Interventional Radiology in the Management Major Obstetric Haemorrhage

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Protocol

Planned LSCS with Interventional Radiology (IR)

Indications and case selection:-

Suspected or confirmed morbidly adherent placenta. This would include anterior placenta praevia with previous caesarean section, or an anterior placenta that appears to be directly underneath a uterine scar.

These patients should be referred in the first instance to Mr Moselhi in Singleton for further US assessment. Where there is then either a significant likelihood of morbidly adherent placenta, or marked uncertainty, the patient will be referred to one of the team of obstetricians participating in this pathway.

Placenta praevia in patients who refuse blood transfusion e.g. Jehovah's Witness.

The obstetricians who will take on the care of these patients are Miss Hilborne, Mrs Dey and Mr Moselhi. They will become the lead obstetrician regardless of who they were originally booked under in order to focus expertise with a large enough pool of surgeons that it is likely one will always be available. They will be the lead clinician and responsible for organising entry to the care pathway and initial communication with the rest of the team.

Timescale:-

These patients should be identified at around 32 weeks, to give time for further imaging and organisation of delivery to take place around 36 weeks. They should be give antenatal steroids at least 2 days prior to delivery.

Communication:-

Date of delivery to be agreed between the patient, obstetric consultant, anaesthetic consultant (contact Caroline in Anaesthetic Department telephone ext: 52361 /52631).

Discuss with Interventional Radiologist giving notice of at least 2 weeks (Dr Tudor Young / Dr Gareth Tudor telephone ext: 52422 PWH) and send a booking form (use X-ray request form) to the Radiology Department with indication of the procedure (prophylactic uterine artery balloon occlusion), time and date of surgery and which radiologist the case has been discussed with.

Inform Labour Ward, Anaesthetic Department and book main theatre where all deliveries will take place.

Ensure theatres are aware that the image intensifier will be in use for the procedure and therefore unavailable for other theatre cases, and that a fluoroscopy compatible theatre table is available.

Separate obstetric and anaesthetic cover will be needed for Labour Ward.

Admit patient the day before:-

On admission,

Blood to be taken for:

- U & Es
- FBC
- Clotting
- Xmatch: 4 units and request 1 adult dose platelets.

Need to ensure both groins are shaved.

Prescribe:

- Ranitidine 150mg 10pm and 8am

No food after midnight and still water until 7am

ID bracelet and gown.

Confirm ICU bed booked.

On the day of the procedure:-

Use Care Plan checklist (see appendix 1).

Multidisciplinary meeting to take place at 8:30am. with key staff to discuss the case preoperatively as per team brief.

Discussion to include planned surgical technique and potential omission of uterotonics.

Inform:-

-Blood bank	} Anaesthetist
-Haematology and Consultant Haematologist	} responsible
-ITU and check bed available	}
-Paediatricians	}Obstetrician
-Urologist and Vascular if applicable	}responsible
-Inform porters	}

Patient preparation:-

- Fast and oral ranitidine.
- Obstetrician to obtain consent for caesarean section and hysterectomy.
- Radiologist to obtain consent for interventional radiology, including embolization.
- Anaesthetic review and consent.
- Baseline – FBC, U&E, Coag & X match 4 units of blood and 1 adult dose platelets.
- Knee length TED stockings.
- Epidural placed on Labour Ward once radiologists ready for patient, but not topped up.
- Urinary catheter on Labour Ward prior to transfer to IR.
- Partner to remain on Labour Ward.
- Midwife to attend with patient to IR suite, but not into room. Sonicaid to be used every 15mins. Remember to tilt patient at all times to avoid aorto-caval compression. Keep patient warm with blankets.
- Once Femoral artery lines/ balloons placed in radiology suite transfer up to main theatre.

Aim to start anaesthetic procedures at 9am, and interventional radiology at 10am. Should arrive in main theatre around 11am, and commence surgery around 11.30am.

Radiology:-

In the Radiology Department, bilateral femoral sheaths 8F inserted and prophylactic balloon catheters are positioned in the anterior divisions of the internal iliac arteries. Two syringes attached to the catheters, prefilled with 2ml of a contrast/saline mix to be secured to each thigh. The specific amount needed to occlude the balloons will be determined and that volume left in each syringe. The patient will then be transferred to main theatre.

C-arm mobile image intensifier and mobile USS machine to be moved to main theatre.

ODP's to ensure correct configuration of operating table in consultation with radiologist prior to patient's arrival.

The radiologist will attend theatre and check placement of the balloon catheters prior to surgery starting and remain in theatre for the case. Ideally, a radiology nurse should also be in attendance.

Gelfoam sponge, contrast medium and other necessary equipment should be available for immediate embolization.

The balloons will be inflated by the radiologist immediately after delivery, when the cord is divided, to cause temporary occlusion of the uterine arteries.

If bleeding persists after closure of the uterus despite inflation of the balloons, uterine artery embolisation may be considered after the LSCS is completed and the patient is haemodynamically stable. The location of where this is done (main theatre or IR suite) will depend on the stability of the patient. The other option is to proceed directly to hysterectomy.

If bleeding has settled after the balloons have been inflated and the clotting has been normalised then the balloons can be deflated one at a time whilst the abdomen is still open. If there is no further bleeding then the abdomen can be closed. If bleeding occurs then the options are embolization or hysterectomy as above.

The femoral sheaths and catheters are kept in for up to 12 hours post op to allow the option of embolization in the event of further bleeding. The femoral sheaths and catheters will be removed on ICU by the anaesthetist. Try and avoid removal in middle of night.

Anaesthesia:-

Consent to include anaesthetic technique, use of cell salvage and probable need for blood products. ICU and the use of invasive monitoring needs to be mentioned.

2 senior anaesthetists (consultant obstetric anaesthetist and senior trainee)
2 experienced ODPs.

Check all obstetric drugs present (get 2 green boxes from Labour Ward containing drugs etc – one in LW theatre fridge and one in LW theatre cupboard, appendix 2).

Arterial line and 2 wide bore peripheral lines.

Have CVP line available.

Have usual GA drugs drawn up (keep in fridge until needed) and vasopressors.

Oxytocin infusion 40 IU in 500ml normal saline and pump.

Cell Saver (plus Pall RS leucocyte depletion filter) and Belmont rapid infuser set up ready to use.

Bair hugger, fluid warmer, hemocue, temperature probe (if GA), flowtron boots.

2 units of boxed blood in theatre.

Follow OBS cymru guidelines for MOH.

Check able to access Rotem results in theatre (guideline in red folder).

Get 3 packs of OBS cymru blood bottles packs from LW.

Inform ICU that case is going ahead.
Consider 1g tranexamic acid IV pre-op in discussion with surgeon.

Top –up epidural for LSCS.

Antibiotic prophylaxis.

Remove epidural catheter on ICU once balloon/sheaths out and clotting is normal. Time with LMWH.

Theatre:-

Scrub nurse, 2 floor nurses and HCA.

Instrument trays for caesarean section/hysterectomy/vascular surgery/urology tray as per pre-op plan.

LSCS drape.

Separate scrub trolleys for IR requirements: 1 large for catheters, guidewires, saline and contrast etc, and 1 small for embolisation products etc.

Sufficient swabs / sutures including suture for B-Lynch technique.

Wash swabs for cell salvage (see cell salvage anaesthetic guidelines) and follow Obs cymru guideline for measured blood loss.

Intrauterine balloon catheter.

Suction x2 (one of which is for cell salvage).

Diathermy equipment.

Obstetric / Midwifery:-

2 consultant obstetricians and trainee.

2 experienced midwives – one to be delegated to check blood, document events e.g. fluid /blood given, time of samples etc. Use OBs cymru paperwork.

USS to locate placenta site immediately before starting.

Consider leaving adherent placenta in situ, or excising part of uterus with placenta adherent.

Timing of cell salvage use to be discussed before hand with anaesthetist.

Thromboprophylaxis post op.

Paediatricians:-

Ensure appropriate set up of resuscitaire, drugs and equipment in conjunction with midwives.

Porters :-

Available to collect blood products.

Emergency management of MOH with interventional radiology

Indications

Uncontrolled post partum haemorrhage despite the use of conventional obstetric measures including balloon tamponade.

Contact consultant interventional radiologist and radiology nurse via switchboard. N.B. There is no official on call interventional rota for radiologists or nurses in the Princess of Wales Hospital. Radiologists and radiology nurses if available will attend but this cannot be guaranteed. Theatre nurses may have to assist with embolisation.

If the patient is stable enough, transfer to Room 6. X ray for selective pelvic arterial embolization.

If the patients' condition is not stable, transfer directly to main theatre and radiologist to attempt selective pelvic arterial embolization using the mobile image intensifier (DSA facility).

Interventional Radiology Major Obstetric Haemorrhage pack (IRMOH) taken to theatre. (See below).

Interventional Radiology Major Obstetric Haemorrhage pack (IRMOH)

To be replenished after each use and routinely replenished every 3 months to avoid obsolescence.

5F arterial needle (0.035)	x 2
5F arterial needle long (0.035)	x 2
6,7,8 F vascular sheaths	x 2 of each
Kimal 10ml syringes with attached lock	x 2
10ml Luer Lock syringes	x 2
3 way taps	x 2
Standard 10ml syringes	x 2
Standard 20ml syringes	x 2
5F Pigtail catheter	x 1
5F Rim catheters	x 2
5F C2 catheters	x 2
5F Sidewinder catheter	x 1
7F Balloon occlusion catheters 11.5mm	x 2
6F Biliary manipulation catheters	x 2
Standard straight 145cm .035 guidewire	x 2
Curved Terumo 145cm .035 guidewire	x 2
Straight Terumo 145cm .035 guidewire	x 2

Guidewire torque device	x 2
Small sterile scissors	x 2
Radiographic contrast 370 50mls	x 4
Gelfoam squares	x 4
Fenestrated sterile angio drape	x 1
Sterile US probe cover	x 1
Sterile US gel 1 sachet	x 1
Galli pots	x 3

GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol
Abertawe Bro Morgannwg
University Health Board

DELIVERY CARE PLAN

Morbidly Adherent Placenta
(Placenta acreta, increta or percreta with or without placenta praevia)

ATTACH PATIENT LABEL

Named Obstetric Consultant: _____
(Consultant planning and directly supervising delivery)

Named Consultant Anaesthetist: _____
(Obs. anaesthetist directly supervising anaesthesia at delivery)

Multidisciplinary Team Involved in Pre-op Planning	**All the relevant members of the multidisciplinary team & the patient agree to the management plan (YES/NO)**
	Informed
Patient	**YES/NO**
Consultant Obstetrician	**YES/NO**
Obstetric Anaesthetist	**YES/NO**
Interventional Radiology Team	**YES/NO**
Dr Young/Dr Tudor	**YES/NO**
Haematologist	**YES/NO**
Urologist (if applicable)	**YES/NO/Not applicable**
Labour Ward Co-ordinator/Matron	**YES/NO**
Neonatologists	**YES/NO/Not applicable**
Labour Ward Lead	**YES/NO**
Obstetric Anaesthetist Lead	**YES/NO**
Other (Advocates/Interpreters)	**YES/NO/Not applicable**
Blood and blood products available on site	**YES/NO**
Patient is willing to accept blood products	**YES/NO**
Local availability of Level 2 critical care bed	**YES/NO**
Ultrasound scan/MRI checked	**YES/NO**
Advanced directive signed	**YES/NO/Not applicable**
EDD double checked	**YES/NO**
Patient information leaflet given	**YES/NO**

Discussion and Informed Consent:
Includes possible interventions (such as hysterectomy, leaving placenta in situ, cell salvage and interventional radiology) - please see management plan:

Name: _____ **Date**: _____

MANAGEMENT PLAN

1.	EL C/S booked on: Case entered on TOMS:			
2.	Consented:			**Y/N**
3.	Date of admission:			
4.	Anaesthesia: Regional/General			
5.	Sterilisation discussed:	**Y/N or N/A**	Consented:	**Y/N or N/A**
6.	Prophylactic uterine artery balloon placement discussed:			**Y/N**
7.	Cell salvage discussed:	**Y/N**	Availability checked	**Y/N**
8.	Post-op arterial embolisation discussed:	**Y/N**		
9.	Management of placenta:			
a)	**Conservative** (intentional retention of placenta, compression sutures, balloon tamponade. Will require post partum antibiotics and serum βHCG measurements if placenta left in situ):			**Y/N**
b)	**Triple P procedure** (**P**eri-op. placental localisation and avoidance at incision, **P**elvic devascularisation and **P**lacental non-separation with myometrial excision):			**Y/N**
c)	**Radical** (total abdominal hysterectomy - primary or life saving procedure):			**Y/N**
10.	Post delivery care:			**HDU/ITU**

NB: If patient presents with uterine contractions or vaginal bleeding prior to the planned procedure please immediately inform:
Labour Ward Co-ordinator (ring Labour Ward on 52383/52387)
Consultant Obstetrician on call
Anaesthetic team on call
Haematology team
Interventional Radiology team via switchboard

The above management plan, including potential additional complications and increased morbidity and mortality, have been explained to the patient and an informed consent taken.	**Y/N**

Name, signature and designation of professional completing document:

Name: _____ **Signature:** _____

Designation: _____

PRE-OPERATIVE CHECKLIST (to be completed just prior to starting the procedure)		
1.	Consultant obstetrician and consultant anaesthetist in attendance	**Y/N**
2.	Cell saver and blood available in theatre	**Y/N**
3.	Interventional Radiology team and haematologist informed	**Y/N**
4.	Other relevant teams informed (neonatals, urologists, ITU/HDU)	**Y/N**
5.	Management plan reviewed prior to the procedure and consent checked	**Y/N**
6.	List of phone numbers of personnel who might be needed posted out by phone	**Y/N**

Name: _____ **Signature:** _____

Designation: _____ **Date:** _____

Checklist for drugs/equipment for obstetric cases done in main theatre to be brought from obstetric theatre.

Fridge – Box 1

Syntocinon 5 iu 1 box

Sytoncinon 10 iu I box

Ergometrine 1 box

Sytometrine I box

Carboprost 1 box

Drug cupboard LW theatre- Box 2

Sodium Citrate x2

Phenylephrine 1 box

Misoprotol box

Terbutaline 500mcg 2 ampoules

Tranexamic acid 500mg iv x 4 ampoules

2 Y connectors

Cold spray (to check block)

Pack of B-Lynch sutures

Directorate of Women & Child Health

Checklist for Clinical Guidelines being Submitted for Approval

by Quality & Safety Group

Title of Guideline:	Interventional Radiology in the Management Major Obstetric Haemorrhage
Name(s) of Author:	Labour Ward Forum
Chair of Group or Committee supporting submission:	Labour Ward Forum
Issue / Version No:	Version No: 2
Next Review / Guideline Expiry:	3 years
Details of persons included in consultation process:	Labour Ward Forum
Brief outline giving reasons for document being submitted for ratification	Update of previous guidelines:- Planned Elective C-Section & Interventional Radiology (Mgmt of Major Obs Haemorrhage)
Name of Pharmacist (mandatory if drugs involved):	
Please list any policies/guidelines this document will supercede:	Version No:1
Keywords linked to document:	Interventional; Radiology; Management; Obstetric; Haemorrhage; Major.
Date approved by Directorate Quality & Safety Group:	(Governance Team will complete this)
File Name: Used to locate where file is stores on hard drive	(Governance Team will complete this)