Management of Incidental GI Subepithelial Lesions

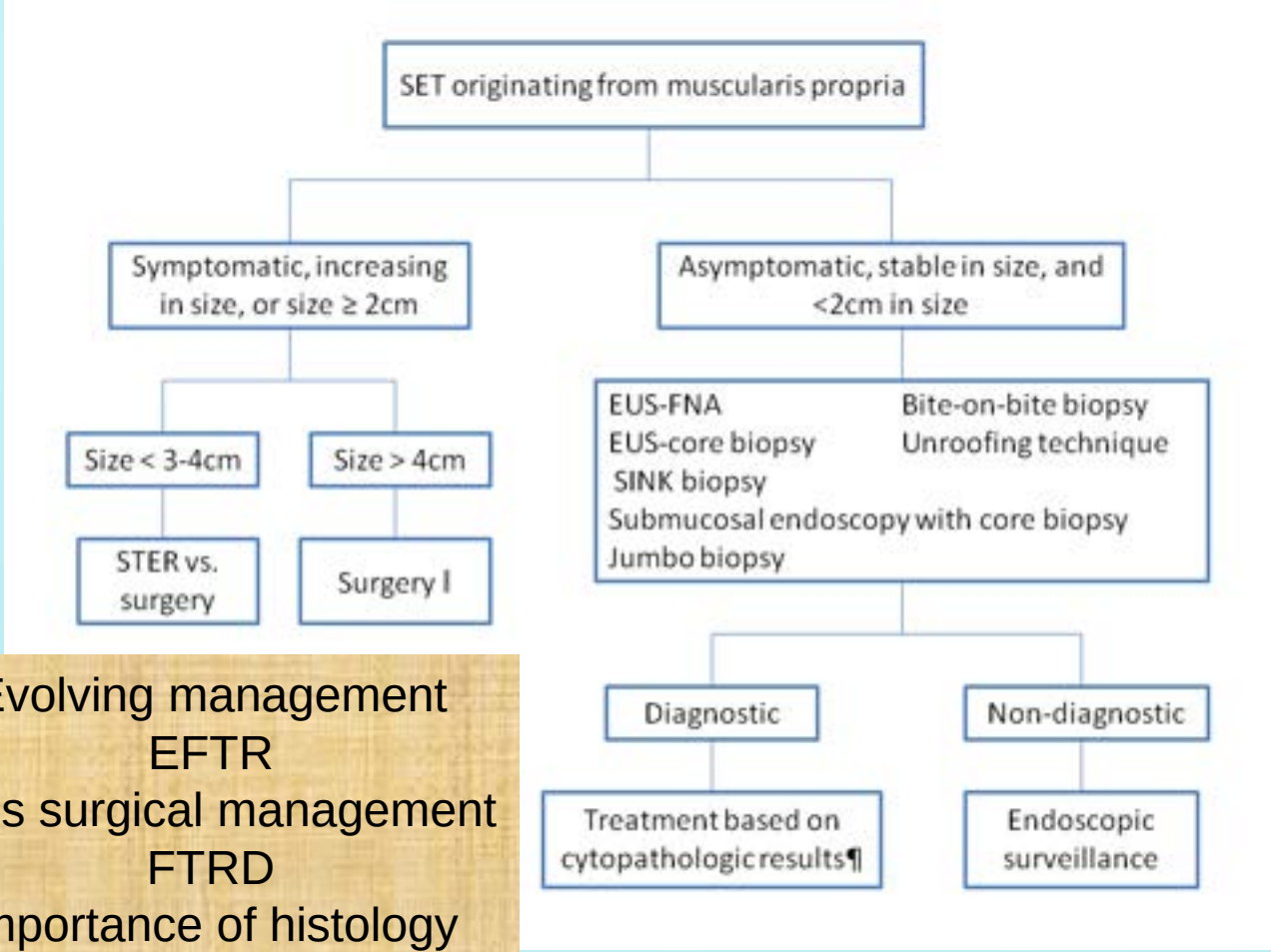
Mouen Khashab, MD, MASGE, FJGES
Professor of Medicine
Director of Therapeutic Endoscopy
Johns Hopkins Hospital

Submucosal Lesions

- “Catch-all” term to describe variety of neoplastic and non-neoplastic lesions from deeper layers of the gastric wall with normal overlying mucosal layer

- Submucosal, subepithelial, intramural tumors/lesions/masses used interchangeably

Stepwise Evaluation of Subepithelial Tumors



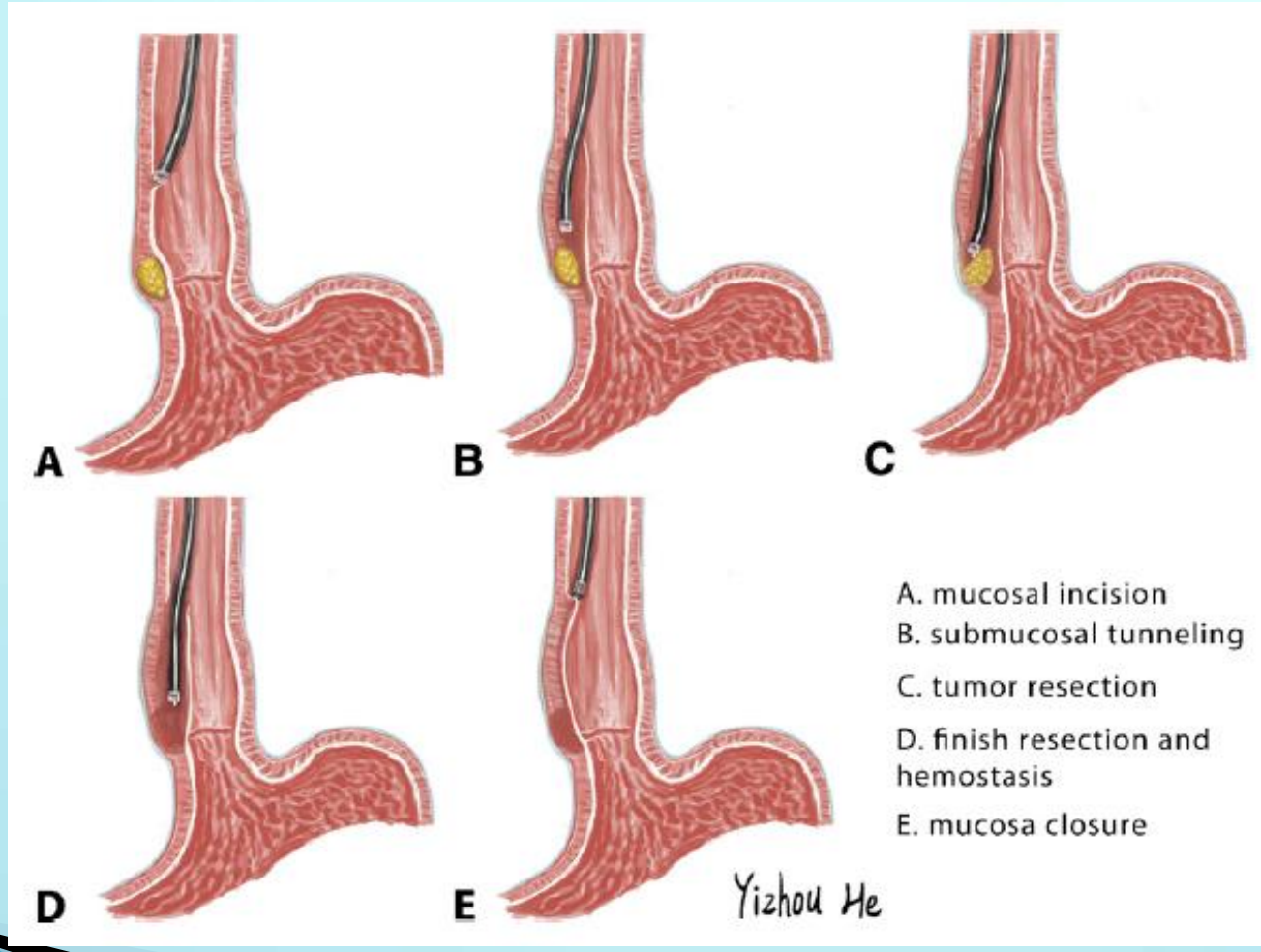
Evolving management
EFTR
Less surgical management
FTRD
Importance of histology

Khashab and Pasricha. GIE 2013

Methods of resecting MP lesions

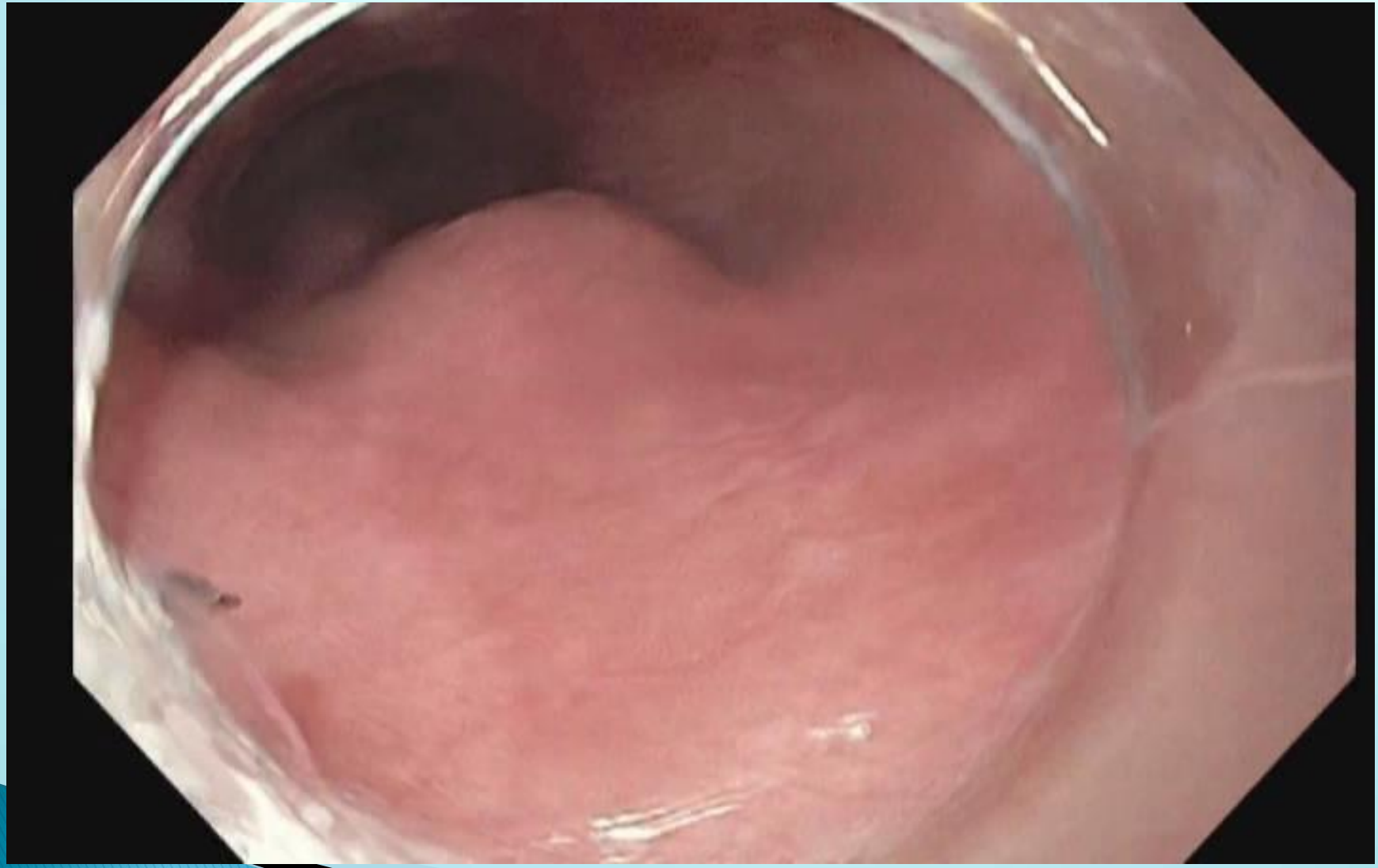
- STER (Submucosal Tunneling Endoscopic Resection)
- ESD (Endoscopic Submucosal Dissection)
- EFTR (Endoscopic Full-Thickness Resection)

Resection of SET (submucosal tunneling endoscopic resection or STER technique)



STER

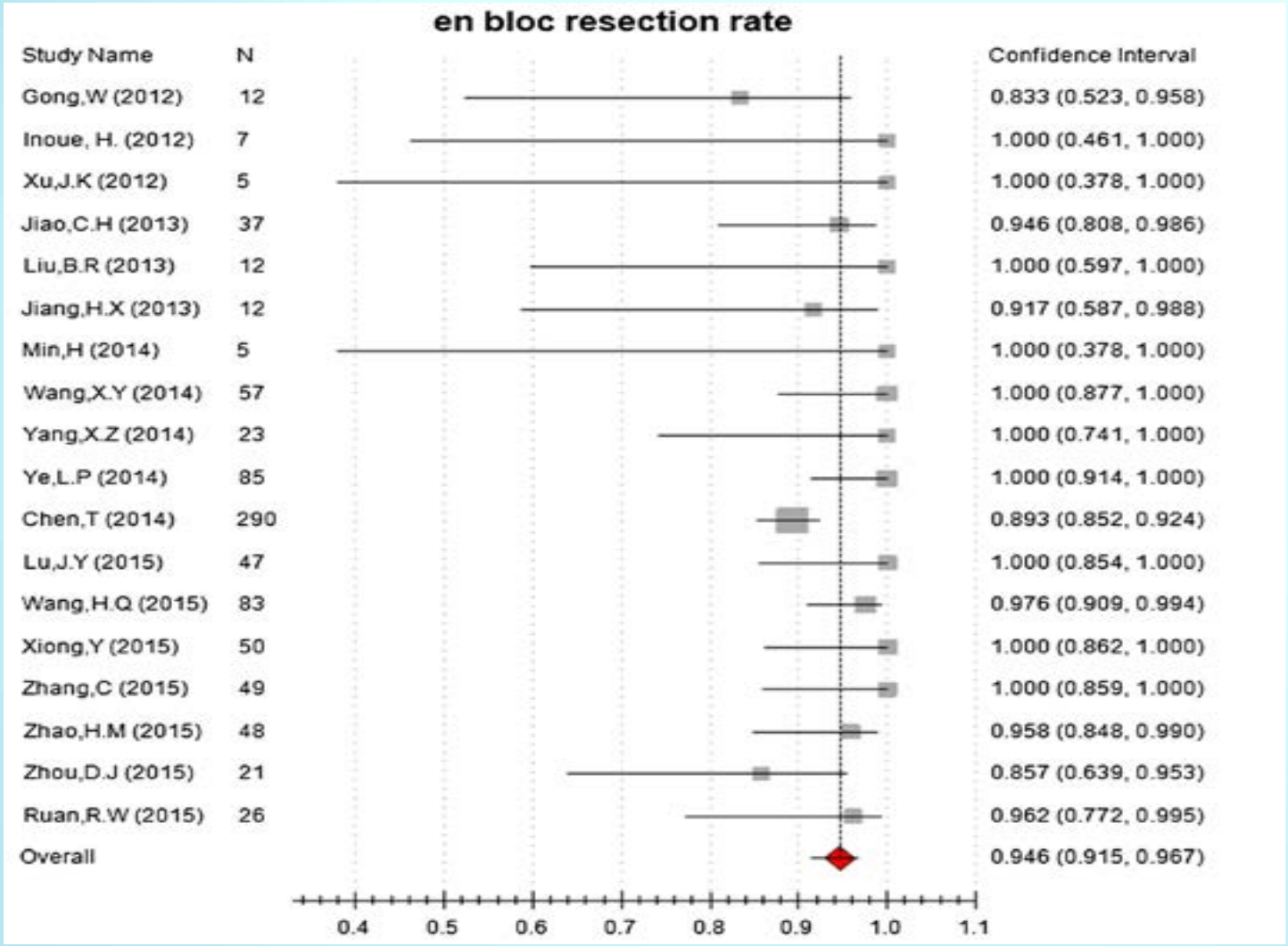
STER



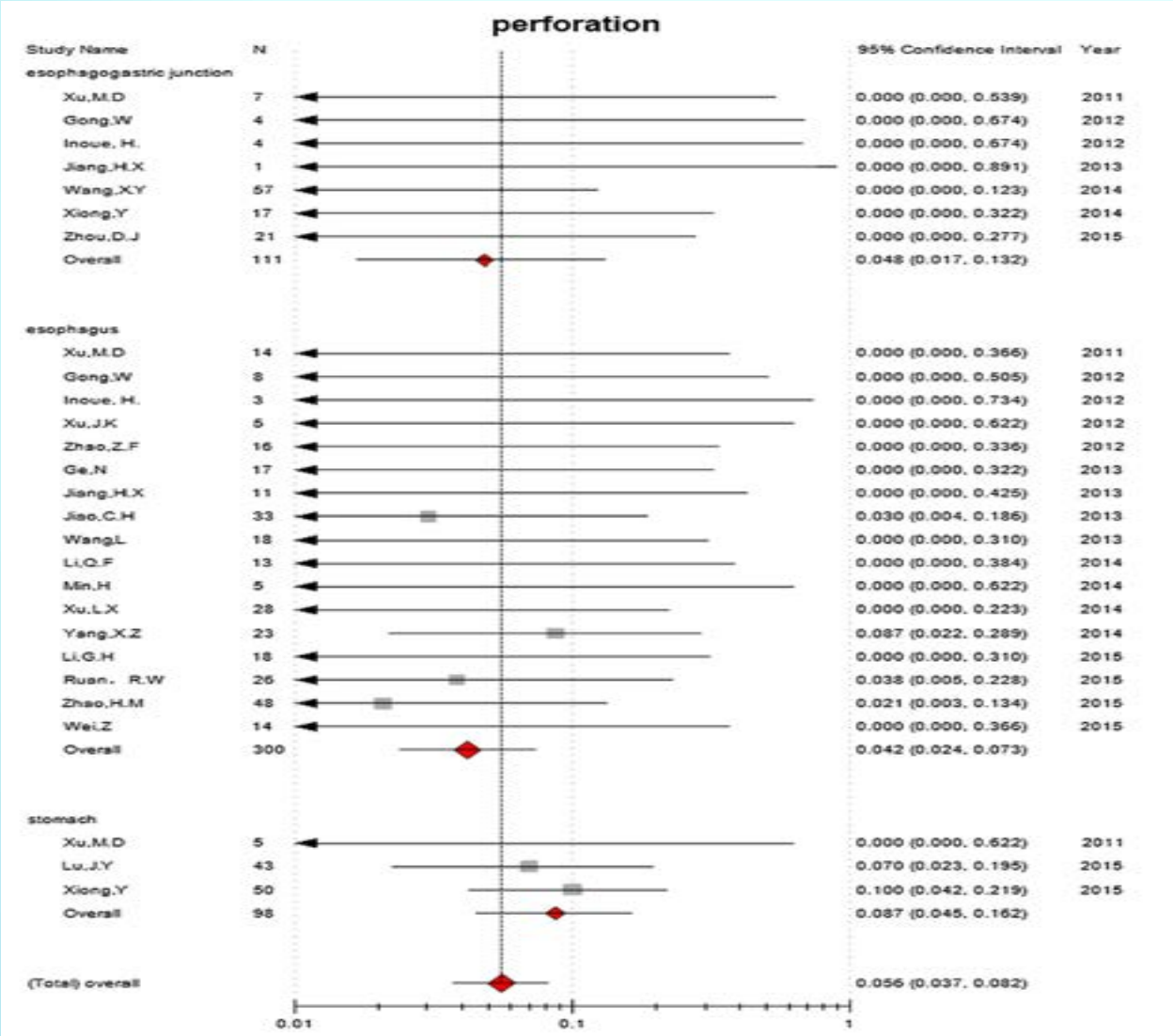
Efficacy and safety of submucosal tunneling endoscopic resection for upper gastrointestinal submucosal tumors: a systematic review and meta-analysis

Xiu-He Lv[1] · Chun-Hui Wang[1] · Yan Xie[1]

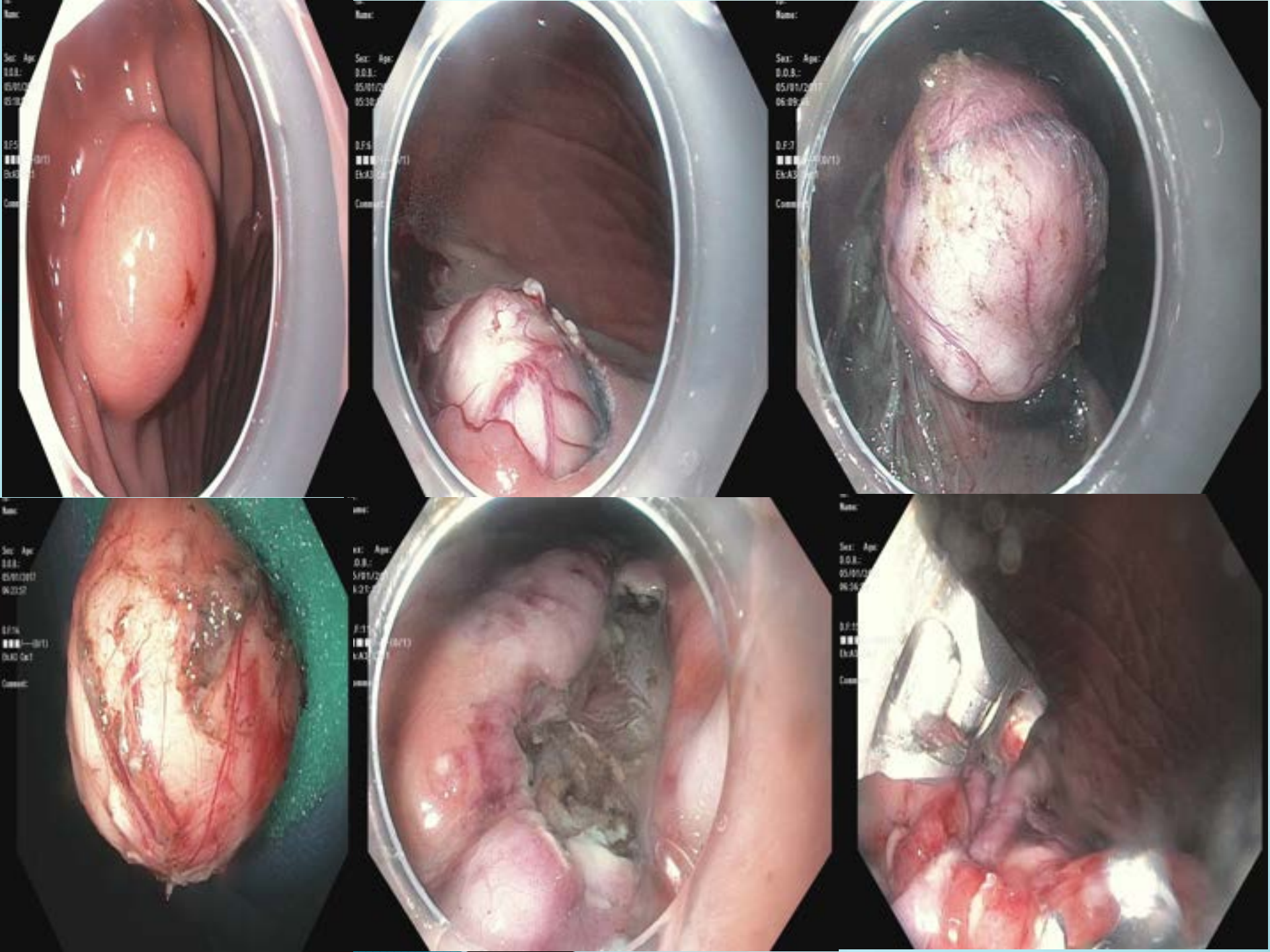
Surg Endosc (2017) 31:49–63



28 studies
1085 lesions

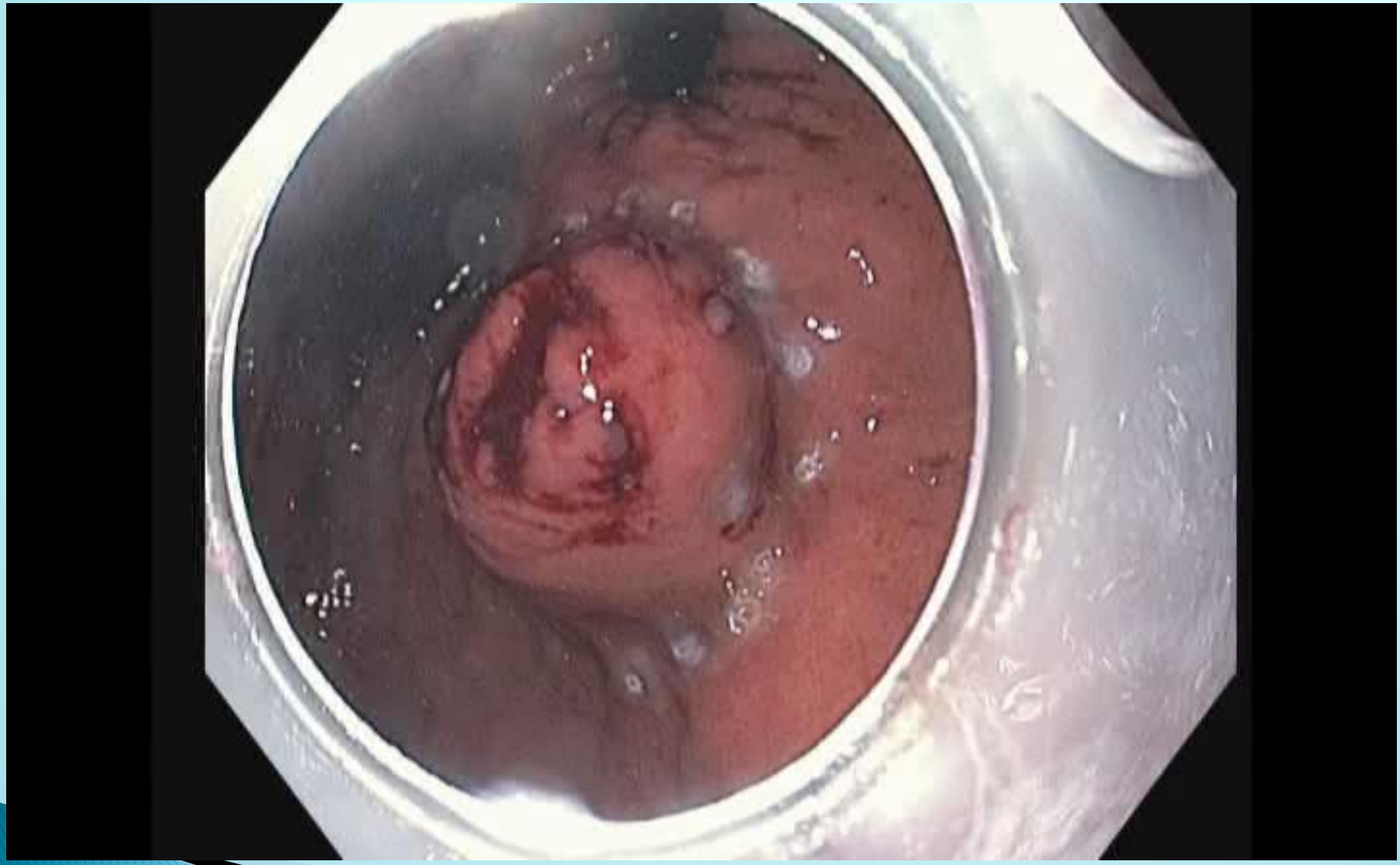

perforation
Study Name
N
95% Confidence Interval
Year
esophagogastric junction
Xu,M.D 7 0.000 (0.000, 0.539) 2011
Gong,W 4 0.000 (0.000, 0.674) 2012
Inoue, H. 4 0.000 (0.000, 0.674) 2012
Jiang,H.X 1 0.000 (0.000, 0.891) 2013
Wang,X.Y 57 0.000 (0.000, 0.123) 2014
Xiong,Y 17 0.000 (0.000, 0.322) 2014
Zhou,D.J 21 0.000 (0.000, 0.277) 2015
Overall 111 0.048 (0.017, 0.132)
esophagus
Xu,M.D 14 0.000 (0.000, 0.366) 2011
Gong,W 8 0.000 (0.000, 0.505) 2012
Inoue, H. 3 0.000 (0.000, 0.734) 2012
Xu,J.K 5 0.000 (0.000, 0.622) 2012
Zhao,Z.F 16 0.000 (0.000, 0.336) 2012
Ge,N 17 0.000 (0.000, 0.322) 2013
Jiang,H.X 11 0.000 (0.000, 0.425) 2013
Jiao,C.H 33 0.030 (0.004, 0.186) 2013
Wang,L 18 0.000 (0.000, 0.310) 2013
Li,Q.F 13 0.000 (0.000, 0.384) 2014
Min,H 5 0.000 (0.000, 0.622) 2014
Xu,L.X 28 0.000 (0.000, 0.223) 2014
Yang,X.Z 23 0.087 (0.022, 0.289) 2014
Li,G.H 18 0.000 (0.000, 0.310) 2015
Ruan, R.W 26 0.038 (0.005, 0.228) 2015
Zhao,H.M 48 0.021 (0.003, 0.134) 2015
Wei,Z 14 0.000 (0.000, 0.366) 2015
Overall 300 0.042 (0.024, 0.073)
stomach
Xu,M.D 5 0.000 (0.000, 0.622) 2011
Lu,J.Y 43 0.070 (0.023, 0.195) 2015
Xiong,Y 50 0.100 (0.042, 0.219) 2015
Overall 98 0.087 (0.045, 0.162)
(Total) overall 0.056 (0.037, 0.082)
0.01
0.1
1

ESD for tumors originating from MP

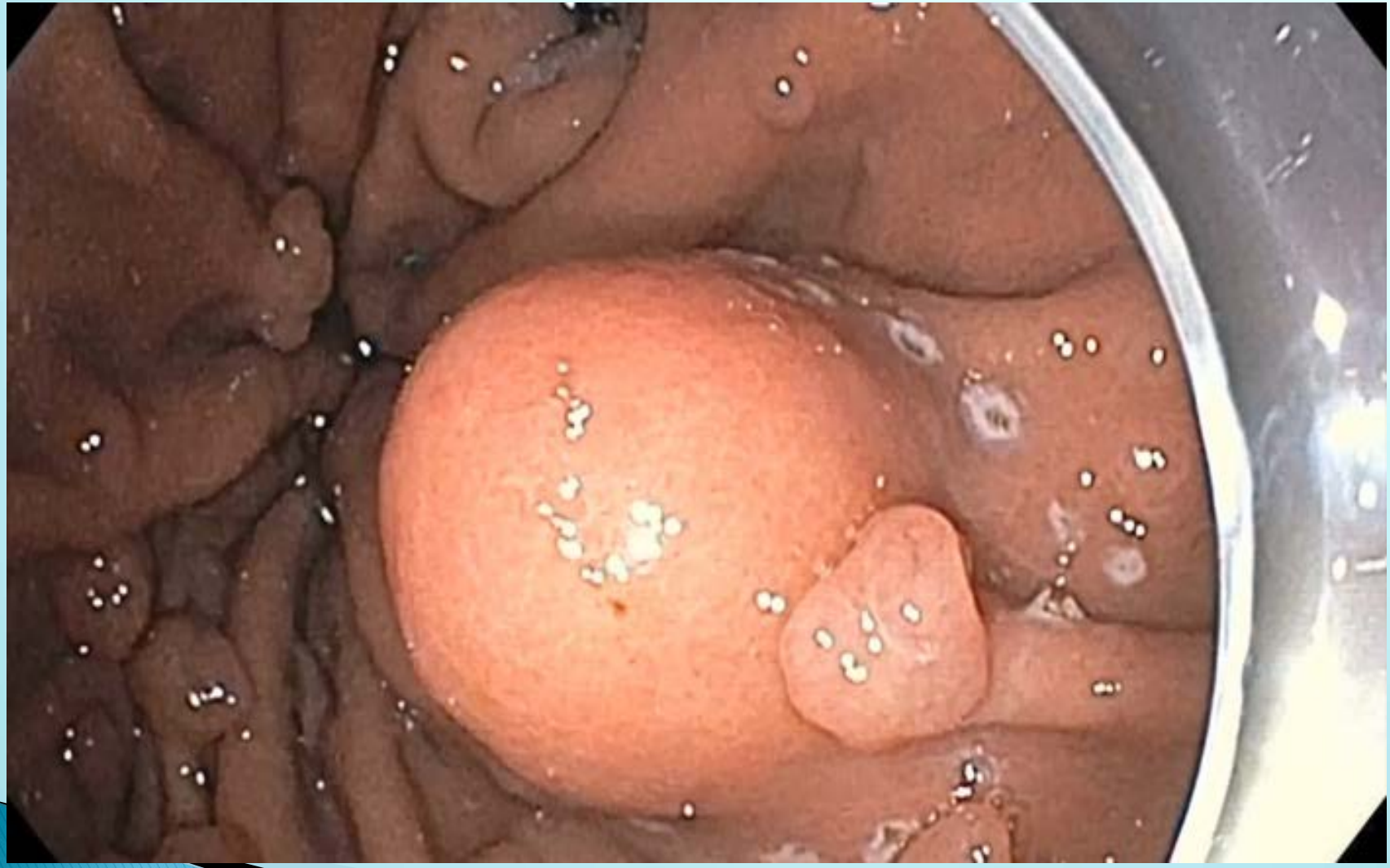


Endoscopic Full-thickness resection (EFTR) of tumors originating from MP

EFTR



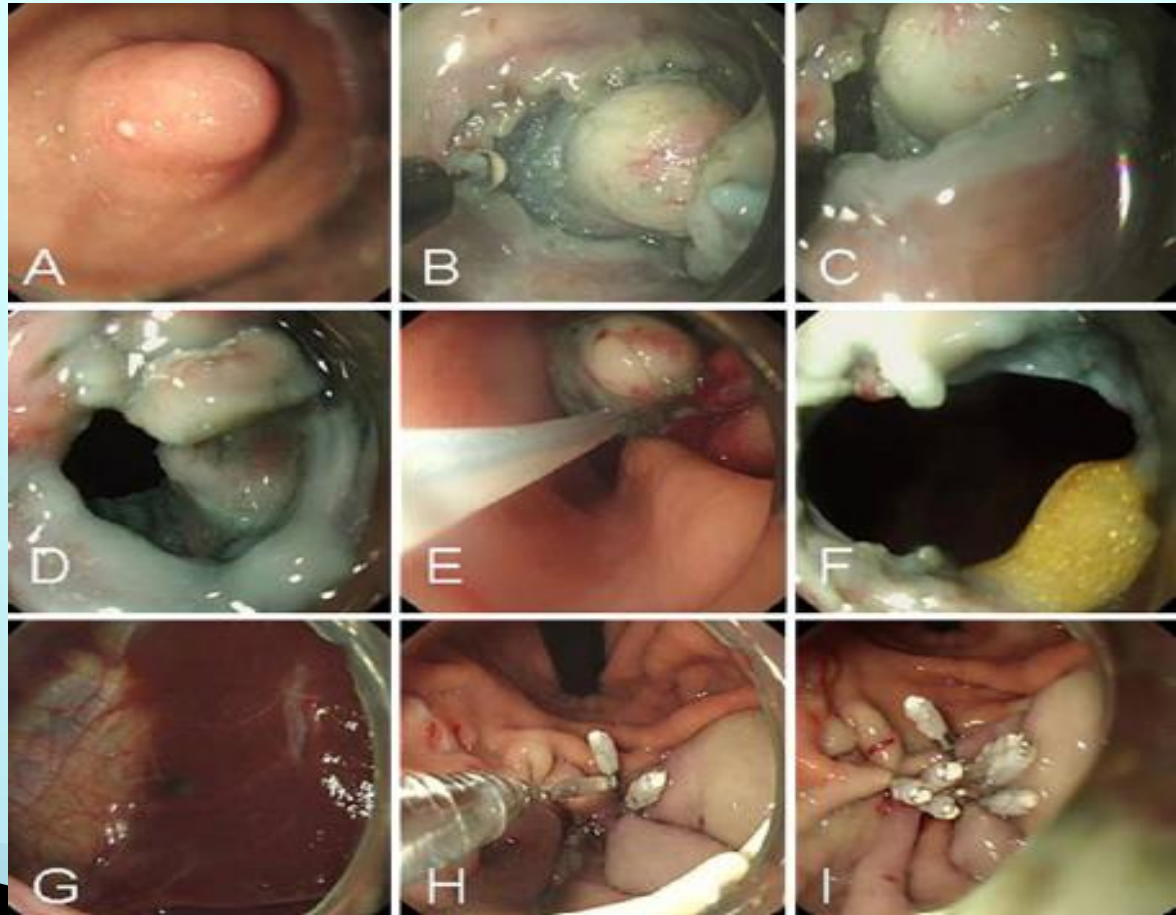
Full-Thickness Resection



Endoscopic full-thickness resection without laparoscopic assistance for gastric submucosal tumors originated from the muscularis propria

Ping-Hong Zhou · Li-Qing Yao · Xin-Yu Qin · Ming-Yan Cai · Mei-Dong Xu · Yun-Shi Zhong · Wei-Feng Chen · Yi-Qun Zhang · Wen-Zheng Qin · Jian-Wei Hu · Jing-Zheng Liu

- Surgical Endoscopy 2011;25:2926–2931
- ESD technique



Patient characteristics	
No. of patients	26
Mean age: years (range)	66.5 ± 6.9 (30–76)
Male/female ratio	11/15
Lesion characteristics	
No. of lesions	26
Mean tumor size: cm (range)	2.8 ± 1.3 (1.2–4.5)
Location	
Anterior wall of gastric corpus	6
Posterior wall of gastric corpus	8
Greater curvature of gastric fundus	5
Lesser curvature of gastric fundus	7
EUS findings	SMT from MP
Outcomes of EFR: % (no. of case)	
Complete resection	100 (26/26)
Perforation	100 (26/26)
Complete closure of perforation	100 (26/26)
Mean procedure time: min (range)	105 ± 32 (60-145)
Pathology	
GIST	16
Leiomyomas	6
Glomus tumors	3
Schwannoma	1
Dignity of GIST: % (no. of case)	
Benign	12.5 (2/16)
Low malignant	75 (12/16)
Malignant	12.5 (2/16)

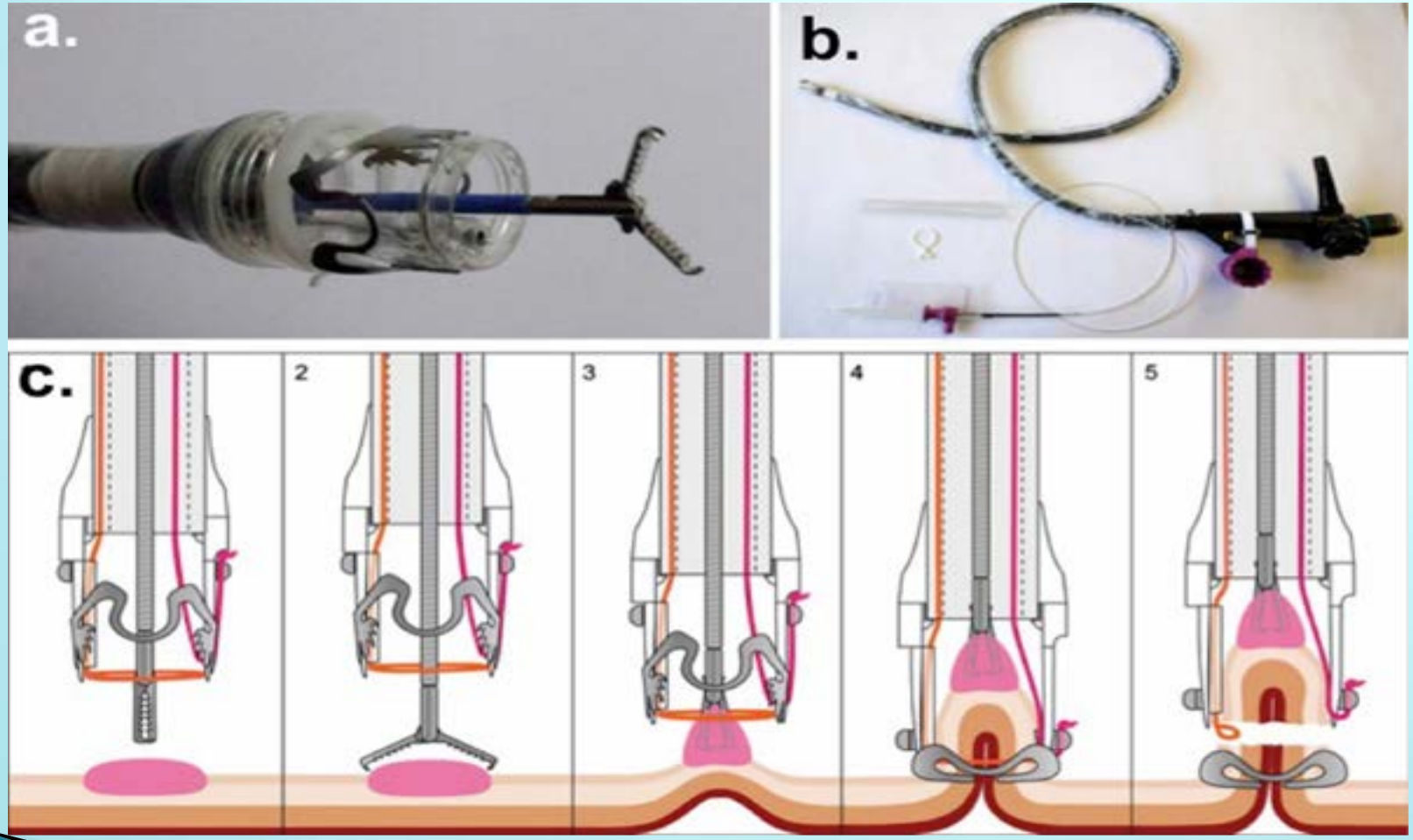
Technically demanding

Long procedure even in experienced hands

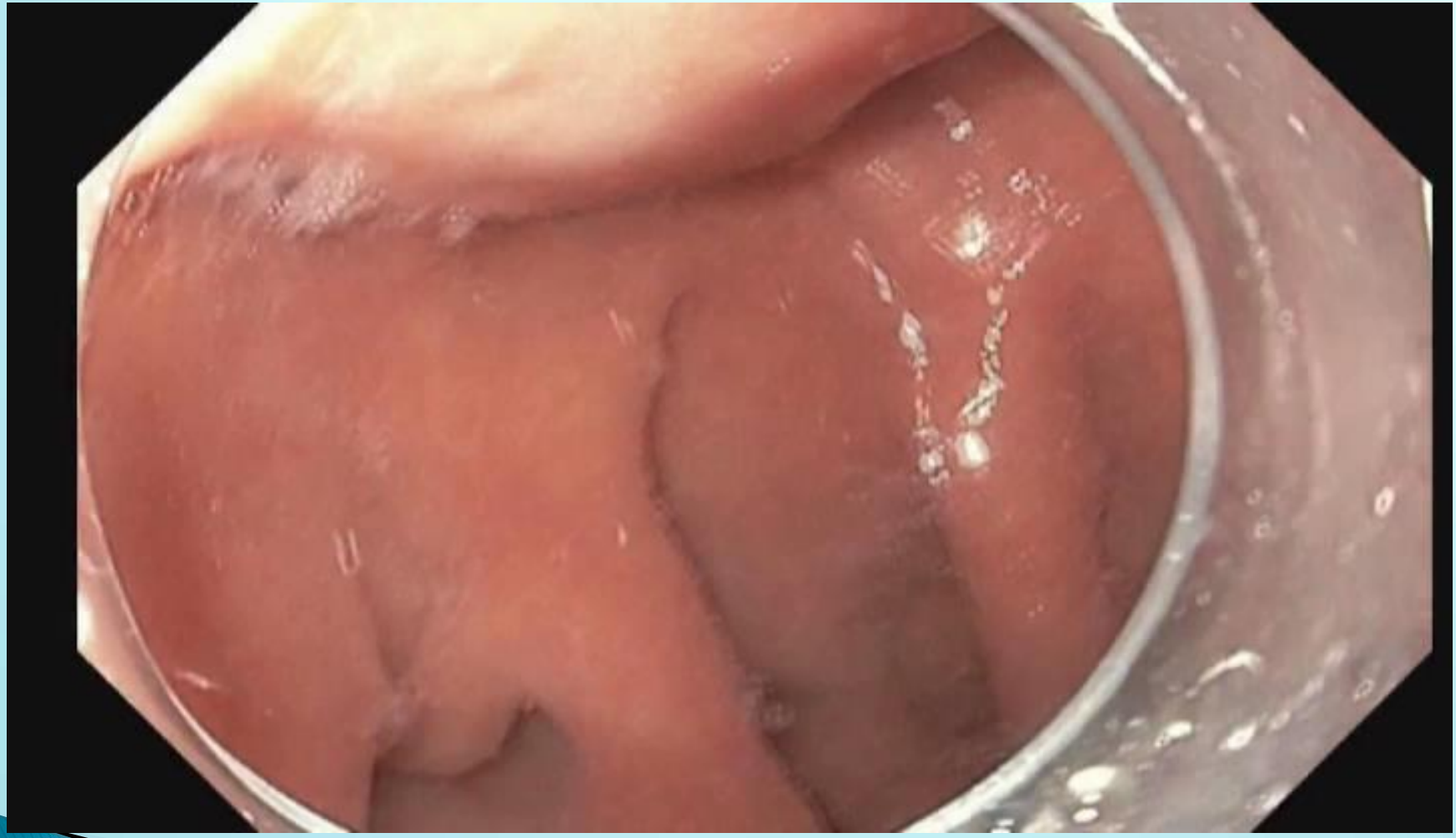
However, reliable R0 resection

Need experience in large defect closure

FTRD



FTRD of Gastric GIST



GASTROINTESTINAL STROMAL TUMOR (1.5CM). TUMOR IS COMPLETELY EXCISED.
Greatest dimension: 1.5cm
TUMOR FOCALITY Unifocal
GIST SUBTYPE Spindle cell
MITOTIC RATE 2/22 HPFs
NECROSIS Not identified
HISTOLOGIC GRADE G1: Low grade; mitotic rate <5/22 HPFs
LYMPHATIC VESSEL AND VENOUS INVASION Not present/not identified
MARGINS Negative for GIST
PRIMARY TUMOR (Pt) pT1: Tumor 2.0cm or less
REGIONAL LYMPH NODES (Pn) pNX: Regional lymph nodes cannot be assessed
DISTANT METASTASIS (pM) Not applicable
IMMUNOHISTOCHEMICAL STUDIES KIT (CD117): Positive S100 and SMA: Negative

Safety of Endoscopic Resection for Upper Gastrointestinal Subepithelial Tumors Originating from the Muscularis Propria Layer: An Analysis of 733 Tumors

Li-Ping Ye, BM[1], Yu Zhang, MM[1], Ding-Hai Luo, MM[1], Xin-Li Mao, MM[1], Hai-Hong Zheng, MM[2], Xian-Bin Zhou, MM[1] and Lin-Hong Zhu, MM[3]

Am J Gastroenterol 2016; 111:788–796

- 726 patients
- UGI SET
- Successful resection: 97%

- 94 pts,13% AEs (mostly perfs, endo Rx)
- 11 AEs managed surgically

	Complete resection			Perioperative perforation			Perioperative bleeding		
	Odds ratio	95% CI	*P* value	Odds ratio	95% CI	*P* value	Odds ratio	95% CI	*P* value
Age, years (≤40, 40 to ≤60, and >60)	—	—	0.138	—	—	0.097	—	—	0.252
Gender (male, female)	—	—	0.959	—	—	0.098	—	—	0.216
Procedure method (traditional, via ST)	—	—	0.496	—	—	0.624	—	—	0.206
Tumor size, cm (≤2.0, 2.0 to ≤3.0, >3.0)	—	—	0.696	1.542	1.067–2.243	0.021*	2.177	1.018–4.655	0.045*
Tumor pathology (leiomyoma, GIST, or others)	—	—	0.218	—	—	0.942	—	—	0.518
Tumor location (esophagus, cardia, stomach, duodenum)	—	—	0.816	—	—	0.206	—	—	0.716
Tumor growth pattern (intraluminal, extraluminal)	2.600	1.007–6.712	0.048*	1.772	1.010–3.110	0.046*	—	—	0.698
Tumor connection to the MP layer (narrow, extensive)	6.113	1.629–22.947	0.007*	10.466	4.995–21.930	<0.001*	4.655	0.889–24.365	0.069*

Limitations of endoscopic resection

- STER is often not possible in the stomach
- STER is not possible when removing very large GISTs
- STER is not possible with ulcerated lesions
- Laparoscopic resection over EFTR for tumors with mainly extraluminal growth
- Closure can be difficult in certain locations (e.g. fundus and posterior gastric wall)

Summary

- EUS is essential in the work-up of SETs
- Endoscopic resection of MP lesions is feasible but challenging
- Techniques used include STER, ESD and EFTR
- Experience with various closure techniques is essential

Thank You