

Shoulder dystocia

One born every minute - Bristol

Introduction

- Shoulder Dystocia
- Mechanics
- Resolution
- Brachial plexus injury

BBC Shoulder Dystocia

Shoulder dystocia

- Most commonly anterior shoulder impacts on symphysis pubis
- Affects 0.1% - 3% of all births
- Needs to be managed efficiently to reduce neonatal hypoxia and effectively to reduce neonatal injury



Truck and low bridge



Prevention

- Bolam indications for CS
 - Fetal Macrosomia >4kg at term
 - Previous SD
 - Maternal choice
- Montgomery compliant discussion of consequences
 - IOL – 50% reduction in SD vs 3x increase 3rd/4th tear
 - CS consequences
 - Increased in childhood obesity & asthma
 - 2x increase Stillbirth in future – 0.2% vs 0.4%

Risk Factors

- Previous shoulder dystocia
- Fetal macrosomia (big baby)
- Maternal diabetes mellitus
- Maternal obesity
- Prolonged first stage
- Prolonged second stage
- Augmentation of labour
- Operative vaginal birth

Unpredictable and unpreventable

- Majority of cases of shoulder dystocia occur in women without any risk factors
- However, clinicians should be aware of existing risk factors and make appropriate recommendations for the best place for birth
- **Clinicians should be alert to the possibility of shoulder dystocia with any birth**

Complications

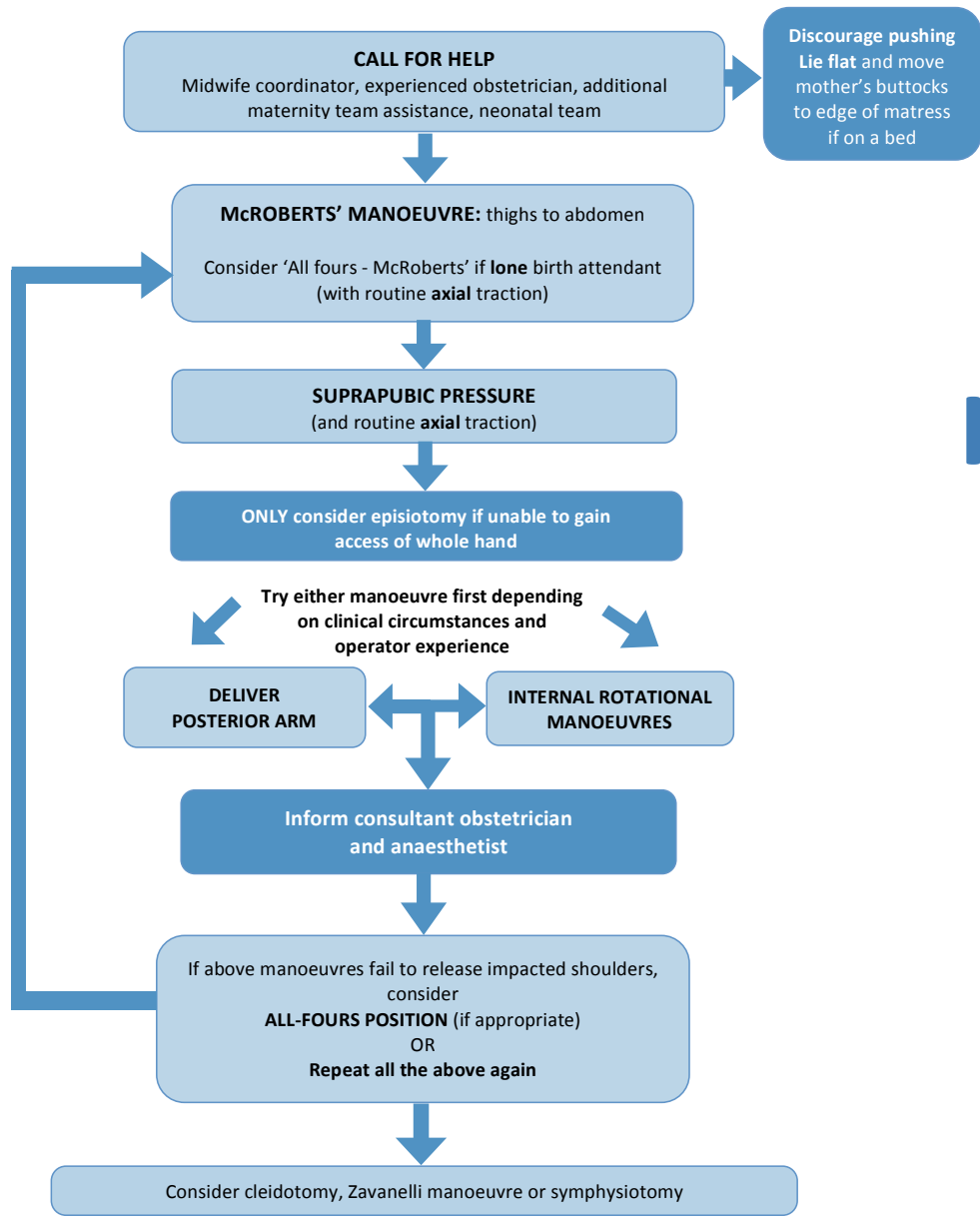
- Brachial Plexus Injury
 - 4-16% shoulder dystocia births, with 10% injuries lasting >1 year
 - Incidence of permanent injury is 1/2300 live births in UK
- Neonatal fractures – humerus and/or clavicle
- Hypoxia & stillbirth
- Maternal trauma

Management of SD



Managing Shoulder Dystocia

- Current international guidelines all recommend the use of four basic resolution manoeuvres:
 - McRoberts' / All-fours McRoberts'
 - Supra-pubic pressure
 - Delivery of the posterior arm
 - Internal rotation of the shoulders



How to Manage Shoulder Dystocia

Baby to be reviewed by midwife/neonatologist after birth and referred for consultant neonatal review if any concerns

DOCUMENT ALL ACTIONS ON PRO FORMA AND COMPLETE CLINICAL INCIDENT REPORTING FORM

Recognition

- Slow & difficult delivery of fetal face and chin
- When fetal head is delivered, it remains tightly applied to vulva
- Chin retraction “turtle neck”
- Anterior shoulder fails to deliver with ‘routine’ traction

McRoberts position

- Lie mother flat, removing any pillows
- Hyperflex & support mother's legs (knees towards chest)
- Mother's bottom lifted off the bed
- Increases relative AP diameter of pelvic inlet by making pelvis more upright
- Apply routine 'axial' traction to fetal head to assess if manoeuvre has been successful



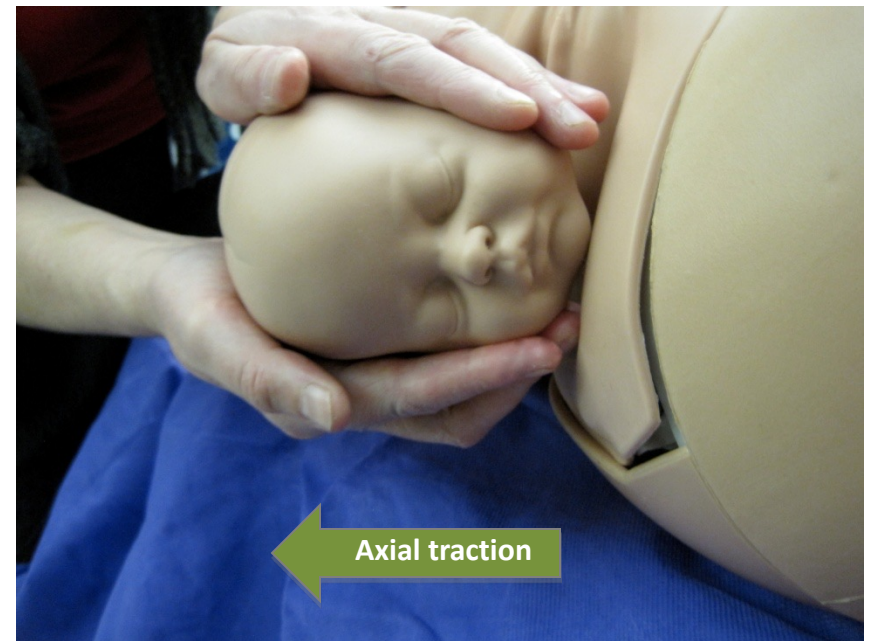
McRoberts' (bottom lifted off bed)

'All-fours McRoberts' position

- Essentially McRoberts' position but upside-down
- Ideal for slim mobile women and a *single midwifery birth attendant*
- Ask mother to roll on to all-fours, with hips and knees flexed
- Simple change of position may help to release shoulders
- Routine axial traction can be applied to assess if manoeuvre has been successful
- **Remember: the sacral hollow is accessed 'anteriorly' if internal manoeuvres are required**

Routine axial traction

- The same degree of traction as applied during a normal birth in an axial direction:
- Traction applied in line with the axis of the fetal spine
- Routine axial traction **ONLY** applied to assess whether each manoeuvre has been successful



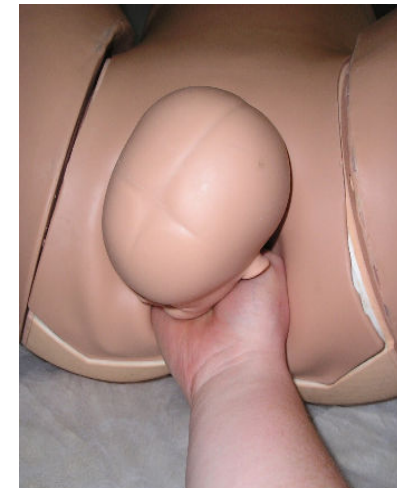
Suprapubic Pressure

- Aims to reduce diameter of fetal shoulders and rotate the anterior shoulder into the wider oblique angle of pelvis
- Apply suprapubic pressure **from side of fetal back** in a downward lateral direction
- Apply routine 'axial' traction to fetal head to assess if manoeuvre has been successful



Internal manoeuvres

- Delivery of posterior arm and rotational manoeuvres both require internal access
- No room under the pubic arch
- Most spacious part of pelvis is in sacral hollow
- Scrunch up hand and enter vagina posteriorly
- “Pringles manoeuvre”



Delivery of the posterior arm

- Reduces diameter of fetal shoulders by an arms width
- Fetal arms often flexed across chest
- Enter posteriorly and feel for fetal wrist
- Grasp wrist and gently release arm in a straight line



Internal Rotation

- Move the fetal shoulders out of narrowest diameter of pelvis
- Apply pressure to posterior (back) or anterior (front) of fetal shoulder depending on access, to rotate fetus into oblique diameter of the pelvis
- Addition of supra-pubic pressure from assistant may help further


What not to do !

- Nothing more than **routine 'axial' traction**
 - Don't pull hard
 - Don't pull downwards
 - Don't pull quickly or with a 'jerk'
- There is insufficient evidence currently to recommend axillary traction
- Do not use fundal pressure – increases impaction

Documentation

- Head & body delivery times
- Who was at the birth & who was called
- Which manoeuvres were performed & their order
- The degree and direction of traction applied
- The anterior shoulder at the time of the dystocia
- Condition of the baby at birth
 - Apgars
 - Cord pHs
 - Signs of neonatal injury

Documentation proforma



PROMPT
Practical Obstetric Multi-Professional Training

SHOULDER DYSTOCIA DOCUMENTATION

Date Time

Person completing form

Designation

Signature

Called for help at:		Emergency call via switchboard at:							
Staff present at birth of head:		Additional staff attending for birth of shoulders							
Name	Role	Name	Role	Time arrived					
Maternal position when shoulder dystocia occurred - please circle (i.e. prior to any procedures to assist)		Semi-recumbent	Lithotomy	Side-lying	All fours	Kneeling	Standing	Squatting	Other
Procedures used to assist birth	By whom	Time	Order	Details			Reason if not performed		
McRoberts' position									
Suprapubic pressure				From maternal left / right (circle as appropriate)					
Episiotomy				Enough access / tear present / already performed (circle as appropriate)					
Delivery of posterior arm				Right / left arm (circle as appropriate)					
Internal rotational manoeuvre									
Description of rotation									
Description of traction		Routine (as for normal vaginal birth)		Other -		Reason if not routine			
Other manoeuvres used									
Mode of birth of head		Spontaneous				Instrumental – vacuum / forceps			
Time of birth of head		Time of birth of baby		Head-to-body birth 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 :	
Explanation to parents		Yes	By			Risk incident form completed if clinical concerns		Yes	N/A
Neonatologist called: Yes / No Time arrived: Neonatologists name:									
Baby assessment at birth (maybe done by M/W):				If yes to any of these questions, for review and follow up by Consultant neonatologist					
Any sign of arm weakness?				Yes	No				
Any sign of potential bony fracture?				Yes	No				
Baby admitted to Neonatal Intensive Care Unit?				Yes	No				
Assessment by									

Postnatal care

- Neonatal review of baby
- Debrief parents
- Information for parents
 - A difficult birth: what is shoulder dystocia? - information for you (RCOG website)
- Referral for mode of birth discussion in next pregnancy

Training for Shoulder Dystocia

- Eponyms and mnemonics are not useful
- Evidence for SD training – Pubmed 2018:
 - Increase in brachial plexus injuries 1 study
 - No change in brachial plexus injuries 4 studies
 - Decrease in brachial plexus injuries 5 studies
- RCOG SD guideline (2012) recommends:
“Shoulder dystocia training associated with improvements in clinical management and neonatal outcomes was multi-professional, with manoeuvres demonstrated and practiced on a high fidelity mannequin”.

Life like models ?

Useful ?

Mannequins for SD training

- Model 1:
 - 100% increase in BPI after Training - UK



- Model 2:
 - No improvement in BPI after training: Dublin & NL



- Model 3:
 - 100% reduction in BPI: UK & US



How should we train ?

7.1.3 What measures can be taken to ensure optimal management of shoulder dystocia?

Manoeuvres should be demonstrated in direct view, as they are complex and difficult to understand by description alone.



Higher fidelity training equipment should be used.



Practical training using mannequins has been associated with improvements in management in simulation⁹⁰⁻⁹⁵ and in real life.¹⁴

The largest trial of shoulder dystocia training found that before training only 43% of midwives and doctors could successfully manage a severe shoulder dystocia simulation within five minutes.⁹¹ Three weeks after a 40 minute simulation training session 83% of staff were able to successfully complete the delivery. Training on a high fidelity mannequin was more successful than training with lower fidelity rag doll and pelvis - with a significantly higher successful delivery rate (95% versus 72%), a shorter head-to-body interval and a lower total applied force successful delivery rate.⁹¹

Moreover, the traction used in simulated shoulder dystocia can be excessive^{98,99} but training using models with force monitoring can reduce the traction used in simulated shoulder dystocia.^{98,100,101}

Shoulder dystocia training associated with improvements in clinical management and neonatal outcomes was multi-professional, with manoeuvres demonstrated and practiced on a high fidelity mannequin.¹⁴ Teaching used the RCOG algorithm (see appendix 2) rather than staff being taught mnemonics (e.g. HELPERR) or eponyms (e.g. Rubin's and Woods' screw).

Training Model for SD



PROMPT Flex Birthing Simulator

Brachial Plexus Injury post training

- UK national rates:
 - Permanent BPI 3 per 10,000 vaginal births
- Bristol data – Permanent BPI
 - Pre-training: 3.8 per 10,000 vaginal births
 - Post training: 1.5 per 10,000 vaginal births
 - Post training: 0 per 10,000 vaginal births (>24,000 births)

DOI: 10.1111/1471-0528.15302
www.bjog.org

Prevention of brachial plexus injury—12 years of shoulder dystocia training: an interrupted time-series study

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BPI rates

- UK national rates:
 - Permanent BPI 3 per 10,000 vaginal births
- Bristol data (2016) – Permanent BPI
 - Post training: 0 per 10,000 vaginal births
- Kansas & New York (2017)
 - Post training Zero permanent injuries

‘That none of 17 039 babies in the last cohort suffered permanent BPI challenges a commonly held view that permanent injury is largely unavoidable.

Permanent brachial plexus injuries must no longer be viewed as an inevitable complication of shoulder dystocia’

NHS Litigation Authority

Figure 6: Total number and value of claims by category between 1st April 2000 and 31st March 2010 as at 31st March 2010

Category	Number of Claims	(%)	Total value	(%)
Shoulder dystocia	250	4.91	£103,520,832	3.32

- 25 successful claims for injury following shoulder dystocia per year
- £414,083 per case

Safer care costs less

North Bristol NHS Trust

- 1990-1999
 - 49,000 births
 - 5 claims for injuries related to shoulder dystocia
 - £1,039,222 paid in damages and legal fees by NHSLA
- 2001 – 2011
 - 55,000 births
 - No permanent injuries
 - £ 0 paid in damages and legal fees

QALYs for SD Training

- Members of Erb's Palsy Group
 - Adults with BPI
 - Parents of children with BPI
- EQ-5D-5L
- Utility score
 - Adults 0.56
 - Carers 0.80
- Effective SD training - £12,000 per QALY

Better care costs less

Secretary of State – Jeremy Hunt



Jeremy Hunt ✓
@Jeremy_Hunt

Superb example of how learning culture leads to high standards of [#patientsafety](#) in maternity at [@NorthBristolNHS](#)



Medical Defence Organisations

- Incentivising best care & premium modelling

8. Can you evidence that 90% of each maternity unit staff group have attended an 'in-house' multi-professional maternity emergencies training session within the last training year?



<p>Required standard</p>	<p>Training should include fetal monitoring in labour and integrated team-working with relevant simulated emergencies and/or hands on workshops. The training syllabus should be based on current evidence, national guidelines/ recommendations, any relevant local audit findings, risk issues and case review feedback, and include the use of local charts, emergency boxes, algorithms and pro-formas. There should also be feedback on local maternal and neonatal outcomes.</p> <p>Maternity staff attendees should include: obstetricians (including Consultants, staff grades and trainees); obstetric anaesthetic staff (Consultants and relevant trainees); midwives (including midwifery managers and matrons, community midwives; birth centre midwives (working in co-located and stand alone birth centres) and bank midwives); maternity theatre and critical care staff; health care assistants (to be included in the maternity skill drills as a minimum) and other relevant clinical members of the maternity team.</p> <p>Trusts should be evidencing the position as at end April 2018.</p>
<p>Minimum evidential requirement</p>	<p>Completion of the 'CNST local training record' form following each training day, including details of the programme used as well as entering all attendees on their local training database to ensure they can demonstrate the percentage attendance for each staff group.</p>
<p>Validation process</p>	<p>Self-certification report to Board using template report.</p>

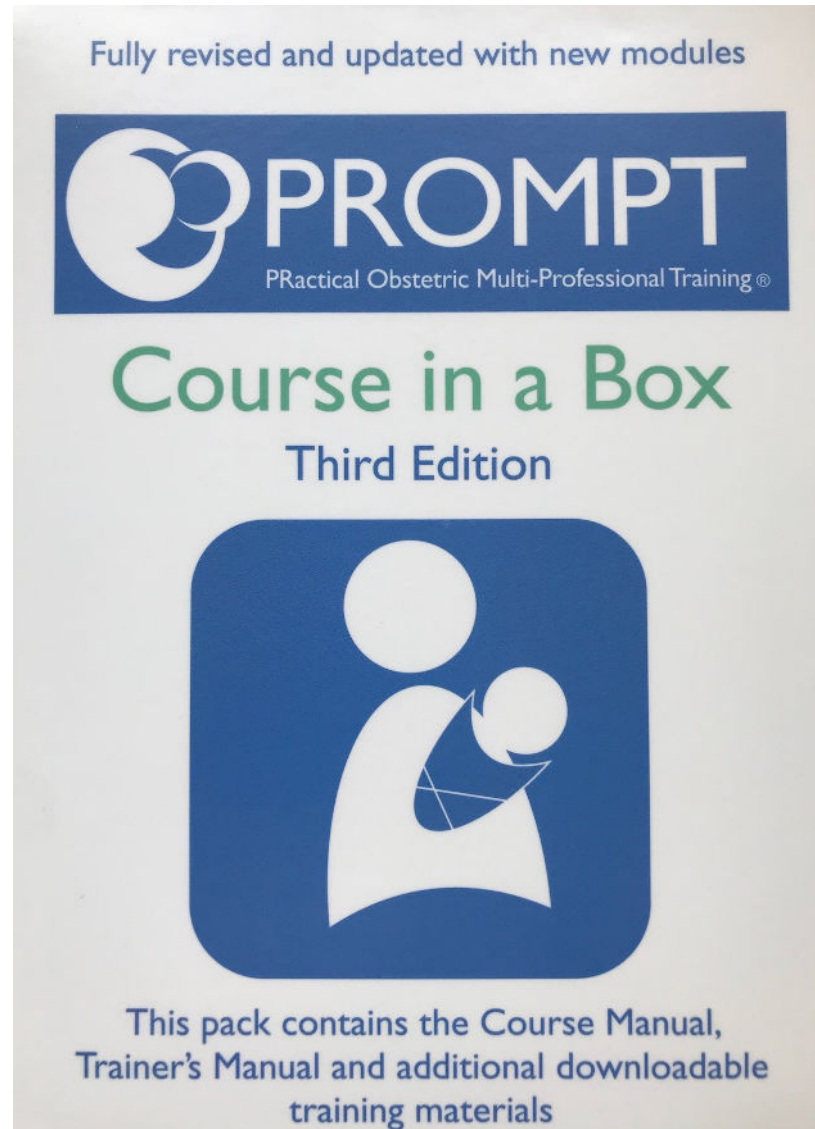
VMIA Australia

-providing premium incentives to Health Services who complete the Prompt program Education Program during the 1 July 2018 to 30 June 2019 period.

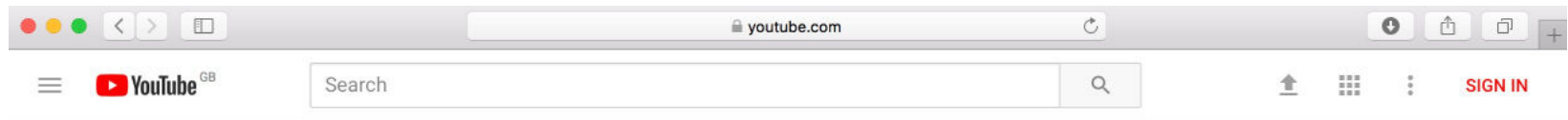
PROMPT 3 – Box Set



PROMPT 3 Course in Box



PMF YouTube Channel



PROMPT Maternity Foundation

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PROMPT Sepsis training demonstration

169 views • 1 month ago



PROMPT Shoulder Dystocia Training

1.8K views • 1 month ago



PROMPT CTG training demonstration

585 views • 1 month ago



PROMPT PPH training demonstration

751 views • 1 month ago



Training Video

Queen's Anniversary prize



Queen's Anniversary Prize for
Excellence in Education - 2014

Key messages

- Shoulder Dystocia is an increasing problem
- Brachial Plexus Injury need not be
- Effective training, together

- www.promptmaternity.org

Thank you



Making Childbirth Safer, Together

