Transcatheter embolisation in upper GI tract arterial bleeding

Peter Huppert
Department of Radiology, Neuroradiology and Nuclear Medicine
Klinikum Darmstadt
ATH Universities of Frankfurt and Heidelberg/Mannheim
Germany
Disclosure

Speaker name:
Peter Huppert, M.D.

☐ I have the following potential conflicts of interest to report:
☐ Consulting
☐ Employment in industr
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☐ Other(s)

x I do not have any potential conflict of interest
Clinical indications

Underlying diseases

• Arterial lesions due to:
  - pancreatitis
  - pancreatic fistula
  - surgical treatment
  - peptic ulcer

Angiographical findings

• Active bleeding – frank contrast extravasation
• Arterial pseudoaneurysm
• Spasm, „irregularity“
• No lesion, endoscopic clip: empiric embolisation?
Embolisation technique

- Coaxial microcatheters 2/3 F
- (detachable) microcoils (2-4 mm /20-60 mm)
- Large size PVA particles (300-1,000 μm)
- Glue (butylcyanoacrylate-iodized oil, Onyx)
Embolisation strategies

- Segmental exclusion of minor arteries representing part of arcades
- Stentgrafting, stent-assisted coiling of major arteries to keep them open
- Combination of coils and glue in case of insufficient coagulation
Segmental exclusion of arcade arteries

- Identification of bleeding artery and access
- Important collaterals involved?
- Visualisation and closure of front door and back door
Peripankreatic Pseudoaneurysm identification of bleeding artery and access
Peripankreatic Pseudoaneurysm identification of bleeding artery and access

Embx. with glue in case of spasm
Peripankreatic Pseudoaneurysm
checking front door and back door

0.5 cc butylcyanoacrylate-iodized oil 1:1
Peripancreatic Pseudoaneurysm due to acute pancreatitis: closure of front and back door

Platin-Microcoils 3-4/40-60 mm FIDC
Segmental exclusion of arcade arteries in case of advanced atherosclerosis

- 84 years old female
- Recurrent bleeding from peptic ulcer
- Endoscopic treatment failed
- High surgical risk

- Advanced atherosclerosis
- No complete arcade
- No front and back door
- One embolisation target
Lesions of major visceral arteries

- 67 years old male
- pT3 bile duct cancer
- Duod.pancreatectomy
- Pancreatic fistula
- Recurrent upper GI bleeding

**Endovascular options:**
- coiling?
- Stent-assisted coiling?
- particles, glue?
- stentgraft?
Stent-assisted coiling of major visceral arteries lesions
Stentgraft treatment of major artery lesions
Stentgraft treatment of major artery lesions
Stentgraft treatment of major artery lesions
Empiric embolisation of peptic ulcer

- 86 y male
- Recurrent bleeding from Forrest Ib duodenal ulcer
- Endoscopic clipping failed two times
- After 11 units of packed red blood cells

**Trx. Options:**
- No bleeding – no embx.
- Surgery
- Empiric embx.

**Embx. Technique**
- coils?
- particles?
- glue?
- stentgraft?
Empiric embolisation of peptic ulcer: „sandwich-technique“: coils-glue-coils

Coils: distal 2/40 mm; prox. 3/60 mm FIDC
Glue: 0.2 cc butylcyanoacrylate + iodized oil 1:1

Follow-up:
- no further bleeding
- no ischemic lesion
Transcatheter embolization –
a new standard in non-variceal upper gastointestinal bleeding nonresponding to endoscopic treatment?
TCE vs Surgery in NVUGIB

8 single- 1 multi-center cohort studies (all retrospective)

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>pts. TCE</th>
<th>pts. Sur</th>
<th>Mor. TCE</th>
<th>Mor. Sur</th>
<th>Rebl. TCE</th>
<th>Rebl. Sur</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ripoll</td>
<td>2004</td>
<td>31</td>
<td>39</td>
<td>26%</td>
<td>20%</td>
<td>29%</td>
<td>23%</td>
</tr>
<tr>
<td>Larssen</td>
<td>2008</td>
<td>36</td>
<td>10</td>
<td>19%</td>
<td>20%</td>
<td>8%</td>
<td>20%</td>
</tr>
<tr>
<td>Langner</td>
<td>2008</td>
<td>11</td>
<td>12</td>
<td>27%</td>
<td>17%</td>
<td>27%</td>
<td>17%</td>
</tr>
<tr>
<td>Defreyne</td>
<td>2008</td>
<td>46</td>
<td>51</td>
<td>39%</td>
<td>27%</td>
<td>43%</td>
<td>8%</td>
</tr>
<tr>
<td>Eriksson</td>
<td>2008</td>
<td>40</td>
<td>51</td>
<td>2%</td>
<td>14%</td>
<td>25%</td>
<td>18%</td>
</tr>
<tr>
<td>Venclauskas</td>
<td>2010</td>
<td>24</td>
<td>50</td>
<td>21%</td>
<td>50%</td>
<td>12%</td>
<td>8%</td>
</tr>
<tr>
<td>Wong</td>
<td>2011</td>
<td>32</td>
<td>56</td>
<td>25%</td>
<td>30%</td>
<td>31%</td>
<td>25%</td>
</tr>
<tr>
<td>Ang</td>
<td>2012</td>
<td>30</td>
<td>63</td>
<td>17%</td>
<td>33%</td>
<td>47%</td>
<td>13%</td>
</tr>
<tr>
<td>Jairath</td>
<td>2012</td>
<td>60</td>
<td>97</td>
<td>29%</td>
<td>10%</td>
<td>10%</td>
<td>n.e.</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>230</td>
<td>310</td>
<td>24%</td>
<td>22%</td>
<td>25%</td>
<td>16%</td>
</tr>
</tbody>
</table>

*OR 1.02*, *OR 0.47*

Empiric Embolization in UGIB?

- Arrayeh et al.: Transcatheter arterial embolization for upper gastrointestinal nonvariceal hemorrhage: is empiric embolization warranted?
  Cardiovasc Intervent Radiol 2012 Feb epub

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary hemostasis</td>
<td>no abnormality empiric embolization</td>
<td>abnormality embolization</td>
</tr>
<tr>
<td>during 30 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gastric bleeding</td>
<td>42%</td>
<td>67%</td>
</tr>
<tr>
<td>Duodenal bleeding</td>
<td>60%</td>
<td>58%</td>
</tr>
</tbody>
</table>
Clinical failure of Embx. in UGIB

- Schenker et al. 2001 J Vasc Interv Radiol 12:1263-71
- Lundgren JA et al.: J Trauma 2011;70:1208-12

Predictors of negative outcome
- coagulopathy, anticoagulant use
- corticoid use before admission
- vasopressin use before TAE
- use of macrocoils and gelfoam
- incomplete embolisation
Summary: Indication TCE in UGIB

- Peripancreatic arterial pseudoaneurysms due to pancreatitis, pancreatic fistula and surgery
- Bleeding of peptic ulcers non responding to endoscopic trx. in pts. with significant comorbidities and increased surgical risk
- Empiric embx. in duodenal lesions guided by endoscopic clips.
Summary: Treatment strategy

• Aggressive embolisation with definitive occlusion of all arteries supplying lesion(s) by use of microcoils and glue.

• Remodelling techniques (stentgrafts, stent-assisted coiling) in case of lesions involving major visceral arteries.
Thank You for Attention!
Transcatheter embolisation in upper GI tract arterial bleeding

Peter Huppert
Department of Radiology, Neuroradiology and Nuclear Medicine
Klinikum Darmstadt
ATH Universities of Frankfurt and Heidelberg/Mannheim
Germany