WOMEN'S HEALTH AND PAEDIATRICS

MATERNITY UNIT

Fetal Pillow and Impacted Fetal Head

Amendments			
Version	Date	Comments	Approved by
1	June 2020	Introduction of Guideline	Perinatal Governance Guideline Group
2	June 2023	Review after RCOG Scientific paper release	Perinatal Governance Guideline Group

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Target audience: All health professionals within the maternity services
Equality impact assessment: Perinatal Governance Guideline Group

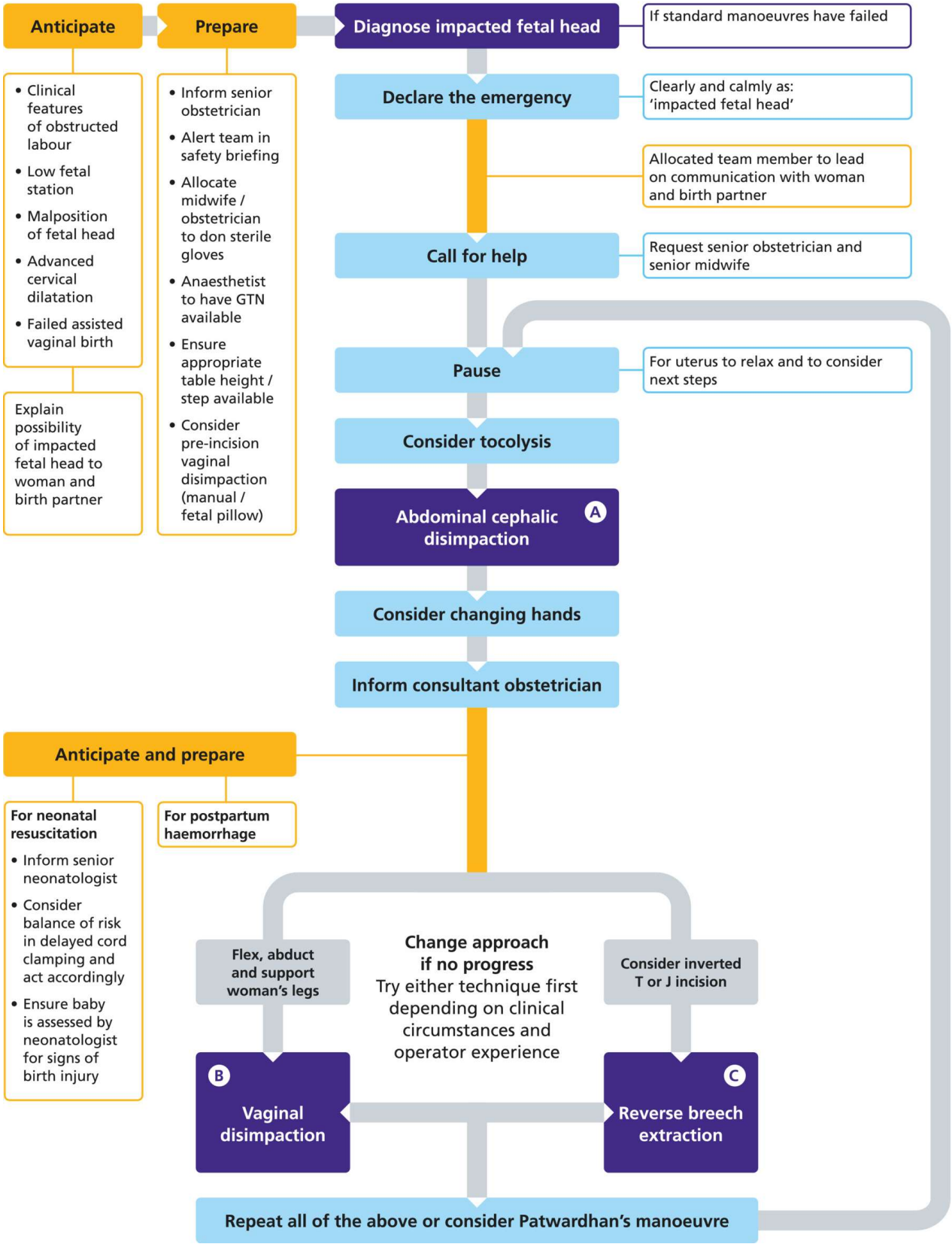
Comments on this document to: Perinatal Governance Guideline Group

Contents

Abbreviations

GTN	Glyceryl trinitrate
OA	Occiput Anterior
OP	Occiput Posterior
OT	Occiput Transverse
HIE	Hypoxic Ischaemic Encephalopathy
CS	Caesarean Section

1.0 Algorithm for management of Impacted Fetal Head



2.0 Introduction

Impacted fetal head (IFH) at caesarean birth (CB) is an un-predictable and challenging obstetric emergency. There is no clear, consensus definition for IFH in the published literature.

Difficulties in disimpacting an engaged fetal head can often delay the delivery of an already compromised fetus and may cause fetal injuries.

IFH cannot be reliably predicted, and therefore, clinicians should be vigilant and anticipate IFH during any CB, and particularly in these circumstances.

- Second stage CB
- Fetal malposition
- Prolonged labour
- Augmentation with oxytocin
- Features of obstructed labour (caput / moulding / low fetal station)

Maternity staff should therefore carefully manage labour, identify slow progress and take appropriate action to minimise the risk of IFH.

In the first year of NHS Early Resolutions (2017/2018), impacted fetal head and/or difficult delivery of the head at caesarean section, was a contributory cause in 9% of cases.

3.0 Complications of IFH

Delay in delivery of fetus with potential to cause HIE	Postpartum haemorrhage
Admission to NNU	Maternal blood transfusion
Uterine Incision Extensions	Sepsis
Injury to Uterine vessels	Increased operating time
Trauma to Urinary Tract	Increased hospital stay

4.0 Prevention

Techniques for prevention (before starting CB)	
Manual vaginal disimpaction (vaginal push method)	Introducing a hand into the vagina to move the fetal head up into the abdomen before making a uterine incision to reduce likelihood of IFH
Fetal Pillow	Using an inflatable device in the vagina to move the fetal head up into the abdomen before making a uterine incision to reduce likelihood of IFH

4.1 Manual Disimpaction pre-incision

This combined process with the operating obstetrician attempting to disimpact from above and the clinician assisting by pushing up from below. Clear communication is essential.
Fetal Pillow

4.2 Fetal Pillow

Fetal pillow is a disposable soft silicon balloon device which is inserted into the vagina and placed beneath the head and then inflated to help lift the fetal head and dislodge it from the pelvis before commencing the caesarean section.

Aims to makes the delivery of the head easier and reduces the risk of complications for the mother and baby that occur when a caesarean section is carried out at full dilation.

4.2.1 Indications for use

Caesarean Section:

1. After a failed instrumental delivery
2. Second stage Caesarean section with deeply impacted head
3. Deep Transverse Arrests/Occipito Posterior position of head at full dilatation
4. Emergency Caesarean Sections for absent progress at 8-10 cm with deeply engaged head/ deflexed head/ Brow presentation
5. Excessive caput and moulding of fetal head at 8-10 cm of dilatation

The decision whether to use a fetal pillow is based on clinical findings and judgement.

4.2.2 Instructions for use

1. Patient to be in lithotomy position
2. The device is taken out from the pack onto the sterile trolley.
3. Deflate the silicon balloon completely by using the 60 ml syringe in the pack
4. Apply liberal amount of obstetric cream on the deflated balloon before inserting it inside the vagina
5. Hold the deflated balloon device like folded wings between the thumb and the finger, making sure that the tube attachment is at the superior end
6. Insert this in the vagina and place it behind the fetal head
7. Make sure this device lies flat, with the deflated surface in direct contact with the fetal head and push it posteriorly towards the sacral bone of mum.
8. Place patient's legs flat on the operating table
9. Inflate the balloon using the 60 ml syringe to push in 180mls of Normal saline through the two way tap in the tube.
10. Close the tap so that Normal saline does not escape out
11. Commence Lower segment Caesarean section
12. Make a curvilinear incision on the upper part of lower segment of the uterus just beneath the vesico-uterine peritoneal reflection to deliver the baby
13. Deflate the balloon by opening the two way tap and saline to be drawn out using the 60 ml syringe - done by midwife/ HCA after delivery of baby
14. Operating surgeon to carefully remove the deflated device by hooking a finger on the plate and to pull it out gently before cleaning the vagina after Caesarean section.
15. Perform Caesarean section using standard technique
16. Inflate with 180ml of saline using the 60ml syringe provided -Three Full Syringes
17. Midwife / Maternity Assistant to open tap to allow saline to drain from fetal pillow device.
18. Remove fetal pillow at end of Caesarean Section

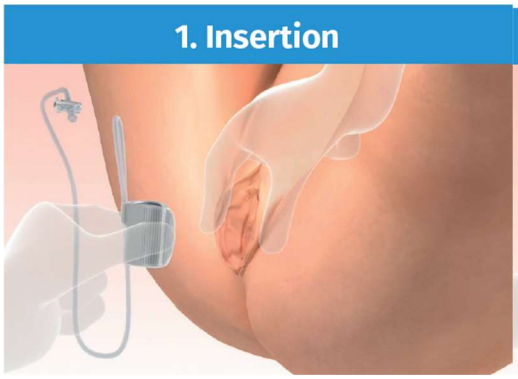
CONTRAINDICATIONS:

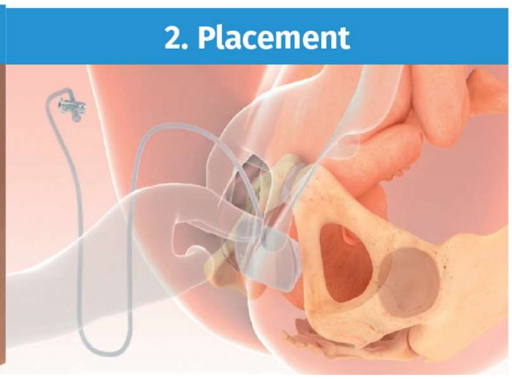
Presence of active genital infection

WARNING:

1. Do not use air to inflate the balloon.

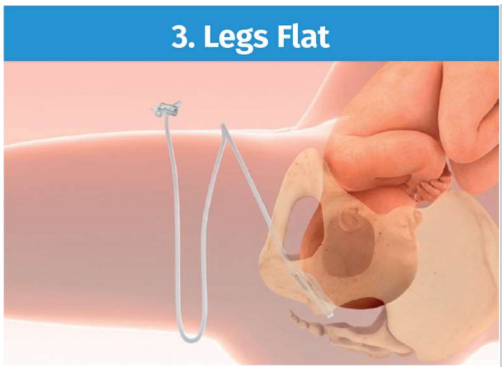
2. Do not inflate the balloon more than 300ml.

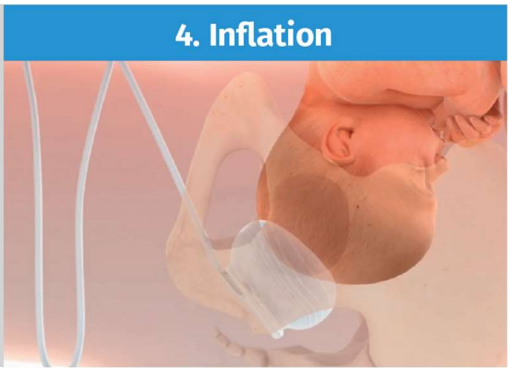




- Bi-fold the device in two
- Lubricate device
- Insert vaginally ensuring the balloon surface is in contact with the fetal head
- Tube attachment must be pointing upwards

- Push the device as posteriorly as possible, towards sacrum
- Placement is similar to a posterior ventouse cup





- Lay the legs flat in the operating table - otherwise it can be expelled or displaced if legs are open

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5.0 Management of IFH

There remains a lack of consensus regarding which disimpaction technique is safest and/or most effective, particularly in relation to neonatal outcomes

Some births may require the use of several techniques in a sequence to disimpact the fetal head

Techniques for management (when IFH encountered during CB)	
Uterine relaxation	Administration of medicine (tocolysis) to relax the uterus and facilitate advanced disimpaction techniques.
Abdominal cephalic disimpaction	Using dominant or non-dominant hand to flex and lift baby's head upwards into the maternal abdomen to deliver the head
Manual vaginal disimpaction (vaginal push method)	Introducing a hand into the vagina to move the head up into the abdomen
Reverse breech extraction	Hand is introduced in the upper aspect of the uterus, baby's feet are grasped and baby is delivered feet first (breech). Once baby's shoulders are delivered, head is lifted out of the pelvis
Patwardhan method	A modification of reverse breech extraction, whereby the arms are delivered first followed by delivery of the breech. Once the buttocks and the feet are delivered, the head is lifted out of the pelvis.

5.1 Uterine relaxation

Anecdotal evidence that tocolysis can facilitate disimpaction by helping to relax the uterus and minimise uterine resistance, particularly during advanced disimpaction techniques such as reverse breech extraction.

There is no evidence supporting use of a particular tocolytic agent. However, in view of the theoretical risk of atonic postpartum haemorrhage, administration of a tocolytic agent with a short half-life is advised, such as sublingual GTN.

5.2 Abdominal cephalic disimpaction

- Introduce hand antero-laterally to get below the fetal head
- Keep wrist straight
- Arm in the midline to avoid application of pressure on the uterine angles
- Establish the position of the fetal head and attempt to sweep their hand over the face or occiput to flex it.
- May be able to flex and elevate the fetal head more easily using their non-dominant hand
- Elevate head towards the uterine incision with the pull applied towards the woman's head, and not the ceiling until out of the pelvis

5.3 Vaginal disimpaction

- Operating obstetrician should:
  - reiterate the steps
  - confirm the fetal position
  - explain the direction of flexion required to their assistant.
- If pressure is applied incorrectly during a vaginal push-up, the fetal head may become more deflexed, compounding impaction behind the pubic symphysis and birth further.
- Both clinicians should communicate their actions, feedback on effectiveness and clearly say if they wish to stop.
- To achieve adequate vaginal access for this, the woman's legs should be repositioned in semi-lithotomy with the knees flexed and thighs abducted
- The assistant (senior midwife or obstetrician) should:
  - insert their whole hand in to the vagina using a 'Pringle hand' technique, previously described in the management of shoulder dystocia. This will evenly distribute pressure across the fetal head.
  - The fingers should be advanced into the sacral hollow and *spread across the fetal head, with the flattened palmar surface of all four fingers and thumb used to cradle the fetal head*. Clinicians should avoid using finger-tips or just one, two or three fingers to push up vaginally.
  - Gentle pressure should be applied steadily, continuously and evenly to flex the fetal head. Jabbing or prodding motions and application of excessive point pressure should be avoided.
- As the head is elevated towards the incision, the operating obstetrician's fingers may be met.
- If no progress is made or either clinician feels it is unsafe to continue, vaginal disimpaction should be abandoned and the legs repositioned out of semi-lithotomy.

5.4 Reverse breech extraction

Given that consultant supervision may not always be feasible, it is essential that obstetricians are trained in how to perform these delivery techniques safely.

The steps required for safe, effective reverse breech extraction are:

- Introduce their hand into the upper segment of the uterus to grasp one or both fetal feet.
- If it is difficult to identify a foot, the operator can follow the baby's back, over the buttocks and down to a leg to grasp a foot.
- The feet may be slippery and a sterile swab can be used to ensure effective grasp. Steady, continuous traction should be applied to one or both feet towards the woman's feet to flex the waist and deliver the legs and breech.
- After the breech has been delivered through the uterine incision, to deliver the arms, the baby's body should be gently rotated in the midline, ensuring the back is anterior and rotating the baby to deliver each arm in turn (Lovset's manouevre), while avoiding any application of pressure to the baby's abdomen.
- Following delivery of both arms, gentle traction should be applied towards the woman's head to deliver the fetal head. If the head does not easily deliver with

gentle traction, a Mauriceau-Smellie-Veit manoeuvre can be employed to flex the baby's head; hyperextension of the fetal neck should be avoided.

5.5 Patwardhan manoeuvre

Modification of reverse breech extraction, where the arms are delivered first

It is rarely practiced in the UK, and not part of current training for UK obstetricians.

5.6 Extension of uterine incision

An inverted T or J incision can be performed to improve access.

The operator should:

- ensure a clear operative view
- protect the baby using their non- dominant hand between the incision and the fetus
- make a vertical incision upwards into the upper segment.

The operator may also need to extend the uterine incision if a Bandl's ring is encountered. A Bandl's ring is a constriction between the upper and lower uterine segments, associated with obstructed labour. There is a lack of consensus but extending the incision to include the Bandl's ring may improve access.

5.7 Non-recommended techniques

Caution is advised against:

- using a single forceps blade
- ventouse employed abdominally
- bladder filling to assist delivery of an IFH

None of these practices are supported by evidence. Moreover, use of a vacuum at CB has the potential to cause significant fetal injury such as intracranial and subgaleal haemorrhage, and should be avoided.

6.0 Non technical skills

6.1 Anticipation and preparation

- If there is any clinical suspicion of an IFH at CB, the maternity theatre team should be alerted preoperatively in the standard safety briefing in theatre and a senior obstetrician informed.
- The team should ensure that:
    - A trained midwife or obstetrician dons sterile gloves in preparation for potential vaginal disimpaction
    - intrapartum oxytocin infusion is discontinued
    - GTN spray is readily available
    - the operating table is at an appropriate height
    - a step is available if needed.

- These steps will help the multiprofessional team to respond effectively if an IFH is diagnosed.

- If difficulties delivering an IFH are encountered, the maternity team should anticipate and prepare for associated complications. This includes:
  - assessing for uterine incision extensions
  - taking measures to prevent and manage postpartum haemorrhage
  - consider the potential need for neonatal resuscitation
  - ensure that a senior neonatologist is present to assess the baby for signs of birth injury.

6.2 Communication and teamworking

- IFH at CB is a team emergency that should be managed with a multidisciplinary approach. While the operating obstetrician performs many of the techniques required to disimpact the fetal head, everyone in theatre has a role to play, and shared understanding is key.
- *Anaesthetists* may need to administer tocolysis or adjust the operating table, as well as communicate with the parents and be cognisant of the increased risk of postpartum haemorrhage.
- *Midwives* may be requested to perform vaginal disimpaction, and crucially, should be trained and confident to do so effectively.
- *Theatre staff* may need to provide a step to the operating obstetrician to help with ergonomics and/or support the woman's legs during vaginal disimpaction. They may also need to call for help from senior obstetricians and neonatologists, clearly conveying the nature and urgency of the situation.
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- Use closed-loop communication when allocating roles, delegating tasks, and giving instructions.

7.0 Educational Tools

https://safeob.com/animation

https://safeob.com/training

8.0 References

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