

Esophagus 2022

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JIM HOFFERKAMP, CTR
12/1/2022

Q&A

- Please submit all questions concerning the webinar content through the Q&A panel.
- If you have participants watching this webinar at your site, please collect their names and emails.
- We will be distributing a Q&A document in about one week. This document will fully answer questions asked during the webinar and will contain any corrections that we may discover after the webinar.

Fabulous Prizes



3

Guest Presenter

- Wilson Apollo, CTR
 - Retired NY State Licensed Radiation Therapist

4

Agenda

- Overview
 - Primary Site
 - Histology
 - Grade
 - Staging
- Treatment

Key Statistics: Esophagus

U.S. 2015-2019

- New cases: 18,281
 - 14,442 in men
 - 3,839 in women
- Deaths: 15,590
 - 12,387 in men
 - 3,087 in women

Stage	5-Year Relative Survival Rate
Localized	47.8%
Regional	25.1%
Distant	5.2%
Unknown	16.7%
Overall	20.8%

Cancer in North America (CiNA) (North American Association of Central Cancer Registries (NAACCR) 2015-2019 U.S. and Canadian incidence data from CDC's National Program of Cancer Registries (NPCR), CCCR's Provincial and Territorial Registries, and the NCI's Surveillance, Epidemiology and End Results (SEER) Registries), submitted December 2021) accessed via CiNA Explorer, an interactive, data visualization tool for quick access to key NAACCR CiNA cancer statistics. <https://www.naaccr.org/interactive-data-on-line>

Terminology

- Incisors-front teeth
- Proximal- Towards the incisors
- Distal-Away from the incisors
- This is the same for the entire GI tract
- Epicenter/Midpoint
 - Where the tumor originated
 - Thickest part of the tumor
 - Midpoint of the tumor

The diagram shows a human torso with the digestive system highlighted. An upward-pointing arrow on the left is labeled 'Proximal', and a downward-pointing arrow on the right is labeled 'Distal'. The organs shown are the Esophagus, Liver, Stomach, Small intestine, and Large intestine.

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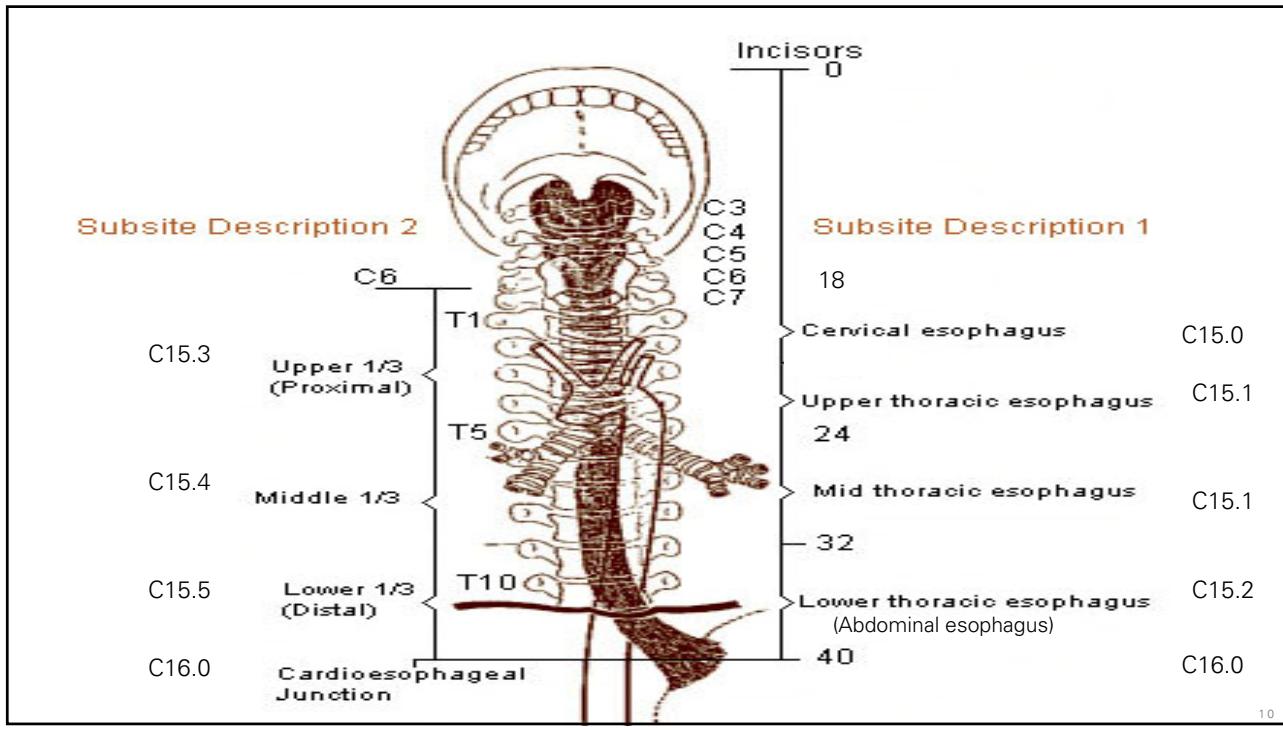
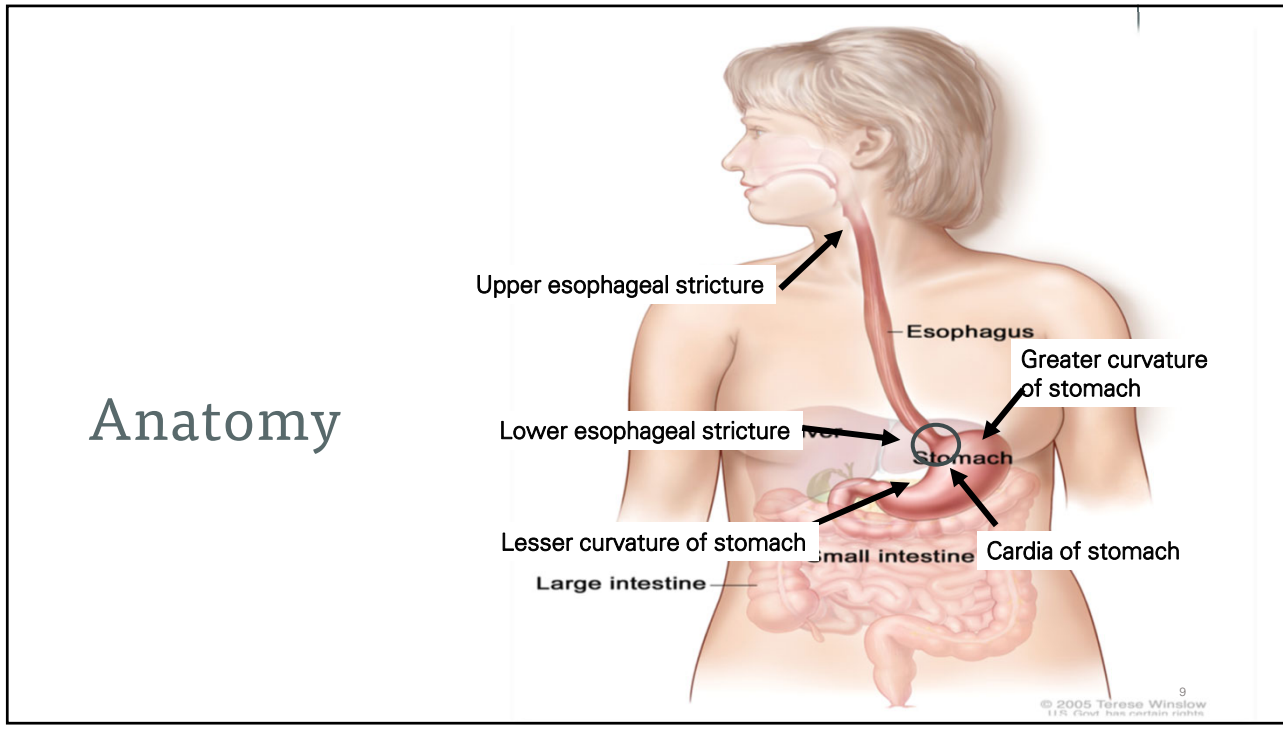
Epicenter/Midpoint

- SSDI-Esophagus Tumor Epicenter
 - Used to determine tumor location within the esophagus
- Schema Discriminator 1
 - Used to determine Esophagus or Stomach Schema

This diagram is identical to the one above, showing the human GI tract with labels for Esophagus, Liver, Stomach, Small intestine, and Large intestine.

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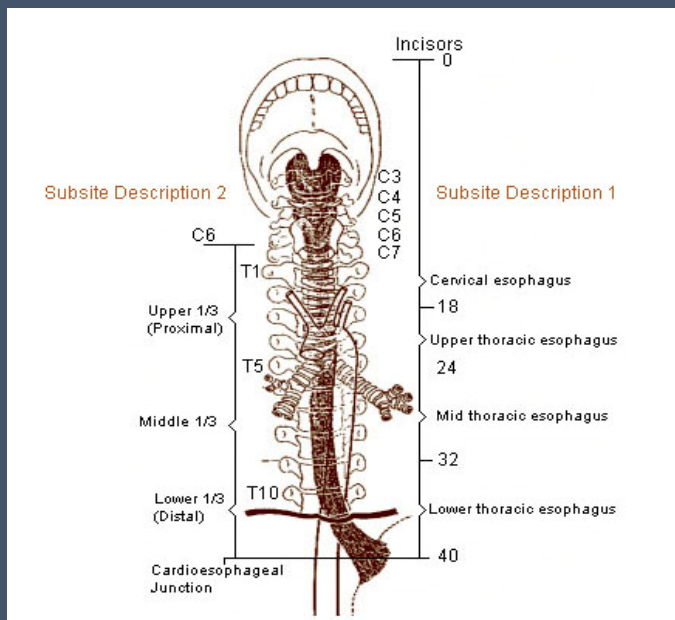
Anatomy



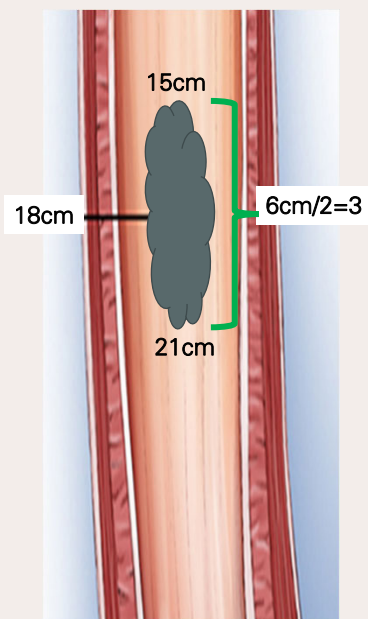
Code Description

- 0 - U: Upper (Cervical/Proximal esophagus to lower border of azygos vein)
- 1 - M: Middle (Lower border of azygos vein to lower border of inferior pulmonary vein)
- 2 - L: Lower (Lower border of inferior pulmonary vein to stomach, including gastroesophageal junction)
- 9 X: Esophagus, NOS
 - Specific location of epicenter not documented in medical record
 - Specific location of epicenter not assessed or unknown if assessed

SSDI: Esophagus Tumor Epicenter



SSDI: Esophagus Tumor Epicenter



- Tumor location is used for staging of squamous cell primaries of the esophagus.
- Physician statement of epicenter location is preferred
- If physician statement is not available, calculate location of midpoint.

Example: If the lesion was from 15-21 cm, this is a 6-cm lesion

epicenter at 18 cm. It is the midpoint

15-24 cm from incisors = upper
 25-29 cm from incisors = middle
 30-40/45 cm from incisors = lower

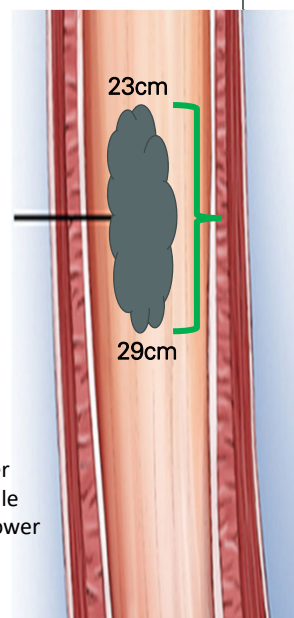
Poll 1

- Patient had a squamous cell carcinoma starting at 23cm and extending to 29cm.

- What is Esophagus Tumor Epicenter?

- 0 - U: Upper
- 1 - M: Middle
- 2 - L: Lower
- 9 X: Esophagus, NOS

15-24 cm from incisors = upper
 25-29 cm from incisors = middle
 30-40/45 cm from incisors = lower

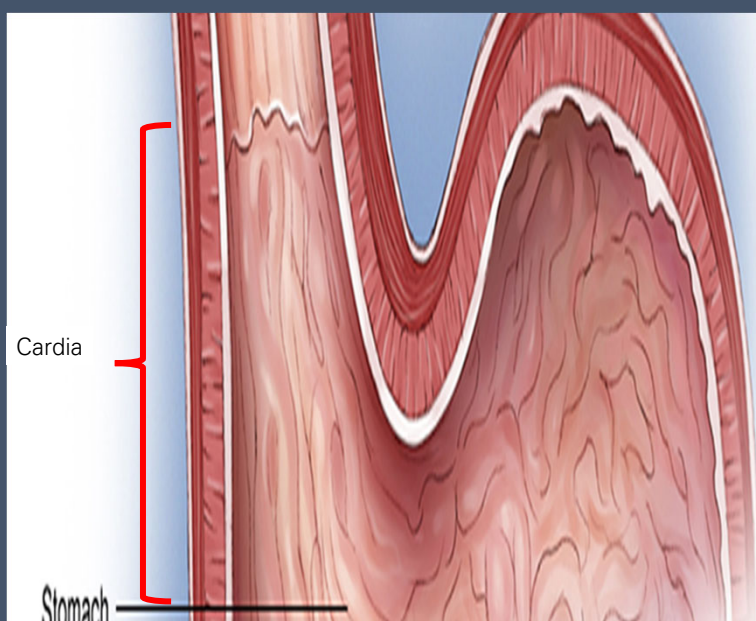


13

C16.0- GE Junction Or Cardia?

- A schema discriminator is required to assign case to either an esophageal schema

Schema ID
Stomach



Schema Discriminator 1-Primary Site C160

Code	Description- Schema Discriminator 1 GE Junction	Schema ID
0	NO involvement of esophagus or gastroesophageal junction AND epicenter at ANY DISTANCE into the proximal stomach (including distance unknown)	00170 Stomach
2	INVOLVEMENT of esophagus or esophagogastric junction (EGJ) AND epicenter LESS THAN OR EQUAL TO 2 cm into the proximal stomach OR stated involvement of or into the stomach OR Esophagus CAP Protocol is used OR Esophagus Staging System is used <i>If the CAP Protocol and AJCC Staging System are different, default to the AJCC Staging System</i>	00161 or 00169 Esophagus
3	INVOLVEMENT of esophagus or esophagogastric junction (EGJ) AND epicenter GREATER THAN 2 cm into the proximal stomach OR Stomach CAP Protocol is used OR Stomach AJCC Staging System is used <i>If the CAP Protocol and AJCC Staging System are different, default to the AJCC Staging System</i>	00170 Stomach
9	Unknown if EGJ involved And Epicenter any distance (including unknown distance) into the proximal stomach	00170 Stomach

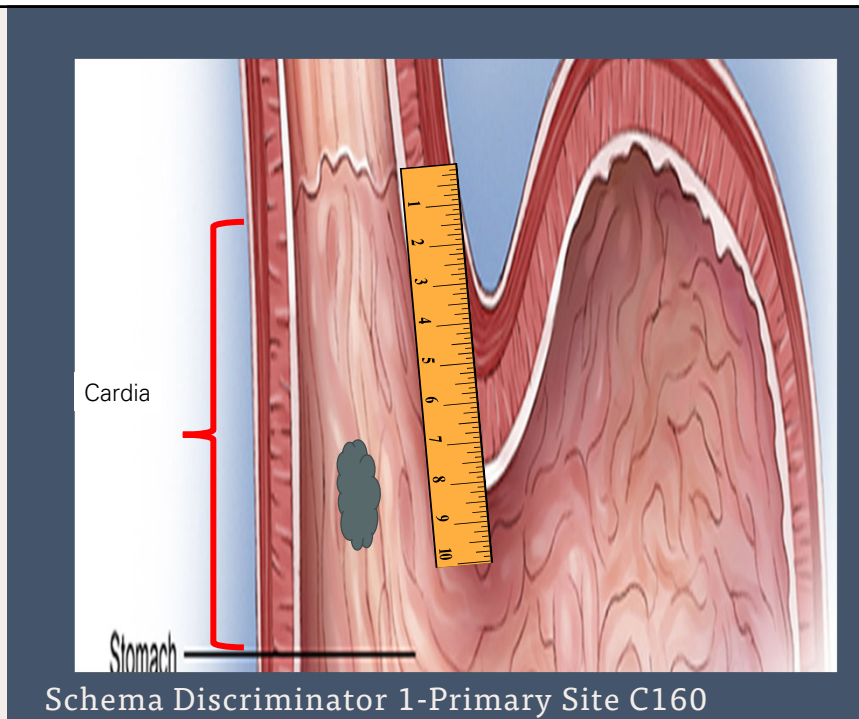
Code 0

- NO involvement of esophagus or gastroesophageal junction

AND

- epicenter at ANY DISTANCE into the proximal stomach
 - (including distance unknown)

Schema ID
Stomach

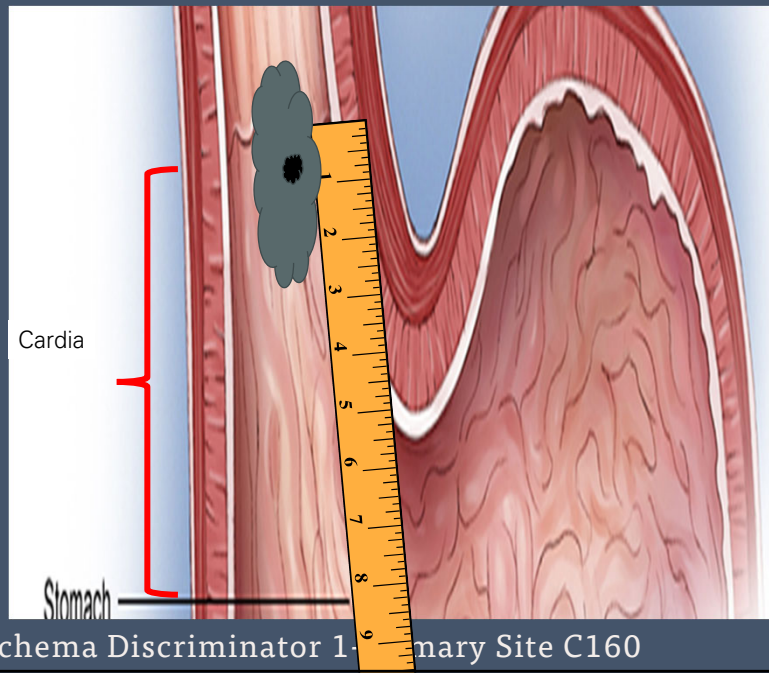


Code 2

- INVOLVEMENT of esophagus or esophagogastric junction (EGJ)
- AND
- epicenter LESS THAN OR EQUAL TO 2 cm into the proximal stomach
- OR
- No stated involvement of or into the stomach
- OR
- Esophagus CAP Protocol is used OR Esophagus Staging System is used

If the CAP Protocol and AJCC Staging System are different, default to the AJCC Staging System

Schema ID *Esophagus*



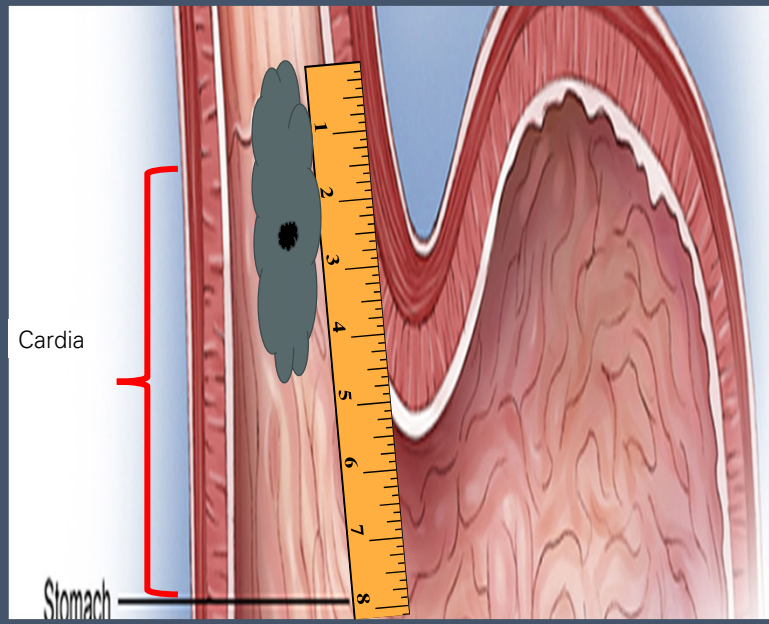
Schema Discriminator 1-Primary Site C160

Code 3

- INVOLVEMENT of esophagus or esophagogastric junction (EGJ)
- AND
- Epicenter GREATER THAN 2 cm into the proximal stomach
- OR
- Stomach CAP Protocol is used or
- Stomach Staging System is used

If the CAP Protocol and AJCC Staging System are different, default to the AJCC Staging System

Schema ID: *Stomach*



Schema Discriminator 1-Primary Site C160

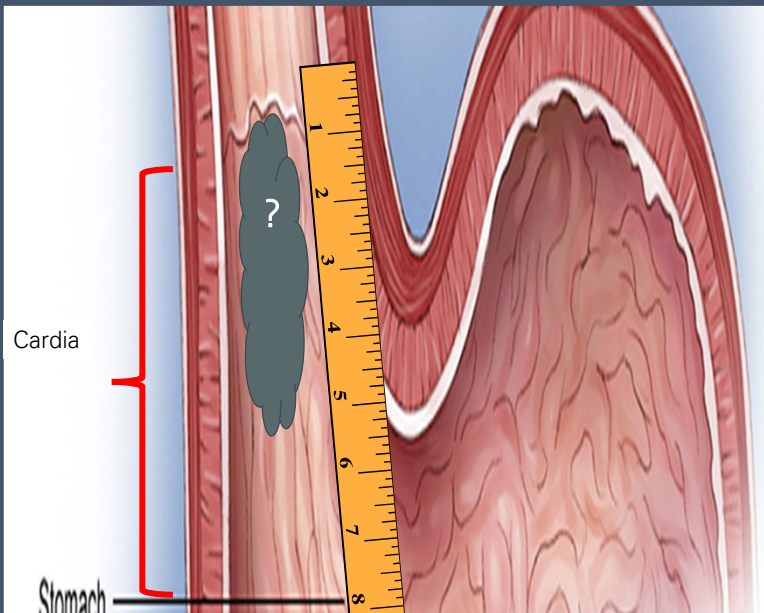
Code 9

- UNKNOWN involvement of esophagus or gastroesophageal junction

AND

- Epicenter at ANY DISTANCE into the proximal stomach (*including distance unknown*)

Schema ID
Stomach



Cardia

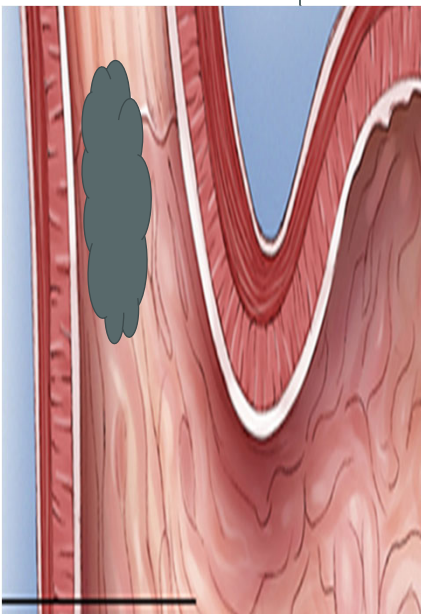
Stomach

Schema Discriminator 1-Primary Site C160

Poll 2

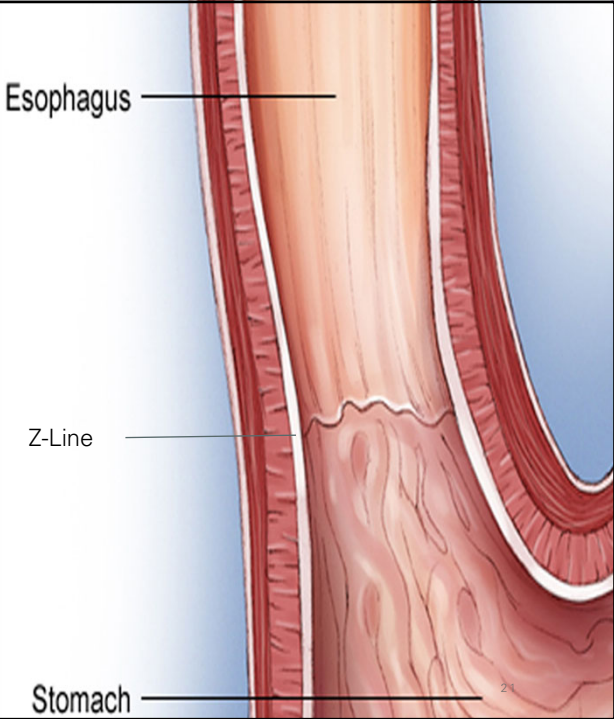
- Patient has a biopsy proven MD adenocarcinoma at the GEJ and extending into the gastric cardia. The physician stage the tumor as cT2 cN0 cM0 Stage 2A based on the esophagus protocol. Would this be assigned a schema discriminator for Esophagus or Stomach?

- Esophagus
- Stomach



Histology

- Squamous Cell Carcinoma
 - Typically found in the upper two thirds of the esophagus.
- Adenocarcinoma
 - Usually forms in the lower third of the esophagus, near the stomach.



Barrett's Esophagus

- Repeated exposure to acidic stomach contents washing back (refluxing) through the lower esophageal sphincter may cause squamous cells to be replaced by glandular cells resembling those cells in the stomach.

Normal squamous epithelium

→

Columnal metaplasia/ Barrett's

→

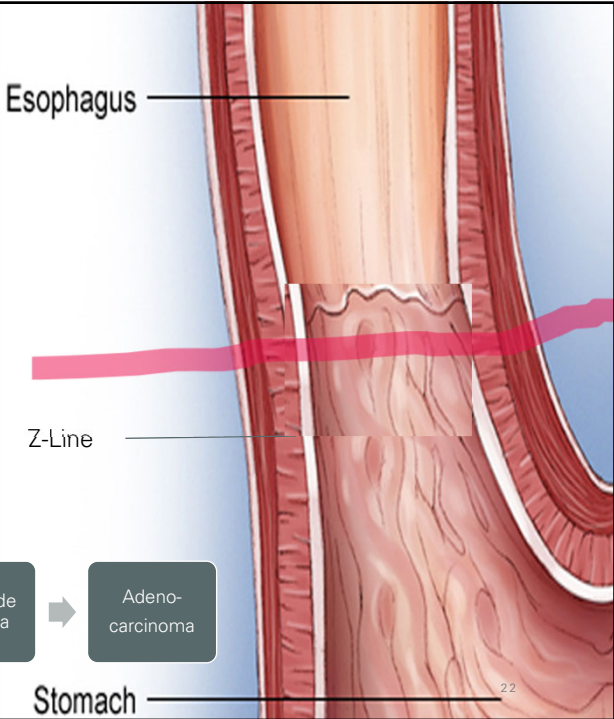
Low grade dysplasia

→

High grade dysplasia

→

Adeno-carcinoma



Grade-Rules for Classification

- Clinical (C)
 - All information collected prior to treatment
 - Usually based on biopsy done during endoscopy
- Pathological (P)
 - Information gathered after resection of the primary tumor.
 - Must be collected prior to neoadjuvant treatment

23

Grade-Rules for Classification

- Post-therapy Clinical (yc)
 - Grade information collected after neoadjuvant treatment, but before resection of the primary tumor.
- Post-therapy Pathological (yp)
 - Information gathered after neoadjuvant treatment and after resection of the primary tumor.

24

Grade may impact AJCC Pathologic Staging

- pT1a pN0 M0 G1 Stage IA
- pT1a pN0 M0 G2-3 Stage IB

25

Layers of the Esophageal Wall

- Mucosa

Mucosa, NOS
Behavior /3
Localized/T1

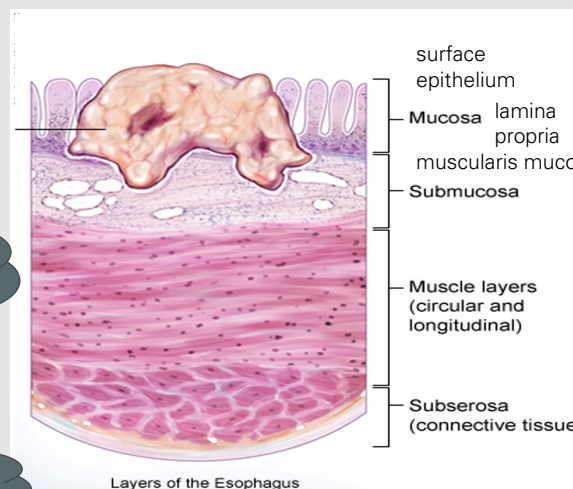
- Surface epithelium

Confined to
epithelium
Behavior /2
pTis

- Lamina propria

- Muscularis mucosa

Behavior /3
Localized/T1



Layers of the Esophagus

26

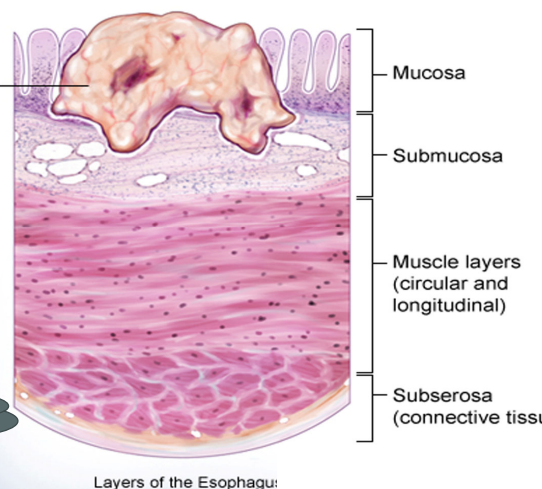
Layers of the Esophageal Wall

- Submucosa
 - Connective tissue, blood vessels, and glands
- Muscularis (middle layer)
 - Striated and Smooth muscle
- Adventitia
 - Connective tissue that merges with connective tissue of surrounding structures
 - No Serosa

Localized/T1b

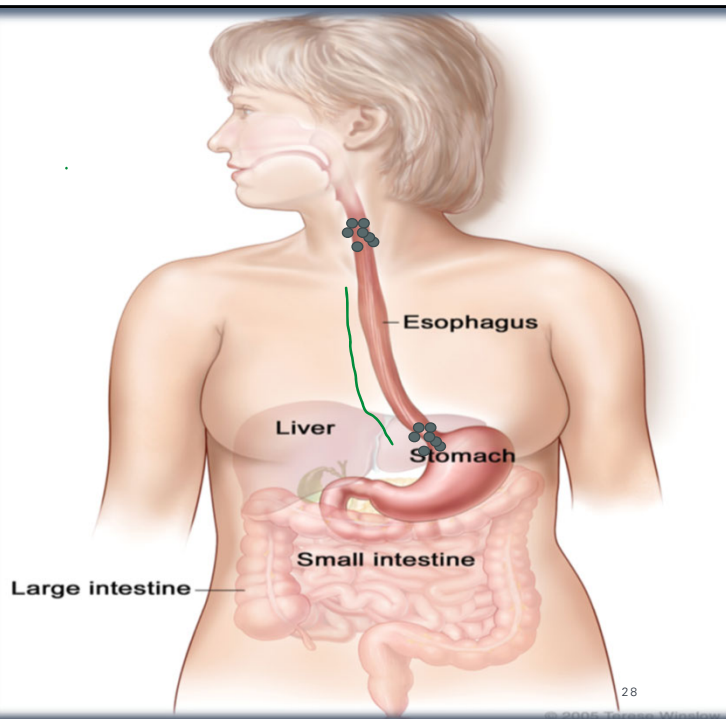
Localized/T2

Regional by DE/T3



Lymphatics of the Esophagus

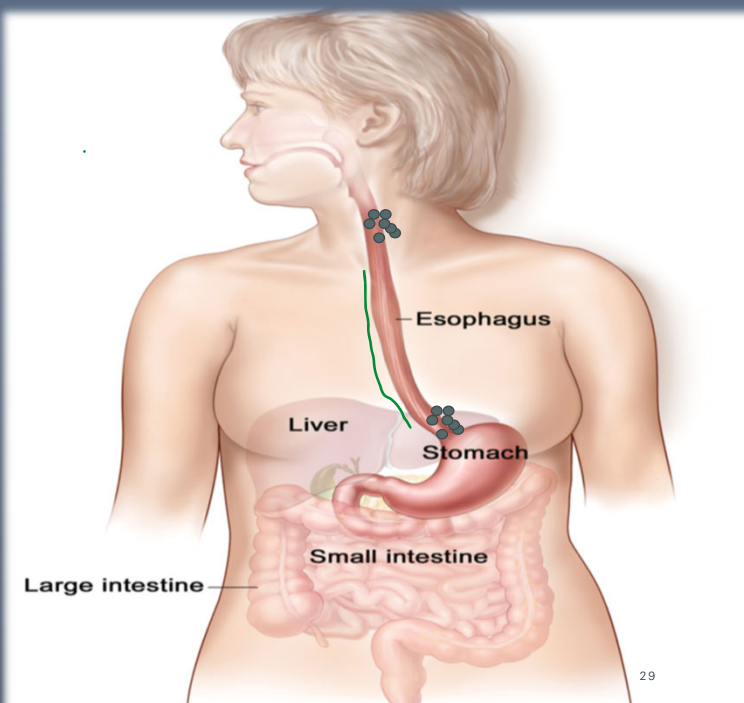
- Drainage is intramural and longitudinal
 - Concentration of lymphatic channels in the submucosa and lamina propria
 - The anatomic site of the cancer and the nodes to which the site drains may not be the same.



Regional Lymph Nodes (not a comprehensive list)

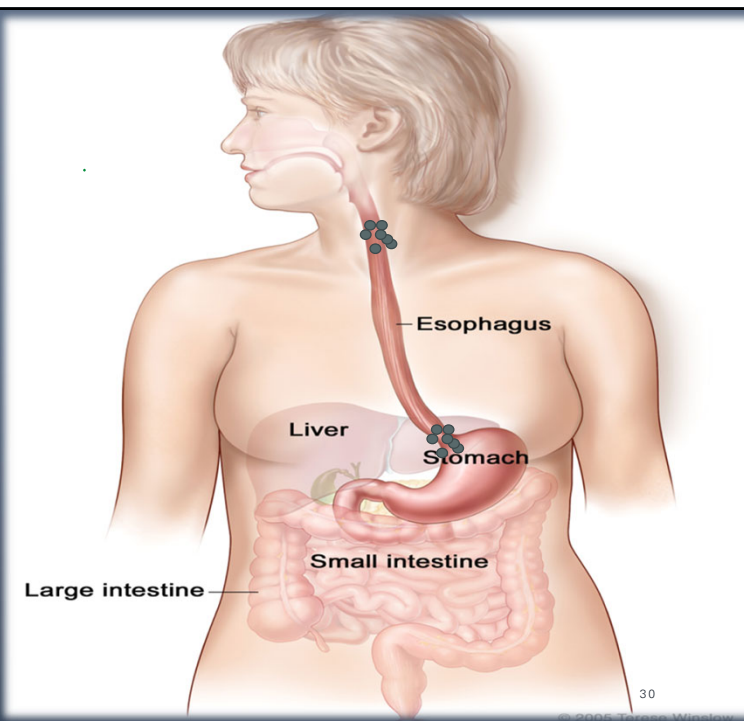
- Lower cervical
- Paratracheal
- Subcarinal
- Thoracic paraesophageal
- Pulmonary ligament
- Diaphragmatic
- Paracardial
- Gastric
- Hepatic

Check AJCC Manual and Summary Stage manual for full list of regional nodes.



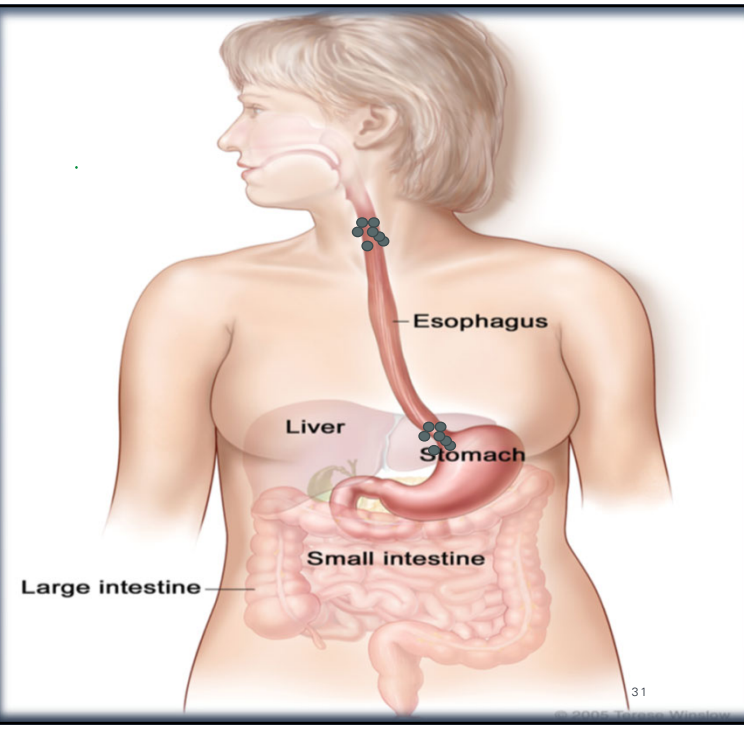
Clinical Work-up

- Endoscopy (Histology, cT, cN, c/pM, Grade, Location)
 - Endoscopic biopsy
 - Endoscopic ultrasound
 - Endoscopic resection (pT)
- Imaging (cN, cM)
 - CT
 - PET/CT
 - MRI (limited use)



Pathologic Workup

- Resection of the primary tumor and regional nodes prior to neoadjuvant treatment
 - Size
 - Location
- Prognosis of patients receiving surgery alone vs those receiving neoadjuvant treatment is different.
 - Stage grouping is different

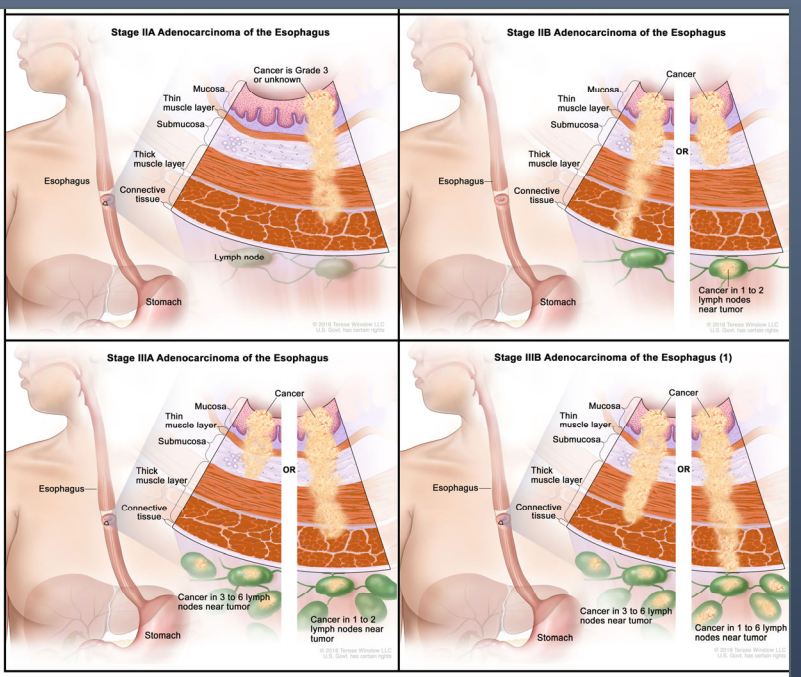


Pathologic Stage Groups

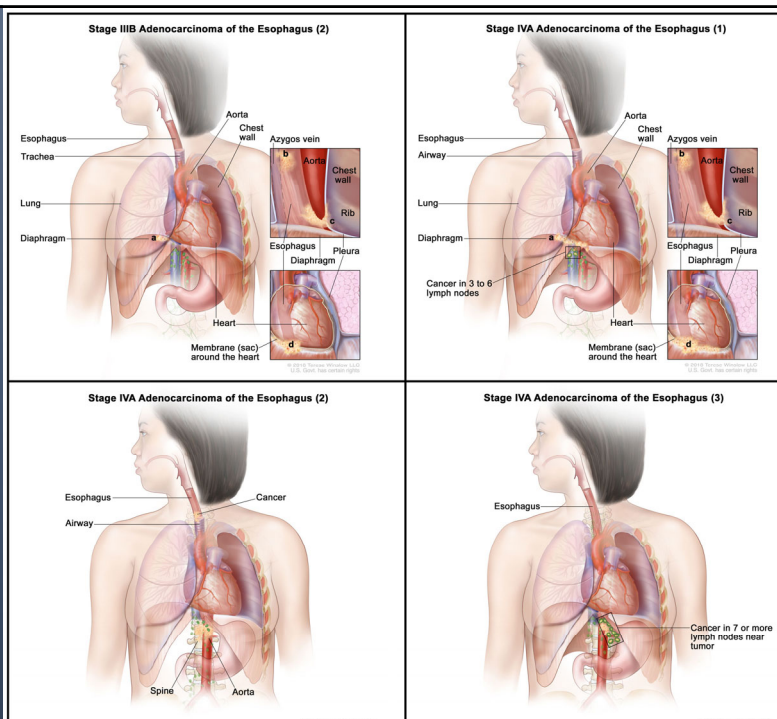
Adenocarcinoma of the Esophagus (13 stages)
For the National Cancer Institute © 2018 Terese Winslow LLC, U.S. Govt. has certain rights

<p>Stage 0 Adenocarcinoma of the Esophagus</p>	<p>Stage IA Adenocarcinoma of the Esophagus</p> <p>Cancer cells are Grade 1 or unknown</p>
<p>Stage IB Adenocarcinoma of the Esophagus</p> <p>Cancer cells are: Grade 1 or 2 or unknown</p>	<p>Stage IC Adenocarcinoma of the Esophagus</p> <p>Cancer cells are: Grade 3 or Grade 1 or 2</p>

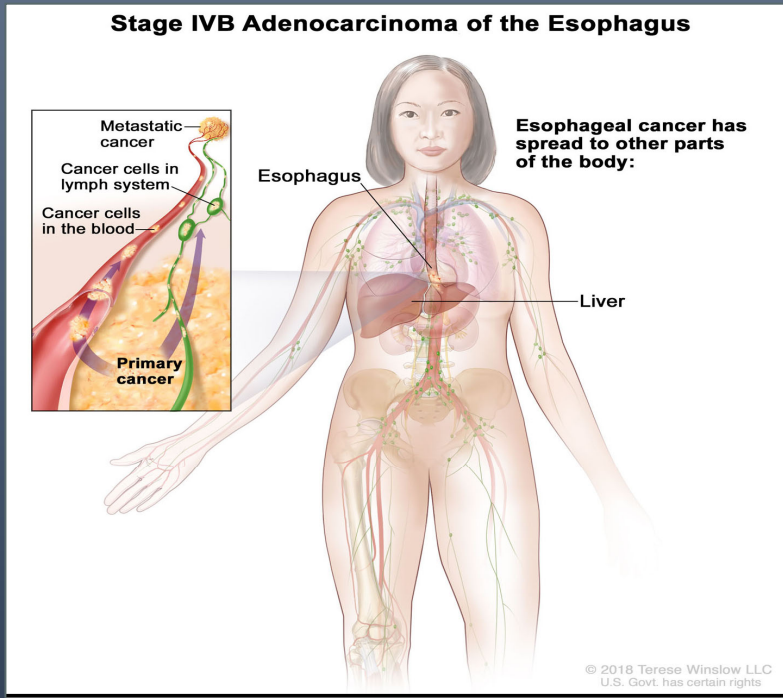
Pathologic Stage Groups



Pathologic Stage Groups



Pathologic Stage Groups



Her 2 Overall Summary

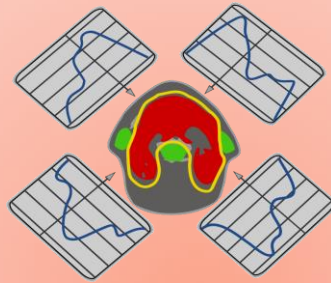
- Note 1: This SSDI is effective for diagnosis years 2021+
 - For cases diagnosed 2018-2020, leave this SSDI blank
- Note 3: HER2 may be recorded for all histologies; however, it is primarily performed for adenocarcinomas

Code	Description
0	HER2 negative; equivocal
1	HER2 positive
7	Test ordered, results not in chart
8	Not applicable: Information not collected for this case (If this item is required by your standard setter, use of code 8 will result in an edit error.)
9	Not documented in medical record Cannot be determined (indeterminate) HER2 Overall Summary status not assessed or unknown if assessed
<BLANK>	N/A - Diagnosis year is prior to 2021

Questions?

37

Case Scenarios



Part 1: EBRT for Management of Esophageal Cancer



Wilson Apollo, MS, CTR

WHA Consulting

NAACCR 2022- Esophageal Cancer

December 1, 2022

WHA Consulting

2

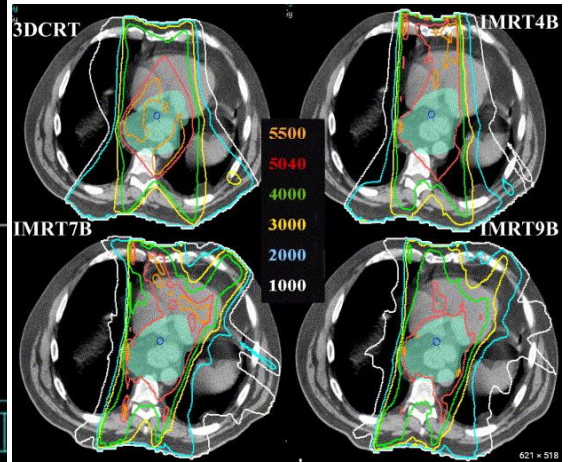
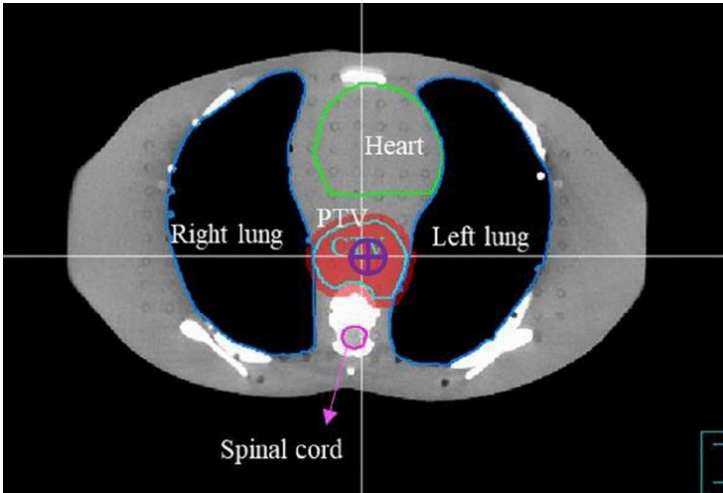
Esophageal Cancer- The picture

Journal of Geriatric Oncology 13 (2022), 1178-1187

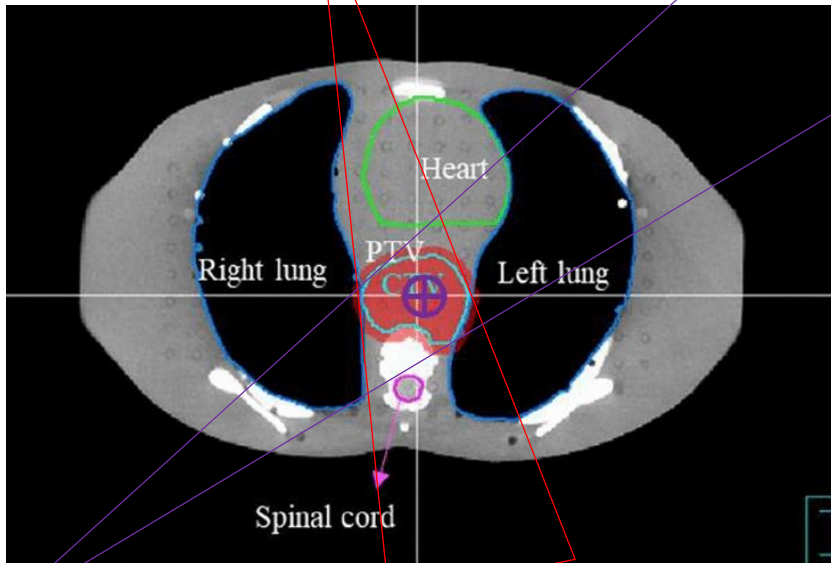


- 5 year survival rate of 20%,
- 15,000 deaths/year in the US,
- Incidence rate of esophageal adenocarcinoma significantly increased,
- Most patients present w/ locally advanced disease @ time of dx,
- **Trimodal therapy** (neoadjuvant chemoradiation, followed by surgery), results in longest survival benefits (~ 47% 5-yr survival rate),
- CROSS randomized trial showed a 24.6 months longer median survival for trimodal therapy vs. surgery alone,
- Definitive chemoradiation also acceptable alternative therapy.

External Beam Radiation Therapy (EBRT) For Management of Esophageal Cancer-The challenges



Photon Beams





Contouring guidelines for IMRT-LNs

Int J Radiation Oncol Biol Phys, Vol. 92, No 4, pp. 911-920, 2015

- **Distal Esophageal** (involving GE Junction[GEJ] or approximate to it):
 - a. CTV extended inferiorly to cover celiac LNs (approximately @ T12 level),
 - b. In upper abdomen, between GEJ & celiac LNs, include para-aortic & gastrohepatic ligament LNs.
- **Tumor above level of carina:**
 - a. Include bilat s'clav nodal basin



Contouring guidelines for IMRT-LNs

Int J Radiation Oncol Biol Phys, Vol. 92, No 4, pp. 911-920, 2015

- **Proximal tumors:** (S'clav LNs already @ risk):
 - a. CTV to encompass mediastinal LNs & periesophageal and prevascular nodes.

Take away: Most CTVs for esophageal cancer will include the regional lymphatics! If not specified in the treatment summary, check with your radiation oncologist or treatment planner to confirm.

Esophageal Cancer- Dose Escalation

Clinical Oncology 34 (2022) e269-e280



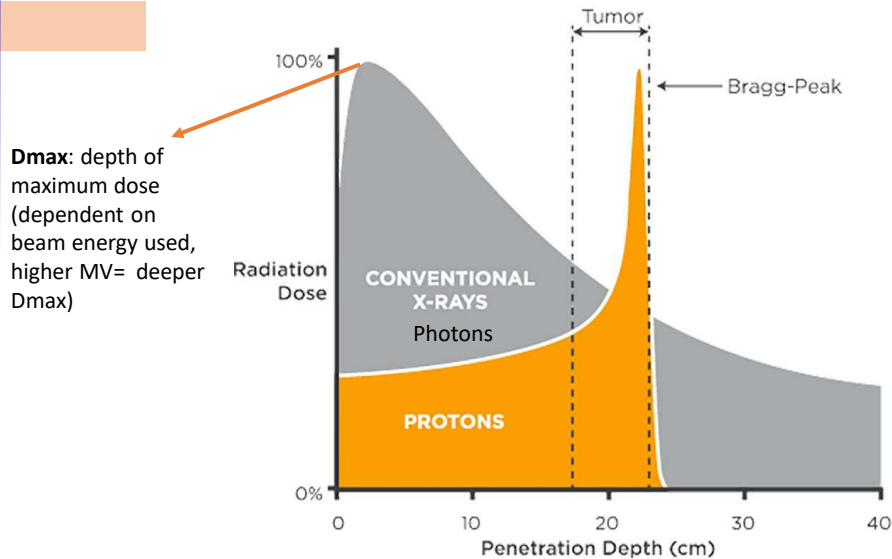
	ART DECO	CONCORDE (PRODIGE 26)	SCOPE 2
Phase	III	II–III	II–III
Histology	SCC and ACA stratified	SCC and ACA stratified	SCC (III) and ACA (II) separated out
Chemotherapy	Carboplatin and paclitaxel Concurrent with radiotherapy weekly (× 6)	Platinum/5-FU 3 cycles concurrent with radiotherapy followed by 3 cycles adjuvant	Platinum/5-FU or Carboplatin and paclitaxel 2 cycles of induction chemotherapy followed by concurrent CRT (PET sensitivity substudy with change of chemotherapy based on response) 50 Gy in 2 Gy fractions
Radiotherapy dose in standard arm	50.4 Gy in 1.8 Gy fractions	40 Gy in 2 Gy fractions ENI and sequential boost 10 Gy in 2 Gy fractions to primary and involved nodes	50 Gy ENI in 2 Gy fractions
Radiotherapy dose in experimental arm	50.4 Gy ENI in 1.8 Gy fractions 61.6 Gy SIB to primary in 2.2 Gy fractions	40 Gy in 2 Gy fractions ENI and sequential boost 26 Gy in 2 Gy fractions to the primary and involved nodes	60 Gy SIB to primary in 2.4 Gy fractions
Maximum length of tumour (if known)	Maximum length of primary tumour 10 cm	Not defined	Maximum length of primary tumour ≤10 cm and total tumour length ≤13 cm

Proton Therapy-Collaborative Group REG001-09 Trial Dosimetry & Acute Toxicity Profile

- Pt underwent proton beam therapy (PBT),
- Delivered dose was 41.4 dose unit Gy-equivalent (GyE),
- 161 pts enrolled,
- 155 pts treated to 41.4 GyE, across 10 institutions between 2010-2019,
- 77% of pts had adenocarcinoma, 34% w/ SCC and 1 pt had adenocarcinoma/neuroendocrine histology, .
- 88% of pts underwent concurrent systemic chemo



Bragg Peak-Proton Therapy



Proton Therapy-Collaborative Group REG001-09 Trial Dosimetry & Acute Toxicity Profile

Treatment-related toxicity:

- Grade 3 toxicities very low, 1-4%,
- GEJ location associated w/ lower rates of toxicities,
- T and N status not associated w/ greater treatment toxicities,
- PBT compares favorably w/ photon-based therapy.

Toxicity	%
Radiation dermatitis	65% (101/155)
Fatigue	60% (93/155)
Nausea	56% (87/155)
Anorexia	43% (66/155)
Esophagitis	40% (62/155)
Dysphagia	29% (45/155)



Proton vs. Photon Beam RT-PROTECT TRIAL

Radiotherapy and Oncology 172 (2022) 32-41



1. Treatment Arms:
 - a. 41.4 Gy in 23 fractions,
 - b. 50.4 Gy in 28 fractions.
2. All plans with following dose constraints for OARs:
 - a. Mean Lung Dose (MLD): <20 Gy
 - b. Spinal Cord Mean Dose: <45 Gy
 - c. Mean Heart Dose: <25 Gy
3. Intra fractional (within a fraction)- and inter fractional (between fractions) changes consideration
 - a. set up errors,
 - b. organ motion,
 - c. displacement of target organ due to inspiration/expiration cycles,
 - d. tumor deformation, shrinkage,
 - e. changes in gastric filling.

Proton vs. Photon Beam RT-PROTECT TRIAL

Radiotherapy and Oncology 172 (2022) 32-41

<https://clinicaltrials.gov/ct2/show/NCT05055648>



Outcome Measures:

- | | |
|--|---|
| a. Pulmonary complications, | h. Cumulative incidence of loco-regional failure, |
| b. Early/late toxicity, | i. Pattern of failure, |
| c. Post-op complications, | j. Disease-free survival (time frame: up to 5 yrs), |
| d. Major cardiovascular events, | k. Overall survival (OS, time frame: up to 5 yrs). |
| e. Pt-reported outcome measures (up to 5 yrs), | |
| f. Compliance w/ trimodal treatment, | |
| g. Pathologic response, | |

Nivolumab in Resected Esophageal or GEJ cancer

N Engl J Med 2021; 384: 1191-1203



- CheckMate 577 randomized double-blind, placebo-controlled phase 3 trial,
- Pt criteria:
 - Adults w/ resected (R0), stage II or III esophageal or GE Junction cancer w/ pathologic residual disease following neoadjuvant chemotherapy.
 - Randomized arm patients w/ Nivolumab for a year
 - 2nd randomized arm w/ placebo
- Results:
 - Median follow-up: 24.4 months,
 - Nivolumab arm median disease-free survival= 22.4 months,
 - Placebo arm median disease-free survival= 11.0 months.

ATTRACTION-4 Phase III International trial

Lancet Oncol 2022; 23:234-47



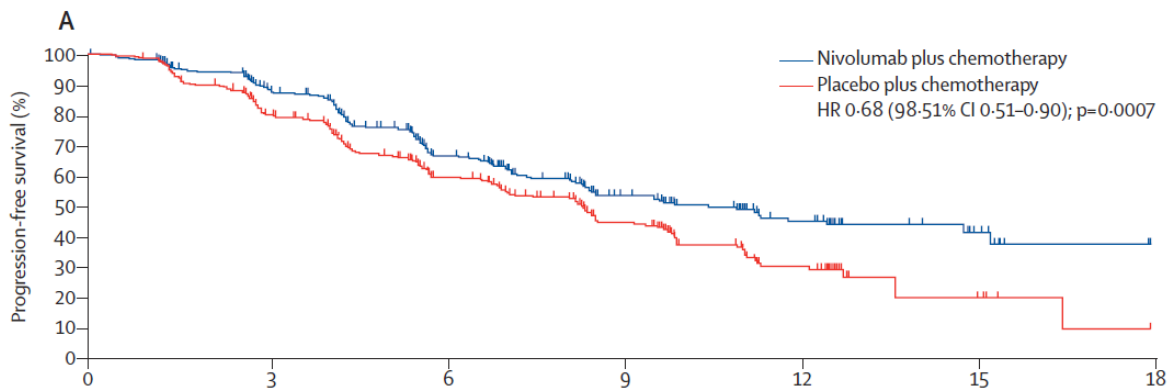
- **Nivolumab** used w/ oxaliplatin-based chemo(n=362) vs. placebo and chemo(n=362),
 - 130 medical centers in Japan, South Korea & Taiwan,
- Eligibility:
- a. pt 20 yrs or older,
 - b. Histologically confirmed unresectable advanced or recurrent gastric or GE junction esophageal cancer,
 - c. Untreated, or previously treated w/ neoadjuvant or adjuvant chemo, completed @ least 180 days before recurrence,
 - d. ECOG performance status of 0 or 1,

ATTRACTION-4 Phase III International trial

Lancet Oncol 2022; 23:234-47



Outcomes:

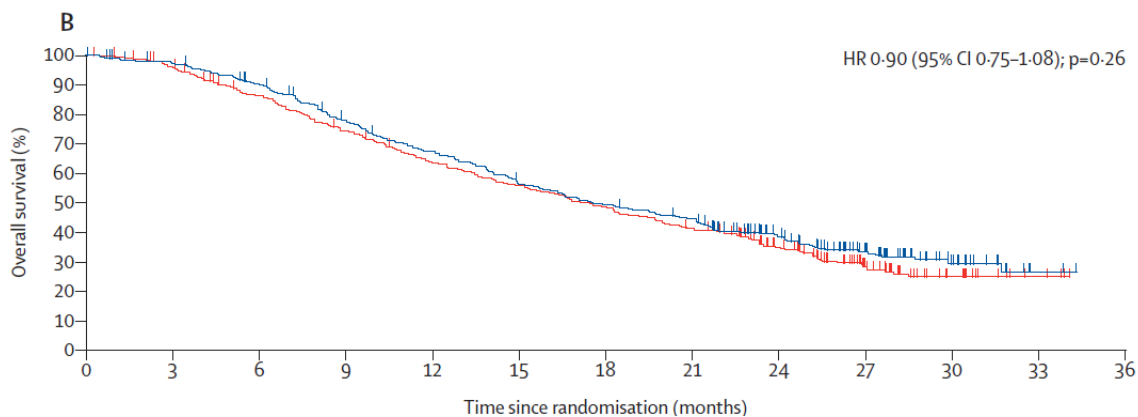


ATTRACTION-4 Phase III International trial

Lancet Oncol 2022; 23:234-47



Outcomes:





CASE SCENARIOS

Case 1

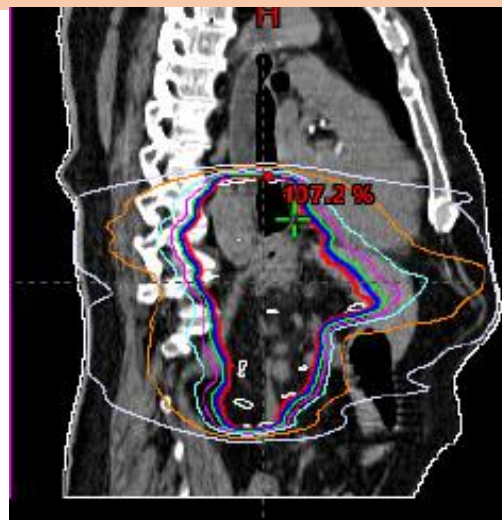
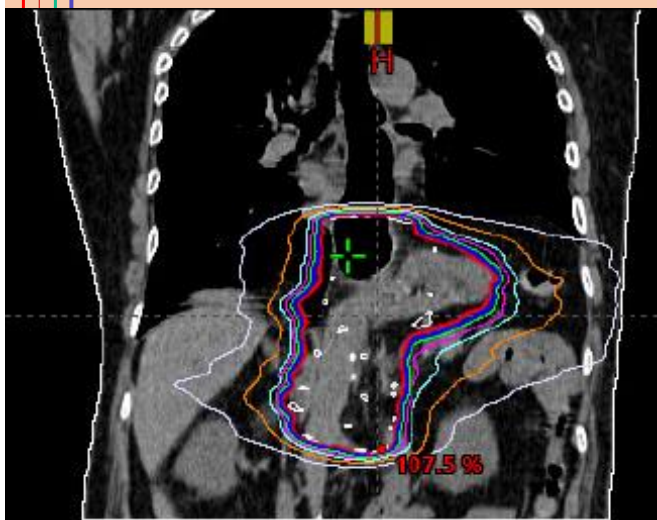


- 64-yr-old male w/ h/o HTN, DMII, who presented w/ cough, GERD. Pt reports dysphagia with solid foods, resulting in regurgitation. Former heavy smoker. Social etoh. +FHX: Sister w/ gastric cancer.
- RT Treatment Summary:

Treatment Site	Ref. ID	Energy	Dose/Fx (cGy)	#Fx	Total Dose (cGy)	Start Date	End Date	Elapsed Days
Esophagus/LN	Esophagus /LN	6X	180	19 / 19	3,420	8/15/2022	9/13/2022	29
Eso/LN_boost	Eso/LN boost	6X	180	9 / 9	1,620	9/15/2022	9/28/2022	13

- The patient was treated to the esophagus using a **IMRT** technique. The patient tolerated treatments quite well, with expected side effects of esophagitis.

Case 1-IMRT plan



Case 1

Seg	#	Field	Code/Definition
Summary	1	Rad/Surg Sequence	2 RT before surgery to primary site
	2	Reason No Rad	0 Radiation was admin..
	3	Location of Rad	1 All RT at this facility
	4	Date RT Started/Flag	0815/2022
	5	Date RT Ended/Flag	09/28/2022
	6	Number of Phases of RT	02
	7	RT Discontinued Early	01 Radiation completed
	8	Total Dose	5040
Phase 1	9	Primary Treatment Volume	50 Esophagus
	10	Rad to Draining LNs	05 Abdominal lymph nodes
	11	Treatment Modality	02 Photons
	12	Planning Technique	05 IMRT
	13	Dose per Fraction	00180
	14	Number of Fractions	019
Phase 2	15	Phase I Total Dose	03420
	16	Primary Treatment Volume	50 Esophagus
	17	Rad to Draining LNs	05 Abdominal lymph nodes
	18	Treatment Modality	02 Photons
	19	Planning Technique	05 IMRT
	20	Dose per Fraction	00180
Phase 3	21	Number of Fractions	009
	22	Phase II Total Dose	01620
	23	Primary Treatment Volume	00
	24	Rad to Draining LNs	
	25	Treatment Modality	
	26	Planning Technique	
	27	Dose per Fraction	
	28	Number of Fractions	
	29	Phase III Total Dose	

Case 1 Rationale:



- **#8:** Note the relatively low total dose used for curative intent for esophageal cancer. Dose escalation has not worked.
- **#10, 17:** RT summary clearly states that regional lymph nodes were included in the treatment volume for both phases,
- **#12, 19:** As per standard of care, expect IMRT plans.



Case 1-Notepad text summary

- 8/15/22-9/28/22 @ ZZZ Hospital: 1. Esophagus/LNs, 6X/IMRT, 1.8 Gy x 19 fx= 34.2 Gy. 2. Boost, Esophagus/LNs, 6X/IMRT, 1.8 Gx x 9 fx= 16.2 Gy. Total dose= 50.4 Gy.



Case 2

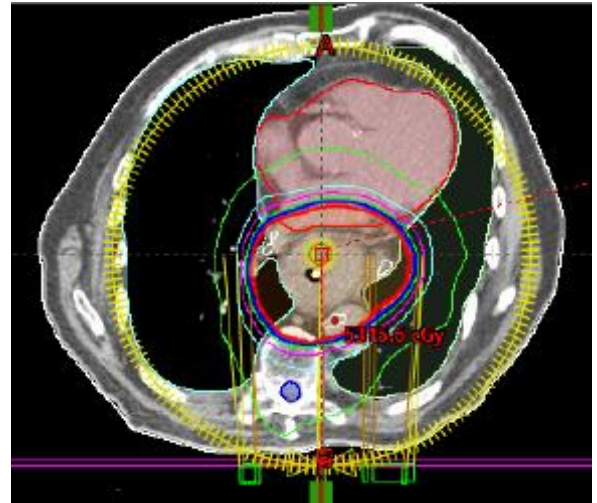
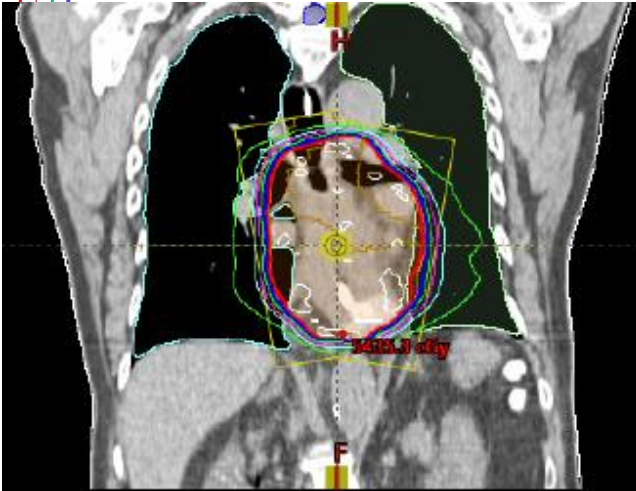
- 74 y/o female with h/o GERD, HTN, HLD, DMII, who presented w/ difficulty with swallowing x 4 weeks. Pt also c/o chest pressure, choking, coughing, epigastric pain and weight loss. Former smoker. Social etoh. +FHX: Father with esophageal cancer.

RT Treatment Summary:

Treatment Site	Energy Technique	Dose/Fx (cGy)	#Fx	Total Dose (cGy)	Start Date	End Date
Plan_Esophagus_PTV_5040	6X/VMAT/IMRT	180	28 / 28	5,040	03/21/2022	04/27/2022



Case 2 IMRT Plan



Case 2

Seg	#	Field	Code/Definition
Summary	1	Rad/Surg Sequence	2 RT before surgery to primary site
	2	Reason No Rad	0 Radiation was admin..
	3	Location of Rad	1 All RT at this facility
	4	Date RT Started/Flag	03/21/2022
	5	Date RT Ended/Flag	04/27/2022
	6	Number of Phases of RT	01
	7	RT Discontinued Early	01 Radiation completed
	8	Total Dose	5040
Phase 1	9	Primary Treatment Volume	50 Esophagus
	10	Rad to Draining LNs	08 Lymph node region, NOS
	11	Treatment Modality	02 Photons
	12	Planning Technique	05 IMRT
	13	Dose per Fraction	00180
	14	Number of Fractions	028
Phase 2	15	Phase I Total Dose	05040
	16	Primary Treatment Volume	00
	17	Rad to Draining LNs	
	18	Treatment Modality	
	19	Planning Technique	
	20	Dose per Fraction	
Phase 3	21	Number of Fractions	
	22	Phase II Total Dose	
	23	Primary Treatment Volume	
	24	Rad to Draining LNs	
	25	Treatment Modality	
	26	Planning Technique	
27	Dose per Fraction		
28	Number of Fractions		
29	Phase III Total Dose		

Case 2 Rationale:

- **#8:** Note the relatively low total dose used for curative intent for esophageal cancer. Dose escalation has not worked.
- **#10:** CTV in planning imaging reveals regional LNs within irradiated volume. Check with treatment planner/rad onc to confirm.
- **#12:** As per standard of care, expect IMRT plans.





Case 2-Notepad text summary

- 3/21/22-4/27/22 @ XXX Hospital: Esophagus/LNs, 6X/IMRT, 1.8 Gy x 28 fx= 50.4 Gy.



Case 3

- 79 yr-old Caucasian male with h/o HTN, HLD, DMII, COPD, significant smoking hx (30 Pk-Yr), who presented with anemia and chest discomfort. Former etoh abuse (sober since 2010). -fhx.
- RT Treatment Summary:

Treatment Site	Energy Technique	Dose/Fx (cGy)	#Fx	Total Dose (cGy)	Start Date	End Date
Plan_Esophagus_PTV_5040	6X/IMRT	180	28 / 28	5,040	07/22/2022	08/30/2022

Case 3

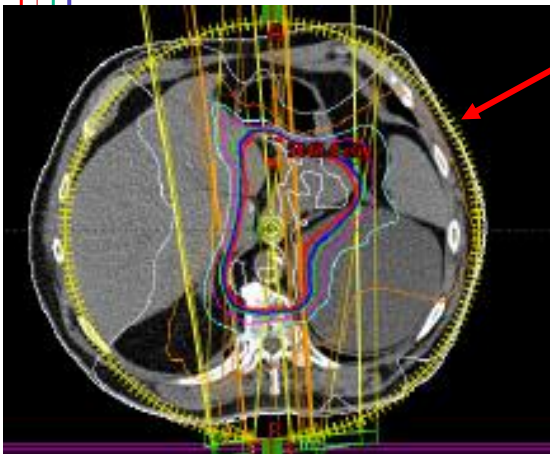
Seg	#	Field	Code/Definition
Summary	1	Rad/Surg Sequence	2 RT before surgery to primary site
	2	Reason No Rad	0 Radiation was admin..
	3	Location of Rad	1 All RT at this facility
	4	Date RT Started/Flag	07/22/2022
	5	Date RT Ended/Flag	08/30/2022
	6	Number of Phases of RT	01
	7	RT Discontinued Early	01 Radiation completed
	8	Total Dose	5040
Phase 1	9	Primary Treatment Volume	50 Esophagus
	10	Rad to Draining LNs	05 Abdominal lymph nodes
	11	Treatment Modality	02 Photons
	12	Planning Technique	05 IMRT
	13	Dose per Fraction	00180
	14	Number of Fractions	028
	15	Phase I Total Dose	05040
Phase 2	16	Primary Treatment Volume	00
	17	Rad to Draining LNs	
	18	Treatment Modality	
	19	Planning Technique	
	20	Dose per Fraction	
	21	Number of Fractions	
	22	Phase II Total Dose	
Phase 3	23	Primary Treatment Volume	
	24	Rad to Draining LNs	
	25	Treatment Modality	
	26	Planning Technique	
	27	Dose per Fraction	
	28	Number of Fractions	
	29	Phase III Total Dose	

Case 3 Rationale:



- **#8:** Note the relatively low total dose used for curative intent for esophageal cancer.
- **#10:** CT simulation imaging confirms LNs inclusion in irradiated volume,
- **#12:** As per standard of care, expect IMRT plans.

Case 3-VMAT



Indicative of rotational therapy. RT summary may refer to it as **VMAT** (Volumetric Modulated Arc Therapy).

When **VMAT** used for treatment esophageal cancer, code to **IMRT-05!**



Case 3-Notepad Text

- 7/22/22-8/30/22 @ XXX Hospital, Esophagus/LNs, 6X/IMRT, 1.8 Gy x 28 fx= 50.4 Gy.



Case 4

45 y/o Caucasian male who presented to his PCP with hoarseness, dysphagia and chest pressure when eating. Patient reports a 15 lb weight loss in past 3 months. Former smoker. Social etoh. +fhx: father w/ prostate cancer at 74.

RT Treatment Summary @ XXX Hospital:

Treatment Site	Energy Technique	Dose/Fx (cGy)	#Fx	Total Dose (cGy)	Start Date	End Date
Plan_Esophagus_PTV_5040	6X/IMRT	180	28 / 28	5,040	04/26/2022	05/02/2022

Case 4

Seg	#	Field	Code/Definition
Summary	1	Rad/Surg Sequence	2 RT before surgery to primary site
	2	Reason No Rad	0 Radiation was admin..
	3	Location of Rad	1 All RT at this facility
	4	Date RT Started/Flag	04/26/2022
	5	Date RT Ended/Flag	05/02/2022
	6	Number of Phases of RT	01
	7	RT Discontinued Early	01 Radiation completed
	8	Total Dose	5040
Phase 1	9	Primary Treatment Volume	50 Esophagus
	10	Rad to Draining LNs	00 No RT to draining LNs
	11	Treatment Modality	02 Photons
	12	Planning Technique	05 IMRT
	13	Dose per Fraction	00180
	14	Number of Fractions	028
	15	Phase I Total Dose	05040
Phase 2	16	Primary Treatment Volume	00
	17	Rad to Draining LNs	
	18	Treatment Modality	
	19	Planning Technique	
	20	Dose per Fraction	
	21	Number of Fractions	
	22	Phase II Total Dose	
Phase 3	23	Primary Treatment Volume	
	24	Rad to Draining LNs	
	25	Treatment Modality	
	26	Planning Technique	
	27	Dose per Fraction	
	28	Number of Fractions	
	29	Phase III Total Dose	



Case 4 Rationale:

- **#8:** Note the relatively low total dose used for curative intent for esophageal cancer.
- **#10:** No indication that lymph nodes were irradiated. Clinically & pathologically N0.
- **#12:** As per standard of care, expect IMRT plans.

Case 4-Notepad Text



4/26/22-5/2/22 @ XXX Hospital: Esophagus, 6X/IMRT,
1.8 Gy x 28 fx= 50.4 Gy.



Esophageal Cancer-RT Summary

- a. Trimodal treatment (ChemoRT + surgery) for resectable cases,
- b. Also chemoRT + immunotherapy for advanced stage,
- c. RT Standard of care is 50.4 Gy in 28 fractions,
- d. Planning technique =IMRT-05,
- e. Vast majority of cases will include the regional lymphatics within the CTV(clinical tumor volume); importance of checking w/ rad onc or treatment planner,
- f. SBRT may be used for stage IV or metastatic dz
- g. Increased role of **nivolumab** & **pembrolizumab** in conjunction with chemo for management of advanced esophageal cancer.

CTR Guide to Coding Radiation Therapy Treatment in the STORE

Version 4.0 February 2022

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Radiation Oncology Working Group





Lily
Alaskan Malamute
3 month-old

Shane
Working Line German Shepherd
18 months old

?

Lily &
Shane



Fabulous Prizes



41

CE Certificate Quiz/Survey

CE Phrase

- Z-line

Link

- <https://survey.alchemer.com/s3/7032783/Esophagus-2022>

Coming UP...

Head and Neck 2023

- Guest Host: Vicki Hawhee, CTR
- 1/12/2023

Data Item Relationships 2023

- Guest Host: Jennifer Ruhl, CTR; Angela Constantini, CTR
- 2/02/2023

Thank you!

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