위점막하 종양의 최신 치료 경향

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소화기 내과
차재황

CASE 1

- 44/M
- Admission via ER
- C.C : Melena, Dizziness D:2days
- Hb: 13.2g/dl

PATHOLOGICAL DIAGNOSIS
Stomach, fundus, anterior wall, laparoscopic wedge resection:

Gastrointestinal stromal tumor

1) Tumor size: 4.8x3.9cm
2) Mitotic count: >10/50HPF
3) Stage pT2 by AJCC
   (Tumor more than 2cm but not more than 5cm)
4) High risk group by modified NIH proposal

(Immunohistochemical stain)

Block C	CD117, C-Kit	Positive
Block C	DOG-1	Positive
Block C	Smooth muscle actin	Very focal positive
Block C	S-100 protein	Negative
Block C	Ki-67	(+, 15%)

CASE 2

- 32/F
- C.C: 검진 내시경 Poly Bx.

-> R/O NET, R/O Adenocarcinoma, PD

Hb: 10.1 g/dl

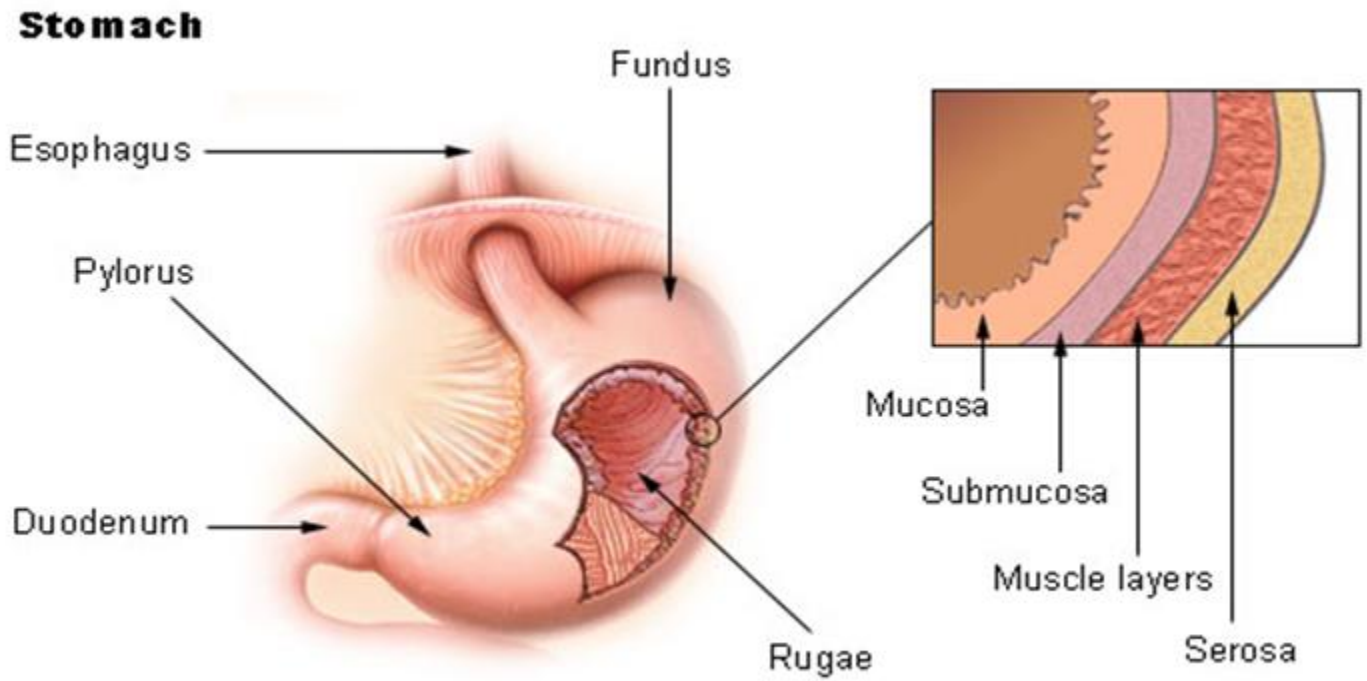
Stomach, upper body, greater curvature, polypectomy:
Neuroendocrine tumor, G1
with 1) Tumor size: 0.2cm in diameter
2) Extent ot tumor: mucosa
3) Mitoses: <1/2mm² (See note)
4) Ki-67 labelling index: <1%
5) Lymphatic invasion: not identified
6) Venous invasion: not identified
7) Perineural invasion: not identified
6) Resection margin: free from tumor

Stomach, lower body, greater curvature~anterior wall,
endoscopic mucosal resection:
Neuroendocrine tumor, G1
with 1) Tumor size: 0.3x0.2cm
2) Extent ot tumor: from mucosa to submucosa
3) Mitoses: <1/2mm²
4) Ki-67 labelling index: <1%
5) Lymphatic invasion: not identified
6) Venous invasion: not identified
7) Perineural invasion: not identified
6) Resection margin: free from tumor

Stomach, mid body, greater curvature~posterior wall,
endoscopic submucosal dissection:
Neuroendocrine tumor, G1
with 1) Tumor size: 0.3x0.2cm
2) Extent ot tumor: from mucosa to submucosa
3) Mitoses: <1/2mm²
4) Ki-67 labelling index: <1%
5) Lymphatic invasion: not identified
6) Venous invasion: not identified
7) Perineural invasion: not identified
6) Resection margin: free from tumor

1	Gastrin	▲	> 1000.00	pg/mL	0-90	SERUM

Subepithelial tumor



Definition

- **SMT SET Subepithelial tumor (SET)**

- Mass lesion appearing as mass, bulge, or impression covered with normal appearing overlying mucosa
- Included both those of intramural or extramural origin

- Mass can arise from outside the wall or from layers other than the submucosa.

→ The term subepithelial is favored than submucosal

Epidemiology

- **Prevalence in upper GI endoscopy: 0.36%**
- - 8-year data, retrospective study
- - 54 out of endoscopy

- Equal frequency in both sexes
- Generally after the fifth decade

Korean J Gastroenterol. 2015 Nov;66(5):274-6.

Clinical Features

- **Majority of SET**
- Asymptomatic
- Discovered incidentally during endoscopy

- **Large SET**
- May outgrow their blood supply → ulcerate the mucosa → present with upper GI bleeding

- **Firm SET Asymptomatic**
- Can cause obstructive Sx: GE junction or pylorus
- Jaundice and pancreatitis: papilla

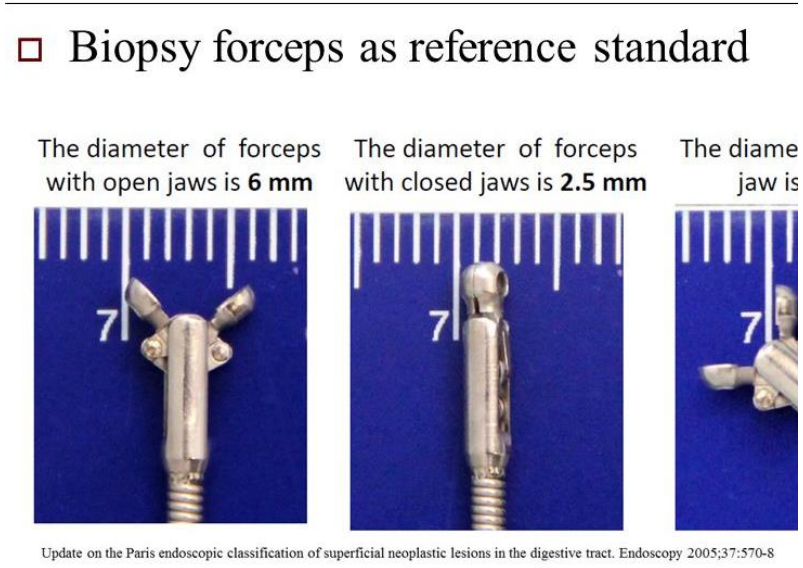
Surg Endosc 1991;5:20-23
J Gastroenterol Hepatol 2008;23:

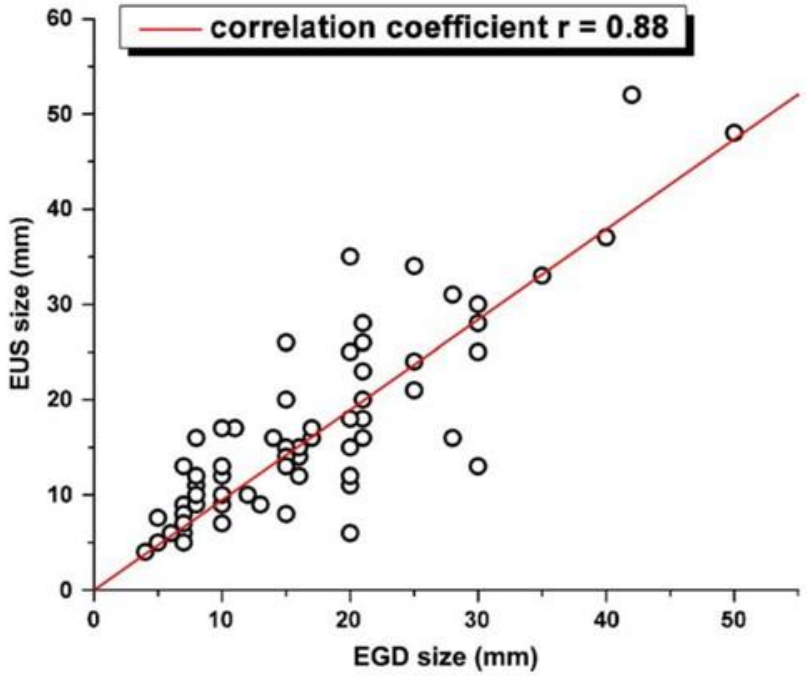
Diagnostic Tools

- Endoscopy
- EUS
- CT
- Histologic Diagnosis
- Cytology
- Histology
- Immunohistochemistry
- Surgical specimen

Endoscopy

- **Size estimation**
  - Open biopsy forceps, endoscopic scales, Shaft of endoscopy





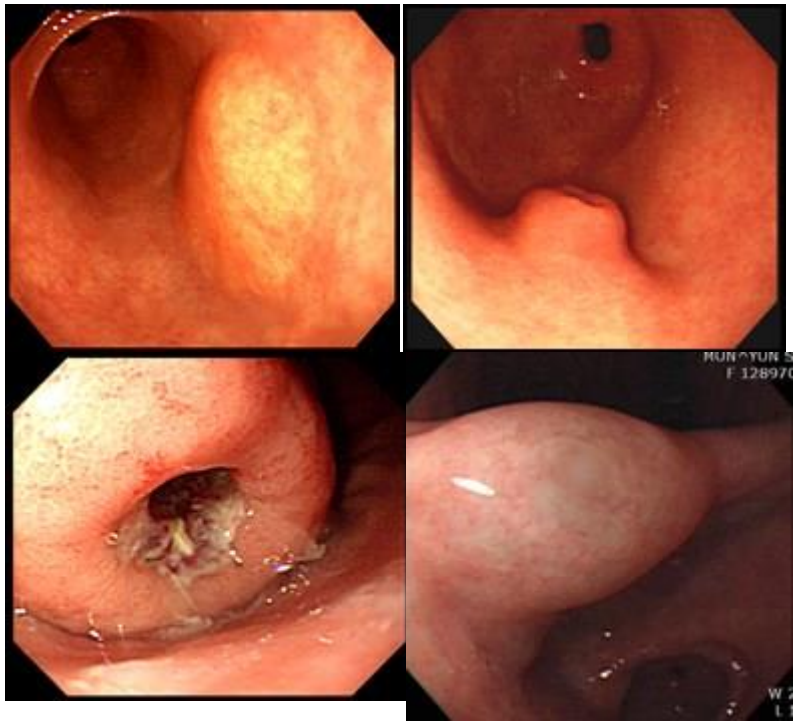
Endoscopy

- **Intramural vs Extramural**
  - Suboptimal in identifying the origin
  - Overall accuracy of 89% (sensitivity 98%, specificity 68%)

- **Consistency & mobility**
  - Rolling sign – 병변이 Muscularis mucosa 및 그 아래층에 존재함.
  - Cushion sign – 병변 내에 공기, 액체, 지방 성분이 있음을 의미.

- **Type of SET**
  - Lipoma (yellowish, pillow or cushion sign)
  - Ectopic pancreas (antrum, umbilication)

- **Mucosal biopsies**
  - To confirm that the mucosa is histologically normal
  - Carcinoid tumor

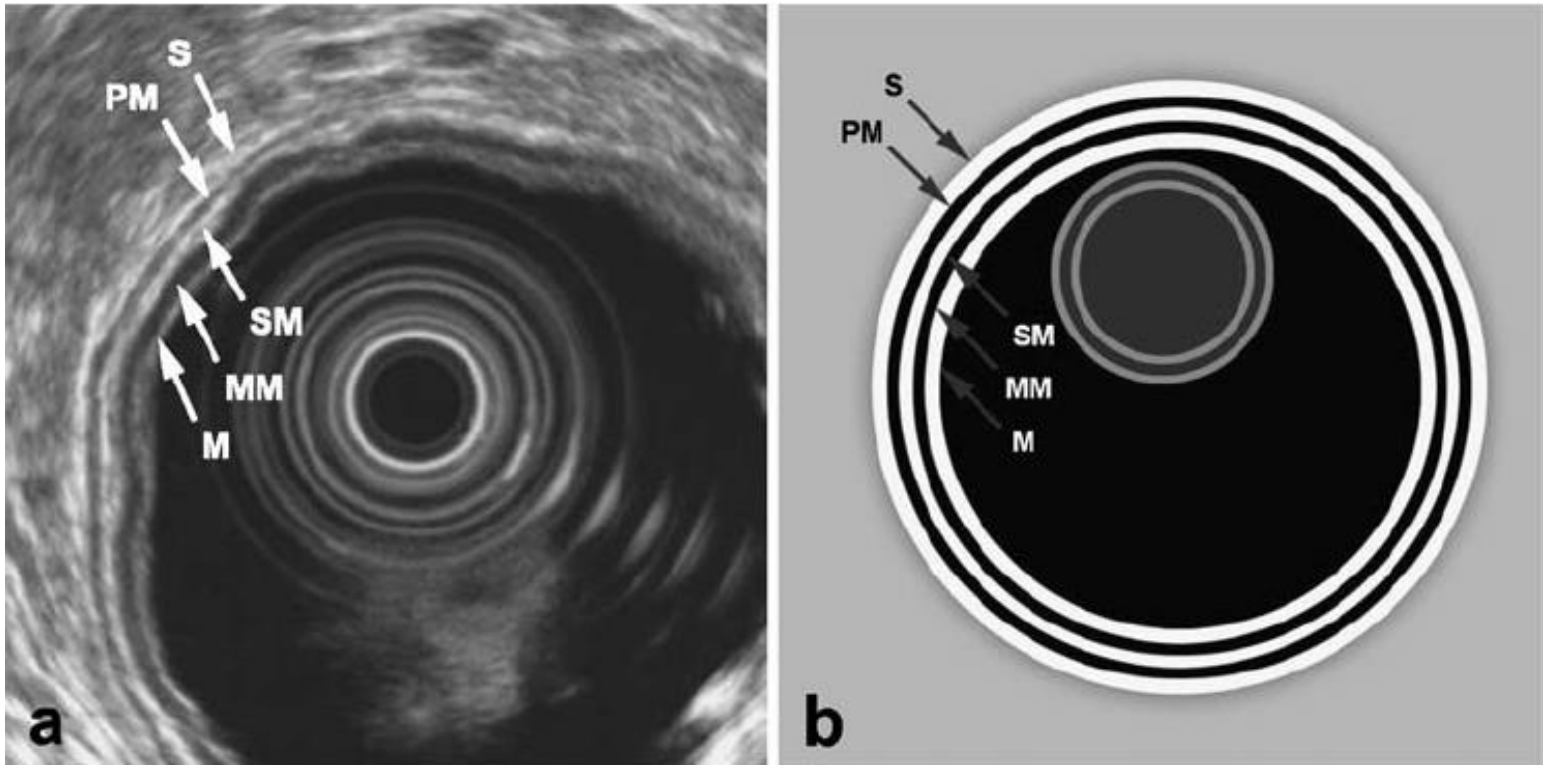


EUS

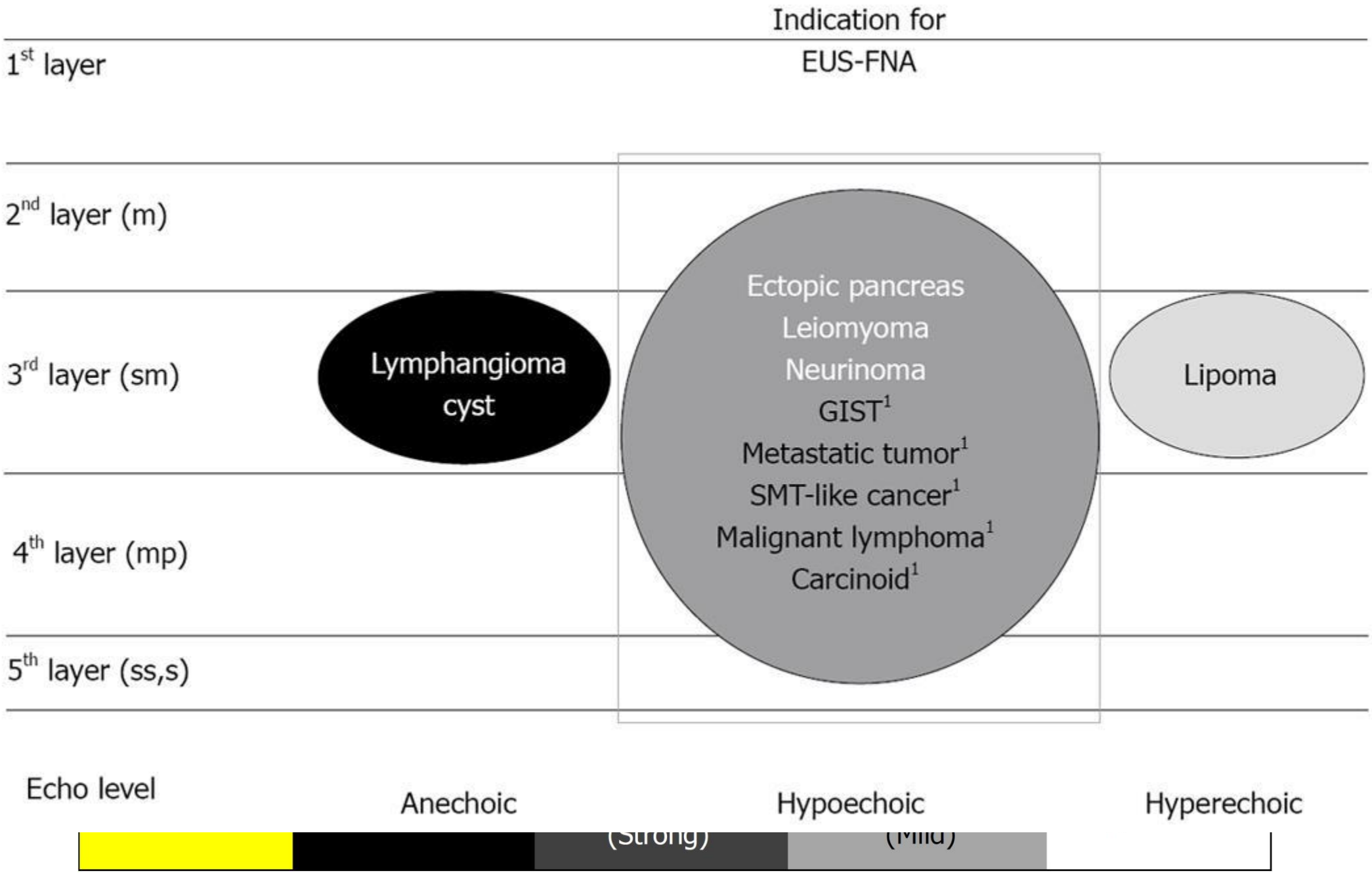
- **Most accurate method for characterizing SET**
- Reliably distinguish intra- vs extramural
- Large lesions which extend beyond the penetration depth of the ultrasound cannot be accurately measured.
- High accurate in predicting the size

(compared to the surgical pathology)

Normal five-layered wall structure



1st mucosa
2st muscularis mucosa
3rd submucosa (SM)
4th muscularis propria (MP)
5th Serosa



World J Gastroenterol 2018; 24(26): 2806-2817

Extrinsic compression (esophagus)

- Normal organ and structure
  - Upper/lower esophageal sphincter
  - Vascular structure; aortic arch, heart
  - Left main bronchus – UI 27cm
  - Vertebra
- Pathologic lesion
  - Aneurysm
  - Vascular abnormalities
  - Left atrial dilatation
  - Mediastinal LAP/tumor
  - Lung cancer
  - Lymphoma

Kommerell's diverticulum

대한소화기내시경학회지 2008;36:78-82

점막하 종양으로 오인된 우측 대동맥궁과 동반된 Kommerell 게실에 의한 식도압박 1예

고려대학교 의과대학 내과학교실, 소화기연구소

조영직 · 금보라 · 김연호 · 공 휘 · 김진남 · 김용식
진윤태 · 전훈재 · 엄순호 · 김창덕 · 류호상 · 현진해

A Case of Esophageal Compression by a Right-sided Aortic Arch and Kommerell's Diverticulum Mimicking an Esophageal Submucosal Tumor

Young Jig Cho, M.D., **Bora Keum**, M.D., **Youn Ho Kim**, M.D., **Hwi Kong**, M.D., **Jin Nam Kim**, M.D., **Yong Sik Kim**, M.D., **Yoon Tae Jeen**, M.D., **Hoon Jai Chun**, M.D., **Soon Ho Um**, M.D., **Chang Duck Kim**, M.D., **Ho Sang Rhu**, M.D. and **Jin Hai Hyun**, M.D.

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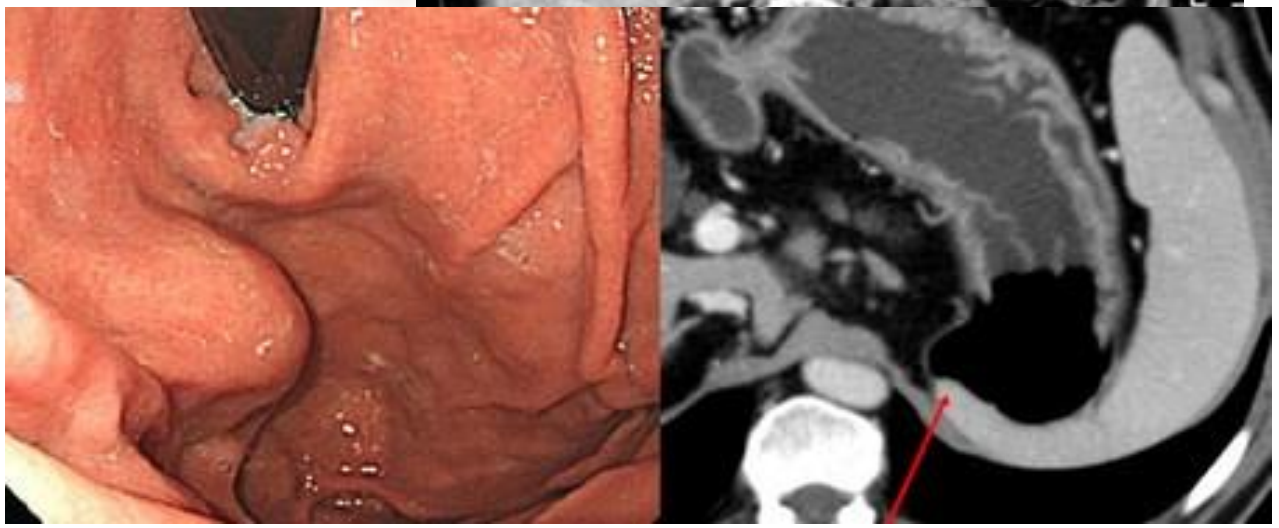
우측 대동맥궁과 태생기의 좌측 배부 대동맥 잔유물인 Kommerell 게실은 드물게 발견되는 선천성 심혈관 기형이다. 대부분의 경우 증상이 없으나, 종격동 구조물을 압박하거나 선천성 심장기형이 동반되면 증상이 발현된다. 때로는 동맥류 파열로 사망할 수도 있다. 저자들은 10년간 큰 음식 덩어리 연하시 상부 흉골부의 경미한 음식물 정체감을 호소한 환자에서 식도의 점막하종양으로 오인하였던 우측 대동맥궁과 동반된 Kommerell 게실에 의한 식도압박 1예를 경험하여 보고한다.

Endoscopy 2009; 41: E157-E158

Extrinsic compression (stomach)

- Normal structure;
  - Spleen (m/c): gastric fundus or upper corpus
  - Vascular structures in splenic hilum
  - Left lobe of the liver
  - GB: antrum
  - The images of temporary compression: intestinal loops
  - Tail of pancreas
- Abnormal structure
  - Pancreatic pseudocyst
  - Aortic aneurysms
  - Left atrial dilatation



EUS (Echotexture)

- Generally
  - Hypoechoic: Leiomyoma / GIST
  - Anechoic: cystic lesions
  - Hyperechoic: lipomas
- Suggestive of malignancy in GIST
  - Size > 3cm
  - Cystic space
  - Echogenic foci
  - Adjacent malignant-appearing lymph nodes

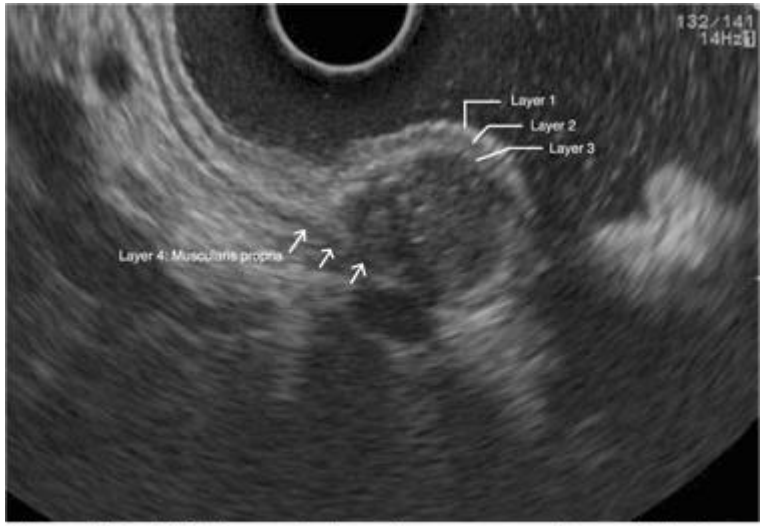


Figure 10B: EUS demonstrates a homogeneous, hypoechoic tumor arising from the 4th layer (arrowhead). The sonographic gastric wall layers are marked.

ymal tumor

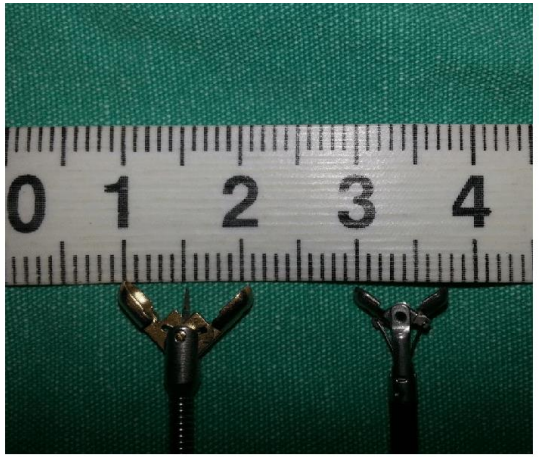
Cyst

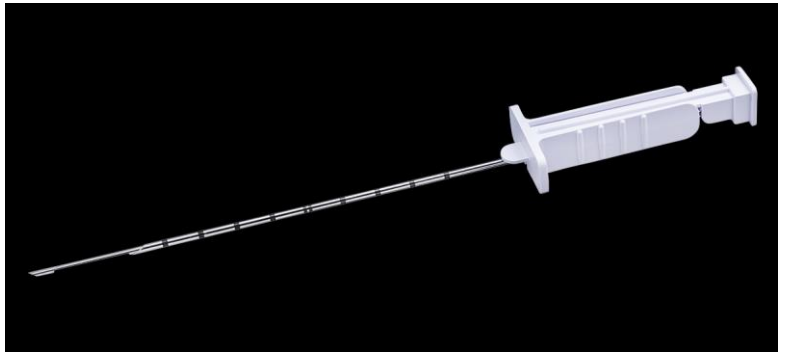
Histologic diagnosis

1) **Cytology**
2) **Histology**
3) **Immunohistochemisty**

• Tissue can be obtained for histology in a number of ways;

1) Stacked ‘jumbo’ forceps
2) Tru-Cut® style biopsy
3) EUS-FNA
4) EMR, ESD

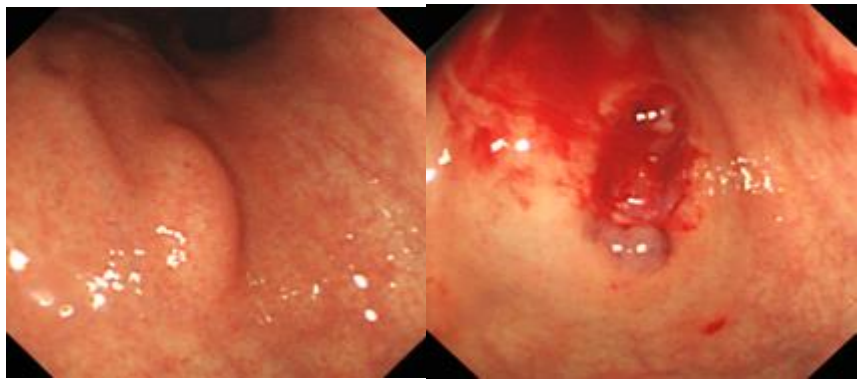




Histologic diagnosis

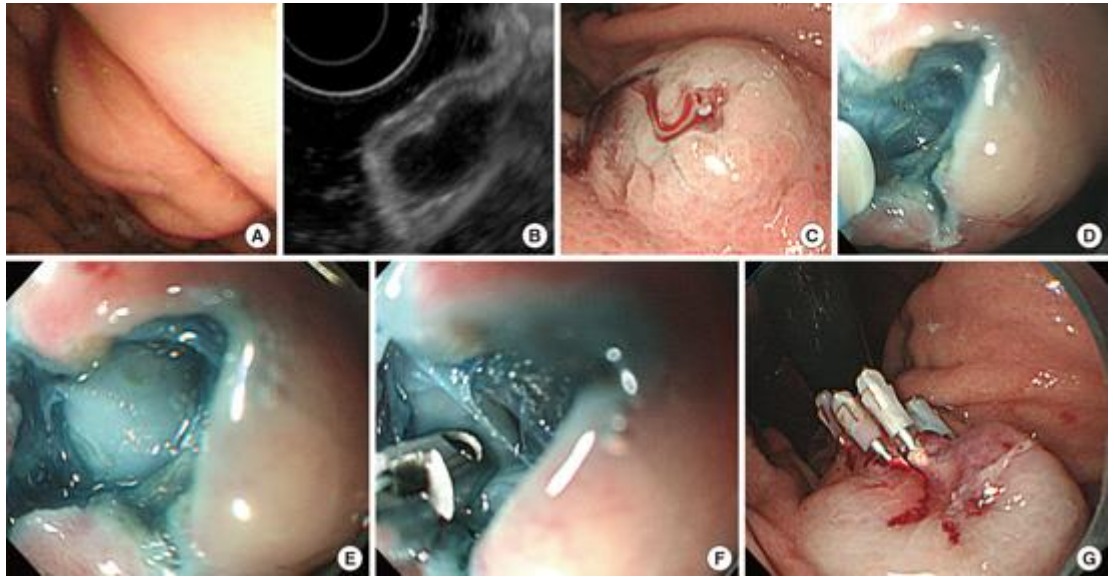
- Bite – on Bite technique

- Diagnostic yield: 14-42%
- Limitation
  - Too many times biopsy
  - Bleeding risk (2.8%)



Histologic diagnosis

- Unroofing technique via ESD



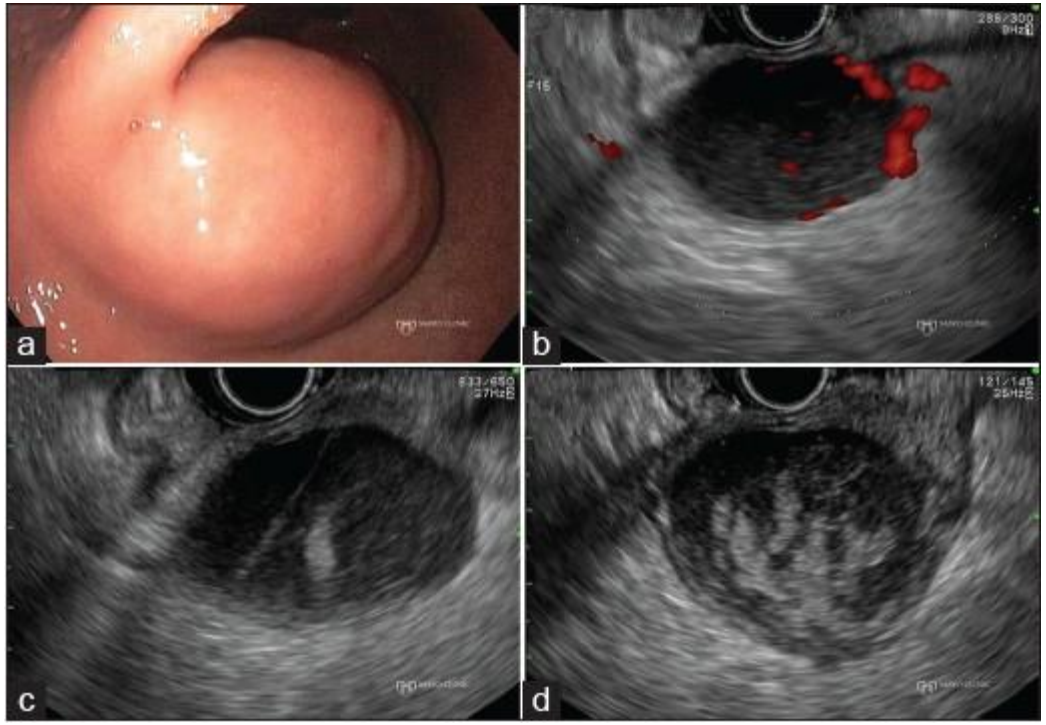
- Diagnostic yield: 90% (36/40)
- Decrease unnecessary surgical operation

J Korean Med Sci. 2016 Nov;31(11):1768-1774

Histologic diagnosis

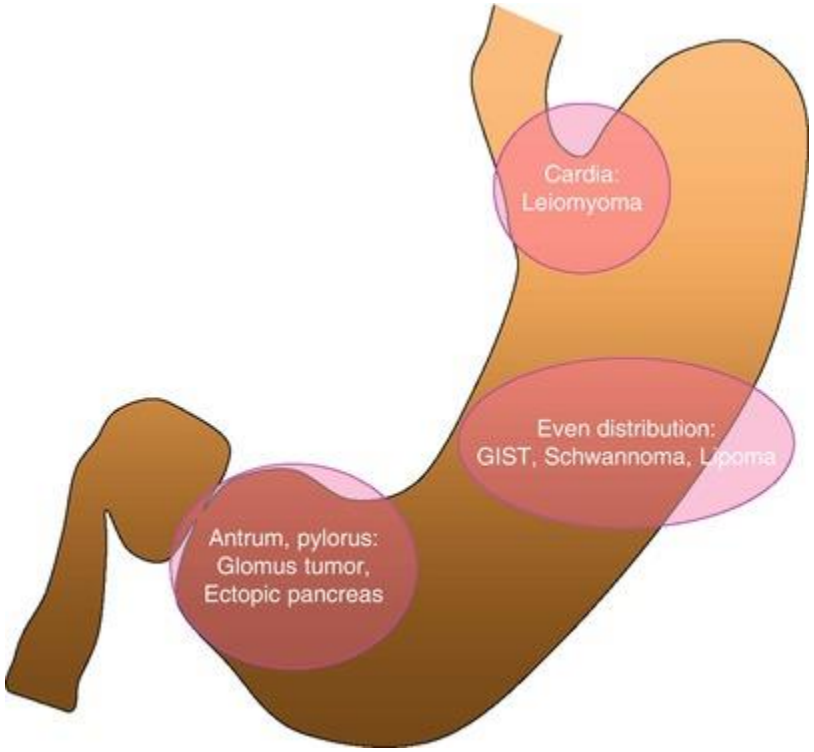
- EUS guided fine needle aspiration (FNA)

- Diagnostic yield : 20~92%
- 민감도, 특이도, 정확도는 높지 않다



Management of SETs

- 자연경과
- 악성화 병변 여부
- 치료 방법 – 수술적 절제, 내시경적 절제



자연경과

Risk of progression for incidental small subepithelial tumors in the upper gastrointestinal tract.

Song JH[1], Kim SG[2], Chung SJ[1], Kang HY[1], Yang SY[1], Kim YS[1].

Author information

1 Department of Internal Medicine, Healthcare Research Institute, Seoul National University Hospital Healthcare System Gangnam Center, Seoul, Korea.

2 Department of Internal Medicine and Liver Research Institute, Seoul National University College of Medicine, Seoul, Korea.

86,698명 중 1.94%(1,684명)에서 SMT가 발견

954명 관찰 <2cm 은 EGD FU
96.4% 크기 변화 없음. 47.3 months FU

3.6% 에서 크기 증가

Variable	Odds ratio (OR)	95% confidence interval (95%CI)
Initial size	1.031	0.971–1.094
Anatomic location		
Esophagus	Reference	
Stomach	4.178	0.969–18.013
Duodenum	3.393	0.644–17.862
Overlying mucosal changes		
Intact	Reference	
Hyperemia, erosion, ulcer	3.613	1.063–12.280

Table 2 Subepithelial tumors incidentally detected at upper gastrointestinal endoscopy: multivariate analysis of the risk factors for increase in size. Adjusted by age, sex, initial size, anatomic location, and overlying mucosal changes.

Endoscopy. 2015 Aug;47(8):675-9.

SET 의 원인과 빈도

GIST/ Leiomyoma (54%)

Ectopic pancreas (16%)

Cystic lesion (9%)

Lipoma (5%)

Carcinoid (3%)

Malignant lymphoma (2%)

기타<1%

Schwannoma, glomus tumor, granular cell tumor, inflammatory fibroid polyp,,,

내시경 절제

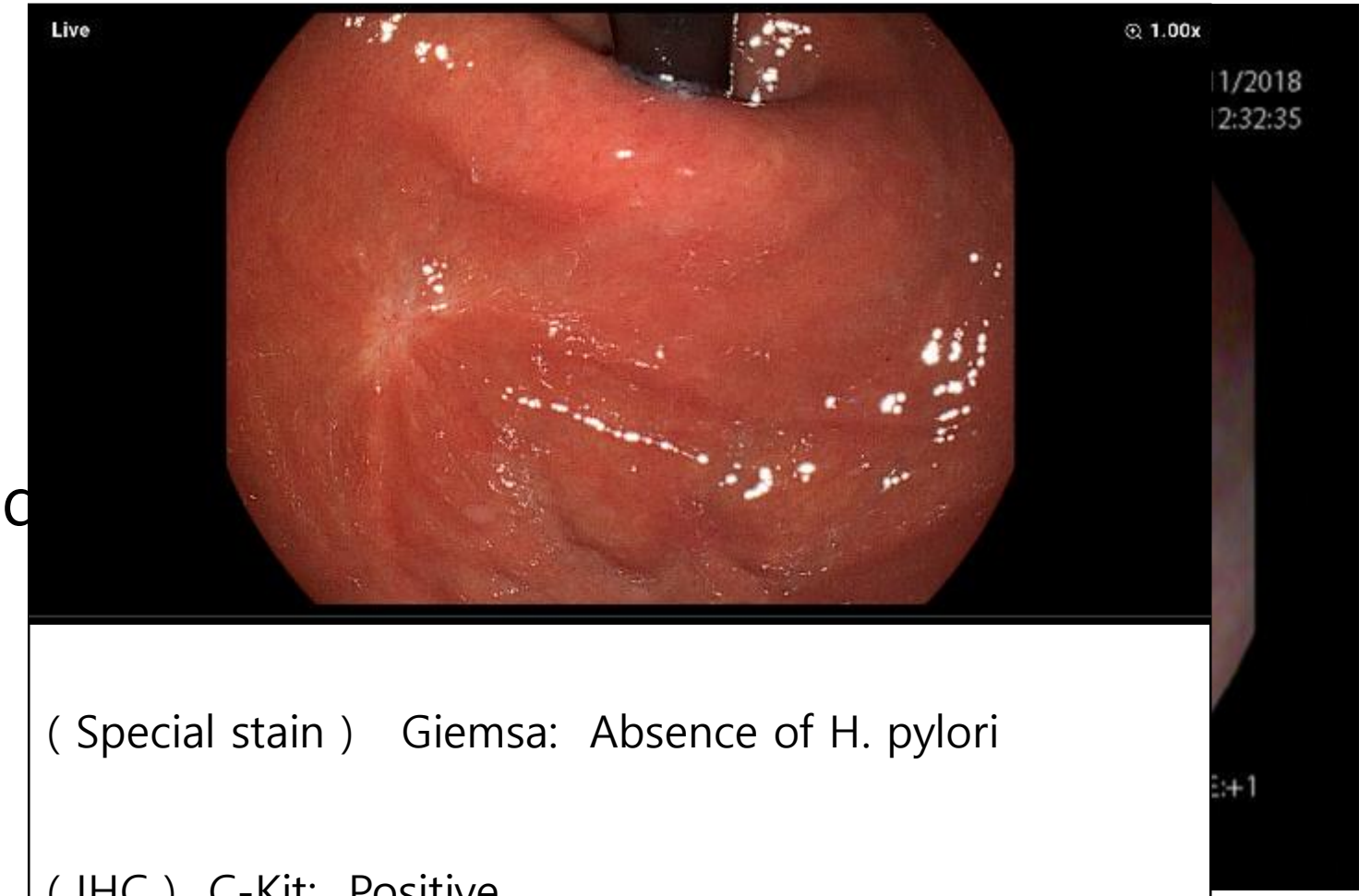
- Standard polypectomy
- Endoscopic mucosal resection
  - EMR with cap (EMR-C)
  - EMR with ligation device (EMR-L)
- Endoscopic submucosal dissection

- Endoscopic full thickness resection (EFTR)
- Submucosal tunneling endoscopic resection (STER)

CASE3

- F/79

- C.C R/O Gastric SEL, Func
  검진센터
- 고혈압, 관절약,
  cholecystectomy Hx.



(Special stain) Giemsa: Absence of H. pylori

(IHC) C-Kit: Positive
DOG-1: Positive
SMA: Negative
S-100: Negative

내시경 절제

- Outcome of ESD

- Perforation risk

1. Large size
2. Location
3. Wide base
4. Extraluminal growth

First author	Year	Case No.	Median diameter	Origin layer	Success rate (%)	Complication rate (%)
Park YS.	2004	15	20.0 mm	MP/non-MP	93	13.1 (1)
Lee IL.	2006	12	20.7 mm	MP	75	0
Hoteya S.	2009	9	38.0 mm	Non-MP	100	0
Hwang JC.	2009	25	28.7 mm	MP	64	12 (3)
Probst A.	2009	10	–	–	100	20 (2)
Bialek A.	2012	37	25.0 mm	Non-MP	100	16.1 (2)
				MP	68	
Li QL.	2012	143	17.6 mm	MP	94	4.2 (6)
Liu BR.	2012	31	22.0 mm	MP	97	13 (4)
PNUH	2013	47	13.5 mm	Non-MP	92	12.7 (2)
				MP	56	

내시경 절제

- More aggressive treatment

➢Removal for more deeper SET

➢Complete resection rate ⬆

➢Endoscopic treatment is possible for perforation

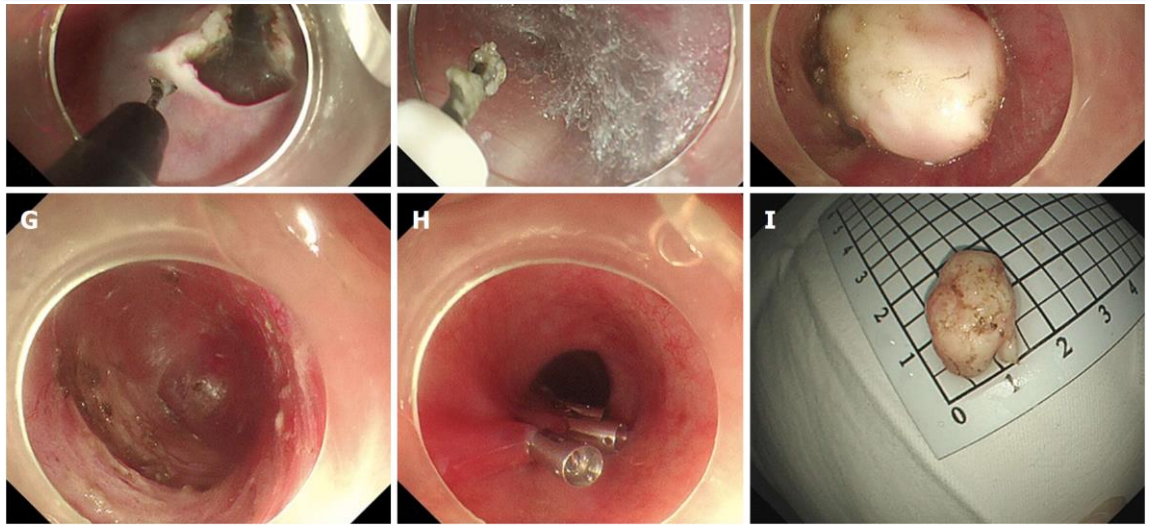
내시경 절제 Submucosal tunneling endoscopic resection (STER)

- Best indication
  1. Location – Esopha cardia, antrum
  2. Layer – SM-MP
  3. Size <4CM

- *En bloc* resection ra 78.7%

- Overall complication rate : 21.2% (35/165)
  - Resolved without intervention or surgery.

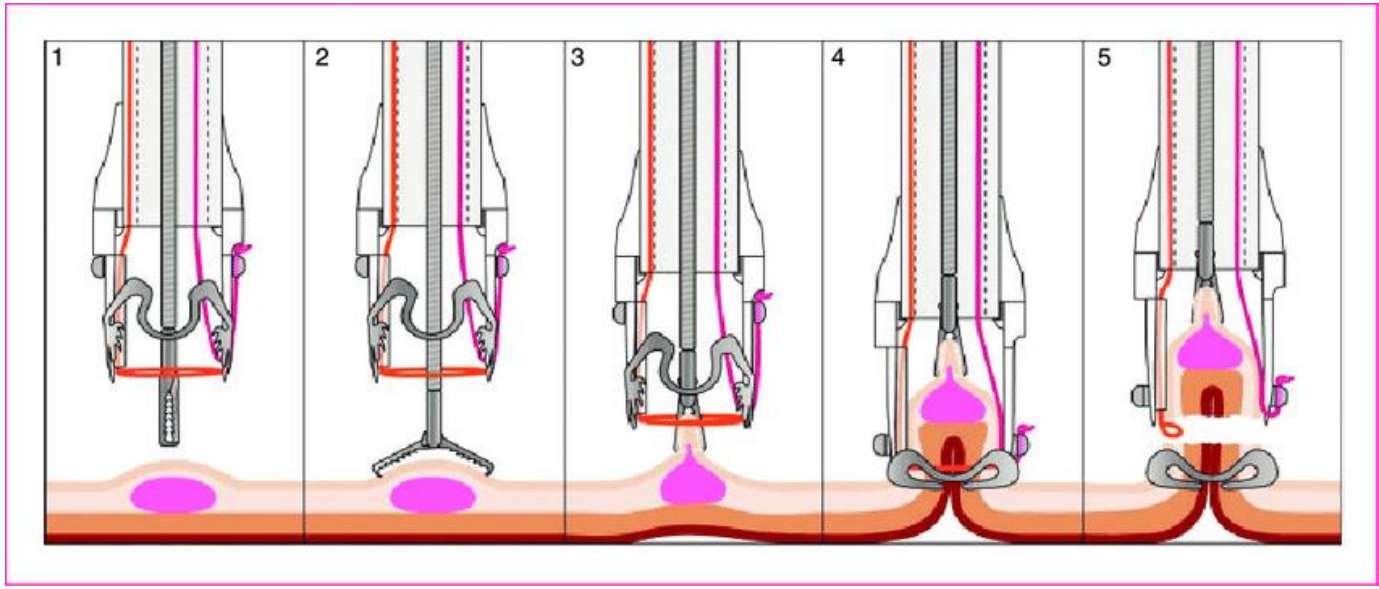
First author	Year	Case No.	Median diameter (mm)	Origin layer	Success rate (%)	Complication rate (%)
Inoue H.	2012	9	18 (12-75)	MP	78	11 (1)
Gong W.	2012	12	20 (10-30)	MP	100	16.7 (2)
Xu MD.	2012	15	19 (10-40)	MP	100	13.3 (2)



World J Gastroenterol. Jan 14, 2019; 25(2): 245-257

내시경 절제

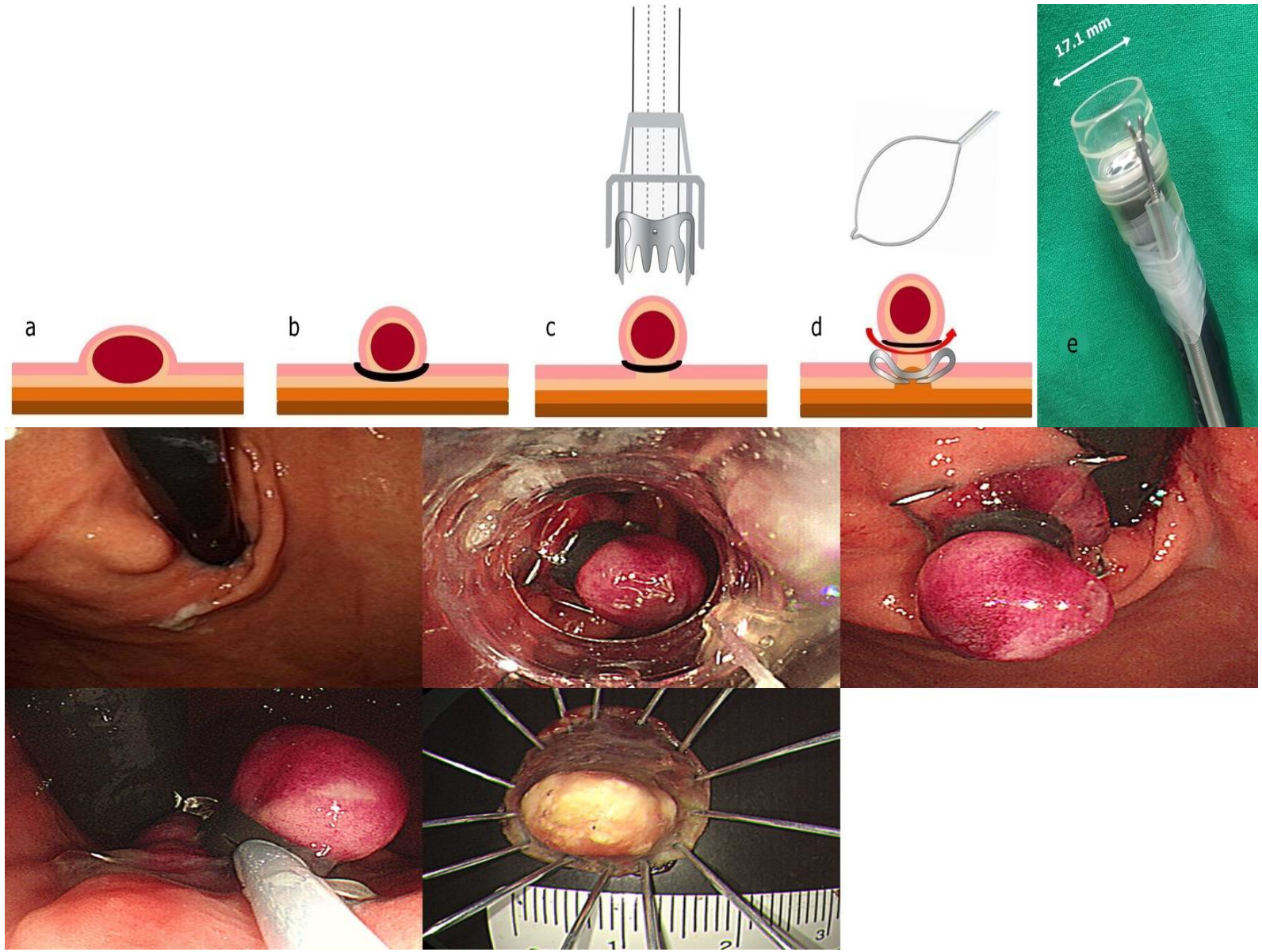
- Endoscopic full thickness resection (EFTR)



- 엔도루프(endoloop)
- Over-the-scope clips (OTSC) 등을 이용하여 봉합

VideoGIE. 2019 Jun 29;4(8):343-350

A SMT located at the PM layer was resected using the band ligation method with the OTSC.

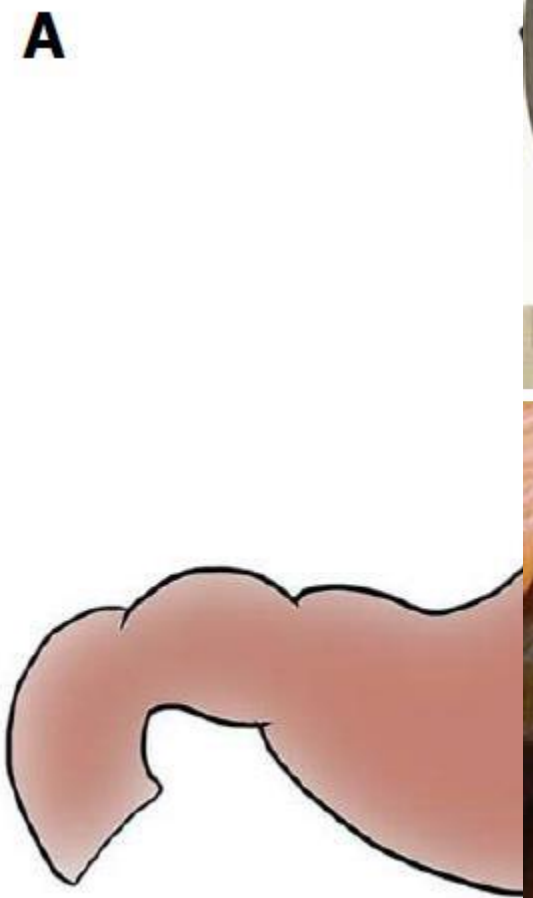


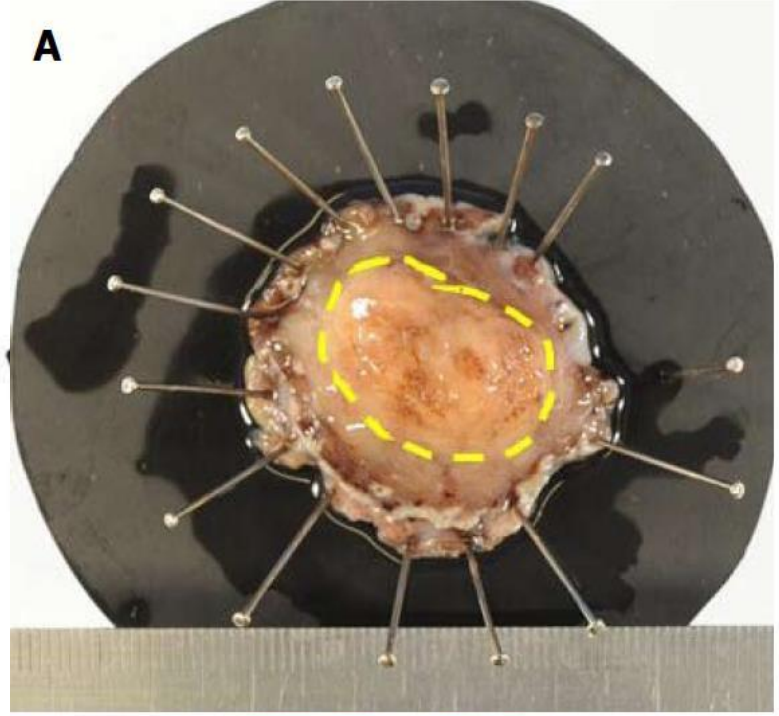
수술적 치료

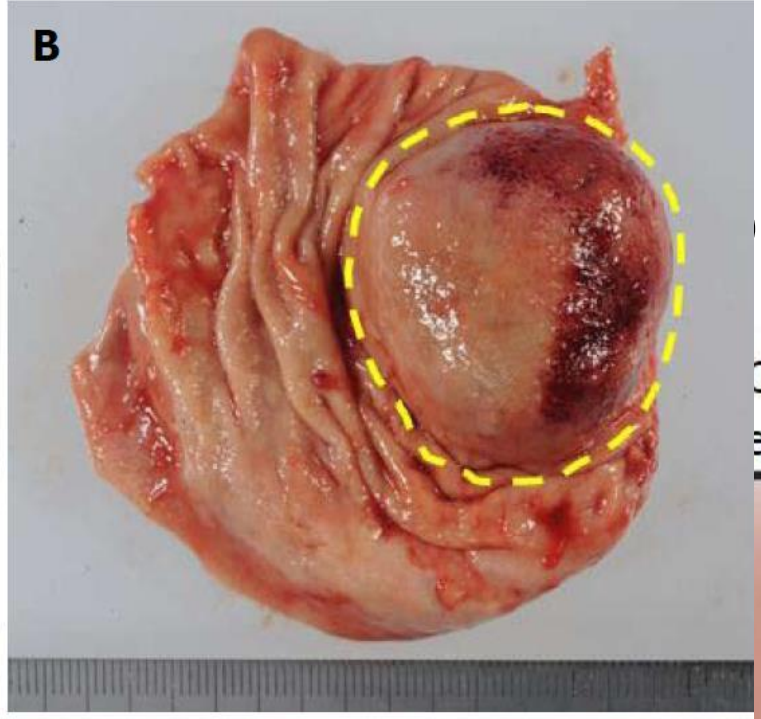
- Laparoscopic Wedge Resection

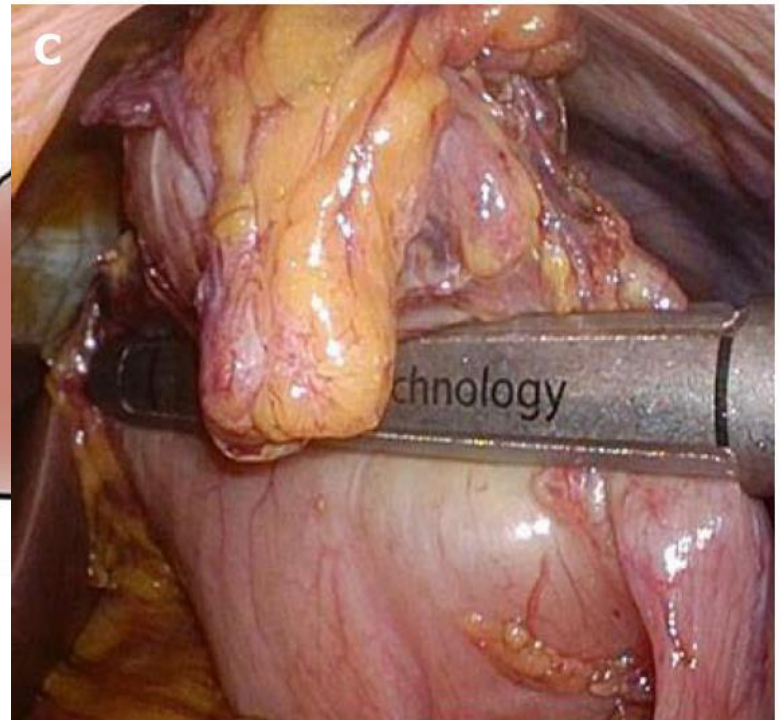
- **Cooperative laparoscopic and endoscopic surgery**
  - Laparoscopic endoscopic cooperative surgery (LECS).
  - Laparoscopic assisted endoscopic full thickness resection (LEFTR).
  - Clean nonexposure technique and non-exposed endoscopic wall inversion surgery (NEWS).

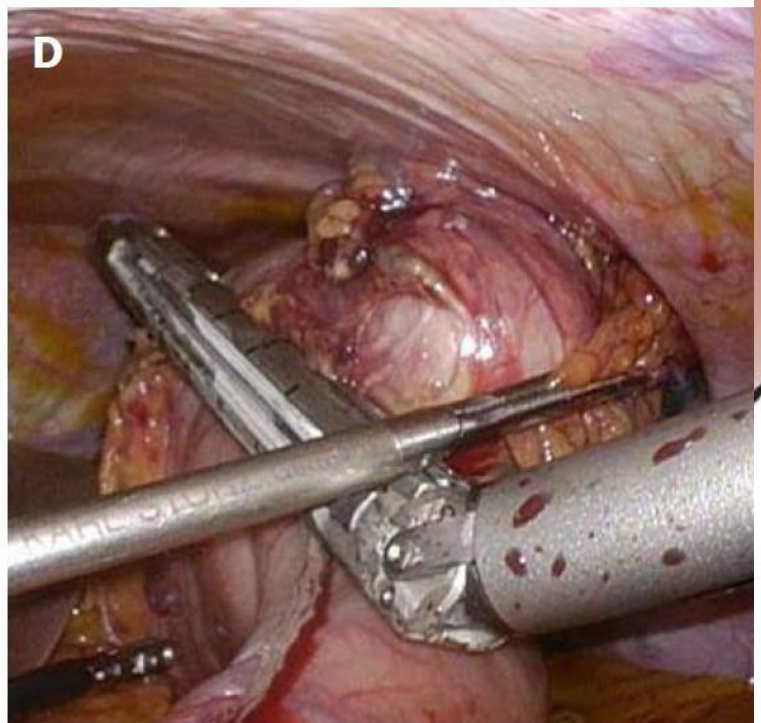
수술적 n

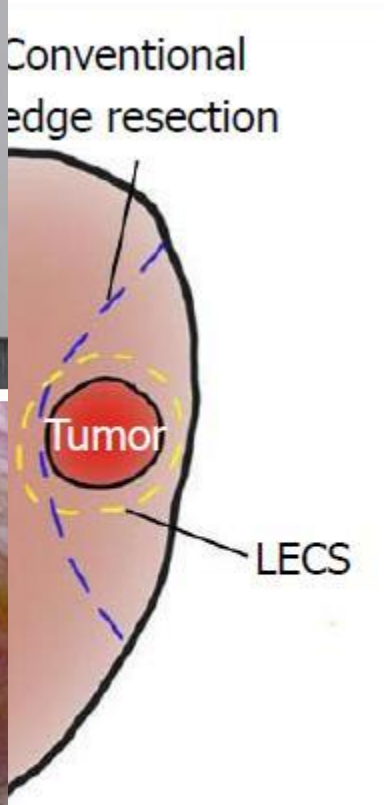






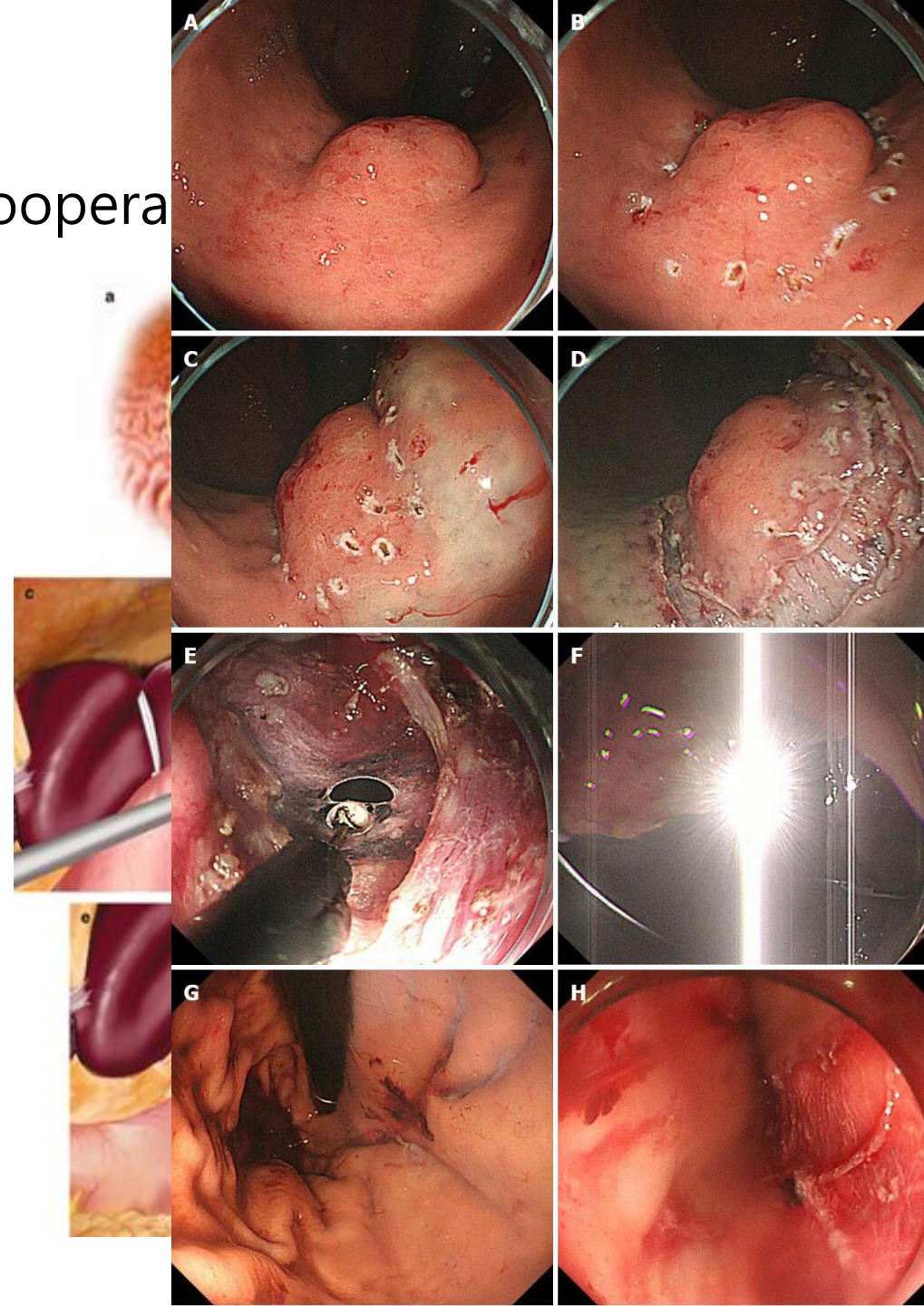






Surg Endosc (2015) 29:868–873

수술적 치료 Laparoscopic endoscopic coopera



(a) Endoscopic submucosal resection around the tumor, using the IT -2 knife.

(b) The tip of the IT-2 knife is inserted into the perforation and sero muscular dissection is initiated along the incision line of the sub mucosal layer.

(c) Temporary closure with hand-sewn sutures.

(d) Closure of the gastric wall using a laparoscopic stapling device.

(e) Post-resection of the tumor with a minimal margin and less sto mach deformation.

(f) Conceptual diagram of the classical LECS procedure.

수술적 치료 Laparoscopic assisted endoscopic full thickness resection (LEFTR)

Author	Year	Diagnosis	Number of patients	Tumor size (mean, mm)	Complete resection rate[a)] (%)	Method of closure	Conversion to gastrectomy (%)	Complications
Hiki et al.[5]	2008	SET	7	46	100	Linear stapler	0	None
Abe et al.[6]	2008	EGC	1	30	100	Manual suture	0	None
Abe et al.[7]	2009	SET	4	37	100	Manual suture	0	None
Cho et al.[8]	2011	EGC	14	26	100	Linear stapler & manual suture	35.7 (5/14)	Leakage (*n*=1)
Tsujimoto et al.[9]	2012	SET	20	37.9	100	Linear stapler	0	None
Nunobe et al.[10]	2012	EGC	1	60	100	Linear stapler	0	None
Hur et al.[11]	2014	EGC	10	14.8	100	Manual suture	10	None
Kwon et al.[12]	2015	SET	6	31	100	Manual suture	0	None
Matsuda et al.[13]	2016	SET	100	30.9	100	Linear stapler	0	Leakage (*n*=1) Postoperative stasis (*n*=2)

- Cost

Clin Endosc. 2018 Jan; 51(1): 33–36.

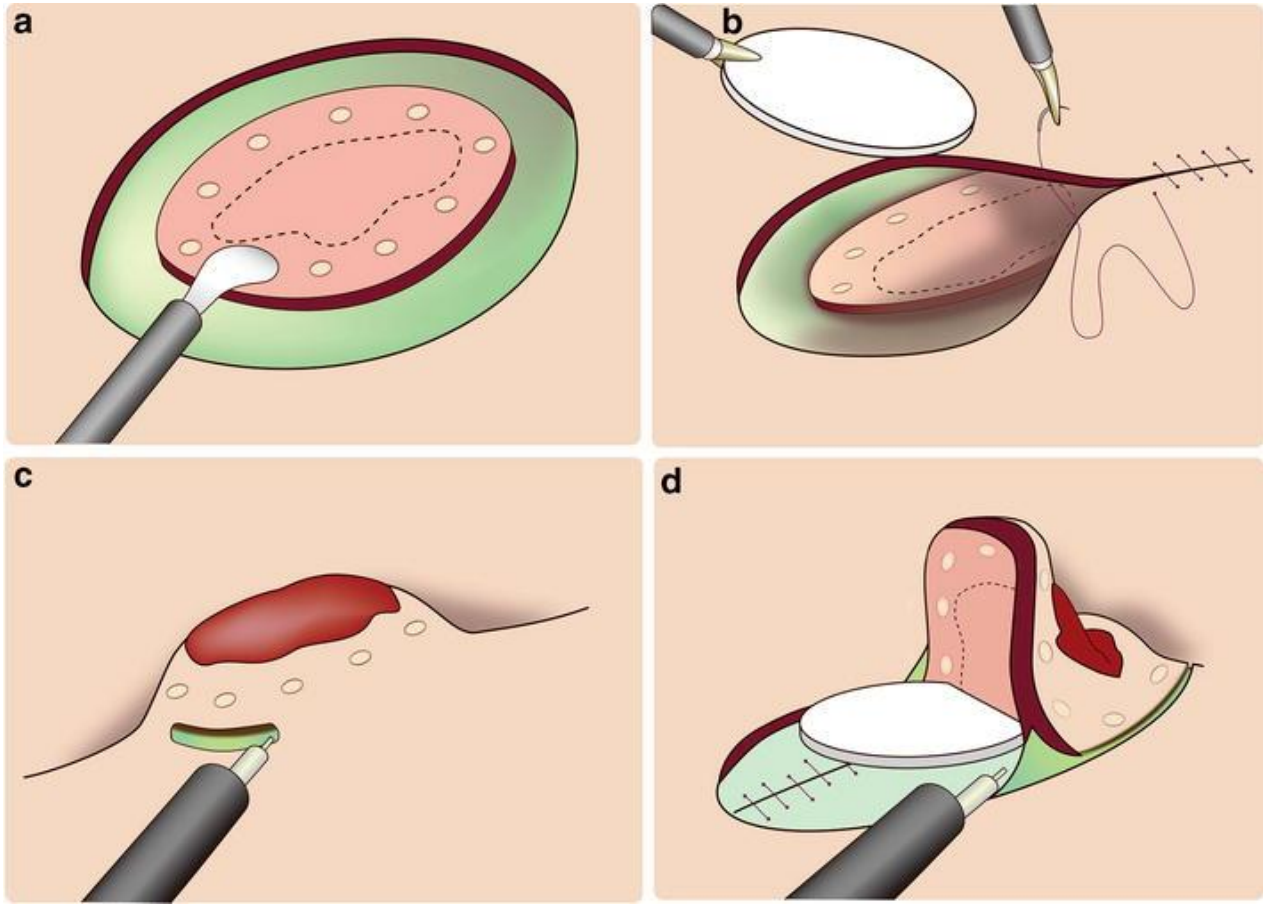
수술적 치료 Clean non-exposure technique and non-exposed endoscopic wall inversion surgery (NEWS)

- August 2013 and February 2018
- NEWS for 42 patients gastric SMTs≤3cm (FU period 29.2 months)

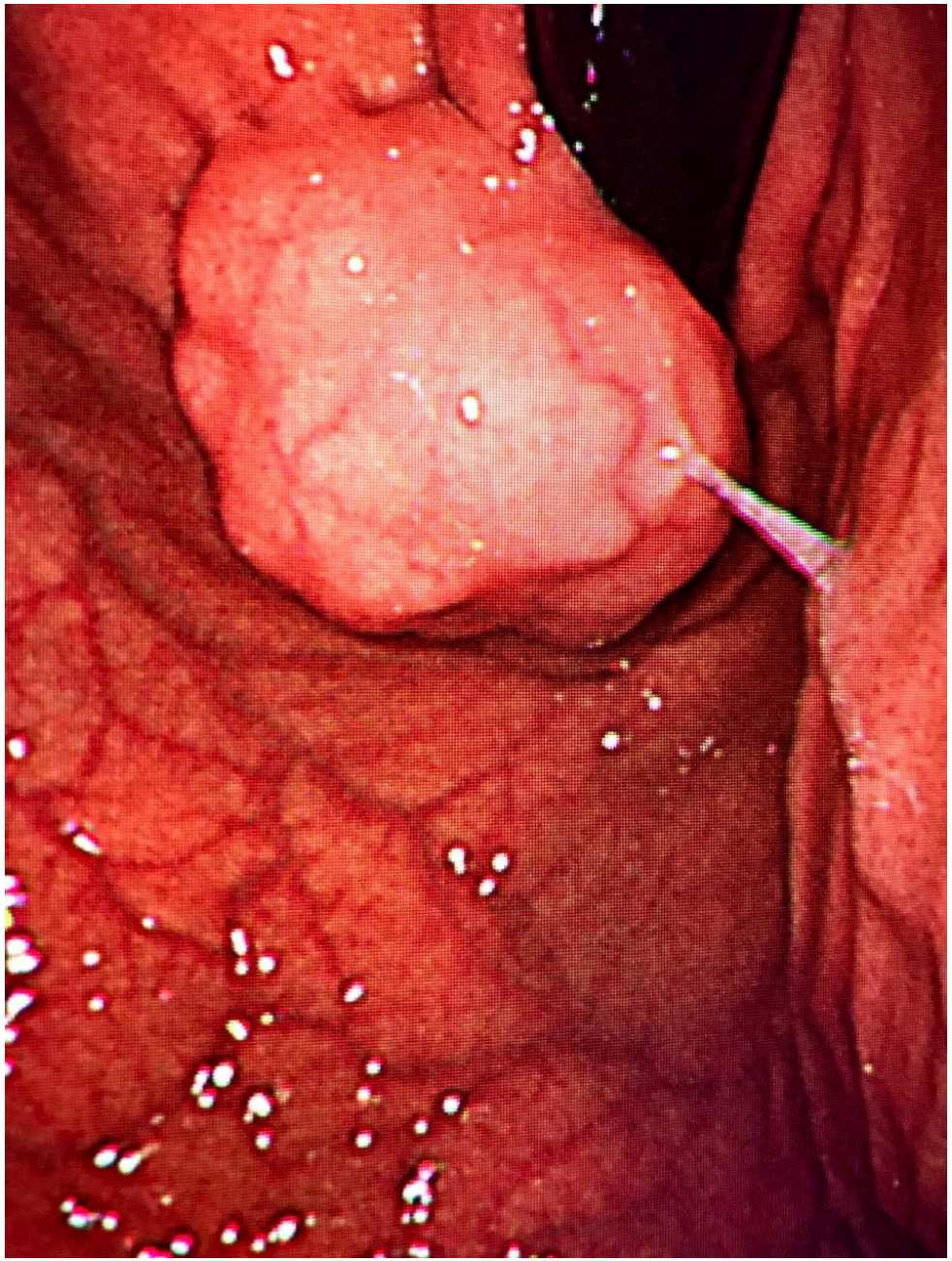
- All tumors negative margins

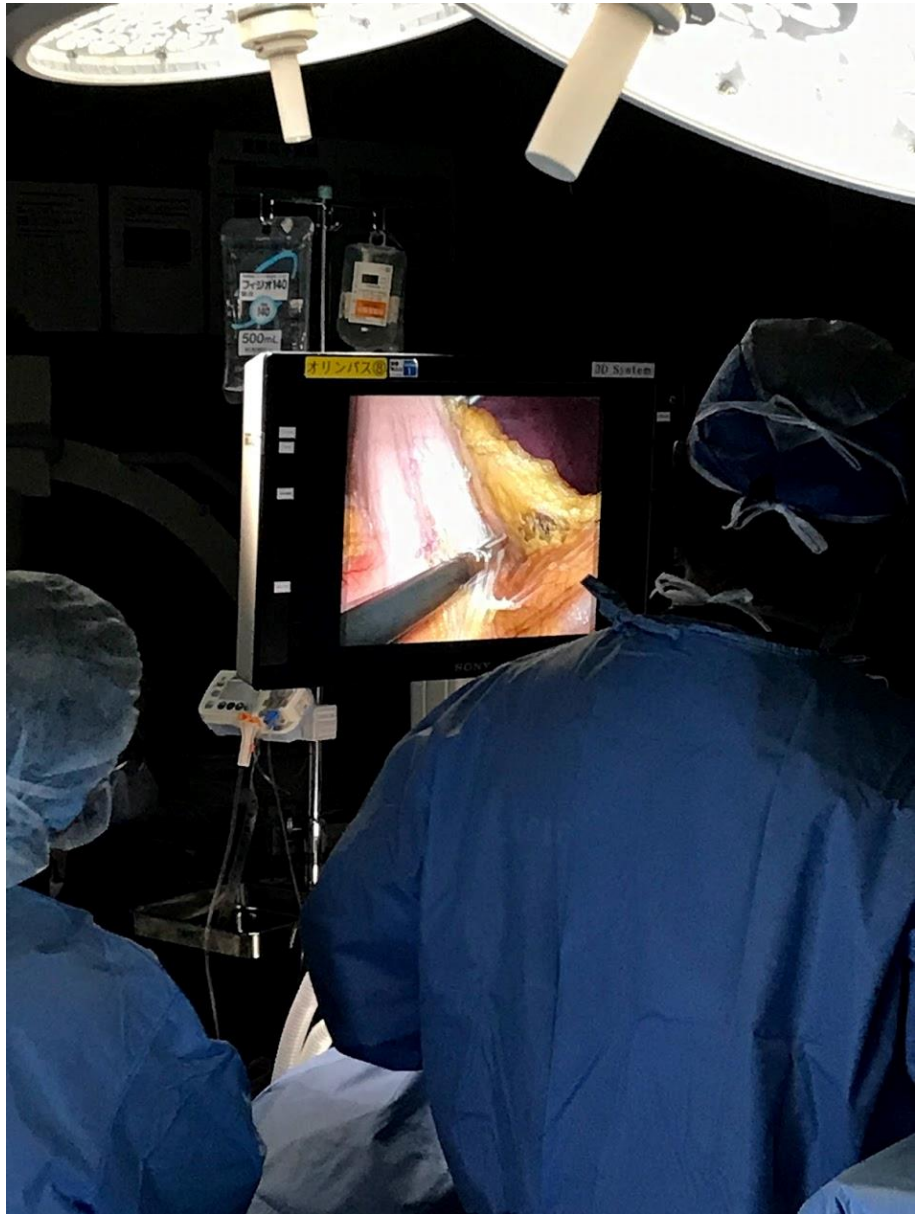
- Median operation time : 198 min
- Median estimated blood loss : 5.0 ML
- Adverse event - one patient

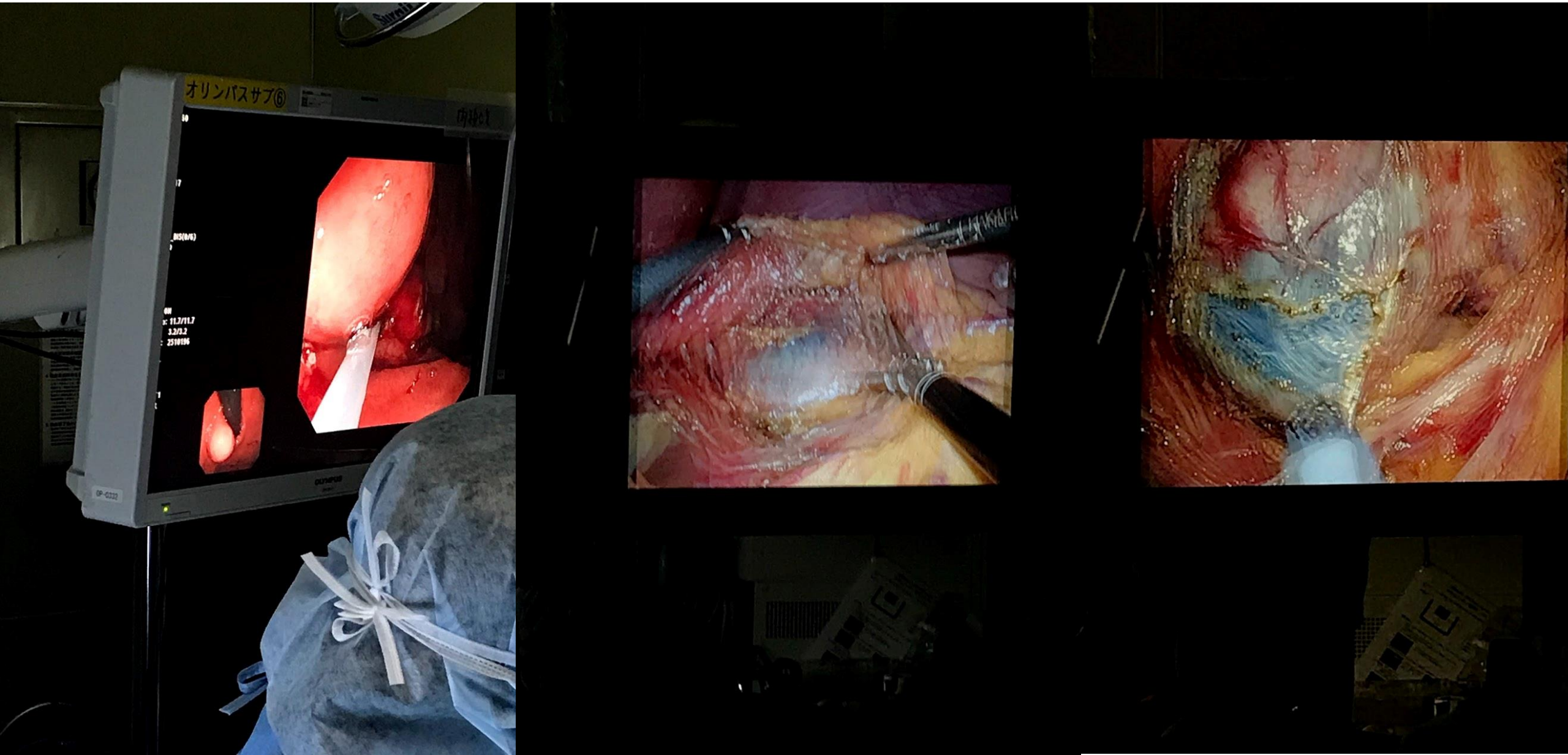
- The average body weight loss rate 0.3 ± 4.0%
- No food residue was observed at endoscopic follow-up



Gastric Cancer. 2019 Jul 3. doi: 10.1007




オリンパス
3D System


オリンパスサブ⑥
OLYMPUS

Thank you for your attention