Esophageal Cancer: Adjuvant Therapy, Anatomy Review, Surgical Approaches

A.P. Marshall

Bonus Conference
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Adjuvant Therapy

- Neoadjuvant - Treatment given as a first step to shrink a tumor before the main treatment, which is usually surgery.

- Adjuvant - Additional treatment given after the primary treatment to lower the risk of cancer recurrence.
Value of Radiotherapy After Radical Surgery for Esophageal Carcinoma: A Report of 495 Patients

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- 495 patients with esophageal cancer who had undergone radical resection
- Randomized to surgery alone (n=275) or surgery + radiation (n=220)
- 54 patients in S+R group excluded
- Inclusion criteria: Squamous cell ca, max age 68 yrs, tumor at least 4.0cm, only thoracic lesions
Adjuvant Therapy

- Overall 5 yr survival rate 31 % for S, 41% for S+R (P=0.45)
- 5 yr survival for patient LN+ was 14.7% for S, 29.2% for S+R (P=0.07)
- 5 yr survival for stage III patients was 13.1 for S, 35.1 for S+R (P=0.0027)

- Conclusions: Postoperative prophylactic radiation improved 5 yr survival in patients with positive LN mets and in patients with stage III disease compared to patients who did not receive radiation

- ***Patients were not informed of being in a research study and did not voluntarily consent to be research subjects.
Surgical Anatomy

- Three areas of narrowing:
  1. Level of cricoid cartilage (upper esophageal sphincter)
  2. Mid Thorax (aortic arch and left mainstem bronchus compression)
  3. Esophageal hiatus (lower esophageal sphincter)

- In adults GE junction ~40-45cm from incisors

- Blood supply
  - Upper: inferior thyroid artery branches
  - Thoracic: bronchial arteries, esophageal branches from aorta, intercostals
  - Diaphragmatic/abdominal segments: left inf phrenic art, left gastric artery branches

- Venous drainage:
  - Lower esophagus: Coronary vein via portal vein

- No serosal layer
Indication for Resection

- Primary indication is for potential cure
  - Achieved in patients whose tumors are confined to its wall and only limited local-regional disease is found

- Aim to maximize R0 resection (macro- and microscopic clearance of proximal, distal, and lateral margins)

- Surgical resection with intentionally palliative intent is less common
  - Sometimes indicated in bleeding tumors requiring frequent blood transfusions or cervical cancers which have been treated by chemotherapy or radiation, but residual tumor precludes satisfactory oral intake
Surgical Approach

- Choice of technique for resection depends mainly on:
  - Tumor Location
  - Intended extent of lymphadenectomy and reconstructive technique
  - Experience and preference of the surgeon
Surgical Approach
Transhiatal Esophagectomy

- Stomach mobilized through upper midline laparotomy
- Esophagus is mobilized without a thoracotomy
- Stomach is transposed through the posterior mediastinum and anastomosed to the cervical esophagus.

- Best for lower esophageal and esophagogastric tumors
- Less likely predisposition to postoperative reflux and recurrent strictures
Surgical Approach
Ivor Lewis Esophagectomy

- “aka Two-Hole Esophagectomy” (Right thoracotomy and laparotomy)

- In 1946 Ivor Lewis did a two-stage approach: initial laparotomy with stomach mobilization followed 10-15 days later by a right thoracotomy, esophagectomy, and esophagogastric anastomosis

- Eventually evolved into a one-stage approach

- Typically used for middle and lower third esophageal tumors
Surgical Approach
Ivor Lewis Esophagectomy

- Advantages:
  - An extensive lymphadenectomy can be easily performed through the right thoracotomy incision
  - Direct exposure for dissection of intrathoracic esophagus

- Disadvantages:
  - Two major incisions
  - Anastomosis in chest
  - Complications can be difficult to manage
  - Typical leak rates <5%
  - Leaks in chest can be more complicated than cervical leaks
Surgical Approach

Three-Hole Esophagectomy

- Right chest is opened (thoracotomy) first and the intrathoracic esophagus and regional LNs are dissected and mobilized. Chest is then closed.

- Patient turned supine.

- Midline laparotomy and stomach mobilization

- Left neck approach for cervical anastomosis

- Some surgeons are using minimally invasive techniques for esophagus mobilization
Surgical Approach
Left Thoracoabdominal Esophagogastrectomy

- Used for large GE junction tumors and resection of distal esophagus and the proximal stomach when removal of the stomach necessitates an intestinal substitute to restore swallowing
- Also used in very obese patients to facilitate exposure

- Patient placed in right lateral decubitus
- Exlap through oblique incision from tip of 6th costal cartilage to mid abdomen
- Choice of partial or total gastrectomy
Postoperative Complications

- Pulmonary Impairment: Atelectasis, Pneumonia
- Tracheobronchial Injury
- Bleeding
- Laryngeal Nerve Injury: (Recurrent LN)
  - Increased risk for bilateral nerve injury after cervical esophagogastric anastomosis
- Chylothorax: Thoracic duct injury
  - Present around POD #3 or 4
- Anastomotic Leak