Portal Vein Embolisation (PVE): A Re-audit & Service Evaluation

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Background:
- PVE with consequent hypertrophy of the unaffected liver is used when predicted remnant liver size following liver resection, or future liver remnant (FLR), is small - i.e. <25% of the total liver volume.
- Inducing hypertrophy of the FLR reduces the risk of post-operative liver failure.
- Unnecessary delays can result in disease progression and postponement of planned surgery.

Aims:
1. Assess adherence of our PVE technique to guidelines in ‘CIRSE 2010 – quality improvement for PVE’.
2. Ensure no significant delays in performing PVE, which risk disease progression.

Targets and Methods:
PVEs between 2011-14 retrospectively identified, then re-audited between 2015-16. Electronic medical records then interrogated for key dates (MDT decision for PVE, procedure request, PVE performed, CT f/u) and adherence to CIRSE guidelines:

- % technical success
- Complications: - major <5% target - minor <25% target
- Surgical resection rates post-PVE

Results:

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<tr>
<th>Audit cycle 1 = 2011-14</th>
<th>Audit cycle 2 = 2015-16</th>
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<tr>
<td>38 PVEs:</td>
<td>35 PVEs:</td>
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<tr>
<td>100% technical success</td>
<td>97.1% technical success</td>
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<td>No minor and 2.6% major complication rate (1 case of PV thrombosis)</td>
<td>No major and 8.6% minor complications (2 non-target embolisation and 1 non-significant PV dissection)</td>
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<td>71.0% had surgery (27/38)</td>
<td>79.4% had surgery (27/34, 1 awaited)</td>
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Delays (in days):
- Average time from MDT to performing PVE was 24.2 days:
  - In 50% of patients over half this duration was waiting for clinicians to request the procedure
  - In the other 50% over half this duration was waiting for the procedure
- Both delays are potentially avoidable.

Action plan:
- Appointment of 2nd operator performing procedure
- Present findings to referring clinicians to minimise delays in requesting PVE
- Optimise PVE booking strategy
- Re-audit in 2 years

Conclusion:
- Minimising the delays to performing PVE potentially increases the numbers of patients eligible for curative treatment.
- Re-audit has revealed that delay to PVE from request is 23.4 days, not significantly different from the previous audit (24.2 days) despite reducing the times for clinicians to request the procedure (9.8 v 13.5 days) and the appointment of a second operator.
- Increased departmental workload?
- More patients had surgery (79.4% v 70.6%), although this still fails to meet the 85% standard.