General data

- Name: 楊xx
- Sex: male
- Age: 62 years old
- Date of admission: 92.11.14

Chief complaint

- Dysphagia since 92.9

Present illness

This 62-year-old male p't denied any systemic disease before. He complained of difficult to swallow solid food since mid.Sept and neck fullness sensation associated, but he didn't pay attention for it until mid Oct.

Present illness

He suffered from soft meal dysphagia and easily chocking and salivaration. So, he visited 博愛醫院 for help and PES found a lumen occlussion mass and **pathology revealed SCC and esophageal ca** was told. The surgical intervention was suggested but he hesitated and used Chinese herbs to control his disease for 1-2 weeks.

Present illness

Then he was suggested to admit to our ward for further treatment. He said that he could receive chemotherapy and radiotherapy but he can't accept to op.

Personal history

- Smoking:1ppd over 45 years
- Alcohol: BEER 1-2 botl for 40 years
- Food allergy:nil
- Drug allergy:nil
- Betel nut eating:nil
- Social activity:life style:active(+), sedentary(-)
  living arrangement:normal(+), abnormal(-)

Physical examination

- No specific finding

Lab data

血液

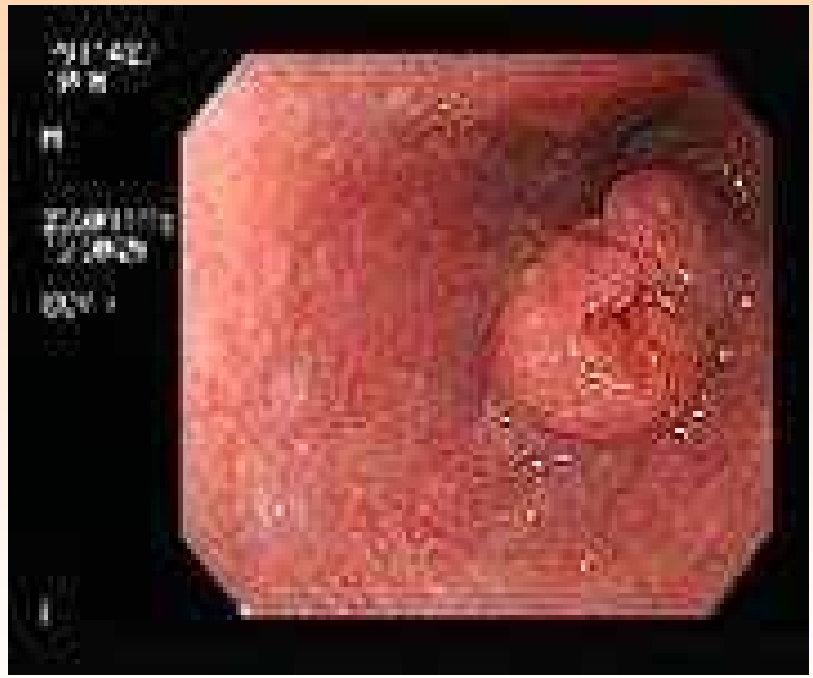
項目\日期時間	92/11/14 18:40
WBC [5.2-12.4 x10.e3/uL]	4.83
RBC [4.2-6.1 x10.e6/uL]	4.62
HGB [12-18 g/dL]	15.2
HCT [37-52 %]	42.6
PLT [130-400 x10.e3/uL]	156
%NEUT [40-74 %]	44.5
%LYM [19-48 %]	41.4

急診生化

項目\日期時間	92/11/14 18:40
Glucose(血)1 [70-110 mg/dl]	121
BUN(血) [7-18 mg/dl]	22
Creatinine(血)[0.5-1.3 mg/dl]	1.2
GOT(血) [0-40 IU/L]	29
GPT(血) [0-40 IU/L]	39
Bilirubin D(血)[0.0-0.4 mg/dl	0.1
Bilirubin T(血)[0.2-1.2 mg/dl	1.0
Na(血)[135-158 meq/L]	138
K(血)[3.5-5.3 meq/L]	3.9

Image-1

- Esophagus :
  A fungating, friable mass with easily touch bleeding located at 26 cm from
  incisors, biopsy x 8#.
  The scope couldn't be passed through further.



Pathological findings

- **CARCINOMA, ESOPHAGUS, ADVANCED**
- **ESOPHAGUS ,921117**
- Esophagus, 26 cm. from incisor, endoscopic biopsy, squamous cell carcinoma
- The specimen submitted consists of eight tissue fragments, measuring up to 0.2 x 0.1 x 0.1 cm. in size, fixed in formalin. Grossly, they are tan and soft. All for section. **Microscopically, it shows a picture of squamous cell carcinoma arranged in solid nests infiltrated on the desmoplastic stroma with frequent mitoses.**

Image-2

- A narrow lesion at mid esophagus suspect intra-lumen lesion.

Image-3

- Irregular surface of lumen wall is noted.

Image-4

- there are circumferential wall thickening (about 6.3 cm in length) of middle esophagus

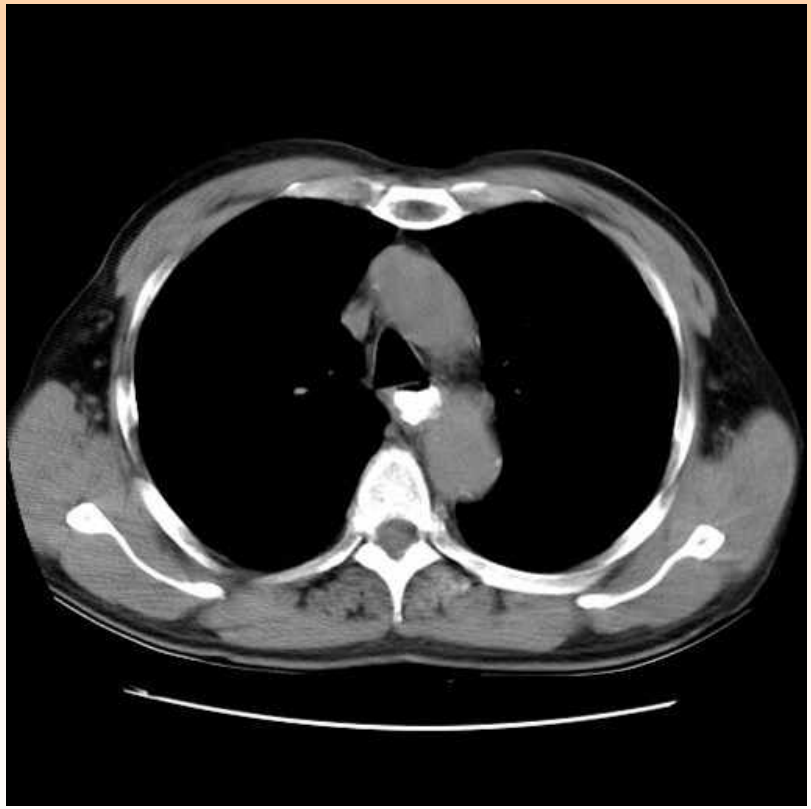


Image-5

- the triangular fat plane between the esophagus, spine, and aorta has been obliterated. In addition, more than 90 degrees of the circumference of aorta is surrounded by the esophageal tumor tissues.
- Thus, **infiltration to the adventitia of descending aort** is probable.

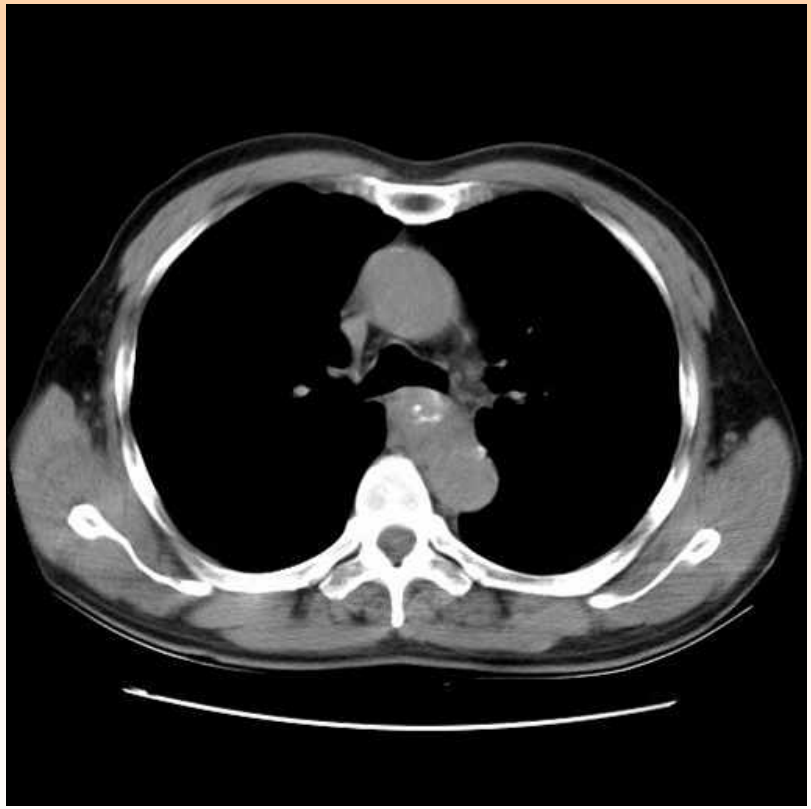


Image-6

- extra-luminal extension of esophageal cancer is suspected due to the presence of obliterated the fat adjacent to the wall of the left main bronchi.

Image-7

- there is a 1.9-cm rt posterior peri-esophageal lymph node at supra-aortic arch level.
- This metastatic lymphadenopathy also result in smoothly external indentation to right esophageal wall.

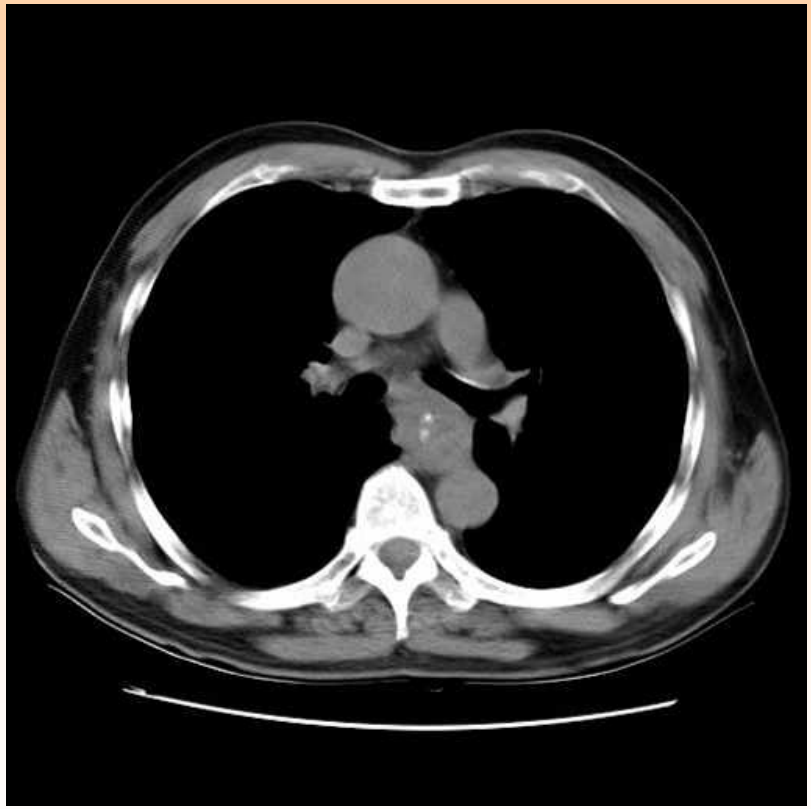


Image-8

- several mediastinal lymph nodes (<1cm in diameter) are noted at the A-P window, sub-carinal level and pre-tracheal region of carina level.
- These LNs may represent the **metastatic lymphadenopathy** or **reactive lymph nodes**.

Image-9

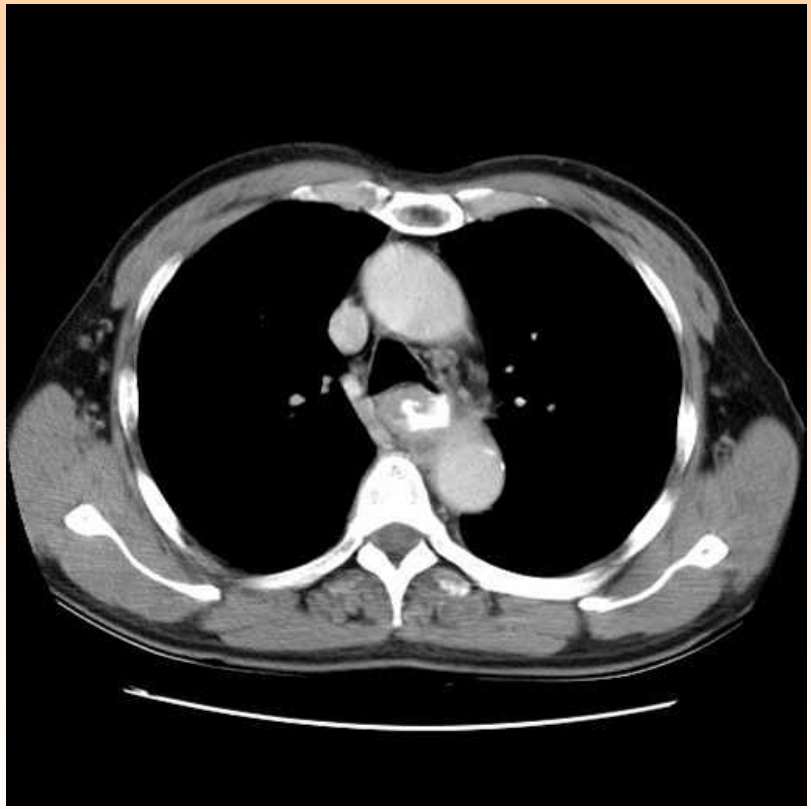


Image-10

- Impression：
  Stage III middle sophageal cancer with thoracic aorta involvement and mediastinal metastatic lymphadenopathy are considered.

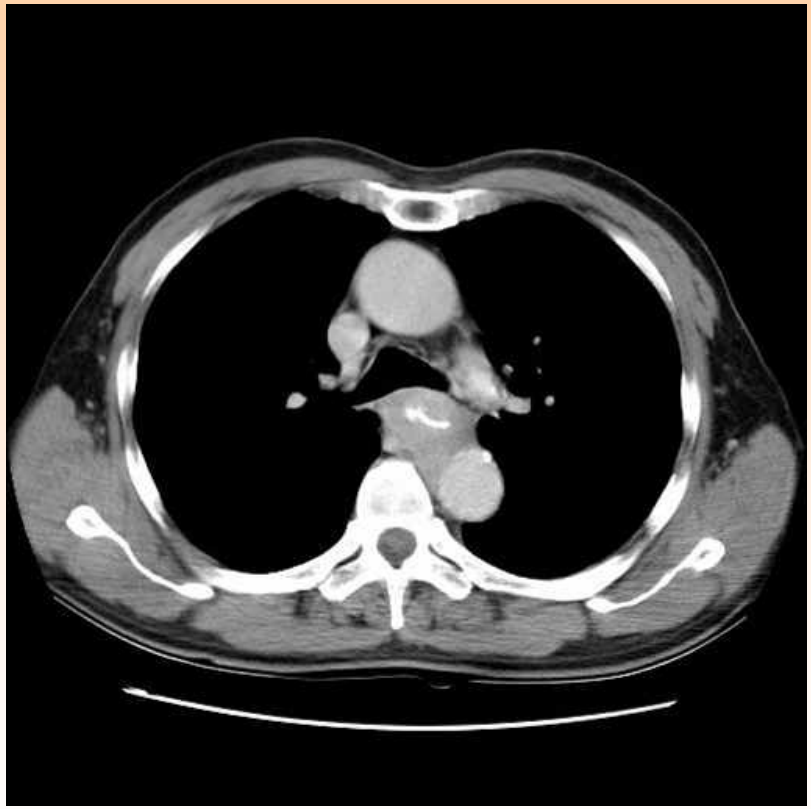


Image-11

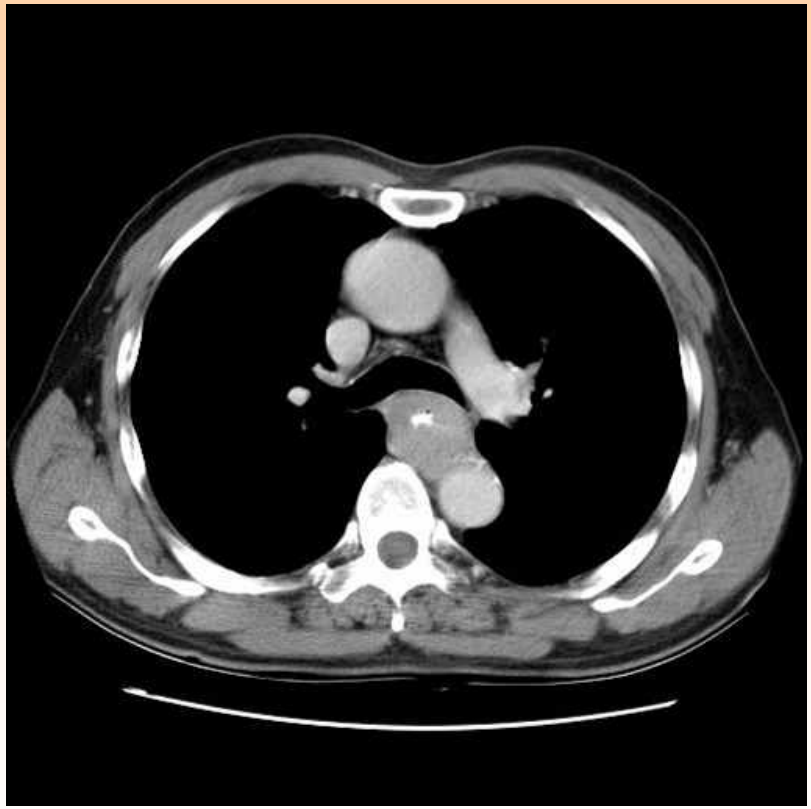


Image-12

Discussion

- **Imaging Studies**
- **Barium swallow** is very sensitive for helping detect strictures and intraluminal masses.
- Performing **esophagogastroduodenoscopy** allows direct visualization and biopsies of the tumor.

Imaging Studies

- **Endoscopic ultrasound** is the most sensitive test to help determine the depth of penetration of the tumor (T staging) and the presence of enlarged periesophageal lymph nodes (N staging).
- **Abdominal and chest CT scans** are useful to help exclude the presence of metastases (M staging) to the lungs and liver and may be useful to help determine if adjacent structures have been invaded.

Imaging Studies

- **Bronchoscopy** is indicated for cancers of the middle and upper third of the thoracic esophagus to help exclude invasion of the trachea or bronchi.
- **Bone scan** is indicated in patients with complaints suggestive of bone metastases.

Imaging finding

- X-ray

  Barium esophagraphy is unique among esophageal studies for assessing both morphology and motility. Barium esophagraphy remains the study of choice for characterization of esophageal strictures. Esophageal carcinoma may demonstrate a variety of appearances on barium esophagrams.

Imaging finding

- Lesions may be annular and constricting; intraluminal, polypoid, or masslike; infiltrative; ulcerating; or varicoid. A mixed pattern is most common.
- Early esophageal carcinoma may present as a small polypoid lesion or as coalescent plaques or nodules.

Imaging finding

- A double-contrast technique should be used for optimal sensitivity.
- The length and location of the involved esophageal segment and the functional impairment resulting from the lesion should be reported.

Imaging finding

- Once a malignancy is detected on barium examination, the radiologist must be careful to evaluate the remainder of the esophagus and stomach for synchronous lesions. Endoscopy should follow.

Imaging finding

- CT scan

Findings: Contrast-enhanced CT plays an important role in the staging of esophageal carcinoma.

Imaging finding

Key findings include the following:

- Eccentric or circumferential wall thickening is greater than 5 mm.
- Peri-esophageal soft tissue and fat stranding may be demonstrated.
- A dilated fluid- and debris-filled esophageal lumen is proximal to an obstructing lesion.

Imaging finding

- Tracheobronchial invasion appears as displacement of the airway (usually the trachea or left mainstem bronchus) as a result of mass effect by the esophageal tumor.
- Absence of a fat plane between the airway and the esophageal mass cannot be used as an indication of invasion. Even in patients without esophageal carcinoma, a fat plane is usually not evident between the esophagus and left mainstem bronchus.

Imaging finding

- Aortic invasion may be assessed in 2 ways.

1. The Picus method considers the arc of contact between the tumor and aorta (Picus, 1983). Loss of the periaortic fat plane over less than 45° suggests no aortic invasion, whereas contact over 90° or more is predictive of invasion of the aortic wall. Contact between 45-90° is indeterminate. Accuracy with this method is 80%.

Imaging finding

2. Obliteration of the triangular fat space between the aorta, esophagus, and spine is another predictor of aortic invasion.

Imaging finding

- A careful search for lymph nodes is an essential component of the interpretation. A short-axis diameter exceeding 1 cm is considered abnormal for lymph nodes in all mediastinal locations.

Imaging finding

- Esophageal carcinoma is often metastatic at presentation.
- metastases were diagnosed most commonly in the abdominal lymph nodes (45%); liver (35%); lung (20%); cervical and/or supraclavicular lymph nodes (18%); bone (9%); adrenal glands (5%); peritoneum (2%); brain (2%); or stomach, pancreas, pleura, skin or body wall, pericardium, or spleen (1% each).

Imaging finding

- However, during terminal phases of the disease, lung metastases are increasingly common.

TMN stage

TNM Staging for Esophageal Carcinoma

TNM			Stage
Tis	N0	M0	0
T1	N0	M0	I
T2	N0	M0	IIA
T3	N0	M0	
T1	N1	M0	IIB
T2	N1	M0	
T3	N1	M0	III
T4	Any N	M0	
Any T	Any N	M1	IV

- T1-Carcinoma invading the lamina propria or submucosa
- T2-Carcinoma invading the muscularis propria
- T3-Carcinoma invading the adventitia
- T4-Carcinoma invading local structures

- N0-No evidence of lymph node involvement
- N1-Evidence of lymph node involvement
- M1-No evidence of metastatic disease
- M2-Evidence of metastatic disease

Stage	TNM	5-Year Survival Rate
0	Tis, NO, MO	75%
I	T1, NO, MO	50%
IIA	T2, NO, MO or T3, NO, MO	40%
IIB	T1, N1, MO or T2, N1, MO	20%
III	T3, N1, MO or T4, any N, MO	15%
IVA	Any T, any N, M1a	<1%
IVB	Any T, any N, M1b	<1%

Imagine example-1

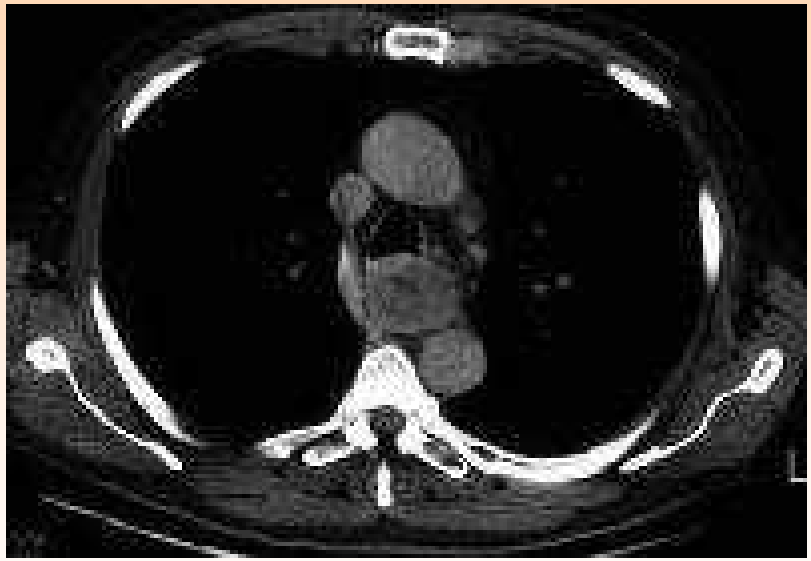
- Esophagus, carcinoma.
- Anteroposterior barium esophagram
- an abrupt change in the caliber of the esophagus, with a long, irregular, annular stricture of the thoracic esophagus. The masslike shouldering at the proximal extent of the lesion at which filling defects are present.

Imagine example-2

- Esophagus, carcinoma.
- Lateral barium esophagram
- an abrupt change in the caliber and contour of the esophagus caused by an irregular circumferential stricture containing focal ulcerations. Findings are most consistent with esophageal carcinoma

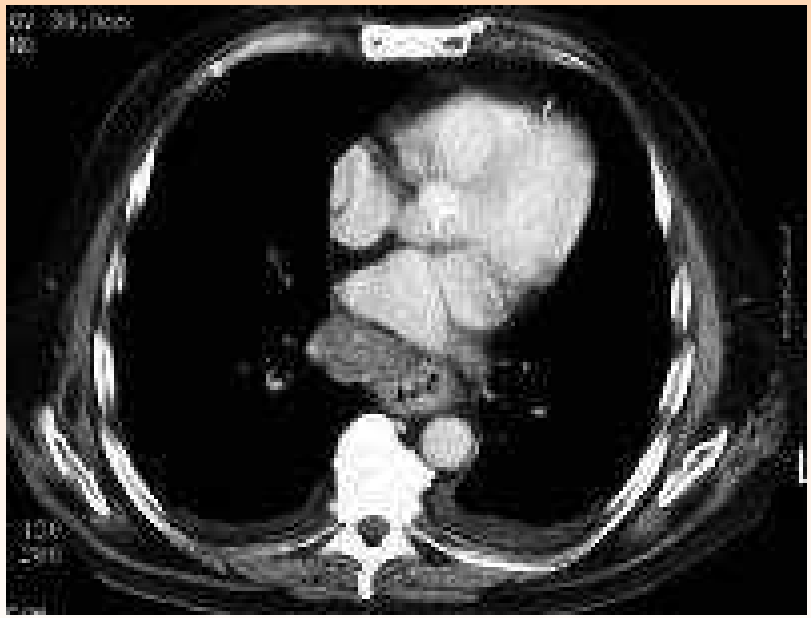
Imagine example-3

- Esophagus, carcinoma.
- Nonenhanced axial CT image
- a large proximal esophageal mass with asymmetric impression on the posterior tracheal wall, suggestive of invasion.
- Infiltration of the peri-esophageal fat showed,
- no evidence of aortic invasion is present.



Imagine example-4

- Esophagus, carcinoma.
- Enhanced axial CT image
- irregular wall thickening of the esophagus. A heterogeneously enhancing mass to the right of the esophagus represents a markedly enlarged metastatic lymph node.
- No significant loss of the fat plane is noted between the



Treatment

Indications for surgery

- Diagnosis of esophageal cancer must be made in a patient who is a candidate for surgery.
- Surgery is indicated when high-grade dysplasia is present in a patient with Barrett esophagus. As many as 50-70% of such patients are found to have cancer when the esophagus is resected.

Contraindications to surgery

- Metastasis to N2 nodes (ie, celiac, cervical, or supraclavicular lymph nodes) or solid organs (eg, liver, lungs) is a contraindication.
- Invasion of adjacent structures (eg, recurrent laryngeal nerve, tracheobronchial tree, aorta, pericardium) is a contraindication.

Contraindications to surgery

- Severe associated comorbid conditions can decrease a patient's chances of surviving an esophageal resection.
- Cardiac function and respiratory function are carefully evaluated preoperatively. A forced expiratory volume in 1 second of less than 1.2 L and a left ventricular ejection fraction of less than 0.4 are relative contraindications to the operation.

Reference

- Takashima S, Takeuchi N, Shiozaki H, et al: Carcinoma of the esophagus: CT vs MR imaging in determining resectability. AJR Am J Roentgenol 1991 Feb
- Yee J, Halvorsen R: Esophageal malignancy: diagnosis and staging. Contemp Diag Radiol 1997