Onyx liquid embolic agent for:

1. Treatment for AML’s
2. Emergency embolisation

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Requires GA
Extremely painful
Requires long preparation
Not suitable in an emergency

Expense
Learning curve
Angiomyolipoma’s (AMLs)

- **Sporadic AML**
  - M > F (0.02 Vs 0.29%)
- **Tuberose sclerosis complex (TSC)** – 67%
- **Lymphangioleiomyomatosis (LAM)** – 60%
  - Larger, multiple and bilateral
Complications:

1. HAEMORRHAGE – “Wunderlich syndrome”
2. RENAL IMPAIRMENT - progressive
# Natural history

<table>
<thead>
<tr>
<th>@ presentation</th>
<th>Tuberose Sclerosis</th>
<th>Sporadic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>30.3</td>
<td>52.1</td>
</tr>
<tr>
<td>Diameter (cm)</td>
<td>8.9</td>
<td>5.4</td>
</tr>
<tr>
<td>% multiple</td>
<td>97</td>
<td>13</td>
</tr>
<tr>
<td>% symptomatic</td>
<td>64</td>
<td>73</td>
</tr>
<tr>
<td>% haemorrhage</td>
<td>44</td>
<td>13</td>
</tr>
</tbody>
</table>

Growth Characteristic

Steiner et al.

- 35 patient: Follow up: 4 year

Summary (based on 1980’s data)

- 82% >4cm symptomatic
- >50% >4cm will haemorrhage
- Major risk = RPH
- 33% life threatening

- RUPTURE RISK?

Rupture risk

Lesion & Aneurysm Size

Aneurysm Vs Lesion Size

Yamakado et al Renal angiomyolipoma: relationship between tumour size, aneurysm formation and rupture
Radiology 2002 225;78-82
Prophylactic embolisation

Aim:

1. Nephron sparing intervention
2. Prevention or treatment of haemorrhage
3. Prevention of progressive renal impairment

<table>
<thead>
<tr>
<th>Authors</th>
<th>N</th>
<th>Embolic agent used</th>
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<tbody>
<tr>
<td>Rimon et al.</td>
<td>17</td>
<td>PVA + ethanol</td>
</tr>
<tr>
<td>Somani et al.</td>
<td>29</td>
<td>Coils, particles or foam</td>
</tr>
<tr>
<td>Kothary et al.</td>
<td>19</td>
<td>Ethiodol + ethanol</td>
</tr>
<tr>
<td>Han et al.</td>
<td>14</td>
<td>Coils, PVA, ethanol or ethanol + iodized oil</td>
</tr>
<tr>
<td>Lee et al.</td>
<td>15</td>
<td>Ethanol + iodized oil</td>
</tr>
<tr>
<td>Lenton et al.</td>
<td>17</td>
<td>PVA or PVA + coils</td>
</tr>
<tr>
<td>Ewalt et al.</td>
<td>27</td>
<td>PVA + coils</td>
</tr>
<tr>
<td>Ramon et al.</td>
<td>48</td>
<td>Ethanol + PVA</td>
</tr>
</tbody>
</table>

VA, polyvinyl alcohol.
High rate of rupture post embolisation

- 30% of PVA
- Light bulb sign
- “pseudo-aneurysm”
- End “coil” or ethanol
Sedation & analgesia

- Midazolam (Hypnoval) – 3-7mg
- Analgesia:
  - IV paracetamol 1gm
  - Fentanyl – 50-100mg doses
Emergencies
Principles of emergency embolisation

• Purposefully injecting “emboli”
• To occlude blood vessels to stop bleeding
• Prevent (minimise) non-targeting injury

• Agents available:
  – Coils
  – Plugs
  – Particles
  – Covered stents
  – Liquids
Emergency embolisation
<table>
<thead>
<tr>
<th>DELIVERY</th>
<th>VESSEL SIZE</th>
<th>Cost (£)</th>
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</thead>
<tbody>
<tr>
<td>Guide catheter</td>
<td>Catheter</td>
<td>Micro catheter</td>
</tr>
<tr>
<td>COILS</td>
<td>X</td>
<td>X</td>
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<tr>
<td>PLUGS</td>
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<td>X</td>
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<tr>
<td>PARTICLES</td>
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<td>X</td>
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<td>C.STENTS</td>
<td>X</td>
<td></td>
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<tr>
<td>LIQUIDS</td>
<td>X</td>
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Why consider Onyx?

• **Traditional view:**
  – Too expensive
  – Not ready
  – Too difficult (training / kit)

• **However:**
  – Ease of use
  – Un-catheterisable vessels
  – Speed
  – Cost
Kaposiform haemangioendothelioma (KHE)
Uterine AVM
Acute pancreatitis bleed
83yr man pancreatitis
SMA bleed-transfer to angio
Microcatheter to feeding
Summary

• Onyx can be a very cost effective solution
• It is easy to use in an emergency
• Its flow characteristics are different in “normal” vessels
• It is safer than Glue
• Put Onyx onto spin at beginning of case
  – No wastage as can be repackaged
• Ideal would be a ready to use Onyx
ONYX
FASHION
STORE
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