Imaging and staging of oesophageal and pancreatic cancer

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Aim

1. Evidence base for the imaging modalities used for staging
2. Revise the staging
3. Imaging algorithms used at RMH

Oesophago-gastric cancer
Multi-Detector CT

- Cornerstone
- Accessible
- Identifies metastatic disease
- Assessment of local staging

Multi-Detector CT

- Improved spatial resolution allows for multi planar reformats
- Tumour assessment in orthogonal planes
- Perpendicular to adjacent structures

Multi-Detector CT

Staging Accuracy

- Poor for early tumours
- Lack of soft tissue contrast
- T stage - based on wall thickness and outline

<table>
<thead>
<tr>
<th>T Stage</th>
<th>Wall Thickness</th>
<th>Wall Contour</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2</td>
<td>&gt;3mm, &lt;5mm</td>
<td>Smooth</td>
</tr>
<tr>
<td>T3</td>
<td>5-15mm</td>
<td>Irregular</td>
</tr>
<tr>
<td>T4</td>
<td>&gt;15mm</td>
<td>Contact with adjacent structures</td>
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Endoscopic Ultrasound staging for early oesophageal tumours

- able to delineate the layers of the oesophageal wall
- more accurate staging of tumours confined within the wall (<T3)

Courtesy of Martin Benson

Is it Resectable???

Lymph node assessment with MDCT

- Lymphatic drainage varies dependent on primary site
- Involvement on CT - based on size criteria
  - ≥10mm mediastinum
  - 5mm-10mm LGA territory, peri-gastric

CT assessment lymph nodes: High specificity, low sensitivity.
**Multi-Detector CT**

**Staging Accuracies**

<table>
<thead>
<tr>
<th></th>
<th>T Stage</th>
<th>N Stage</th>
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<tbody>
<tr>
<td>Oesophageal Cancer</td>
<td>74%*</td>
<td>68%*</td>
</tr>
<tr>
<td>Gastric Cancer</td>
<td>77%†</td>
<td>67%†</td>
</tr>
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**EUS – Nodal assessment**

- Morphological appearance & size
  - Malignant nodes: Round, hypo-echoic
  - Capability for FNA using linear array probe

*Meta-analysis*:

<table>
<thead>
<tr>
<th></th>
<th>EUS</th>
<th>CT</th>
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<tbody>
<tr>
<td>Sens</td>
<td>80%</td>
<td>50%</td>
</tr>
<tr>
<td>Spec</td>
<td>70%</td>
<td>83%</td>
</tr>
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1. When is PET-CT relevant in Oesophago-gastric cancer?

1. Useful to stage the primary tumour
2. Useful to stage the regional lymph nodes
3. Useful to identify occult metastatic disease
4. Should be used for all oesophago gastric patients who are suitable for surgical resection
**18F PET/CT - Oesophageal Cancer**

**Detection of occult metastases**

Initial studies using FDG PET:
- Metastatic disease detected in 15% patients considered potentially operable*.
- Prospective trial 187 patients showed confirmed up-staging in 9 (4.8%) patients & 18 (9.5%) patients with unconfirmed metastases‡.

Delineation of craniocaudal extent of tumour§


**Occult Supraclavicular lymph nodes, detected on 18F PET/CT**

**18F PET/CT - Gastric Cancer**

Variable 18F FDG avidity dependent upon tumour subtype
- Intestinal-type have greater FDG avidity
- Limited uptake in diffuse-type ~30% tumours not visualised

18F PET/CT not currently advocated for gastric cancer staging
Current RMH Oesophago-gastric Cancer Staging Algorithm

**Oesophageal Cancer**
Initial staging MDCT
MDT Discussion
For radical surgery or Chemo/Radiotherapy:
EUS & 18FDG-PET/CT
Laparoscopy if sub-diaphragmatic disease

**Gastric Cancer**
Initial staging MDCT
MDT Discussion
EUS in selected cases
Laparoscopy