min:	5 mins:	10 mins:
Cord gases	Art pH:	Art BE:	Venous pH:	Venous BE:
Debriefing/Explanation to parents Yes				
By -----				

