Guide Lines for the Clinical and Pathologic Studies on Carcinoma of the Esophagus

Japanese Society for Esophageal Diseases

Part I. Clinical Classification

1. Definition of carcinoma of the esophagus

Carcinoma located in the esophagus is defined as "carcinoma of the esophagus" and classified into "primary" (or simply expressed as "carcinoma of the esophagus") and "secondary" or "metastatic" carcinoma of the esophagus.

2. Location of the lesion

For the precise recording of the location of the lesion, the esophagus is divided into the following regions (Fig. 1).

Cervical esophagus (Ce): Region between the esophageal orifice and the upper margin of the sternum.

Upper and middle intra-thoracic esophagus (I): further subdivided into the following two regions.

Upper intra-thoracic esophagus (Iu): Region between the upper margin of the sternum and the tracheal bifurcation.

Middle intra-thoracic esophagus (Im): Proximal one half of the esophagus between the tracheal bifurcation and the esophagogastric junction.

Lower intra-thoracic and abdominal esophagus (E): further subdivided into the following two regions.

Lower intra-thoracic esophagus (Ei): Intra-thoracic region of distal one half of the esophagus between the tracheal bifurcation and the esophagogastric junction.

Abdominal esophagus (Ea): Intra-abdominal region of the esophagus.

Note 1: The regions defined in this Guide Lines are related to the previous "TNM Classification of the Oesophagus (1973)", where

Ce: 1. Cervical oesophagus
I : 2. Intra-thoracic oesophagus (excluding region 3)
E : 3. Lower oesophagus

Thus "I" is not applied to the whole length of the intra-thoracic esophagus and the lower thoracic esophagus (Ei) is excluded.

Note 2: Ph and C are abbreviation of hypopharynx and the cardia of the stomach, respectively.

Note 3: Tumors with their proximal and distal extensions limited within E and C regions

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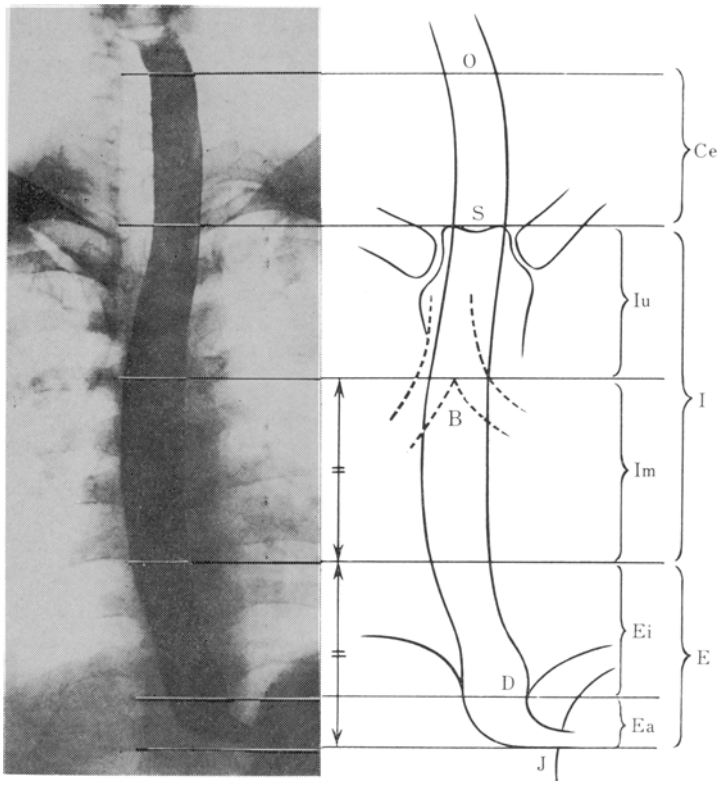


Fig. 1. Location of the lesion
O: esophageal orifice S: upper margin of sternum B: tracheal bifurcation
D: diaphragm J: esophagogastric junction

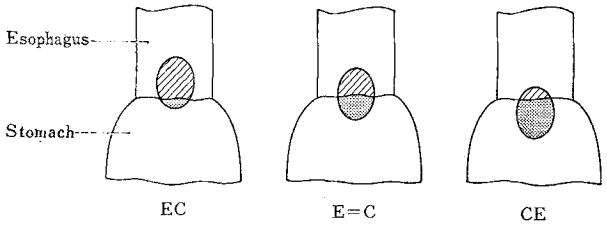
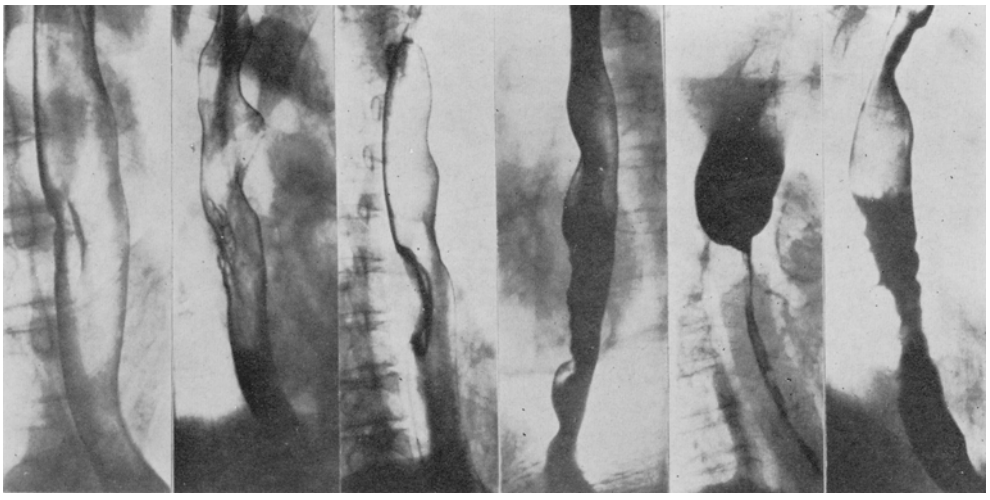


Fig. 2. Carcinoma of the esophagogastric junction

are referred to as "carcinoma of the esophagogastric junction". These lesions are also recorded according to the criteria mentioned above, while the following description (Fig. 2) may also be used.

3. Radiologic and endoscopic classification
   1) Radiologic findings
      a) Location of the lesion: Refer to Fig. 1.
      b) Horizontal location: Anterior, posterior, left lateral, right lateral, circumferential, etc.
      c) Vertical extension: Record the length from the proximal to the distal end of



Superficial elevated | Superficial depressed | Tumorous | Serrated | Funnelled | Spiral

Fig. 3. Radiologic types

the lesion.

d) Types (Fig. 3): i) Superficial ii) Tumorous iii) Serrated iv) Funnelled v) Spiral vi) Unclassified

e) Margin: i) Well-defined ii) Ill-defined

2) Endoscopic findings

a) Distance: The distance from the upper incisors to the lesion.

b) Horizontal location: The clockwise expressions such as 1–5 o'clock is used, in which the apex of the nose is taken as the 12 o'clock position on the circumference of the esophagus.

c) Types: i) Superficial ii) Elevated iii) Depressed iv) Stenotic v) Unclassified

d) Margin: i) Well-defined ii) Ill-defined

e) The other findings such as color, bleeding from the lesion and the feasibility of the passage with endoscope beyond the lesion must be recorded.

4. Number of patients

1) Total number of out-patients with carcinoma of the esophagus

2) Total number of patients admitted

3) Total number of patients treated operatively

All operative procedures employed for carcinoma of the esophagus should be included. As a rule, only primary cases are registered and reoperative cases are excluded.

4) Total number of patients treated nonsurgically

5. Number of operations, operability rate and resectability rate

1) Number and rate of operations

Operations are classified as follows. In each case the number and rate are described. The denominator is total number of patients seen.

a) Resection: As to the operative methods, refer to paragraph 10.

b) Stomies: Esophagostomy, gastrostomy, jejunostomy, etc.
c) Anastomoses: By-pass operation, etc.
d) Exploratory thoracotomy or laparotomy
e) Others: Esophageal indwelling tube, etc.

2) Resectability rate
a) Resectability rate of cases in out-patient clinic:

$$\frac{\text{Number of resection}}{\text{Number of cases in out-patient clinic}} \times 100$$

b) Resectability rate of cases admitted:

$$\frac{\text{Number of resection}}{\text{Number of cases admitted}} \times 100$$

c) Resectability rate of operated cases:

$$\frac{\text{Number of resection}}{\text{Number of cases operated on}} \times 100$$

6. Operative findings
1) Location of the lesion
2) Invasion to the adventitia
A_0: No invasion is noted.
A_1: Possible or doubtful invasion.
A_2: Definite invasion.
A_3: Invasion into the neighboring structures.

Note 1: Histologic depth of invasion is described as follows.
a_0: No invasion.
a_1: Invasion reaching the adventitia.
a_2: Definite invasion.
a_3: Invasion into the neighboring structures.

3) Degree of lymph node metastasis (Table 1., Fig. 4., Table 2.)
N-number represents lymph node group. Presence or absence of metastasis is described as (+) or (−).
N (−): No metastasis.
$N_1(+)$: Metastasis to group 1.
$N_2(+)$: Metastasis to group 2.
$N_3(+)$: Metastasis to group 3.
$N_4(+)$: Metastatic node beyond group 3.
Absence of lymph node metastasis in the above group is described as $N_1(-)$, $N_2(-)$, $N_3(-)$ and $N_4(-)$.

Note 1: Descriptions by histologic examination are expressed using n, for instance, $n(-)$, $n_1(+)$, $n_2(+)$, $n_3(+)$ and $n_4(+)$ using the same criteria as gross findings.
Note 2: When the lesion is located in more than one area, all lymph node groups related to all the involved regions should be considered.
Note 3: In case of $N_1(+)$ and $N_2(+)$, its description should be $N_2(+)$.
Note 4: Names of lymph node between 1 and 16 are quoted from "The General Rules for the Gastric Cancer Study in Surgery and Pathology"*.

4) Organ metastasis
M_0: No organ metastasis is noted.
M_1: Organ metastasis positive.

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Table 1. Lymph nodes for surgical dissection

No.	Lymph nodes	No.	Lymph nodes
100	Lateral cervical lymph nodes	1	Right cardiac lymph nodes
101	Cervical paraesophageal lymph nodes	2	Left cardiac lymph nodes
102	Deep cervical lymph nodes	3	Lesser curvature lymph nodes
103	Retropharyngeal lymph nodes	4	Greater curvature lymph nodes
104	Supraclavicular lymph nodes	5	Suprapyloric lymph nodes
105	Upper thoracic paraesophageal lymph nodes	6	Subpyloric lymph nodes
		7	Left gastric artery lymph nodes
106	Thoracic paratracheal lymph nodes	8	Common hepatic artery lymph nodes
107	Bifurcation lymph nodes	9	Celiac artery lymph nodes
108	Middle thoracic paraesophageal lymph nodes		(lymph nodes at the root of left gastric artery)
109	Pulmonal hilar lymph nodes		(lymph nodes at the root of common hepatic artery)
110	Lower thoracic paraesophageal lymph nodes		(lymph nodes at the root of splenic artery)
111	Diaphragmatic lymph nodes	10	Splenic hilar lymph nodes
112	Posterior mediastinal lymph nodes	11	Splenic artery lymph nodes
		12	Hepatoduodenal ligament lymph nodes
		13	Retropancreatic lymph nodes
		14	Mesentric lymph nodes
		15	Middle colic artery lymph nodes
		16	Paraaortic lymph nodes (abdominal)

Table 2. Classification of lymph nodes for surgical dissection

Location	Group			
	Group 1 (N_1)	Group 2 (N_2)	Group 3 (N_3)	Group 4 (N_4)
Cervical (Ce)	101	102, 104	100, 103, 105, 106, 107, 108	Beyond group 3
Upper intra-thoracic (Iu)	105	106, 107, 108, 112	101, 110, 111, 1,2, (104), (109)	Beyond group 3
Middle intra-thoracic (Im)	108	105, 106, 107, 110, 111, 112, 1, 2	3, 7, (104), (109)	Beyond group 3
Lower intra-thoracic (Ei)	110	108, 111, 112, 1, 2, 3, 7	105, 106, 107, (109)	Beyond group 3
Abdominal (Ea)	1, 2	110, 111, 3, 7, 9, (10), (11)	108, 5, 8, (112), (4)	Beyond group 3
Cardia of the stomach (C)	1, 2, 3, 4	7, 8, 9, 10, 11, (5), (6)	12, 13, 14, (110), (111)	Beyond group 3

Note 1: Lymph nodes number in the bracket are not necessarily to be dissected.
Note 2: The classification of lymph nodes for carcinoma of the esophagogastric junction is made by the following the table below.

Esophagogastric junction (EC, E=C, CE)	1, 2, 3	7, 9, 10, 11, (110), (111), (4)	108, 5, 6, 8, (112), (12), (13), (14)	Beyond group 3

5) Pleural dissemination
   Pl_0: No pleural dissemination is noted.
   Pl_1: Pleural dissemination positive.

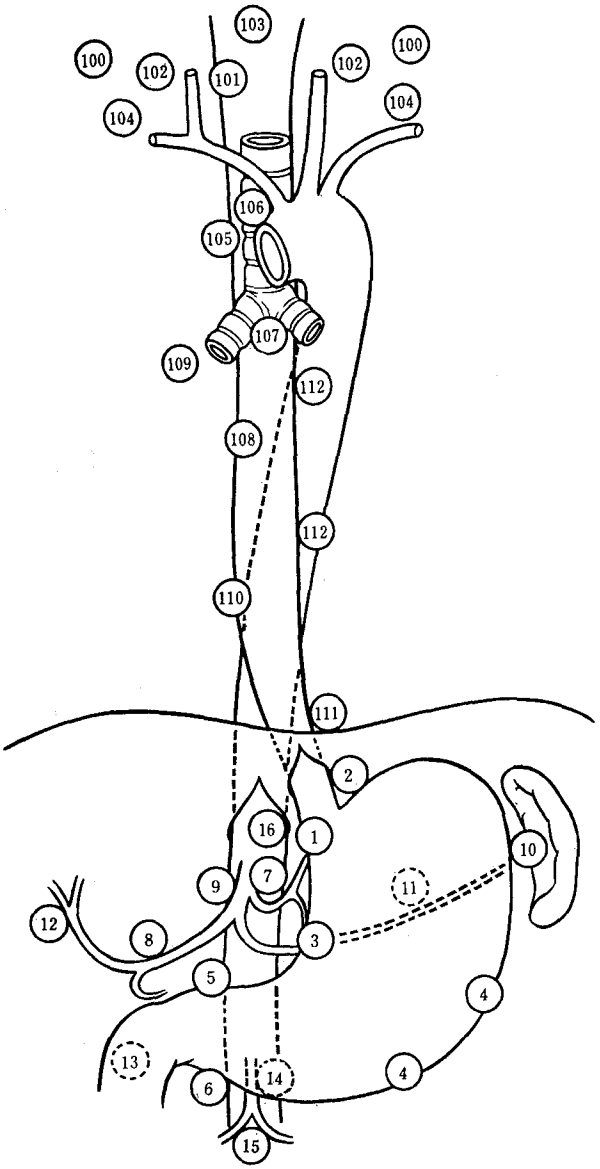

Fig. 4. Lymph nodes for surgical dissection

7. Stage

1) Gross stage

Gross staging of carcinoma of the esophagus is made into four stages as determined by the most advanced part of the lesion including and metastasis at operation.

Stage (St)	Invasion to adventitia	Lymph node metastasis	Organ metastasis	Pleural dissemination
I	A_0	N (−)	M_0	Pl_0

II	A_1	$N_1(+)$	M_0	Pl_0
III	A_2	$N_2(+)$	M_0	Pl_0
IV	A_3	$N_3(+)N_4(+)$	M_1	Pl_1

2) Histologic stage

Histologic stage is determined by histologic findings of the specimens as well as the gross stage. Histologic stage is classified into five degrees.

stage (st)	Invasion to adventitia	Lymph node metastasis	Organ metastasis	Pleural dissemination
0	m, sm	n (−)	$M_0(m_0)$	$Pl_0(pl_0)$
I	mp	n (−)	$M_0(m_0)$	$Pl_0(pl_0)$
II	a_1	$n_1(+)$	$M_0(m_0)$	$Pl_0(pl_0)$
III	a_2	$n_2(+)$	$M_0(m_0)$	$Pl_0(pl_0)$
IV	a_3	$n_3(+)n_4(+)$	$M_1(m_1)$	$Pl_1(pl_1)$

Note 1: A stage 0 carcinoma is also called early carcinoma of the esophagus. Furthermore, for diagnostic purposes a definition of superficial carcinoma of the esophagus is also laid down. Superficial carcinoma is the one which is located in or beneath the submucosal layer without regard to the presence or the absence of lymph node metastasis.

8. Resectability

Gross resectability is divided into four degrees according to the extent of the excision of the lesion and lymph node dissection.

Resectability (R)	Resection of the lesion	Lymph node dissection
0	Incomplete resection	Not applicable
I	Complete resection	Dissect to N_1
II	Complete resection	Dissect to N_2
III	Complete resection	Dissect to N_3

Note 1: Histologic resectability is based upon the histologic examination of the resected specimens.

Note 2: The cases with gross carcinomatous infiltration noted at or within 10 mm from the lines of resection are expressed grossly as P(+) for proximal and D(+) for distal line of resection. Similarly, those with positive carcinoma cells noted histologically at or within 5 mm from the lines of resection are expressed as p(+) for proximal and d(+) for distal line of resection.

9. Curability

Curability is the expected cure rate for the carcinoma to be deduced from the combination of stage and resectability classification and is divided into four degrees (Fig. 5).

C III(absolute curative resection): This category C III includes those with combinations of resectability number R III, R II, R I and Stage number St 0, St I, St II, St-III where each positive lymph node N-number is less than resectability R-number, and in St IV cases with M_0 and Pl_0 N-number plus one is less than R-number.

C II(relative curative resection): Likewise, the category C II includes the cases with combinations of resectability number R III, R II, R I and Stage number St 0, St I, St II, St III where N-number equals R-number, and in Stage IV cases with M_0 and Pl_0 N-number plus one equals R-number.

C I (relative non-curative resection): The category C I is adopted in cases with curability number other than C III and C II where possible complete resection of the carcinomatous lesion is obtained.

C 0 (absolute non-curative resection): The category C 0 is obtained in cases with a

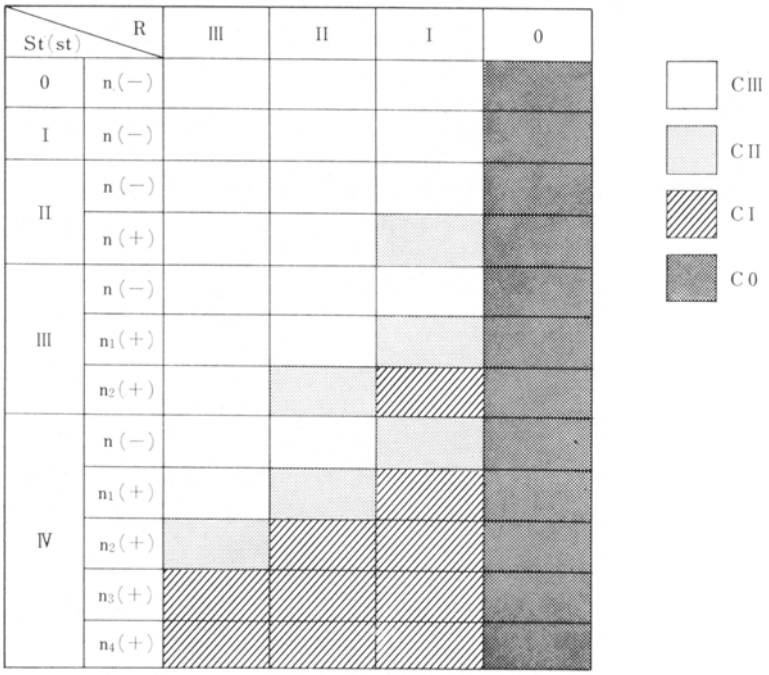

Fig. 5. Curability

part of carcinomatous lesion apparently left in situ.

Note 1: In general the above mentioned curability number C III and C II mean so-called curative resection. C I and C 0 are called noncurative resection.

Note 2: Curability obtained from histologic examination is called histologic curability and the use of this terminology is preferable to gross curability.

Note 3: In cases where histologic examination revealed carcinomatous invasion limited to m or sm of the esophagus with incomplete lymph node dissection but with complete resection of the carcinomatous lesion giving a resectability number of R 0, expected cure rate may permit the use of curability number C II.

Note 4: Some cases of curability number C I appeared in the nomogram may come down to curability C 0.

10. Operative methods

1) Approaches to carcinomatous lesion

Trans-cervical, trans-thoracic, trans-abdominal and trans-extrapleural, etc.

2) Extent of the resection

Describe the sites of resection shown in the location of the lesion (Fig. 1).

3) Reconstruction

a) Routes: ante-thoracic, retro-sternal, intra-thoracic and posterior mediastinal, etc.

b) Site of anastomosis: cervical, ante-thoracic, intra-thoracic, intra-abdominal and extra-pleural, etc.

c) Organs for substitution: stomach, jejunum, colon, skin tube and artificial esophagus, etc.

11. Operative results (number and rate of mortality)
    1) Direct operative death

    Operated case dying within thirty postoperative days is a direct operative death regardless of whether the patient dies in hospital or at home.

    a) Direct operative mortality rate:

$$\frac{\text{Number of direct operative deaths}}{\text{Number of total operated cases}} \times 100$$

    b) Direct resection mortality rate:

$$\frac{\text{Number of direct resection deaths}}{\text{Number of total resection cases}} \times 100$$

    c) Direct reconstruction mortality rate:

$$\frac{\text{Number of direct reconstruction deaths}}{\text{Number of total reconstruction cases}} \times 100$$

    2) Postoperative hospital death

    Describe numbers and rate of mortality occurred during the hospitalization. The denominator is the number of total operated cases during the hospitalization.

12. End results and prognosis
    1) Number and rate of mortality in end results

    Describe numbers and rate of mortality in the operative survivors without regard to whether patient died in the hospital or at home. The denominator is the total number of the operative survivors.

    a) Numbers and rate of death due to carcinoma
    b) Numbers and rate of death due to other than carcinoma
    c) Numbers and rate of death due to undetermined causes
    d) Numbers and rate of cases untraced or lost in the follow-up study

    2) Survival rate
    a) Operative survival rate:

$$\frac{\text{Number of survivors}}{\text{Number of total operated cases}} \times 100$$

    b) Resection survival rate:

$$\frac{\text{Number of survivors}}{\text{Number of total resection cases}} \times 100$$

    c) Resection endured survival rate:

$$\frac{\text{Number of survivors}}{\text{Number of total resection endured cases}} \times 100$$

    d) Known resection endured survival rate:

$$\frac{\text{Number of survivors}}{\text{Number of total known resection endured cases}} \times 100$$

13. Combined treatments
    1) Preoperative radiotherapy

    When preoperative radiotherapy is administered, the following items should be described.

    a) Method of radiation: source, technique, size, single tumor dose, total tumor dose, dose-time relation and waiting period, etc.
    b) Postradiation findings: findings Character "R" of radiation should be put at the head of each of the expression for X-ray, endoscopic, gross and histologic findings.

2) Preoperative chemotherapy

Agents, doses modes and period of administration and waiting period (from the final administration of chemotherapy to the operation), etc. Character "Ch" should be put at the head of each expression.

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