Emergency Embolisation for Bleeding Protocol

This is a new procedural document – please read in full.

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| Target audience:              | Clinical Staff - Trust-wide                        |
Amendment Form

Please record brief details of the changes made alongside the next version number. If the procedural document has been reviewed without change, this information will still need to be recorded although the version number will remain the same.

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<th>Version</th>
<th>Date</th>
<th>Brief Summary of Changes</th>
<th>Author</th>
</tr>
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<td>Version 1</td>
<td>November 2012</td>
<td>This is a new procedural document, please read in full.</td>
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<td>Willy Pillay</td>
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1. INTRODUCTION

Emergency embolisation for bleeding provides a minimally invasive treatment option for patients that are usually unwell.

In some patients, embolisation will be unsuccessful, and open surgery or conservative management will need to be considered. Because of the potential for rapid decompensation, senior input into the decision to attempt embolisation, and when to stop is essential. Adequate support for the interventionalist is essential, both to attend to the unstable patient (whilst the interventionalist focuses on identifying and occluding the offending vessel/s), and to assist with the decision-making in an evolving clinical scenario.

Often the lack of visible haemorrhage does not invoke the same degree of urgency afforded to patients haemorrhaging on an operating table. The procedure of embolisation should be planned and executed in a manner similar to that of open surgery. Often a failed attempt at embolisation may require rapid conversion to open surgery.

2. PURPOSE

There is evidence that there is an unmet need for embolisation, when compared to other populations. This protocol is an attempt to formalise (and advertise the service), and thereby increase the number of patients undergoing successful embolisation.

3. DUTIES AND RESPONSIBILITIES

3.1 SPECIALTIES INVOLVED

1. Interventional Radiology
2. Anaesthetics
3. GI Surgery
4. Head & Neck Surgery
5. Vascular Surgery
6. Urological surgery
7. Respiratory Medicine
8. Orthopaedics
9. Obstetrics & Gynaecology
10. Emergency medicine (A&E)
11. GI Medicine
### 3.2 STAFF INVOLVED

1. **Consultant Vascular Interventional Radiologist**
   - Responsible for undertaking embolisation with support from vascular surgeon
2. **Consultant Vascular Surgeon**
   - Responsible for supporting embolisation procedure with vascular radiologist
3. **Radiographer**
   - Operator of medical imaging equipment
4. **Radiology Nurse**
   - Assists radiologist and surgeon in performing actual procedure
5. **Senior Anaesthetist**
   - Responsible for managing airway, pain and anxiety, and leading resuscitation
6. **Consultant for Index Team**
   - Assists with patient resuscitation
   - Involvement in decision to abandon embolisation, and when to convert to open surgery, with due consideration given to the CURRENT status of the patient.

### 4. PROCEDURE

#### SPECTRUM OF DISEASES

1. Upper GI bleed (e.g. Bleeding DU, haemosuccus)
2. Lower GI bleed (e.g. Angiodysplasia, diverticular disease)
3. Severe nosebleed
4. Trauma
5. Obstetric bleed (e.g. post caesarean-section)
6. Haemoptysis (e.g. cystic fibrosis)
7. Retroperitoneal bleed (e.g. patients on Warfarin)
8. Iatrogenic trauma (e.g. bleeding following liver or renal biopsy, chest, renal or biliary drain insertion)

#### 4.1 PRE-EMBOLISATION

1. The decision to consider embolisation should be taken by a senior member of the clinical team (usually a consultant) managing the patient. Patients on Critical Care should have direct input from the named consultant or on-call consultant of the index specialty.

2. Senior input is necessary to ensure that all options of treatment are considered (including non-intervention), and in the event that embolisation is chosen, to consider at what point prolonged attempt at embolisation should be abandoned in favour of open surgery or a decision to withdraw treatment.
3. Where various specialties are involved in the care of the patient (e.g. poly trauma), senior members need to liaise with each other to ensure that a joined-up management plan is agreed as well as any alternative plan. Where multiple procedures are necessary, consideration should be given to the order in which they will be performed. This will be informed by the underlying condition, status of the patient, core temperature, coagulopathy and the possible need to adopt a damage limitation strategy.

4. Where endoscopy has been attempted for GI bleeding, the placement of metal clips at the site of bleeding is useful when attempting to localise the offending vessel at angiography.

5. Where bleeding is encountered after drain insertion or at the time of biopsy, the drain or trocar should not be removed, but rather clamped or closed while awaiting definitive treatment. The foreign body may tamponade any bleeding. A trocar may allow arrest of haemorrhage by placement of Gelfoam sponge down the lumen into the site of injury.

6. A senior member of the index team should liaise directly with the interventionalist to discuss;
   a. The NEED for embolisation.
   b. The overall PROGNOSIS of the patient
   c. OTHER treatment options.
   d. THRESHOLDS for treatment and options in the event of an unsuccessful attempt at embolisation.

7. Should embolisation be considered, then rapid consideration should be given to:
   a. Early involvement of the emergency anaesthetic team (most patients, by the nature of the problem, should already have this in place). (SEE 3 ABOVE). The interventionalist is not able to manage problems with the airway, hypotension, pain etc.
   b. The need for and availability of a bed in the Department of Critical Care.
   c. A full set of blood results including clotting. In discussion with Haematology (and in some instances using the policy for massive haemorrhage), blood and blood products need to be available.
   d. Arranging junior support from the index team to be available to assist with ongoing fluid resuscitation, and support.
   e. Placement of an indwelling Foley urinary catheter to help monitor resuscitation, and also make the procedure more comfortable for the patient. Large volumes of intra-vascular contrast initiate diuresis, and patients will be required to remain lying flat for a few hours post intervention (see Angiography IPOC).
   f. CONSENT for embolisation, with a discussion about alternatives and possible outcomes. Often consent may include the possibility and risks of
open surgery should embolisation be unsuccessful. Risks of embolisation include amongst others:

i. Damage to access artery
ii. Contrast-induced nephropathy (especially if there is pre-existing renal dysfunction)
iii. Failure of the procedure
iv. Inadvertent occlusion of non-target vessel with resultant ischaemia of distal organ (e.g. stroke, bowel ischaemia, skin necrosis, limb threat)
v. Damage to artery at site of embolisation.

8. Role of pre-embolisation intravascular contrast-enhanced CT scan.

a. IV contrast enhanced arterial phase CT scanning demonstrates the site of bleeding in a large number of cases.

b. This provides a guide to the interventionalist when selecting vessels to interrogate for potential bleeding, and should improve the overall efficiency of embolisation.

c. In patients with poly trauma, whole-body-CT should be considered early in the resuscitative phase. Arterial phase contrast enhancement may detect occult bleeding early, preventing late decompensation and delayed treatment.

4.2 EMBOLISATION

1. Full monitoring and resuscitation facilities need to be available, along with access to drugs, fluids and blood/products.

2. Senior anaesthetic and clinical team members should be present at the embolisation, in order that decisions about when to abandon embolisation, and when to convert to open surgery are made with due consideration given to the CURRENT status of the patient. The interventionalist is unable to make decisions about resuscitation and other options of treatment, without the presence of senior members of the teams involved with the patient.

4.3 POST EMBOLISATION

1. Appropriate monitoring should be available. Patients may re-bleed, bleed from another site, or have ongoing venous bleeding (e.g. trauma).

2. Correction of coagulopathy, anaemia, hypothermia and volume deficit should continue.

3. Repeat embolisation may occasionally be necessary, and the process should follow a pattern similar to that outlined above.
5. **TRAINING**

1. This policy will be presented at a postgraduate meeting to disseminate the contents Trust wide.

2. Elective cases requiring embolisation attended by at least two vascular radiologists / vascular surgeons to enhance experience and individual operator skills.

6. **MONITORING COMPLIANCE**

<table>
<thead>
<tr>
<th>What is being Monitored</th>
<th>Who will carry out the Monitoring</th>
<th>How often</th>
<th>How Reviewed/Where Reported to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual patient outcome</td>
<td>Vascular MDT</td>
<td>Weekly</td>
<td>All vascular interventional procedures are peer-reviewed at vascular MDT.</td>
</tr>
<tr>
<td>Embolisation success rates / procedural complications</td>
<td>Vascular Surgical departmental audit</td>
<td>6 monthly</td>
<td>Audit of case notes / MDT records. Registered with audit department</td>
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7. **DEFINITIONS**

**Embolisation:** The therapeutic introduction of a substance into a vessel in order to occlude it.

**Contrast Induced Nephropathy:** Either a greater than 25% increase of serum creatinine or an absolute increase in serum creatinine of 0.5 mg/dL.

8. **EQUALITY IMPACT ASSESSMENT**

An Equality Impact Assessment (EIA) has been conducted on this procedural document in line with the principles of the Equality Analysis Policy (CORP/EMP 27) and the Fair Treatment For All Policy (CORP/EMP 4).

The purpose of the EIA is to minimise and if possible remove any disproportionate impact on employees on the grounds of race, sex, disability, age, sexual orientation or religious belief. No detriment was identified.

A copy of the EIA is available on request from the HR Department.
9. REFERENCES


APPENDIX 1 - NOTES

The internal pathway described is an interim pathway and will be updated. A new pathway will commence once Doncaster and Bassetlaw NHS Foundation Trust is able to support an in-house 24/7 rota. Please ensure you have the most up to date policy to refer the patient to the correct personnel.
APPENDIX 1

Internal Pathway at DBH for Patients Needing Embolisation

Consultant in charge of patient feels that embolisation may be of benefit to the patient

**Consultant must review patient**

- **Index consultant** responsible for ongoing fluid resuscitation
- Initiate trust massive transfusion protocol

Consultant in charge speaks to **DRI radiologist on call and Vascular Surgeon on Call**

- Radiologist will review CT / need for CT
- Haemodynamic stability must be considered

**Doncaster on call for Interventional Radiology?**

- Consult Vascular IR Rota held in switchboard and medical imaging
- 

  **No**
  
  Radiologist will transfer appropriate imaging to STH

  **DRI index consultant refers patient to NGH radiologist**
  
  - STH VIR (vascular interventional radiologist) may require time to review imaging before accepting transfer

  **IF STH VIR accepts patient, DRI consultant in charge** speaks to his equivalent consultant colleague at STH to discuss case and make arrangements to accept transfer

  STH VIR Consultant will make arrangements for DCC provision

  Some cases may be admitted directly under STH VIR Consultant on call

  Ongoing management and assessment of haemodynamic stability

  **Emboliisation carried out at DRI**

  (see suggested protocols and need for involvement of index consultant)

  **Emboliisation carried out at STH**

  Patient is transferred to STH as per external protocols to be agreed

  Yes