WEO
The voice of world endoscopy

Beyond AI diagnosis: New evidence of ESD, suggesting a refined management of colorectal neoplasm

Yutaka Saito, MD, PhD, FJGES, FASGE

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Agenda

Indication for ESD/JGES guidelines

IEE diagnosis in Japan

Results of CREATE-J

Proposal for WEO guidelines

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Digestive Endoscopy 2020; **32**: 219–239 doi: 10.1111/den.13545

Check for updates

Guidelines

Japan Gastroenterological Endoscopy Society guidelines for colorectal endoscopic submucosal dissection/endoscopic mucosal resection

Shinji Tanaka,[1,2,3,4] Hiroshi Kashida,[1] Yutaka Saito,[1,2] Naohisa Yahagi,[1] Hiroo Yamano,[1] Shoichi Saito,[1] Takashi Hisabe,[1] Takashi Yao,[2] Masahiko Watanabe,[2,3] Masahiro Yoshida,[1,4] Yusuke Saitoh,[1] Osamu Tsuruta,[1] Ken-ichi Sugihara,[2] Masahiro Igarashi,[1] Takashi Toyonaga,[1] Yoichi Ajioka,[2] Masato Kusunoki,[3] Kazuhiko Koike,[4] Kazuma Fujimoto[1] and Hisao Tajiri[1]

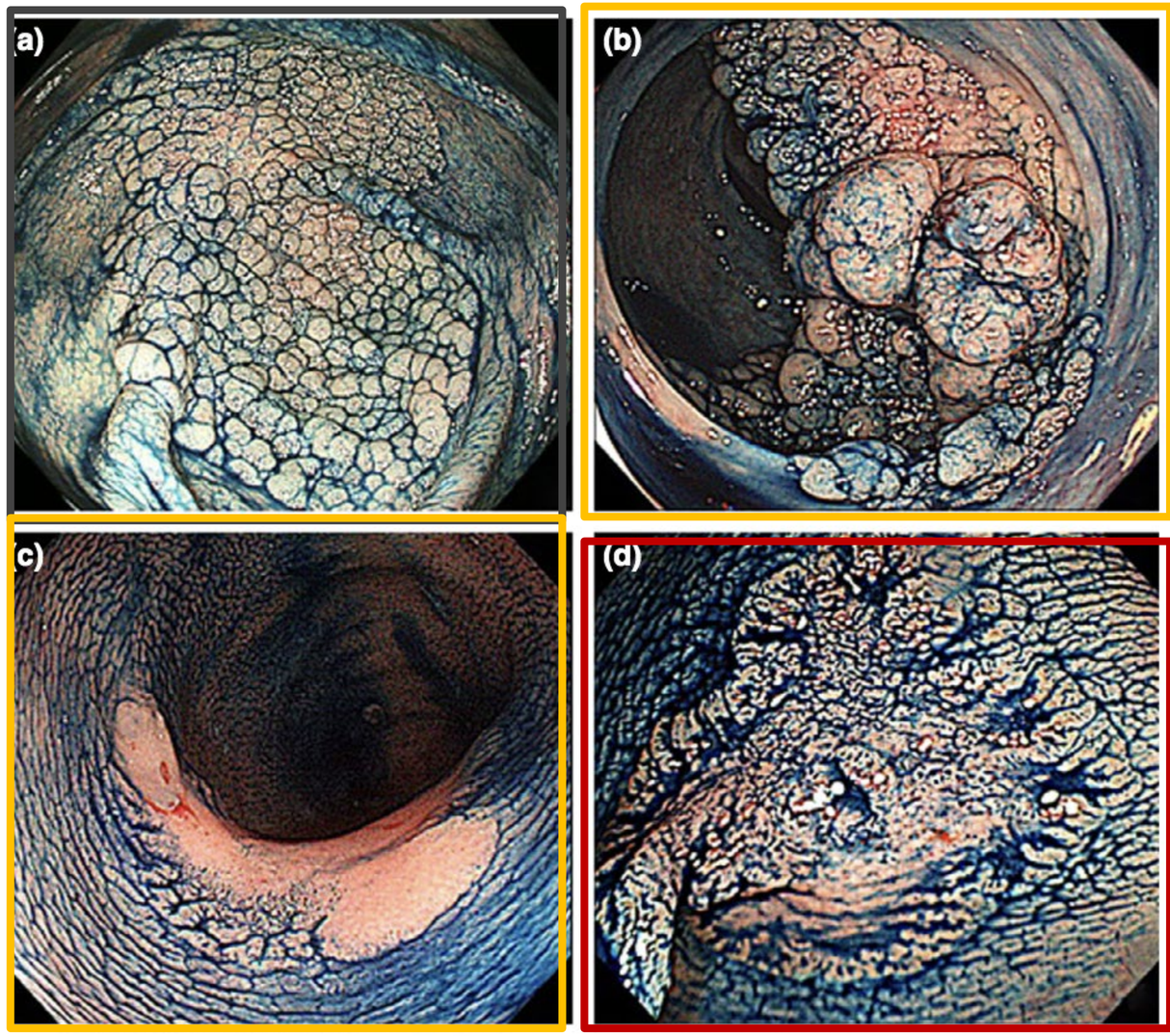
[1]*Japan Gastroenterological Endoscopy Society,* [2]*Japanese Society for Cancer of the Colon and Rectum,* [3]*Japanese Society of Coloproctology, and* [4]*Japanese Society of Gastroenterology, Tokyo, Japan*

Table 2 Indications for ESD for colorectal tumors[†]

Lesions for which endoscopic en bloc resection is required

1) Lesions for which en bloc resection with snare EMR is difficult to apply
   - LST-NG, particularly LST-NG (PD)
   - Lesions showing a V_I-type pit pattern
   - Carcinoma with shallow T1 (SM) invasion
   - Large depressed-type tumors
   - Large protruded-type lesions suspected to be carcinoma[‡]
2) Mucosal tumors with submucosal fibrosis[§]
3) Sporadic localized tumors in conditions of chronic inflammation such as ulcerative colitis
4) Local residual or recurrent early carcinomas after endoscopic resection

[†]Partially modified from the draft proposed by the Colorectal ESD Standardization Implementation Working Group.
[‡]Including LST-G, nodular mixed type.
[§]As a result of a previous biopsy or prolapse caused by peristalsis of the intestine.
EMR, endoscopic mucosal resection; ESD, endoscopic submucosal dissection; LST-G, laterally spreading tumor granular type; LST-NG, laterally spreading tumor non-granular type; PD, pseudo-depressed; SM, submucosal.



f laterally spreading tumors (LST; classification should be done on the basis of image
praying). LST-G, laterally spreading tumor granular type; LST-NG, laterally spreading
us type LST-G (Homo); (b) nodular mixed-type LST-G (Mix); (c) flat-elevated-type LST-NG
IG (PD).

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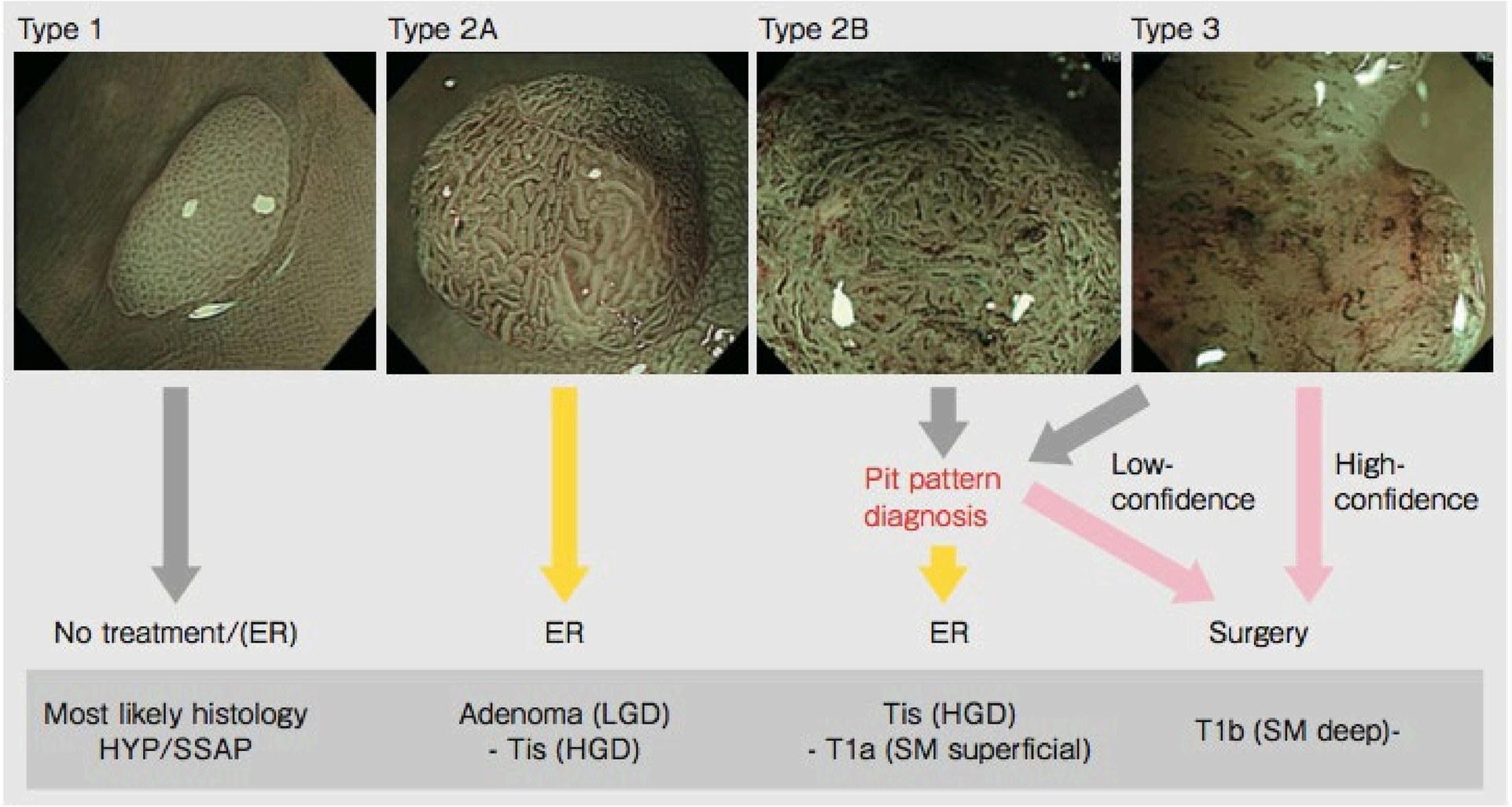
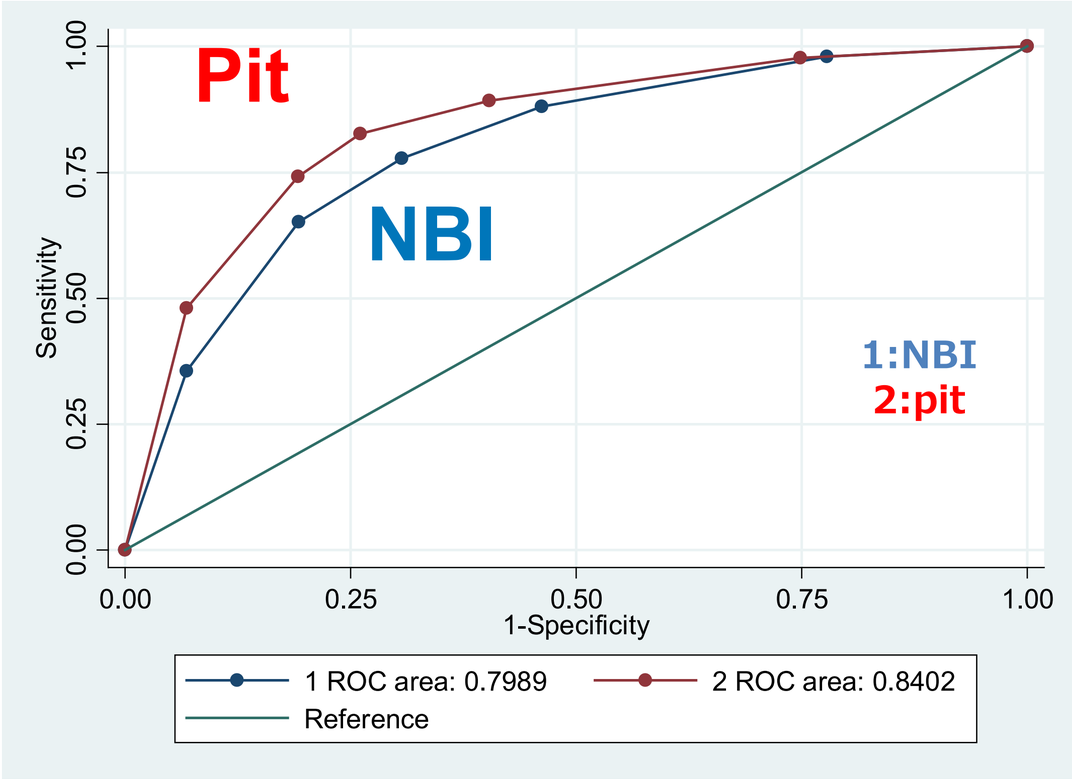


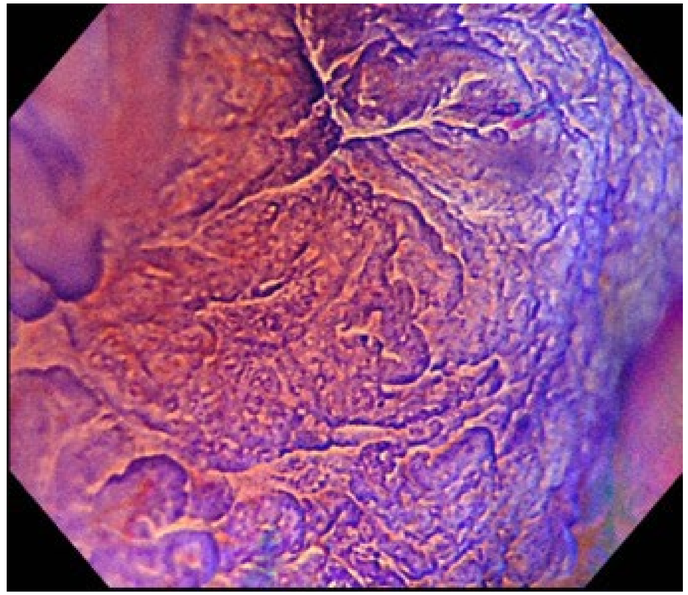
図3　JNET分類（大腸拡大NBI分類）

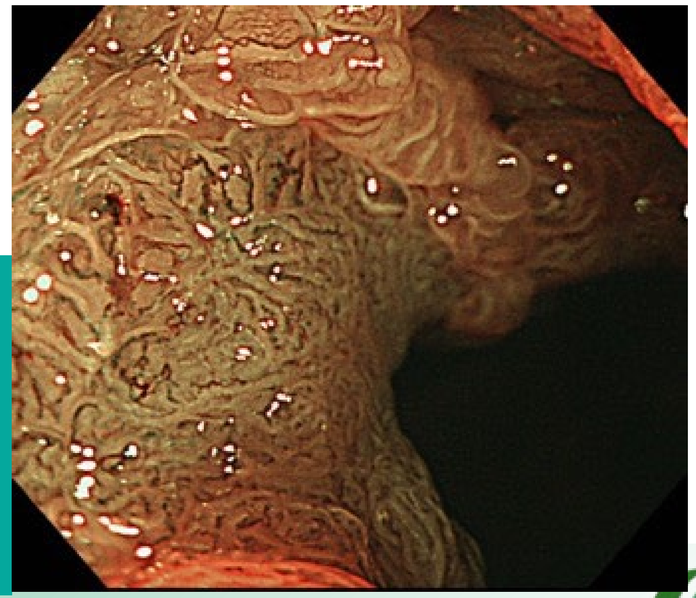
Sakamoto T, Saito Y, et al. GIE2018

Result1

ROC analysis for NBI and Pit pattern Diagnosis







Pit pattern≫ magnified NBI For Depth Diagnosis

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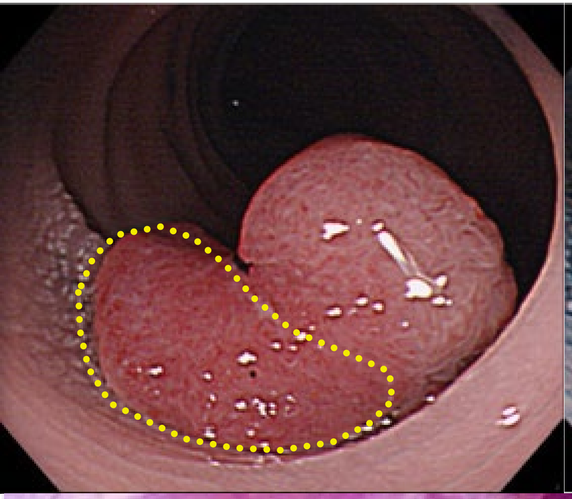
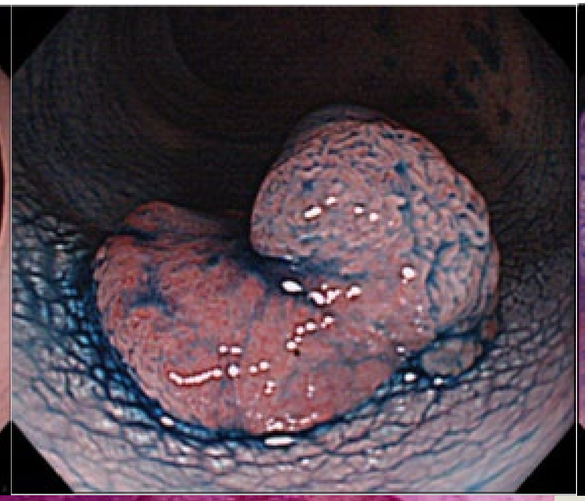
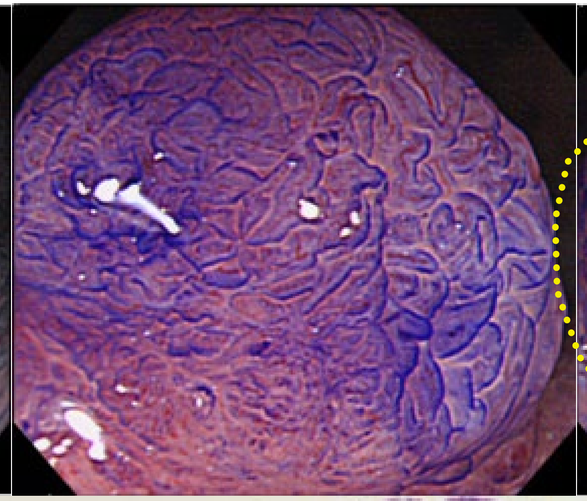
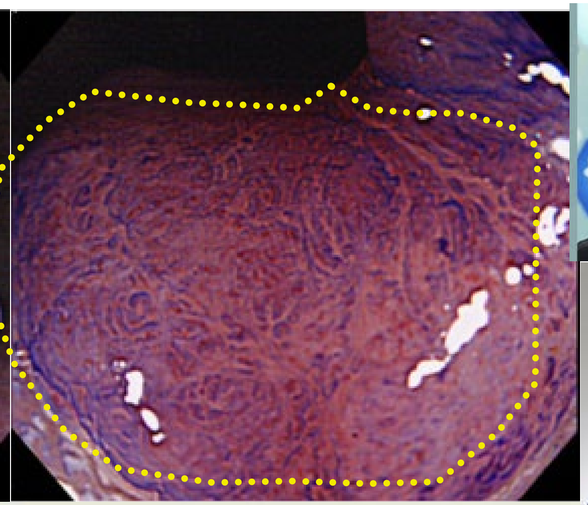
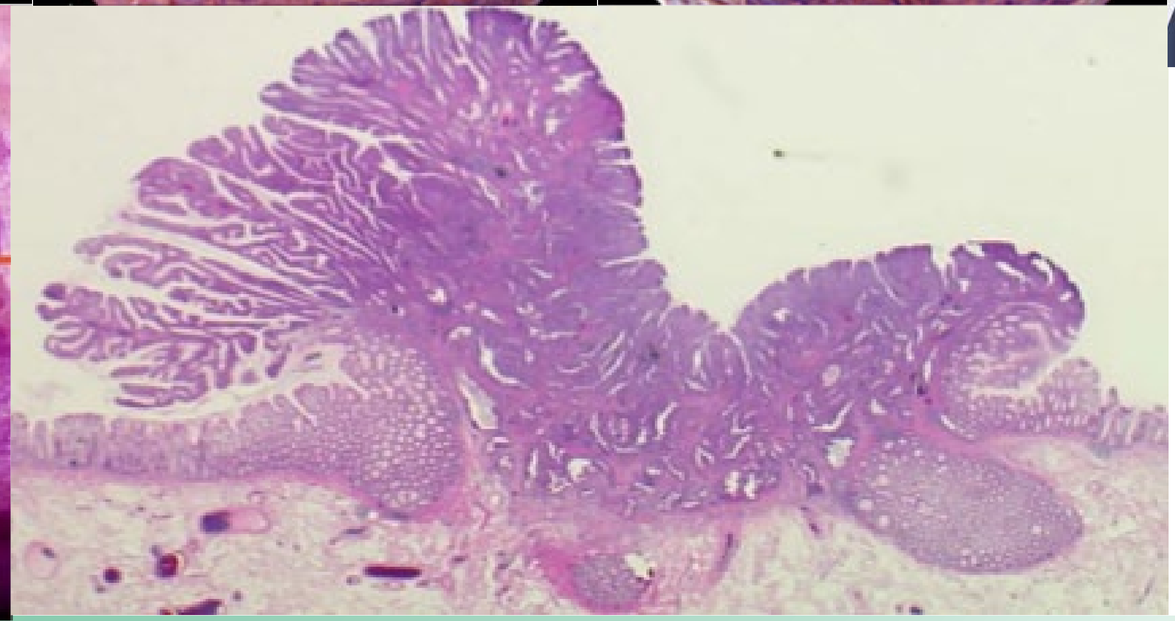
VI (invasive pattern) ; VI & demarcated area



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How about in the Western Countries?

OPEN ACCESS

Suboptimal endoscopic cancer recognition in colorectal lesions in a national bowel screening programme

Jasper L A Vleugels,[1] Lianne Koens,[2] Marcel G W Dijkgraaf,[3] Britt Houwen,[1] Yark Hazewinkel,[1] Paul Fockens,[1] Evelien Dekker ,[1] on behalf of the DISCOUNT study group

BMJ

Vleugels JLA, *et al*. *Gut* 2020;**69**:977–980. doi:10.1136/gutjnl-2018-316882

BMJ Vleugels JLA, *et al*. *Gut* 2020;**69**:977–980. doi:10.1136/gutjnl-2018-316882

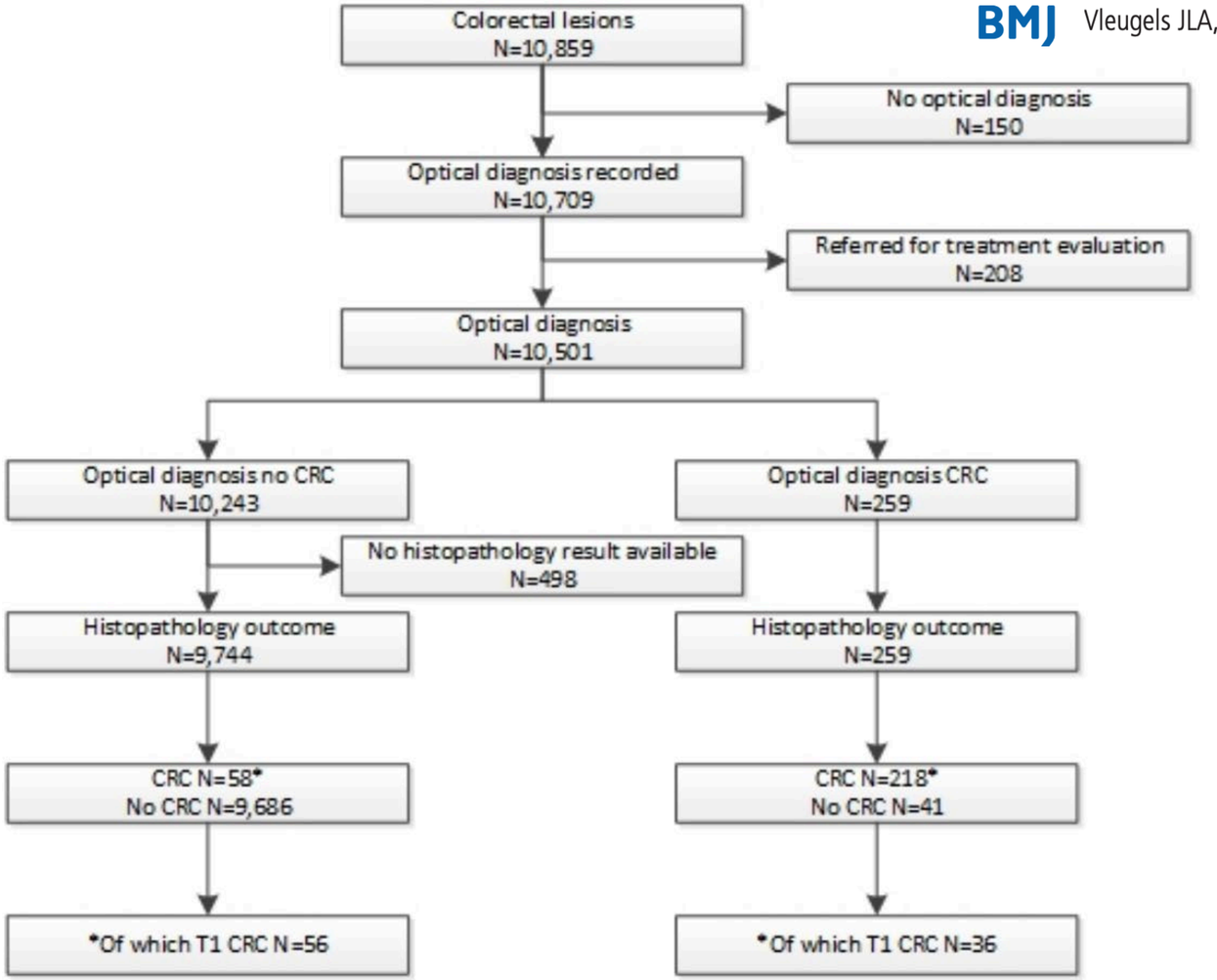


Figure 1 STARD flow chart describing study flow. Between February 2015 and February 2017, 28 participating endoscopists performed 3622 colonoscopies for the Dutch BCSP and detected 10 859 lesions during these colonoscopies. The figure shows the flow through the study along with the primary outcome of optical diagnosis of T1 CRC. Reasons for exclusion are noted. *Depicts the number of T1 CRCs of the total group of CRCs. BCSP, bowel cancer screening programme; CRC, colorectal cancer; STARD, Standards for Reporting Diagnostic Accuracy; T1 CRC, T1 colorectal cancer.

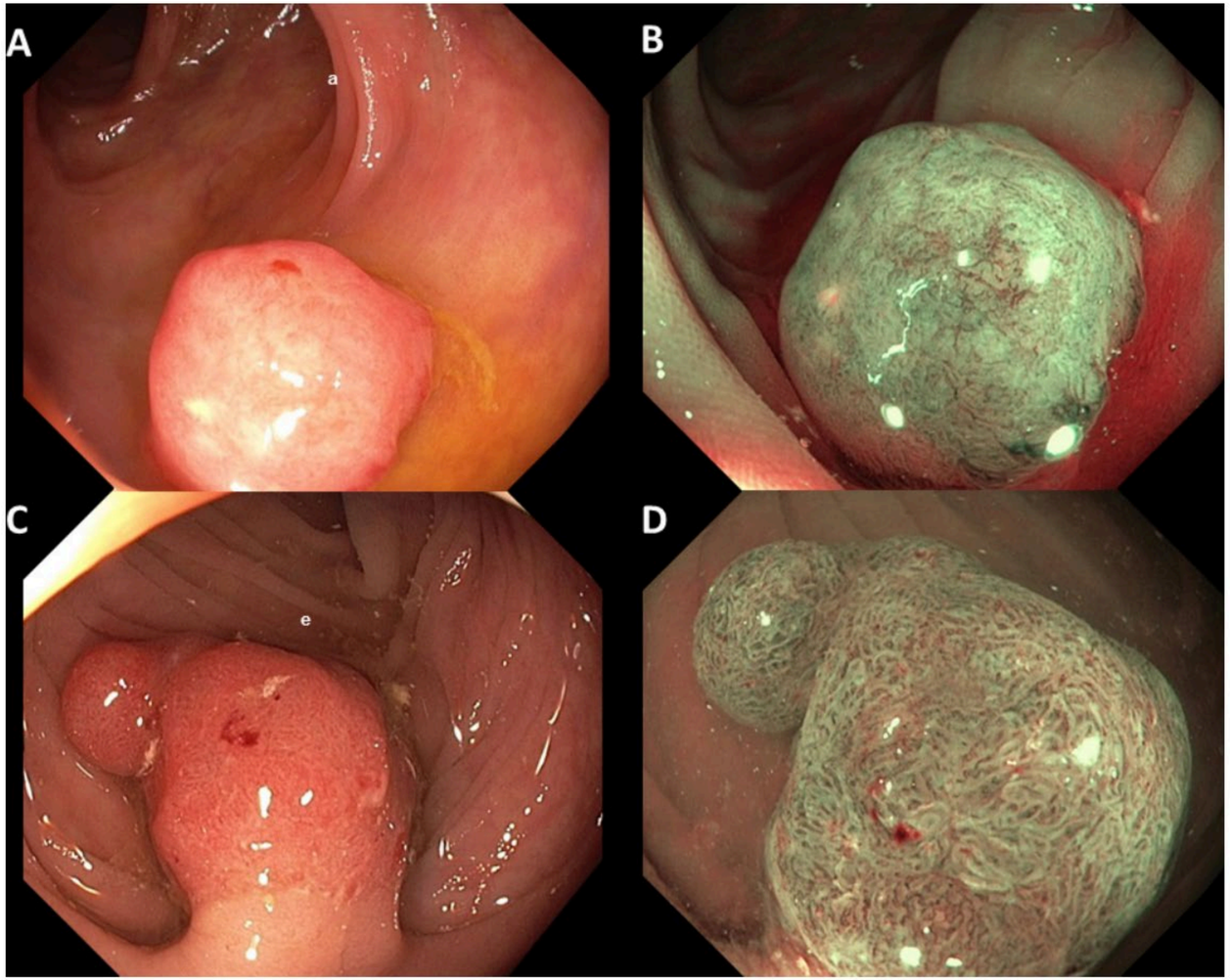


Figure 2 White light (A,C) and corresponding narrow band imaging (B,D) pictures of histologically confirmed T1 colorectal cancers optically diagnosed as adenomas.[27]

Historical Background of IEE-JNET

2011～ | 2015 | 2020～

JNET Classification Confirmed

JNET 1st Scale

Make 1st Consensus by young expert working group

1st Web Trial

1st Consensus meeting by all Japan NBI Expert

Sensitivity/

Specificity Necessity

Delphi method

2nd Consensus meeting by all NBI Expert

Validation Study

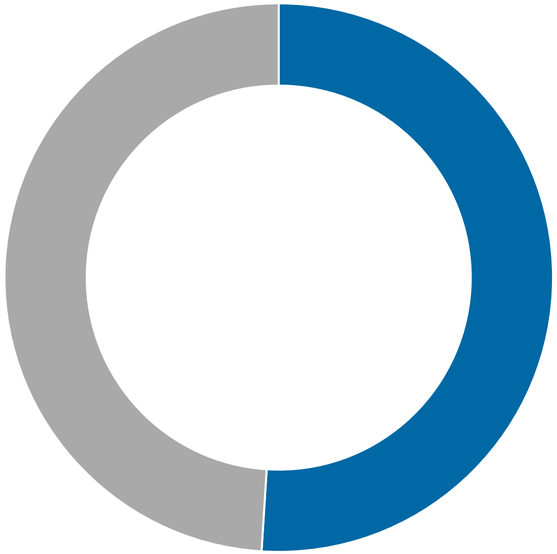
Collaboration between JGES & ESGE

IEE-JNET

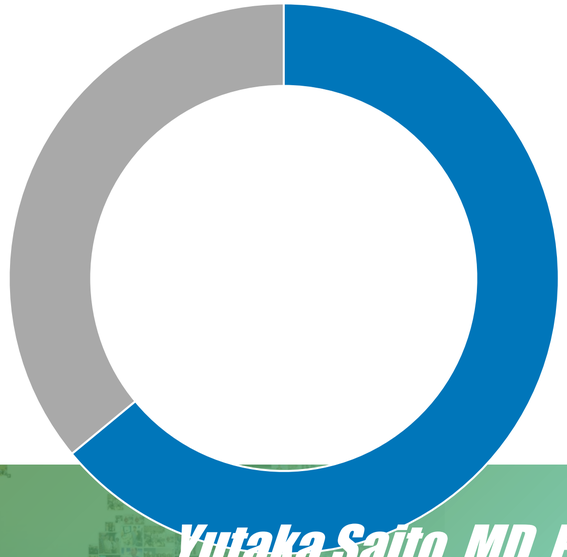
International Evaluation of Endoscopy classification-JNET

1st collaboration study between JGES & ESGE

Result: Accuracy for histology



	Type 1	Type 2A	Type 2B	Type 3
Accuracy (%)	73.3	51.9	45.3	38.1



	Type 1	Type 2A	Type 2B	Type 3
Accuracy (%)	82.1		71.7	

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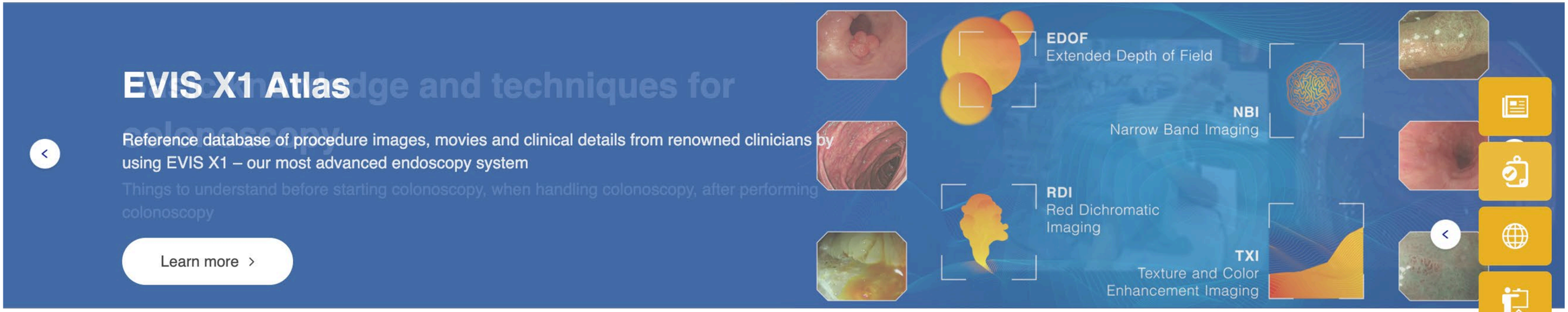


Home > Gastroenterology

Updates

The JNET classification NEW

EVIS X1 Atlas- Colorectal cases (Prof. Yutaka Saito) NEW

Yamada M, Saito Y, et al. Endoscopy 2016

Endoscopy data from NCCH

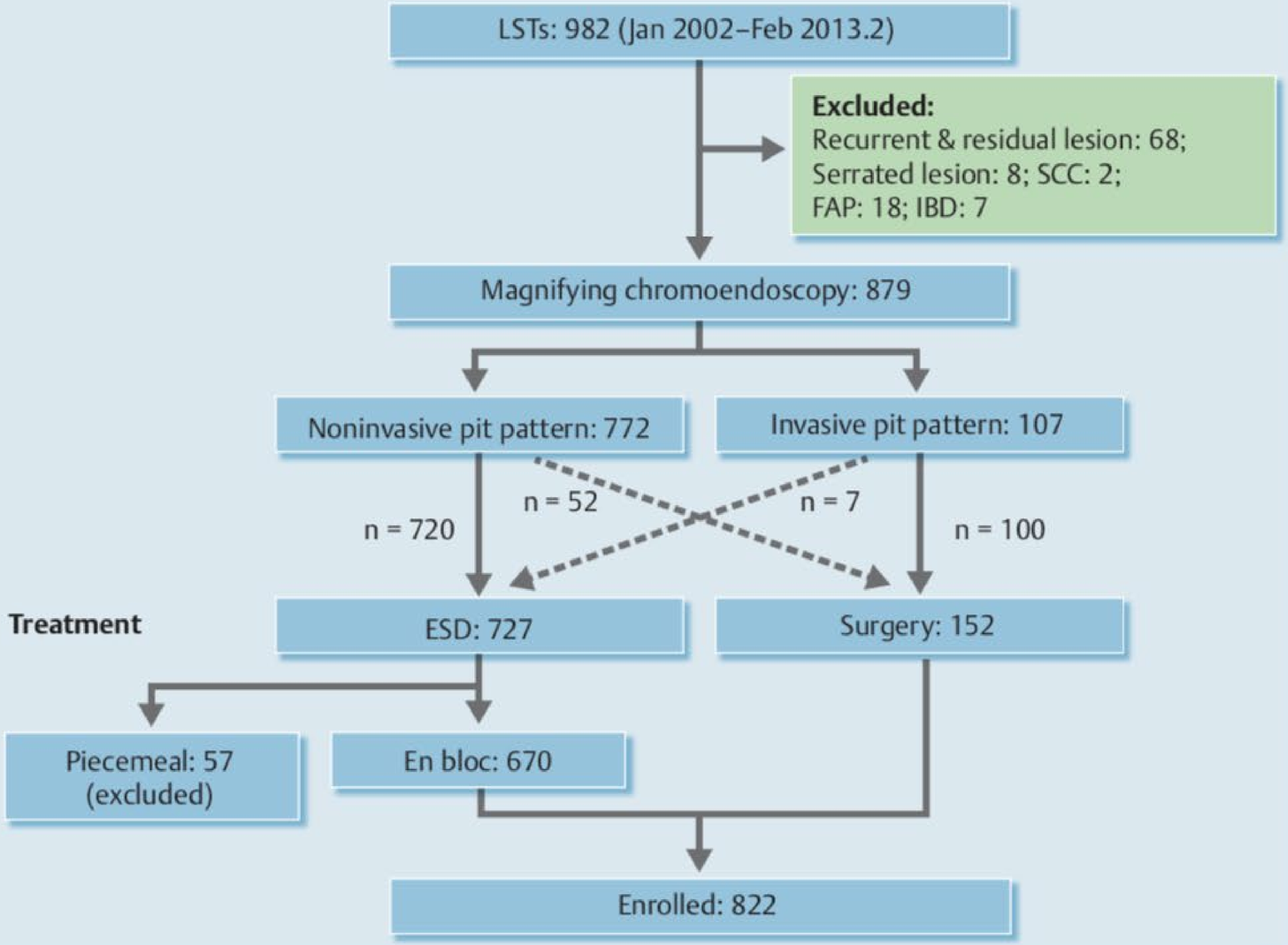
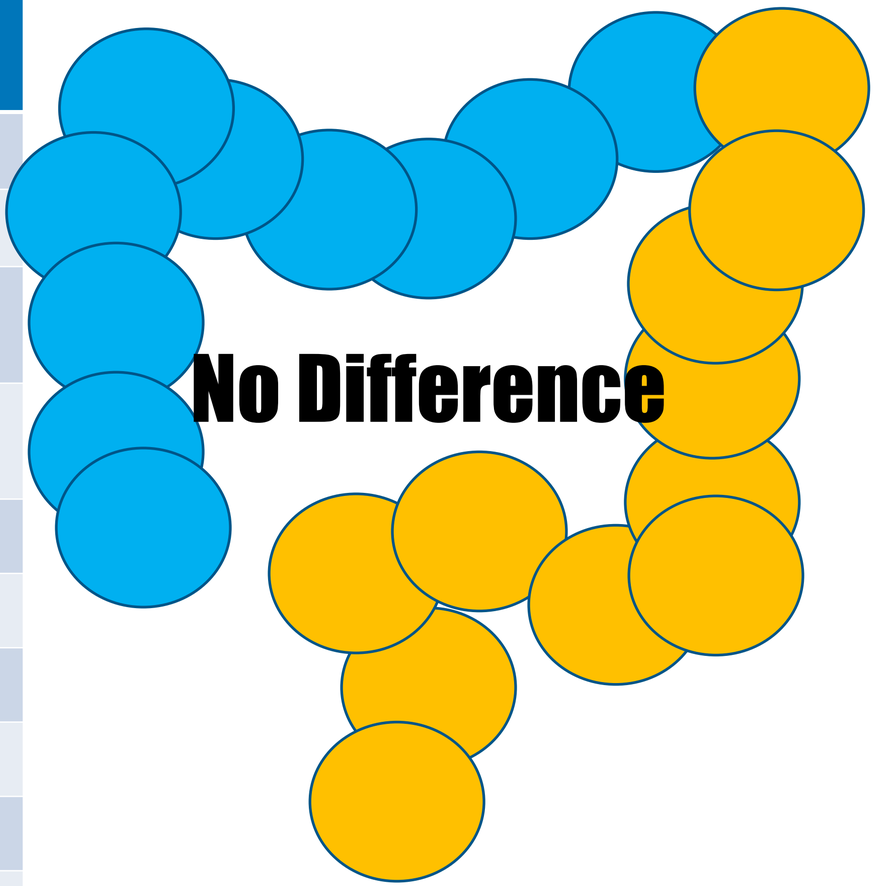


Fig. 2 Study flow diagram. Data are for numbers of laterally spreading tumors. LST, laterally spreading tumor; SCC, squamous cell carcinoma; FAP, familial adenomatous polyposis; IBD, inflammatory bowel disease.

	Deep submucosal invasion[1], n/N (%)	Univariate OR (95%CI)	Multivariate OR (95%CI)

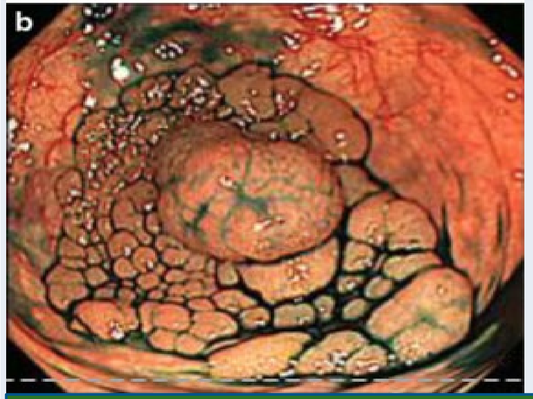
Table 4 Endoscopic predictors for deep submucosal invasion.

	Deep SM invasion, n/N(%)	Univariate OR (95%CI)	Multivariate OR (95%CI)
LST-G			
Tumor location			
Right	26/177 (15%)	0.93 (0.54-1.60)	
Left	37/237 (16%)		
Large nodule			
≧10mm	55/316 (17%)	2.37 (1.09-5.17)	11.7 (2.3-58.6)
	8/98 (8%)		
Depression			
Present	20/23 (87%)	54.0 (15.4-189)	59.2 (9.0-387)
Absent	43/391 (11%)		
Pit pattern (Invasive)			
Present	33/41 (80%)	47.2 (20.0-111)	32.8 (12.2-87.8)
Absent	30/373 (8%)		



Yamada M, Saito Y, et al. Endoscopy 2016

Yamada M, Saito Y, et al. Endoscopy 2016

	Pit	Depression	SMT-like /Large nodule
	**Sens. 71%** **Spec. 98%**	**Sens. 92%** Spec. 73%	Sens. 20% **Spec. 96%**
	**Sens. 52%** **Spec. 98%**	Sens. 32% **Spec. 99%**	**Sens. 87%** Spec. 26%

- ***Limitation of Pit pattern***
- ***PPV is high（Specificity）***
- ***NPV (Sensitivity) is 70% for LST-NG, 50% for LST-G!***

Indication for ESD
JNET 2B & Non-invasive pattern
Any Location including proximal colon

LST-subtypes & Tumor size	20mm-	30-	40-
0-IIa (LST-G, homogenous)	EMR		ESD
0-Is+IIa (LST-G, nodular mixed)	EMR	ESD	
0-IIa(+IIc), 0-IIc (LST-NG)	ESD		

Gut and Liver, Vol.7, No.3, May 2013, 263-269.

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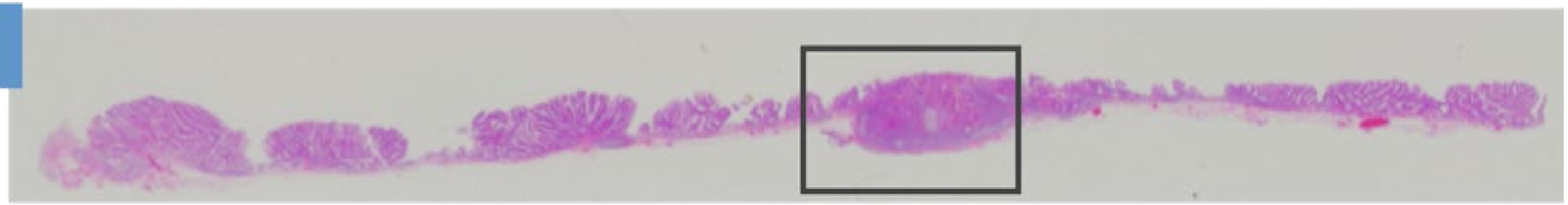
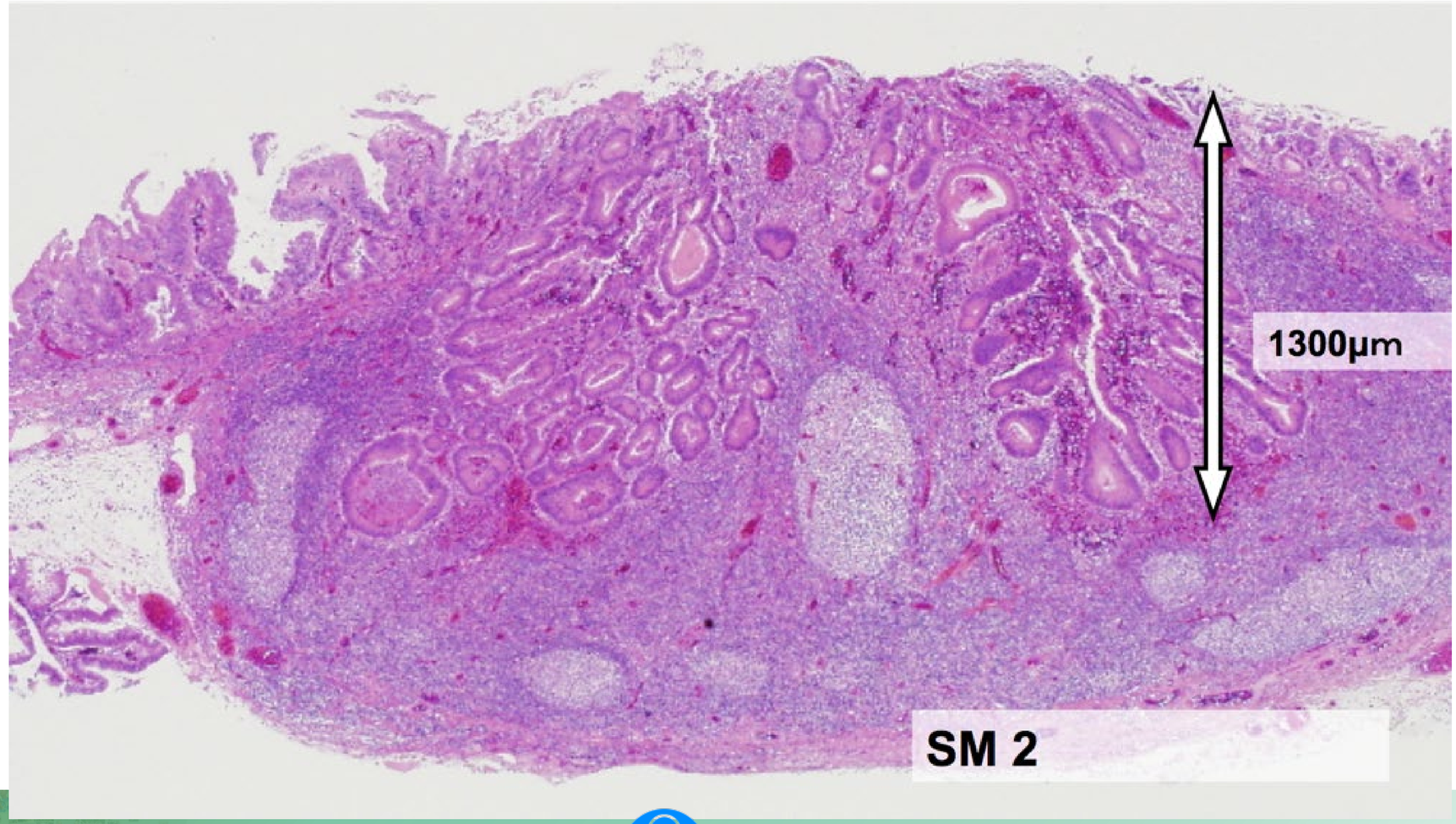
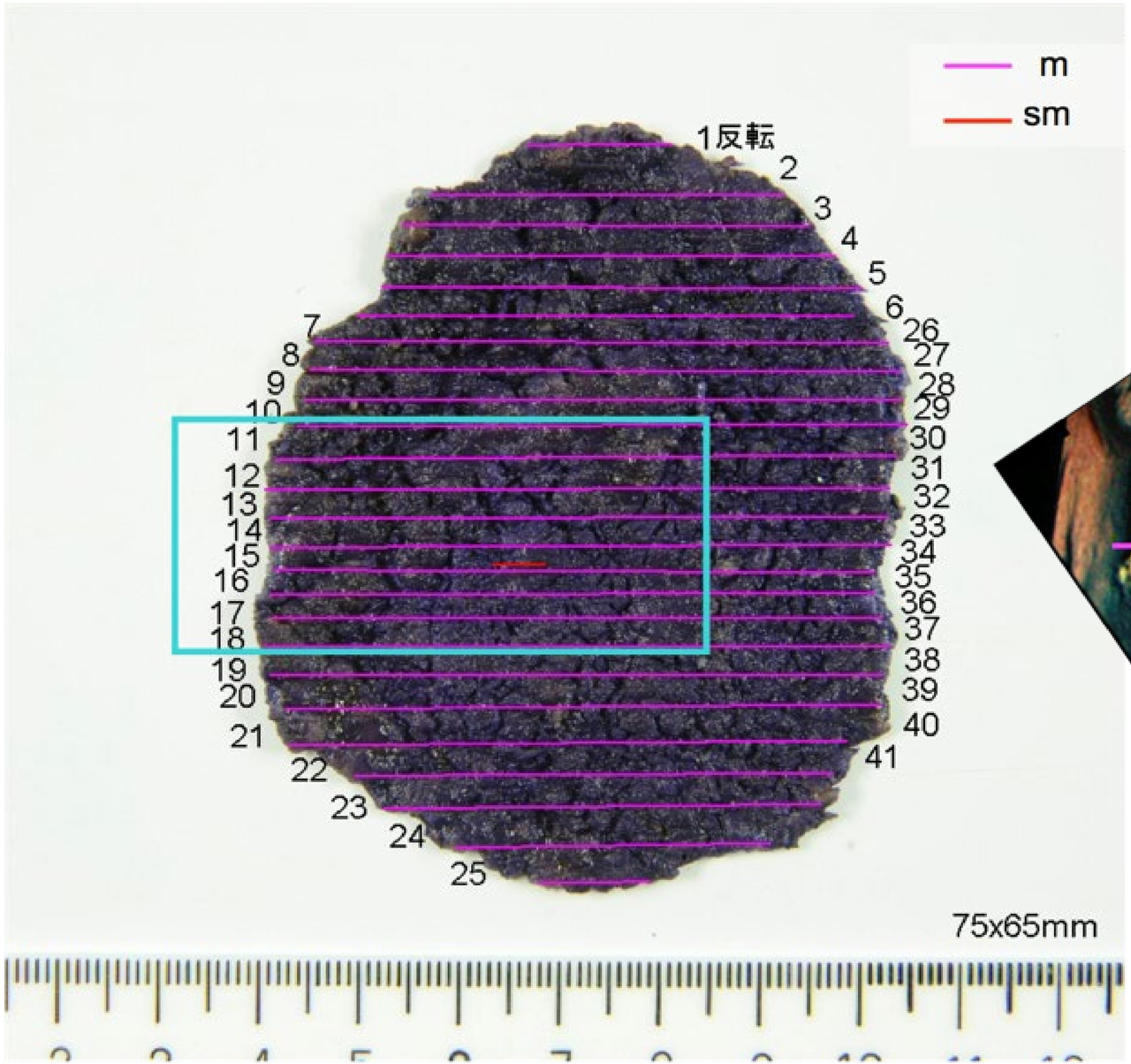
#11



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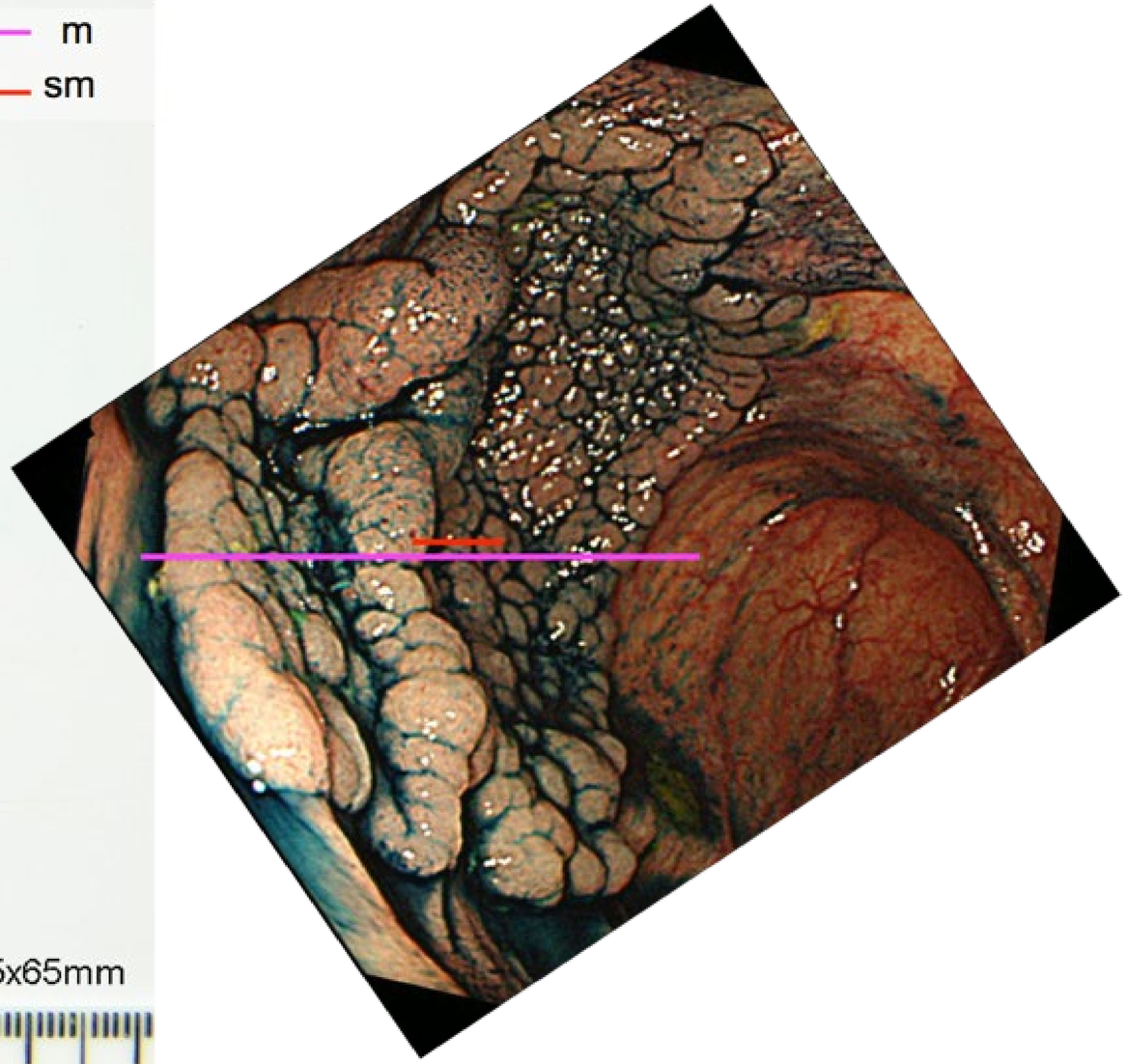

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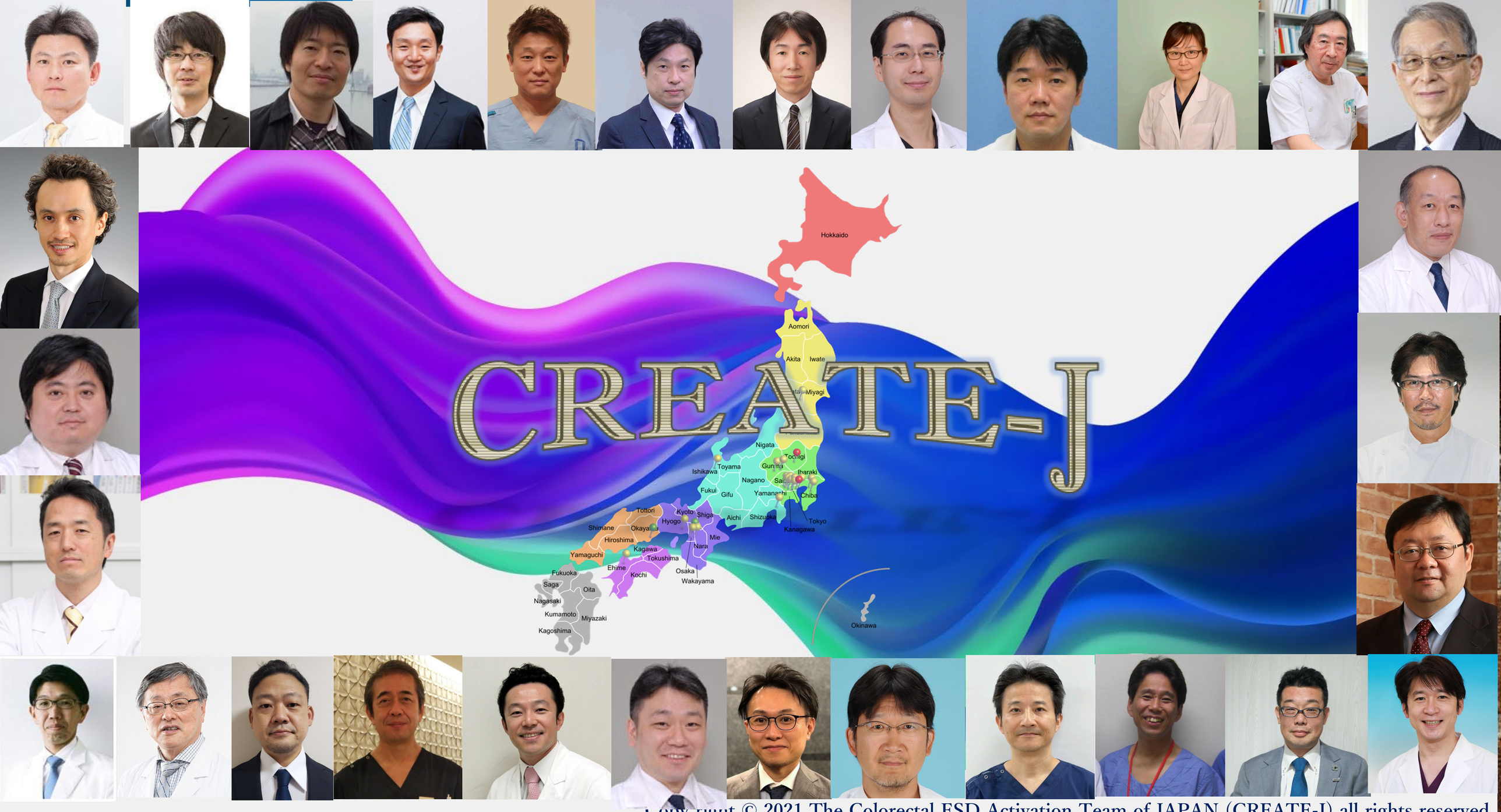

Presenter; SAITO, YUTAKA, E-mail: ytsaito@ncc.go.jp

Digestive Endoscopy 2022; ••: ••–•• doi: 10.1111/den.14223

Original Article

Outcomes of endoscopic submucosal dissection for colorectal neoplasms: Prospective, multicenter, cohort trial

Nozomu Kobayashi,[1] Yoji Takeuchi,[2] Ken Ohata,[5] Masahiro Igarashi,[6] Masayoshi Yamada,[7] Shinya Kodashima,[8] Kinichi Hotta,[14] Keita Harada,[15] Hiroaki Ikematsu,[16] Toshio Uraoka,[9,19] Naoto Sakamoto,[10] Hisashi Doyama,[21] Takashi Abe,[3,22] Atsushi Katagiri,[11] Shinichiro Hori,[23] Tomoki Michida,[2,4] Takehito Yamaguchi,[17,18] Masakatsu Fukuzawa,[12] Shinsuke Kiriyama,[20] Kazutoshi Fukase,[24,25] Yoshitaka Murakami,[13] Hideki Ishikawa[26] and Yutaka Saito[7]

Table 3 Incidence of submucosal invasion in lesions preoperatively diagnosed as intramucosal lesions (serrated lesions were

Location	n	SM-invasion	OR	95% CI	T1b	OR	95% CI
Right colon	922	13.6%	1	Ref.	5.6%	1	Ref.
Left colon	338	17.2%	1.32	0.94-1.85	8.0%	1.45	0.90-2.35
Rectum	414	17.6%	1.37	0.99-1.87	11.8%	2.25	1.5—3.37
Combination of location & morphology							
Right, LST-G	467	8.1%	1	Ref.	3.9%	1	Ref.
Right, LST-NG	382	17.5%	2.4	1.58-3.66 <0.001	5.2%	1.38	0.73-2.62 0.333
Right, non-LST	73	27.4%	4.26	2.32-7.82 <0.001	19.2%	5.92	2.83-12.39 <0.001
Left, LST-G	130	11.5%	1,47	0.79-2.75 0.228	9.2%	2.54	1.21-5.34 0.013
Left, LST-NG	168	18.5%	2.56	1.54-4.25 <0.001	4.2%	1.09	0.46-2.58 0.853
Left, non-LST	40	30.0%	4.84	2.31-10.18 <0.001	20.0%	6.24	2.58-15.17 <0.001
Rectum, LST-G	301	14.6%	1.93	1.22-3.06 0.005	10.0%	2.76	1.52-5.01 0.001
Rectum, LST-NG	51	29.4%	4.7	2.39-9.29 <0.001	13.7%	3.97	1.61-9.81 0.002
Rectum, non-LST	62	22.6%	3.29	1.68-6.46 <0.001	19.4%	5.99	2.77-12.99 <0.001

STUDY PROTOCOL

Registration of all Colorectal ESD Pts. **1,984**

Perform colorectal ESD

Pathological assessment

1,883
(1,965 lesions)

Curative (*JSCCR guidelines**)

Non-curative

Additional Surgery

**** JSCCR guidelines Curative***

- No POR/MUC component
- Ly(-) V(-)
- Invasion Depth < 1000μm
- BD1
- VM0

1y

3ys

5ys

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Endoscopy Division, National Cancer Center Hospital

(Clinical Trial Registration: UMIN000010136)

Patient and Lesion Characteristics

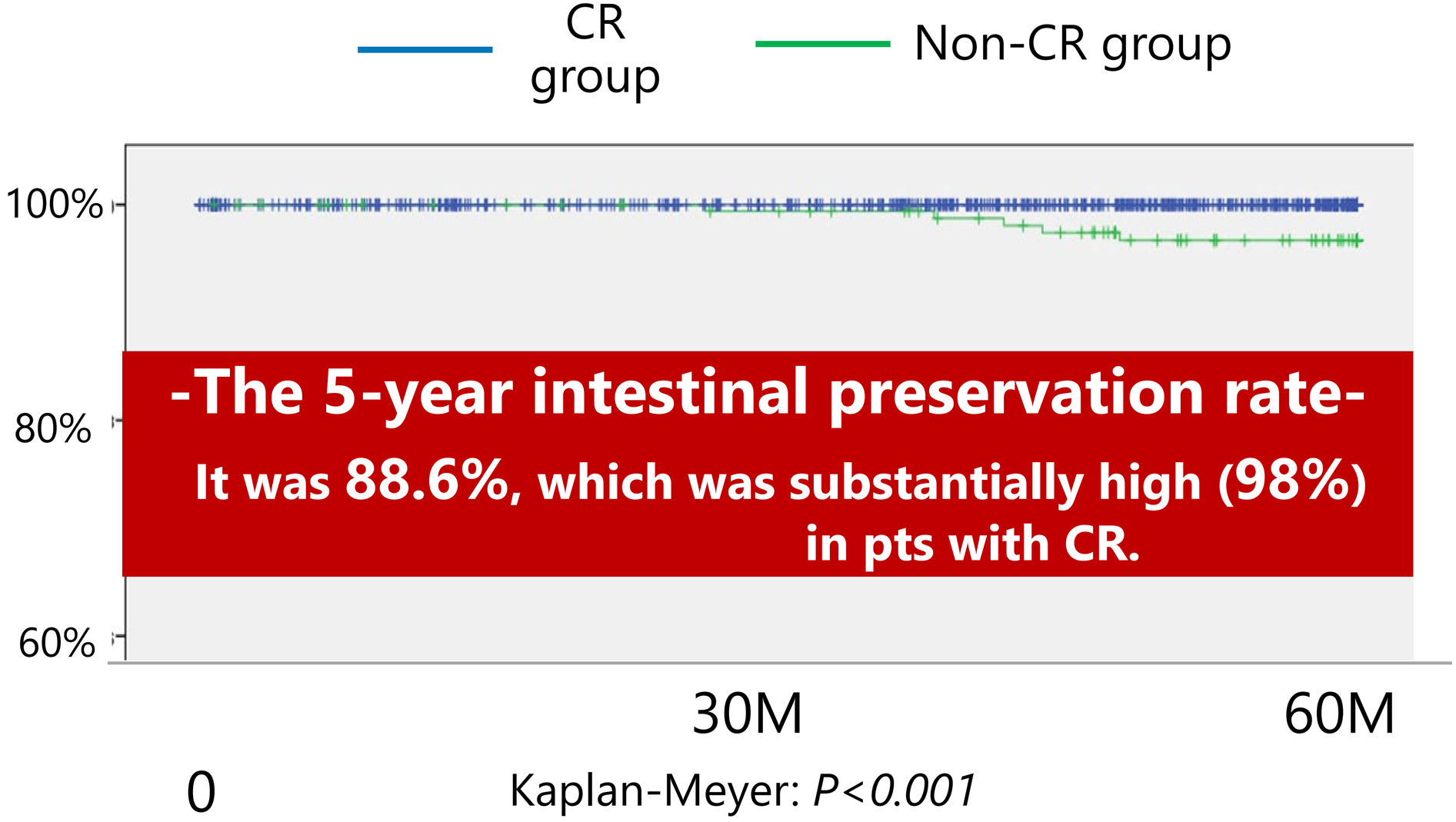
-91% Curative Resection-

	Total	Adenoma	Tis	T1a	T1b -
Number of lesions, n	1814	40%	**39%**	**7%**	**8%**
Curability, n (%)					
Complete CR (%)	**79%**	87%	86%	75%	0
Incomplete CR	**12%**	13%	13%	10%	0
non-CR	9.6%	0.4%	1.0%	14%	100%

Definitions:
Intramucosal cancer, corresponding to high-grade dysplasia and mucosal high-grade neoplasia in the WHO classification, was defined as Tis.
Submucosal invasion < 1000 μm was defined as T1a, and invasion ≥ 1000 μm was recorded as T1b.
CR was achieved when there was no submucosal deep invasion ≥ 1000 μm, lymphovascular invasion, tumor budding, nor a poorly differentiated component.
Complete CR was defined as a CR free of tumor at both lateral and horizontal margins of the specimen.
Incomplete CR was defined as CR with lateral margin presence or cannot be determined because of coagulation artefacts.
Adenoma includes serrated lesions.

➢The primary outcomes:

Comparison of Disease-free Specific Survival



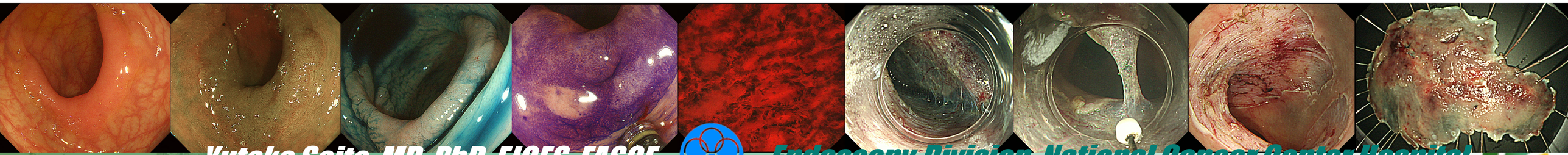
CONCLUSIONS

In this multicenter cohort study,

- ✓ **Favorable long-term outcomes after C-ESD ≥ 20 mm ; the 5-year DSS and OS rates were 99.6% & 93.5%, respectively.**

- ✓ **To note, the 5-year intestinal preservation rate was 98.1% when CR was achieved in the initial ESD procedure.**

- ✓ **ESD can be a potential first-line therapy for superficial colorectal neoplasms ≥ 20 mm.**

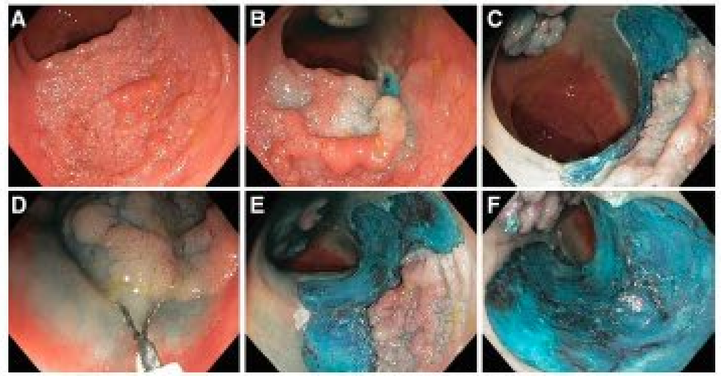


Our ESD multicenter study vs. ACE-study

CLINICAL—ALIMENTARY TRACT

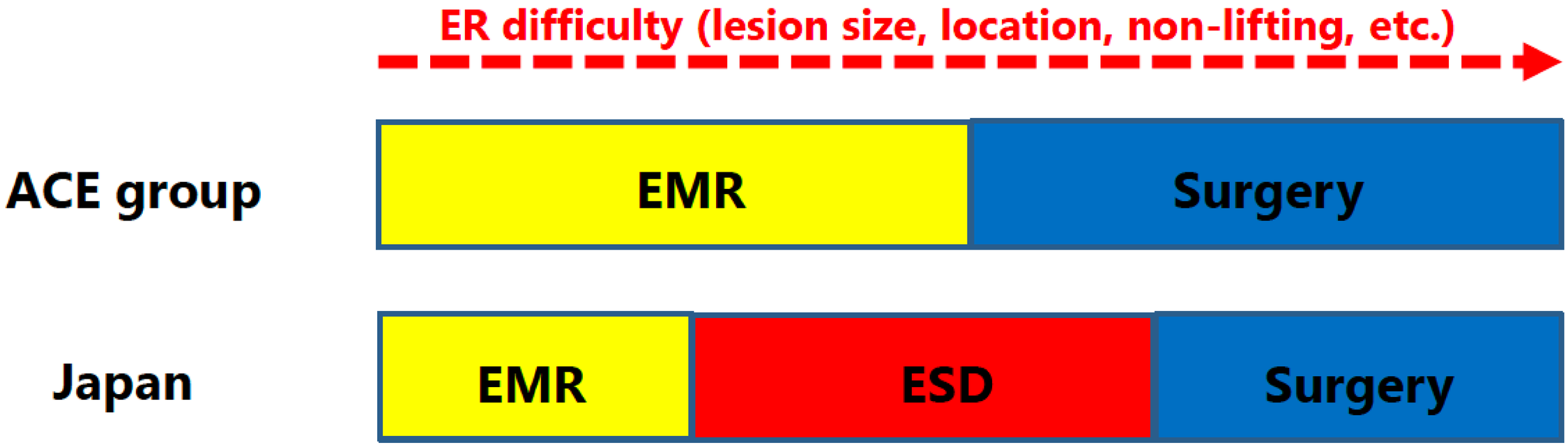
Endoscopic Mucosal Resection Outcomes and Prediction of Submucosal Cancer From Advanced Colonic Mucosal Neoplasia

GASTROENTEROLOGY 2011;140:1909–1918



	ESD 1,965 cases	Moss, et al. 479 cases
Perforation	3.2%	1.3%
Delayed Bleeding	2.2%	2.9%
Emergency Surgery	0.5%	0.6%

The target lesions might be different or



	ESD ; 1965 cases	Moss, et al. ; 479 cases
Cancer		
T1	15.3%	7.6%
T1b	7.6%	3.7%

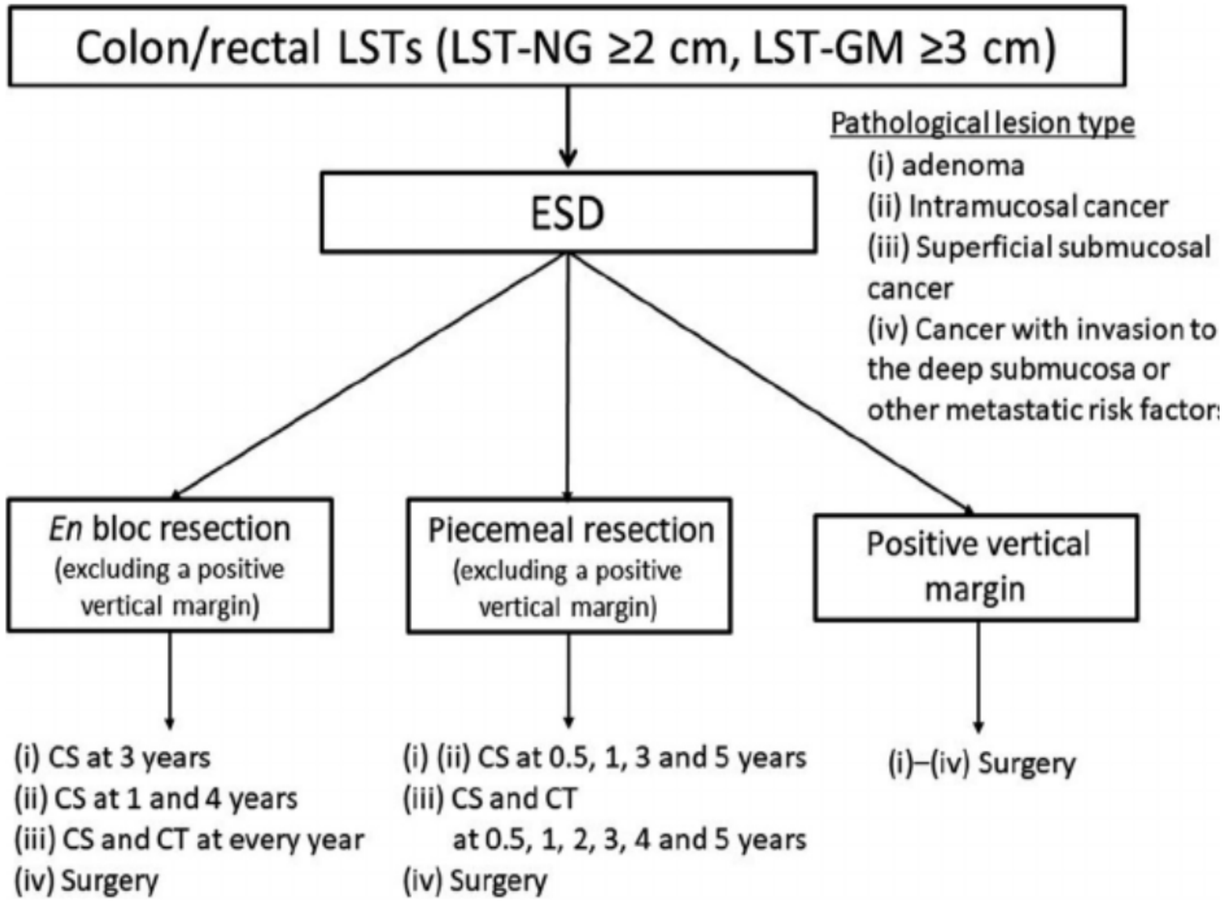
Digestive Endoscopy 2021; ••: ••–•• doi: 10.1111/den.14058

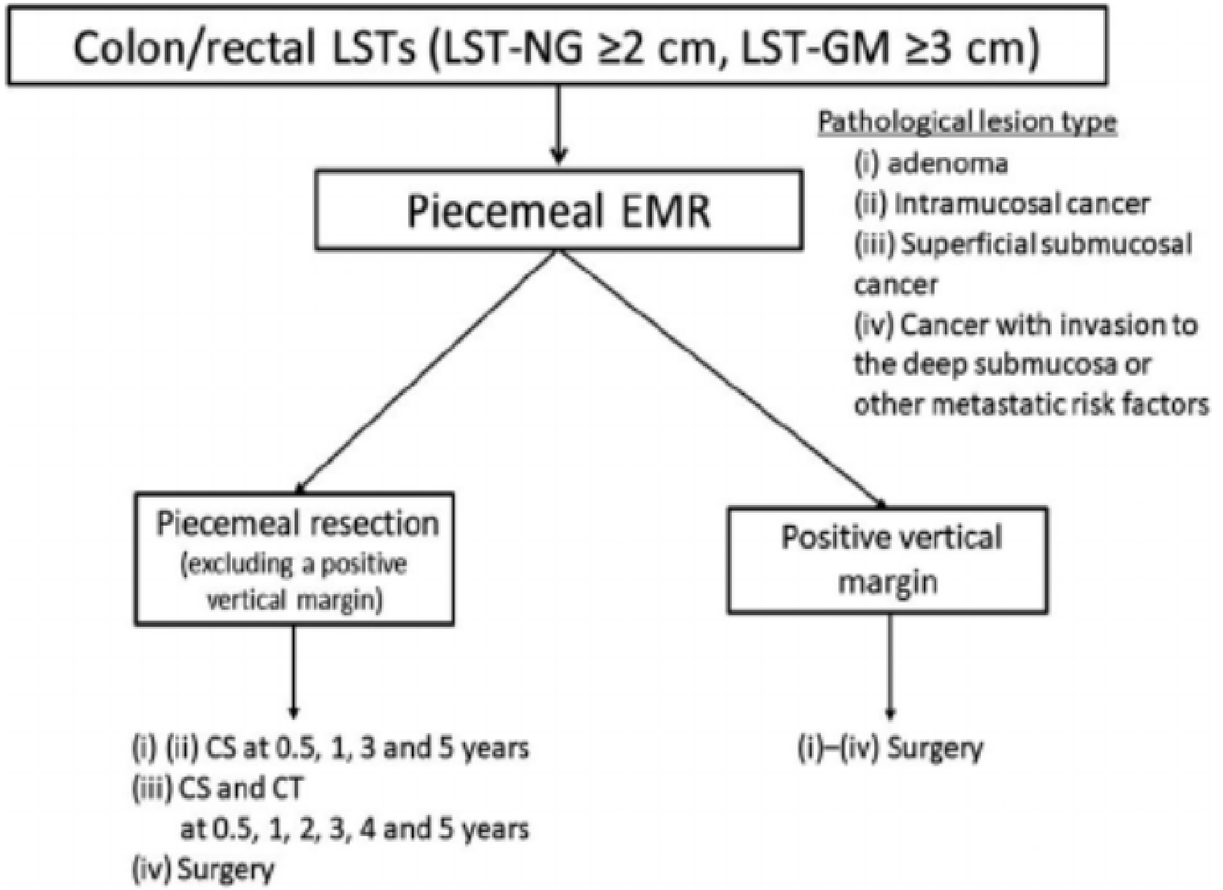
Original Article

Cost-effectiveness analysis of endoscopic resection for colorectal laterally spreading tumors: Endoscopic submucosal dissection versus piecemeal endoscopic mucosal resection

Masau Sekiguchi,[1,2,3,7] Ataru Igarashi,[5,6] Yasuhiko Mizuguchi,[2] Hiroyuki Takamaru,[2] Masayoshi Yamada,[2] Taku Sakamoto,[2] Henrik Maltzman,[8] Ylva Falken,[7] Minoru Esaki,[4] Takahisa Matsuda[1,2,3] and Yutaka Saito[2]

[1]*Cancer Screening Center,* [2]*Endoscopy Division, National Cancer Center Hospital,* [3]*Division of Screening Technology, Center for Public Health Sciences, National Cancer Center,* [4]*Hepatobiliary and Pancreatic Surgery Division, National Cancer Center Hospital,* [5]*Department of Health Economics and Outcomes Research, Graduate School of Pharmaceutical Sciences, The University of Tokyo, Tokyo,* [6]*Unit of Public Health and Preventive Medicine, Yokohama City University School of Medicine, Kanagawa, Japan,* [7]*Division of Surgery and* [8]*Division of Medicine, Department of Clinical Sciences, Danderyd Hospital, Karolinska Institutet, Stockholm, Sweden*


Colon/rectal LSTs (LST-NG ≥2 cm, LST-GM ≥3 cm)
ESD
Pathological lesion type
(i) adenoma
(ii) Intramucosal cancer
(iii) Superficial submucosal cancer
(iv) Cancer with invasion to the deep submucosa or other metastatic risk factors
En bloc resection (excluding a positive vertical margin)
Piecemeal resection (excluding a positive vertical margin)
Positive vertical margin
(i) CS at 3 years
(ii) CS at 1 and 4 years
(iii) CS and CT at every year
(iv) Surgery
(i) (ii) CS at 0.5, 1, 3 and 5 years
(iii) CS and CT at 0.5, 1, 2, 3, 4 and 5 years
(iv) Surgery
(i)–(iv) Surgery

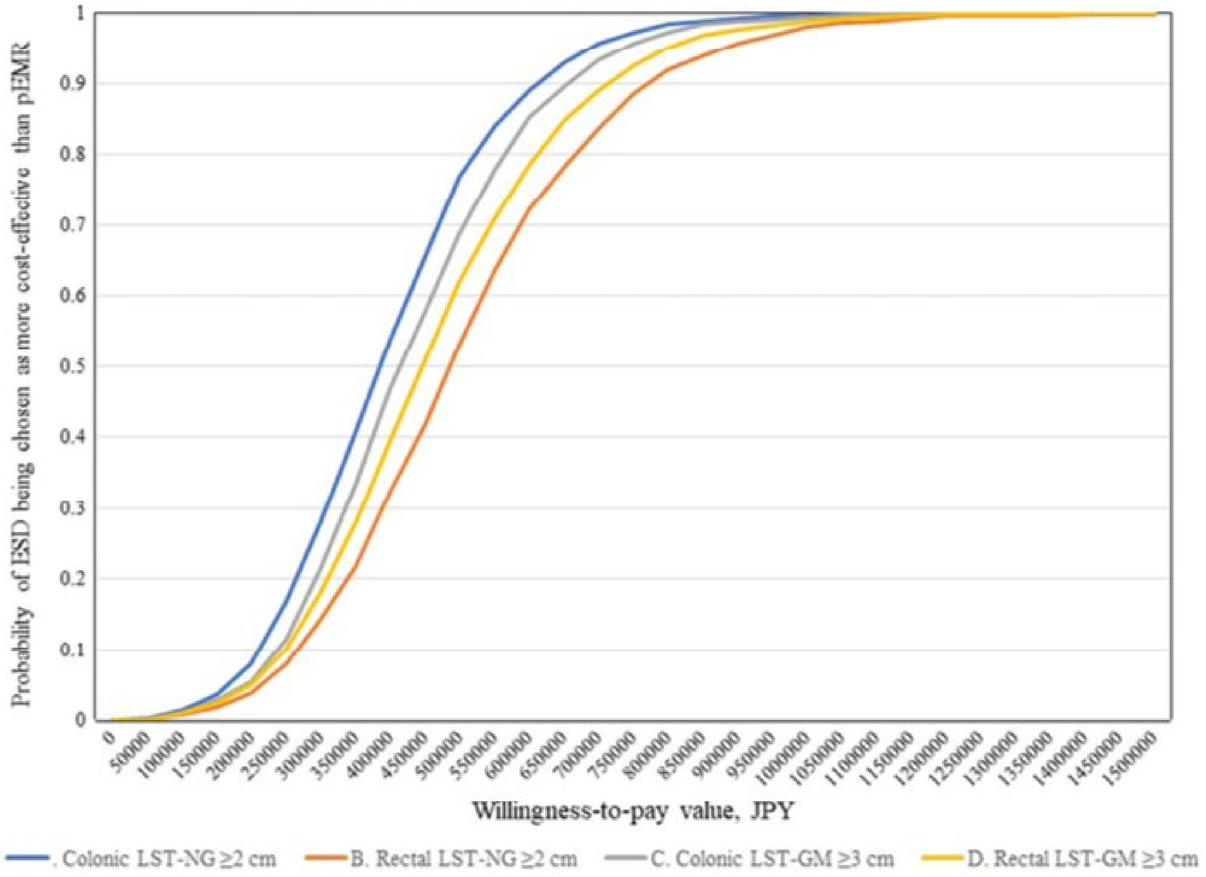

Colon/rectal LSTs (LST-NG ≥2 cm, LST-GM ≥3 cm)
Piecemeal EMR
Pathological lesion type
(i) adenoma
(ii) Intramucosal cancer
(iii) Superficial submucosal cancer
(iv) Cancer with invasion to the deep submucosa or other metastatic risk factors
Piecemeal resection (excluding a positive vertical margin)
Positive vertical margin
(i) (ii) CS at 0.5, 1, 3 and 5 years
(iii) CS and CT at 0.5, 1, 2, 3, 4 and 5 years
(iv) Surgery
(i)–(iv) Surgery

- The recurrence rates following ESD & p-EMR were
- 0.9–1.3% & 21.1–25.9%, respectively.
- The ICR for an avoided recurrence & surgery for ESD against p-EMR were
- 3575–4521 USD & 69,604–77,689 USD, respectively.

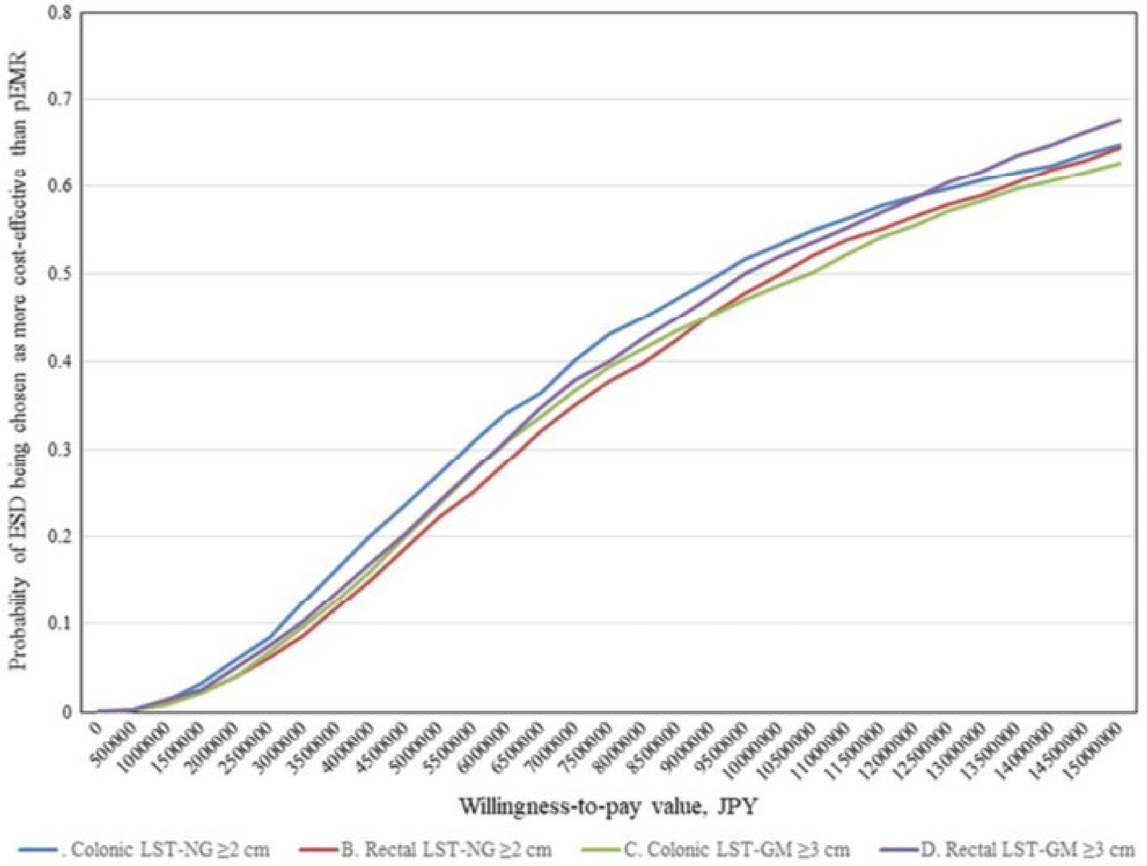
- Probabilistic Sensitivity analysis demonstrated that the probability of ESD being chosen as a more cost-effective option than p-EMR was >50% at willingness-to-pay values of
- ≥3795–4744 USD for avoiding a recurrence
- & ≥90,143–99,631 USD for avoiding a surgery.

- In the scenario analysis, the required cost was also lower for ESD.

In the scenario analysis, the required cost was also lower for ESD



Cost-effectiveness acceptability curves showing the correlation between the probability of endoscopic submucosal dissection being more cost-effective and the willingness-to-pay value for avoiding a recurrence. ESD, endoscopic submucosal dissection; LST-GM, laterally spreading tumor, nodular mixed-type; LST-NG, laterally spreading tumor, non-granular type; pEMR, piecemeal endoscopic mucosal resection.



Cost-effectiveness acceptability curves showing the correlation between the probability of endoscopic submucosal dissection being more cost-effective and the willingness-to-pay value for avoiding a surgery. ESD, endoscopic submucosal dissection; LST-GM, laterally spreading tumor, nodular mixed-type; LST-NG, laterally spreading tumor, non-granular type; pEMR, piecemeal endoscopic mucosal resection.

Indication for ESD
JNET 2B & Non-invasive pattern
Any Location including proximal colon

LST-subtypes & Tumor size	20mm-	30-	40-
0-IIa (LST-G, homogenous)	EMR		ESD
0-Is+IIa (LST-G, nodular mixed)	EMR	ESD	
0-IIa(+IIc), 0-IIc (LST-NG)	ESD		

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Diskussion Points

CQ1 Does Tis (HGD) require en bloc resection?

CQ2 Does Tis of the right -colon also require en bloc resection?

CQ3 Must Histology define intramucosal carcinoma instead of HGD?

Statement;
This could be high-grade dysplasia.
If all agree that intramucosal cancer is equal to HGD.

CQ4 Must Histology conduct I-H staining such as Desmin, D2-40, etc for ESD specimens?

WEO

World Endoscopy Organization