

## OESOPHAGEAL TUMOURS

1. **Epithelial** (a) **Benign**= squamous cell papilla/adenoma || (b) **Malignant**= squamous cell carcinoma/adenocarcinoma

2. **Mesenchymal** = leiomyoma+sarcoma/GIST/granular cell tumours \**commonest benign tumour = LM 75%\**

### BENIGN EPITHELIAL

**Squamous Cell Papilloma**: middle/lower third; exophytic sessile/pedunculated

**Adenoma**: Barrett's metaplasia/submucosal glands in lower 2/3

### MALIGNANT EPITHELIAL

#### **SQUAMOUS CELL CARCINOMA (1/3)**

Epidemiology: M/50-60/black/Asian OG belt

Aetiology: smoking/EtOH/hot drinks/diet ie cured and charred meat, lack of fruit+veg ie vit C, vit A, riboflavin

Associated conditions: achalasia, Ph pouch, P-V syn, tylosis, coeliac disease, corrosive stricture, radiation

Site: 1:5:2 distribution (U:M:L)

Micro: keratinocyte-like cells

Macro: exophytic, ulcerated, infiltrative (60:25:15)

Spread: local=horiz (para/peri/LO)+vert(submucosal) || nodes: cervical, mediastinal, perigastric || distant: liver, lung, kidney, adrenal

Precursor lesion: normal squamous mucosa → damaged by above factors → dysplasia (intraepith neoplasia) → cancer

Outcomes of treatment: 5yr survival 90% if node +ive; 45% if node -ive

#### **ADENOCARCINOMA (2/3)**

Epidemiology: M/white/professional class/rising incidence

Aetiology: Barrett's metaplasia/GOR/smoking \*H pylori protective; no EtOH/diet link

Site= **all lower 1/3** (Siewart & Stein by centre in relation to GOJ: T1 5cm above, T2 true cardia T3 prox gastric Ca 5cm below)

Micro= adenocarcinoma

Macro= 50% infiltrative

Spread= nodes: submucosal+paraoesophageal communicate with each other;

para → perioesophageal (can skip these) → lateral oesophageal nodes

Variants: truly non-Barrett's-associated from submucosal glands/adenoid cystic Ca/

### MESENCHYMAL

#### **LEIOMYOMA**

Epidemiology: Commonest benign oesophageal tumour (75%)

Micro: spindle/smooth muscle cells in connective tissue capsule

Macro: submucosal; >2cm suspicious for sarcoma

Site: distal 2/3; 5% multiple

Clinical features: mass lesion symptoms when >5cm

Investigations: EUS= smooth, lobulated without muscle invasion (ii) IHC: desmin/smooth muscle<sub>(-ive for KIT/DOG1/CD34)</sub> \*NO BIOPSY\*

Management: (i) <5cm = 12mthly surveillance (ii) >5cm = enucleate or resection

#### **Granular cell tumour:**

skin + GI tract; lower 2/3 oesophagus

#### **GIST:**

## STAGING OESOPHAGEAL CANCER (ESMO)

1. OGD: 6x Bx (do not dilate before biopsy)
2. CTTAP:TNM
3. EUS: T/local nodes<sub>(complements PET CT)</sub>
4. PET CT: distant nodes/mets<sub>(with EUS as avid tumour uptake can obscure nodes)</sub>
5. Laparoscopy: (a) distal oesophageals/junctionals w/ significant infradiaphragmatic component (washings/peritoneal disease)
6. EBUS-FNA: if bronchial invasion suspected
7. US neck: upper/mid third tumour need nodal FNA for proof

*SLBNx concept defunct: lymph-capillary networks (esp submucosa) → longit drainage + skipping mets → need radical dissection*

T	Node +ive	N	M
T0	0%	N0	M0
T1a Epith/Lam prop/M. mucosae	18%	N1 1-2 regional nodes	M1 distant mets
T1b Submucosa	55%	N2 3-6 regional nodes	
T2 Muscularis Propria	60%	N3 7+ regional nodes	
T3 Adventitia (no serosa)	80%		
T4a Invade pleura/pericardium/diaph	100%		
T4b Other: aorta/trachea/vert body	100%		

*STAGE: I: T1N0M0 IIa: T2/3N0M0 IIb: T1/2N1M0 III: T3N1/T4N0M0 IV: allM1*

*5Yr survival 60% 50% 35% 15% 3.4%*

## EARLY OESOPHAGEAL CANCER

### ***Tumour contained in superficial epithelium without nodal involvement (T1a-bN0)***

T1a: m1 epith                      T1b: sm1  
           m2 lamina propria            sm2  
           m3 muscularis mucosa        sm3

T1a: ACC has no nodes m1-3 || SCC can have nodes in m2-3

T1b>T1a for nodal spread and sm1-3: increasing nodal potential

### Investigations:

Barrett's (HDG/IMN): repeat OGD + quadrant Bx **1cm** apart; 2 GI pathologists; staging; MDT

Squamous: repeat OGD w/ Lugol's iodine (target bx non-stained areas)

EMR: most accurate histopathological diagnosis and T staging \*change T stage in 48%\*

ESD: less likely to have involved margins

### Management:

**1. Oesophagectomy:** eradicate high risk mucosa and nodes but morbidity & mortality (2-4%)

**2. Endoscopic resection/ablation**

EMR: stricture 9%/perforation 0.5%/bleeding 1.5%/recurrence 26% SCC

ESB: stricture 26%/perforation 10%/bleeding 10%/recurrence 1-2% SCC

ABLATION: RFA/APC give high eradication but higher recurrence than EMR/ESD

## ESMO GUIDELINES + JAPANESE RECOMMENDATIONS

**T1a:** EMR

**T1b<sub>sm1</sub>** (*superficial submucosal infiltration*): oesophagectomy/EMR

\* 55% node positive\*

**T1b<sub>sm2-3</sub>/T2:** oesophagectomy

Surgery: radical transthoracic oesophagectomy (better than transhiatal)

NA treatment: small trials; enhances post-op mortality but not R0/OS → surgery alone

Non-operative: \*Cisplatin/5FU 4 courses or FOLFOX 6 courses + DXT\* if unfit/declines surgery but M&M increased in salvage surgery

## LOCALLY ADVANCED OESOPHAGEAL CANCER (cT3-4 or N1-3 M0)

Early SCC can be managed with definitive CRT (prox); in middle tumours, choice between CRT and surgery

SCC: NA-C then surgery

ACC: NA-CRT (cisplatin/5FU + DXT) 8 weeks before + after surgery

## OESOPHAGEAL CANCER SURGERY

INDICATIONS: (i) only if R0 resection possible (ii) Curable (M<sub>0</sub>)

### Resection Margins

**1. Longitudinal:** spreads longitudinally in submucosal lymphatics → 10cm gives 17% R1 vs 4cm gives 40% R1

SCC patterns= single/multifocal/intramural lymphatic spread; need longer margin if multifocal

Proximal margin more important in SCC; distal margin more important in ACC

**2. Radial:** clear RRM is independent prognostic factor (R1: <1mm)

### Lymph Node Resection

One-field: diaphragmatic/R+L pericardiac/lesser curve/coeliac/L gastric/common hepatic/splenic

Two-field: para-aortic +thoracic duct/R+L pulmonary hilar/paraoesophageal/subcarinal/R paratracheal

Three-field: BC/deep lateral/external cervical/deep anterior cervical ie R+L recurrent

Rationale (i) optimal staging (ii) locoregional control (iii) Improved cure rate:

WECC: 4600 resections without CRT → number of nodes (a) involved (b) removed affects prognosis after resection

SEER: number removed affects survival

TNM7: minimum 6 nodes

AJCC minimum 18 nodes; for lower 1/3 tumour two vs three-field equivalent

Oesophageal resection \*OESOPHAGUS HAS NO SEROSA SO IS SHIT TO ANASTOMOSE\*

### **1. Pharyngolaryngo-oesophagectomy (tumours in hypopharynx/cervical oesophagus)**

Remove: lower pharynx/larynx/cervical trachea/thyroid+IJV en bloc/cervical oesophagus

Radical LN dissection in neck

### **2. IVOR-LEWIS Two-phase subtotal oesophagectomy (mid/lower third)**

(i) Abdo: mobilise stomach/divide LGA close to origin/remove posterior mediastinal tissue/hiatectomy/pleurectomy

(ii) Right thoracotomy: oesophageal resection/mediastinal dissection/resect azygos arch/en bloc para-aortic+T-duct

OG anastomosis in apex of thorax (entire gastric conduit in thorax to prevent reflux/impaired gastric emptying)

### **3. McKEOWN Three-phase subtotal oesophagectomy (upper/mid third)**

(i) Abdo: mobilise stomach + remove nodal groups

(ii) Thoracic dissection as for tw-phase but also mobilise oesophagus in apex of thorax

(iii) Cervical dissection: remove thoracic oesophagus + OG anastomosis in neck

### **4. Left-sided subtotal oesophagectomy**

Extended total gastrectomy if significant cardiac involvement

Contraindicated if tumour above aortic arch

### **5. Transhiatal Oesophagectomy (upper/lower third) \*ONLY IF NODE NEGATIVE\***

Ca hypopharynx and cervical oesophagus/intraepith SCC T1a/Barrett's HGD

T1 need oes resection; T2/3 need gastrectomy

Must remove oesophageal/gastric LN stations

Dutch: 220pts ACC mid and lower third → radical transthoracic = better survival/more nodes removed/pulmonary complications

Other: 4 RCTs show no difference between TT vs TH

## RECONSTRUCTION

### Routes:

Retrosternal (emergency for leak with posterior mediastinal sepsis) anterior to trachea so unpleasant swallowing  
Posterior mediastinal (shortest route from abdo to apex of thorax/neck)

### Organ:

**Stomach:** one anastomosis

principles: isoperistalsis/preserve RGE+RGA+intramural arcades/high part of stomach/pyloroplasty or myotomy  
lengthening: Kocherize duodenum/lesser curve resection/serosal incisions

**Colon:** two anastomoses: oesphago-colic + colojejunostomy/gastrostomy

indication: prev gastric resection/extensive gastric involvement/failed gastric interposition

**Jejunum:** Roux-en-Y or interposition

### Complications

Major due to fucking something up: leak and chyle

Minor flow-related in conduit: stricture/GOO + reflux/dumping

#### **1. Leak (5%)**

*Early (48-72hrs):* technical error → OGD + clip if small; theatre if large

*Late (5-10d) OG* (i) ischaemia<sub>(commonest)</sub> (ii) tension → not amenable to surgery so manage conservatively<sub>(NG/drains/abx/feeding jejunum)</sub>

GASTRIC: (iii) gastric staple line → washout + closure (iv) gastric necrosis → resect, cervical oesophagostomy

Conservative management: NG suction/drains mediastinum+pleural/antibiotics/feeding jejunum

#### **2. Chylothorax (2-3% open, 10% blunt TH)**

First 7 days when oral/jej feeding restarts → chest drain output increase → (i) malnutrition (ii) immunodeficiency<sub>(lose white cells)</sub>

Large leak: re-explore and ligate low

Small leak<sub>(<500mls/day)</sub>: enteral feeding w/ MCTs/TPN with lipid rich feed

Co-trimoxazole vs *Pneumocystis carinii*

**3. RLN Palsy:** Cervical anastomosis (rare if done in apex of thorax) Conservative if unilateral transient/thyroplasty if permanent

#### **4. Gastric outlet obstruction**

(i) Prevent with pyloroplasty/myotomy but can't laparoscopically (ii) also happens if stomach staddles hiatus

Treatment: prokinetics if pyloroplastied/dilatation if no pyloroplasty

**5. Bile reflux:** acid/alkaline reflux treated with prokinetics +/- acid suppression

**6. Dumping:** resolves by 12 mths

**7. Benign anastomotic stricture:** OGD + dilatation

*\*DELAYED DYSPHAGIA NEEDS OGD TO RULE OUT EARLY RECURRENCE\**

### Outcomes:

**Mortality:** decreasing for both ACC/SCC 2-4% to 10%

### **Survival:**

Prognostic factors: cell type/stage/nodes involved and resection/RRM

## PALLIATIVE CARE

*M1 (metastatic disease) for palliative care and best supportive care as median survival 8 mths*

### Features:

Dysphagia<sub>(absolute, progressive, rapid)</sub>/regurgitation<sub>(aspiration/cough)</sub>/weight loss

Other features: odynophagia/dysphonia/dyspnoea/bleeding/fistula/reflux

Constitutionals

### Methods:

1. Brachytherapy: single intraluminal high dose = better long-term relief of dysphagia than SEMS w/ less morbidity (2RCTs)
2. SEMS: effective and quick but not durable  
    contraindicated within 2cm of UOS (globus/pain/laryngeal compression/migration)  
    problems: migration, torsion, fracture, perforation, bleeding, incomplete expansion, restenosis, pain, reflux
3. Chemo: AC as for gastric ca; less impressive results for SCC so palliative mono or BSC here

### Other:

Intralesional EtOH induces tumour necrosis

Ablation - Laser: for overgrowth/ingrowth of stents/local recurrence but pain/perf/benign PNx+Mdx/stricture 20%/bleed

    PDT – PD drug in tissue activated by laser; can cause porphyria

    APC

EBRT: recanalise oesophagus/inhibit progression but stricture/fistula and ultimately recurrent dysphagia

### Specifics:

Bleeding: laser/EtOH/EBRT/electrocoag

RLN palsy: left>right; weak voice + poor cough with aspiration; difficult swallow (OP phase); Teflon injection

Aerodigestive fistula: cough/aspiration and recurrent UTIs; 5% overall due to tumour or node invasion/necrosis; covered stent