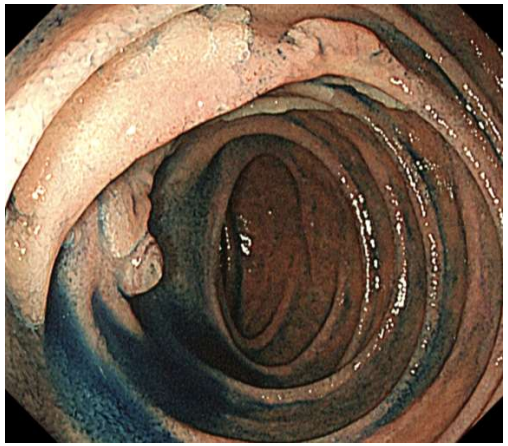
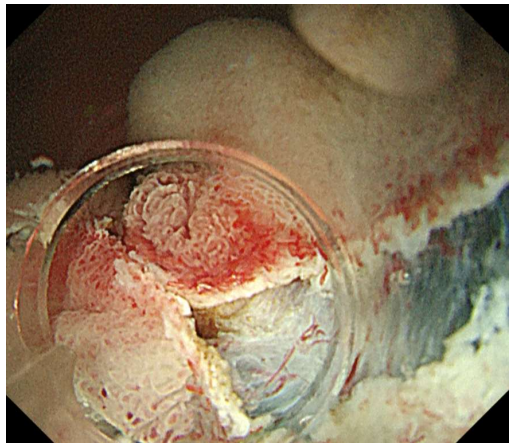
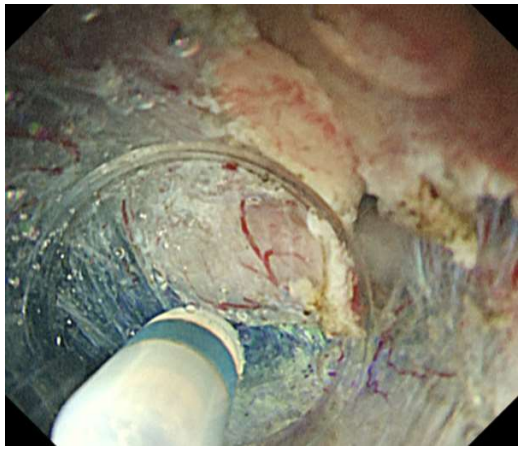
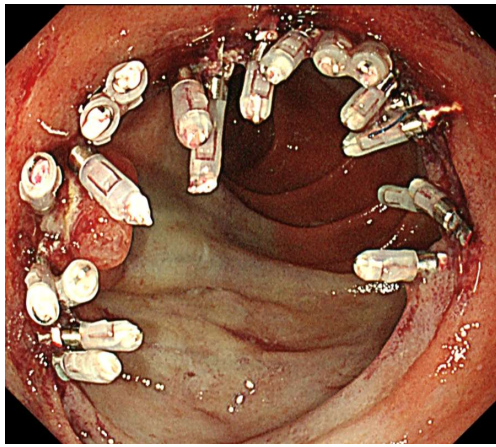
NEW YORK SOCIETY FOR GASTROENTEROLOGY & ENDOSCOPY
48th Annual
NEW YORK COURSE
December 12-13, 2024 • New York, NY

Update In EMR / ESD



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Division of Research and Development for Minimally Invasive Treatment
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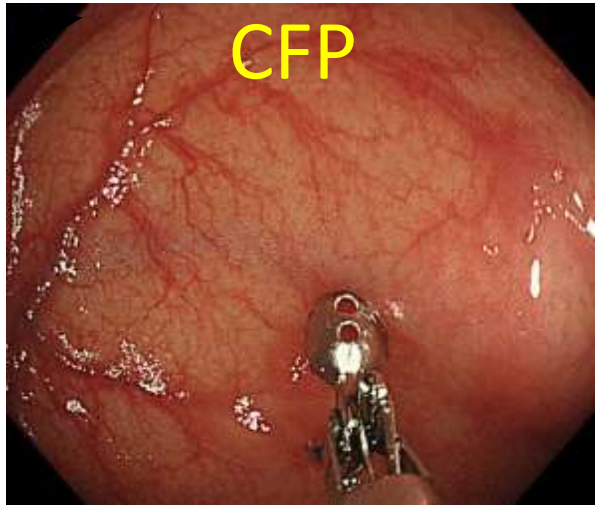
COI Disclosure

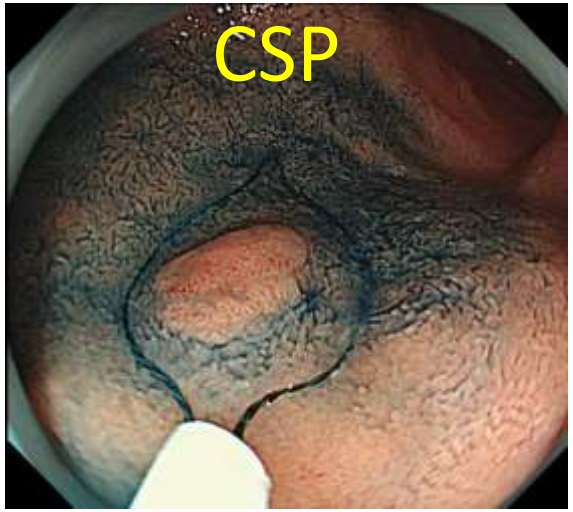
I declare the following competing interests:

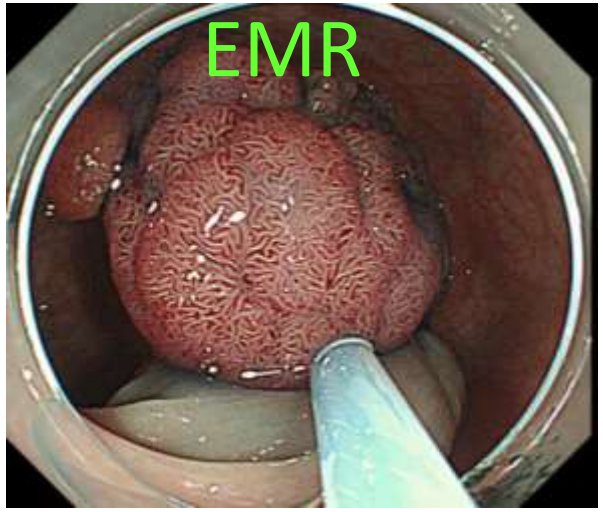
Research Grant: Kaigen Pharma
Consultant: Olympus, Fujifilm, Top Corporation
Royalty: Olympus

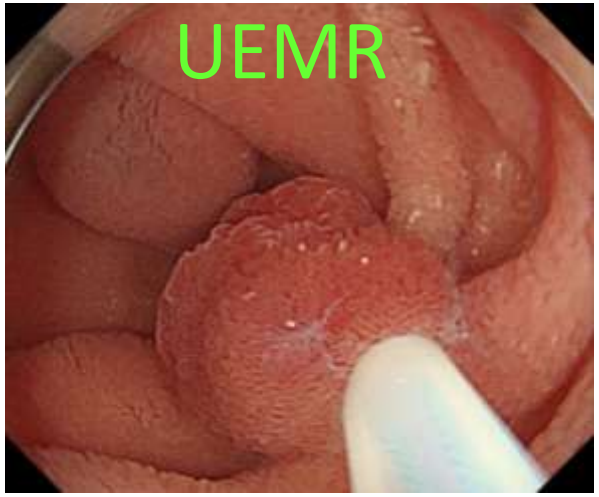
Selection of Right Treatment Option

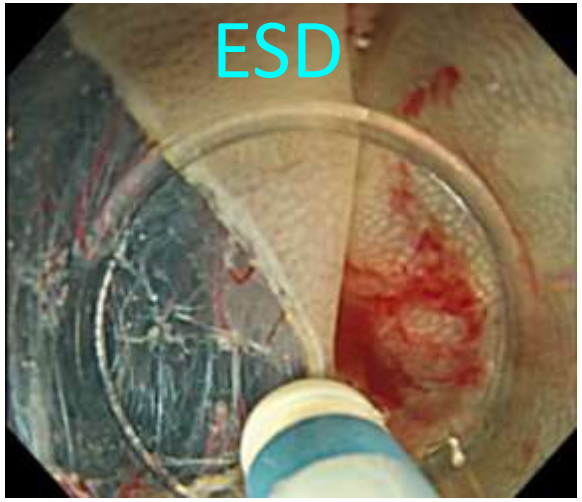
- Size?
- Invasion?
- Fibrosis?
- Location?
- Accessibility?
- Maneuverability?











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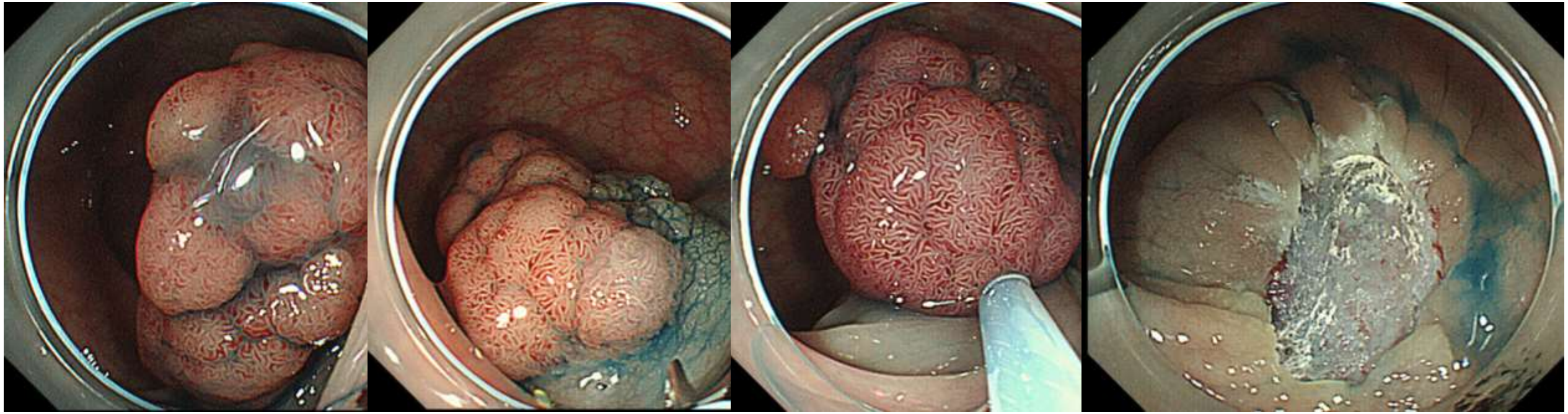
Endoscopic Mucosal Resection (EMR)

EMR is very useful for most of middle-sized lesions!



Lesions 10～30 mm??

Good lesion lifting is a key for successful result.

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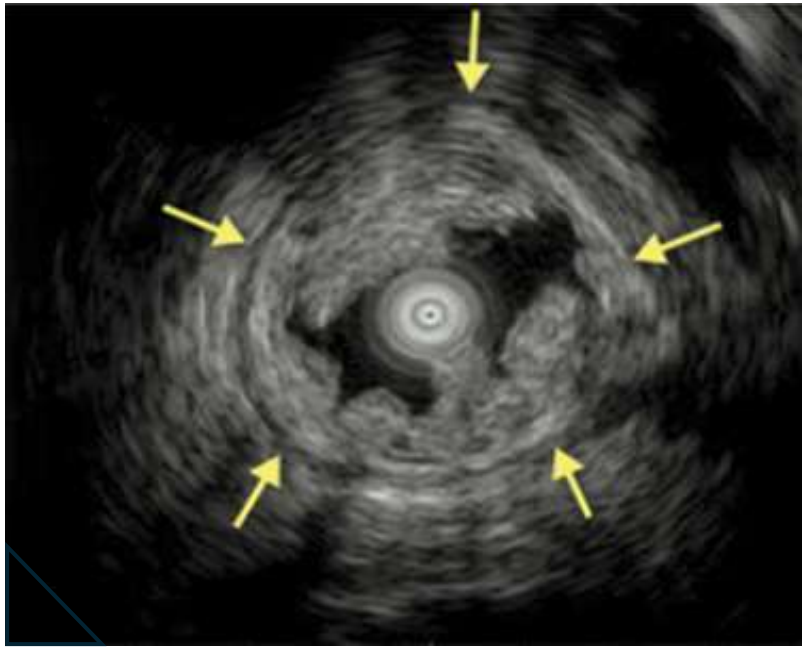
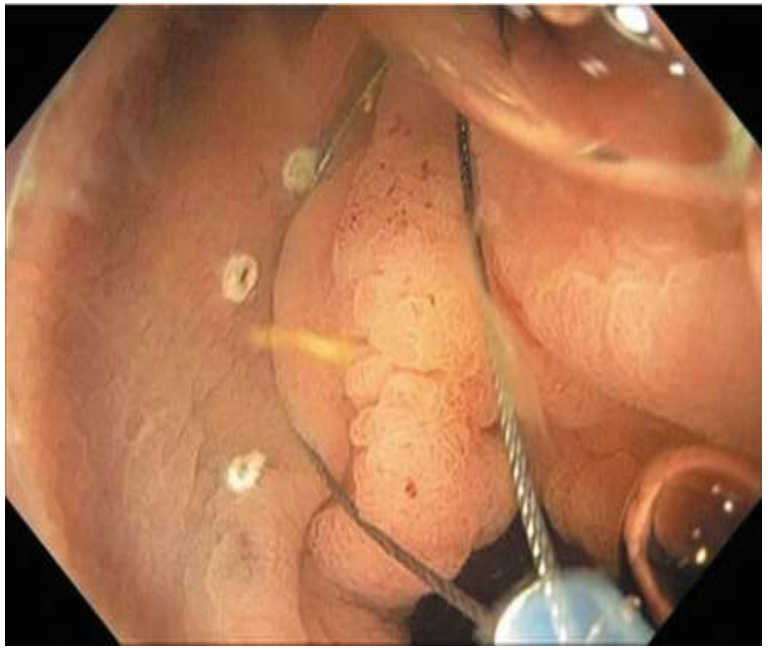
“Underwater” EMR without submucosal injection for large sessile colorectal polyps (with video)

Kenneth F. Binmoeller, MD, Frank Weilert, MD, Janak Shah, MD, Yasser Bhat, MD, Steve Kane

San Francisco, California, USA





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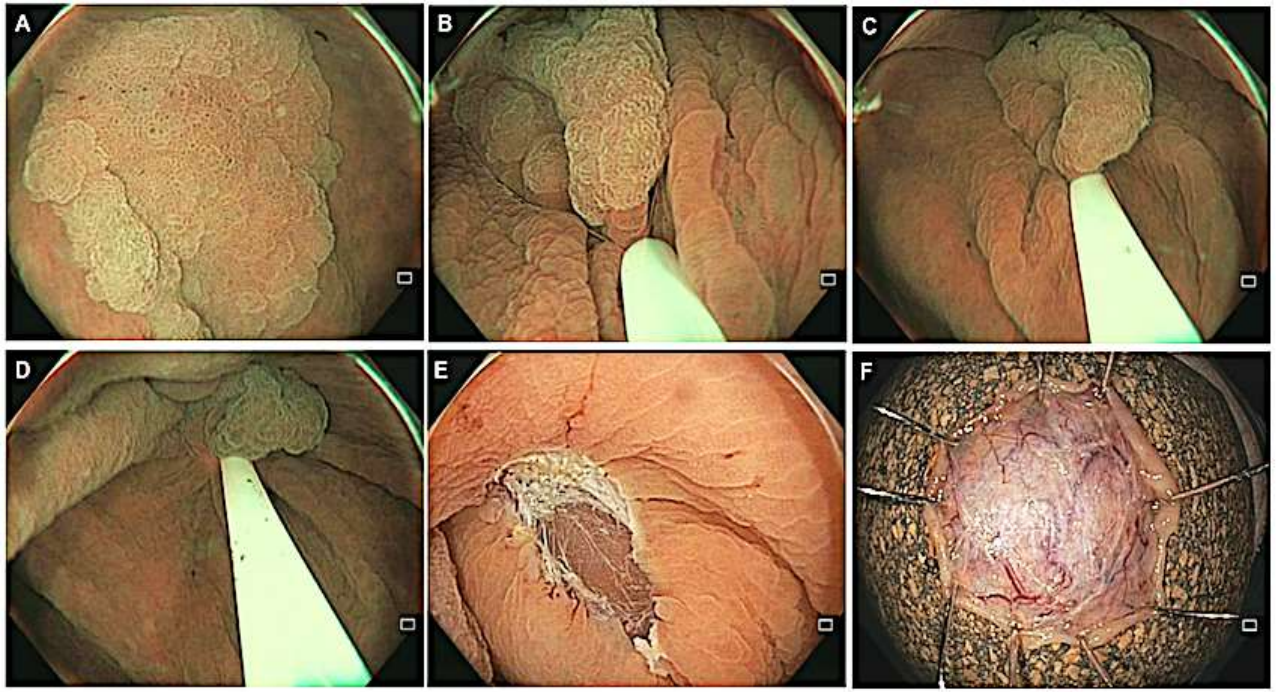
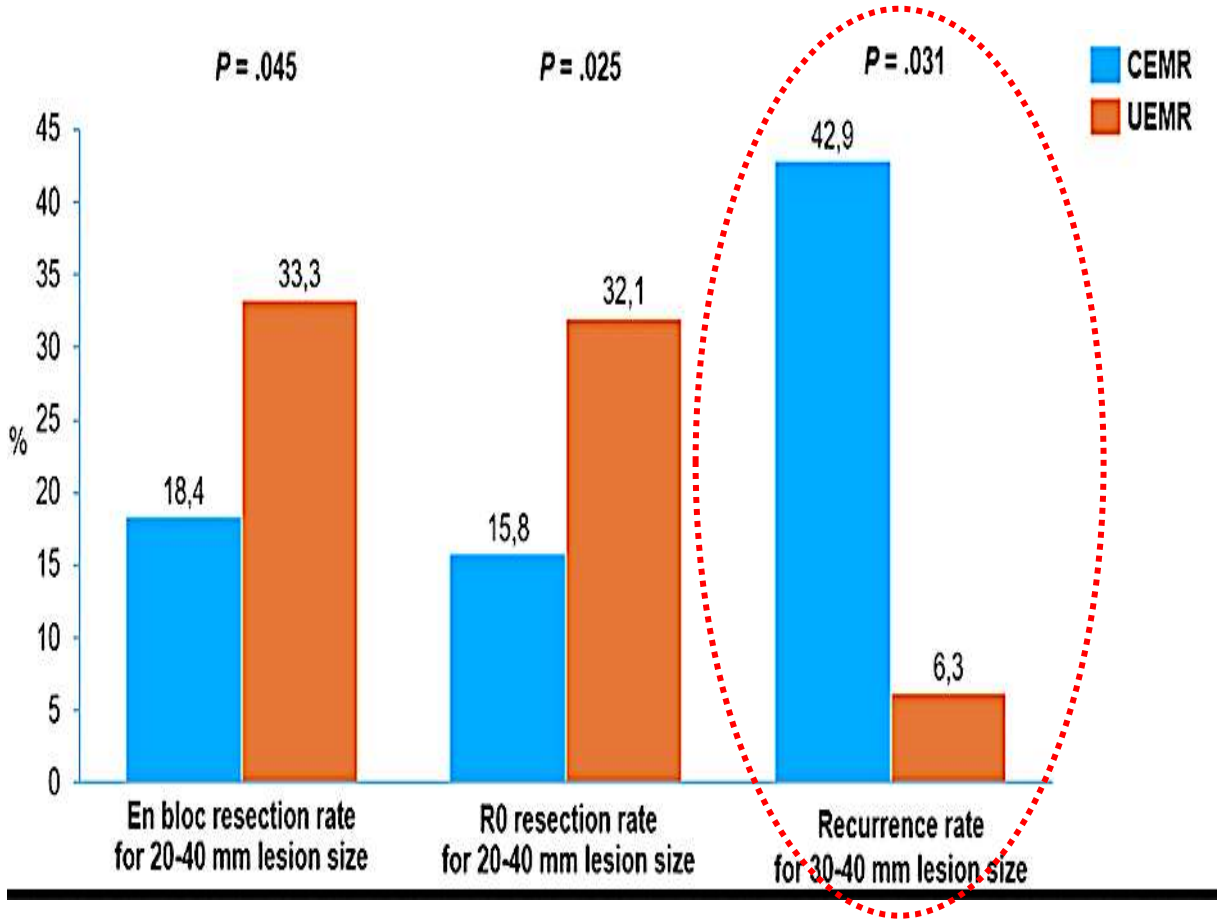
GASTROINTESTINAL ENDOSCOPY Volume 75, No. 5 : 2012

UEMR is Better than CEMR for smaller than 40mm Polyps

A prospevtive randomized ccontrol trial



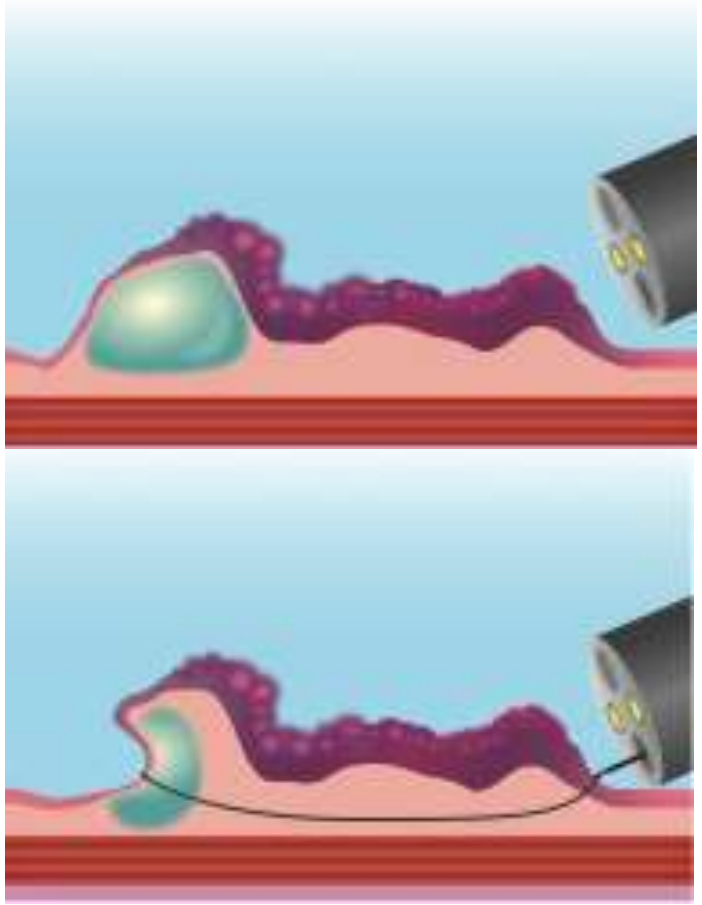


- UEMR showed superiority to CEMR regarding *en bloc* resection, R0 and procedure time.
- Recurrence rate of UEMR was significantly lower than CEMR.

Nagl S et al., Gastroenterology 2021

Efficacy of PI-UEMR for Duodenal Lesions

En-bloc resection rate of PI-UEMR was significantly better than UEMR!



Propensity score matched cases

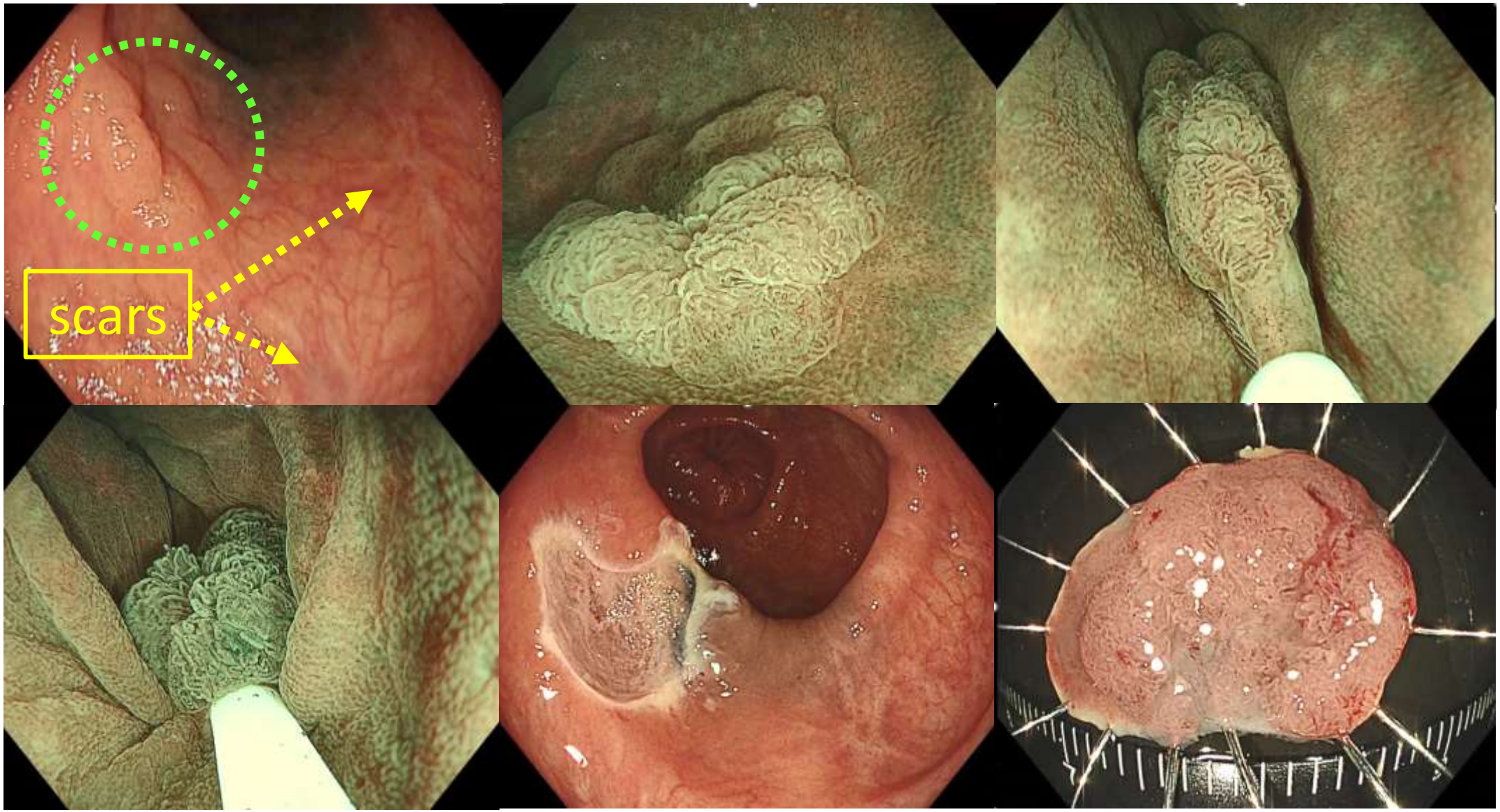
	UEMR	PI-UEMR	*P*-value
Procedure time (min, mean ± SD)	11 ± 1.2	9 ± 1.2	0.30
En bloc resection (%)	83	96	<0.05
Intraoperation perforation (*n*, cases)	0	1	0.12
Delayed bleeding (*n*, cases)	0	1	0.12
Delayed perforation (*n*, cases)	0	0	–
Histopathological diagnosis (Vienna classification 3/4/5, *n*)	42/5/0	40/5/2	0.14

PI-UEMR, partial submucosal injection combined with UEMR; UEMR, underwater endoscopic mucosal resection.

No difference in complications

Takatori Y, Yahagi N et al. DEN 34: 535-542, 2022

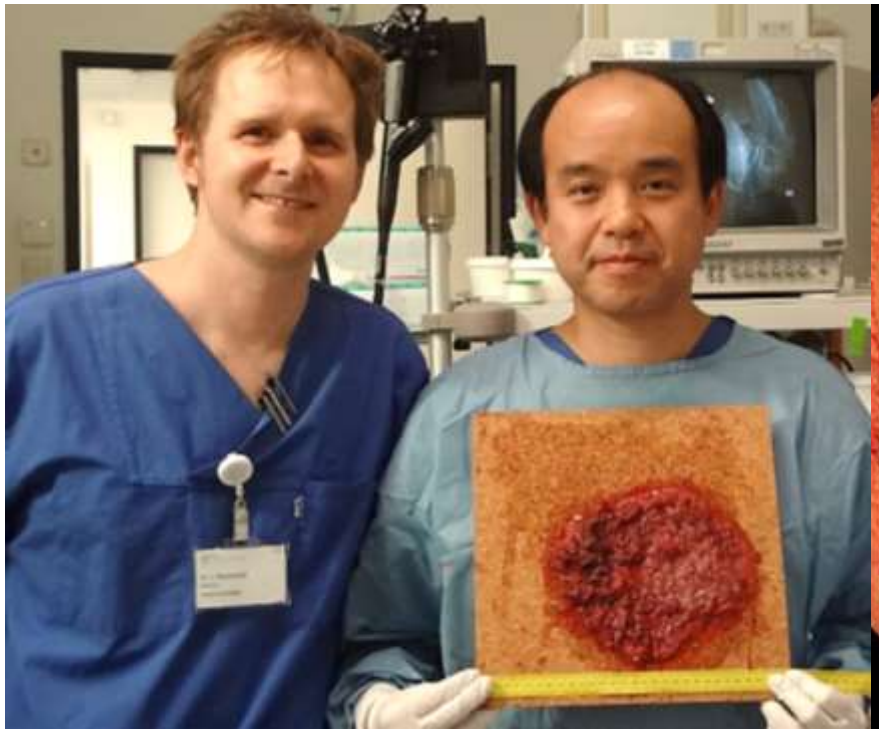
Use of UEMR for a Sporadic Adenoma in a UC Patient with Scars



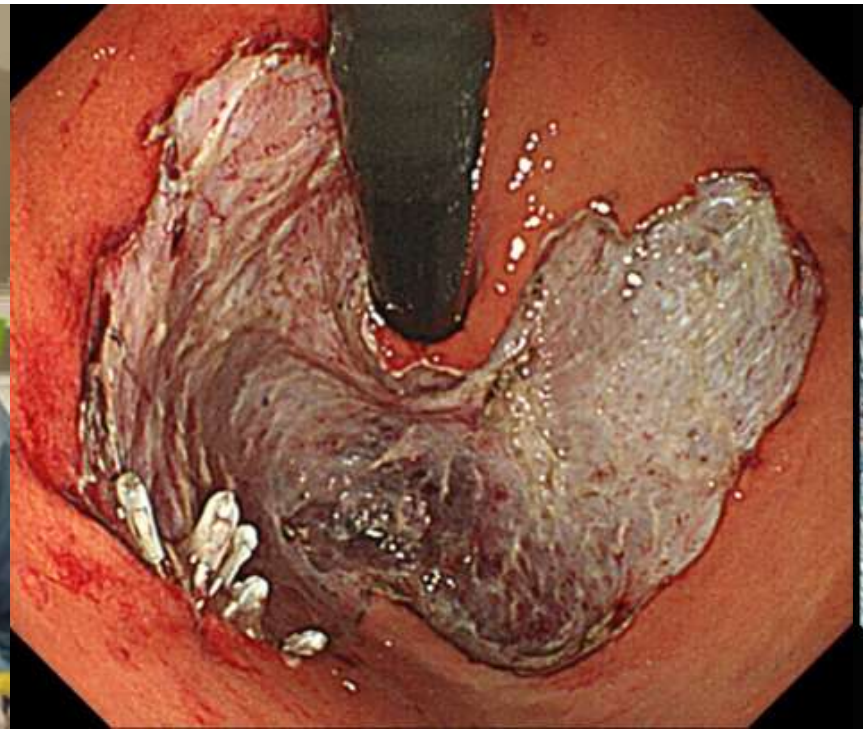
Takabayashi K , Yahagi N et al. Endoscopy 2022

Endoscopic Submucosal Dissection (ESD)

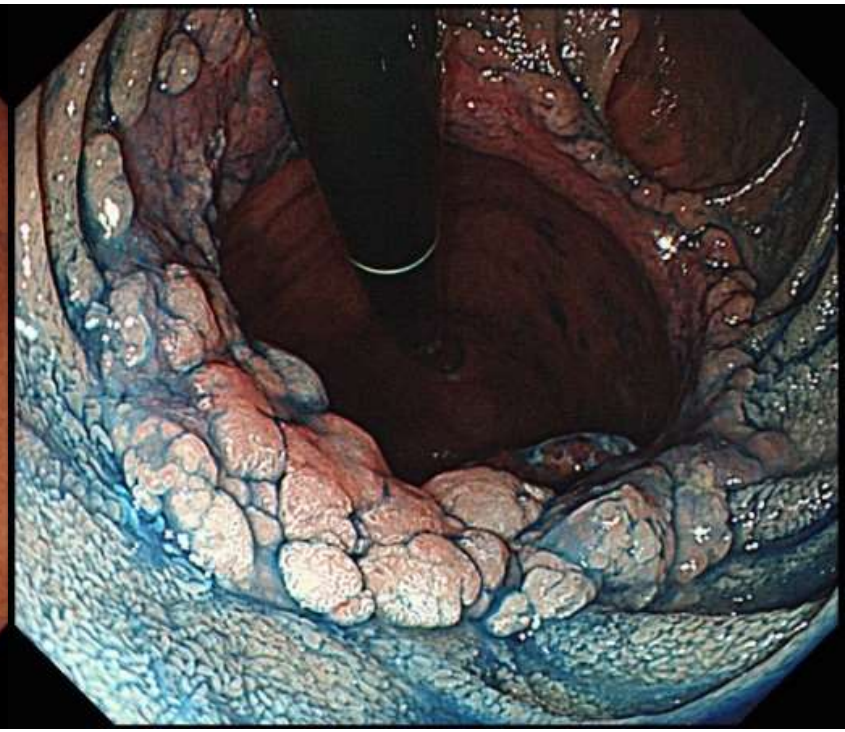
ESD is a low-tech but highly effective procedure!



Extremely large lesion



Very difficult location



Challenging situation

Criticisms for Current ESD

- Technically demanding
- Time-consuming procedure
- Long learning curve
- Higher risk of complications
- Need for hospitalization

What are current trends in ESD?

Some kind of traction techniques to facilitate submucosal dissection.

- Mechanical traction techniques

  Clip and line, S-O clip, EndoLifter, Endo Trac etc.

- Natural traction techniques

  Gravity, Hood, PCM, WPM etc.

Currently Available Traction Techniques

- Mechanical traction

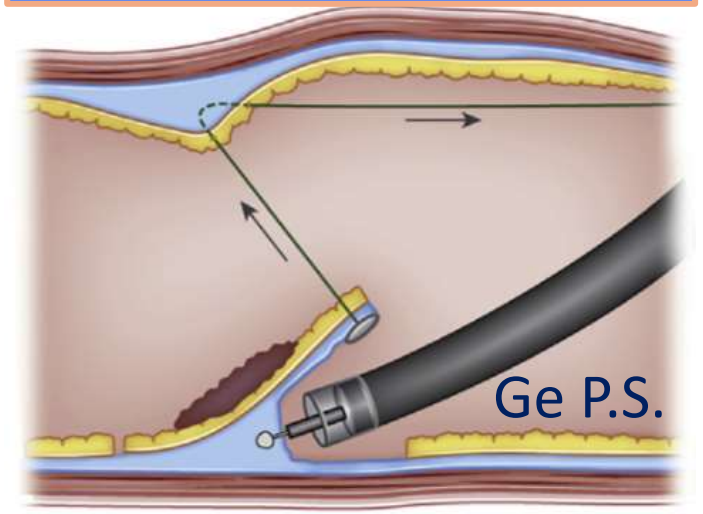
  Clip and line, S-O clip, EndoLifter, Endo Trac etc.

- Natural traction

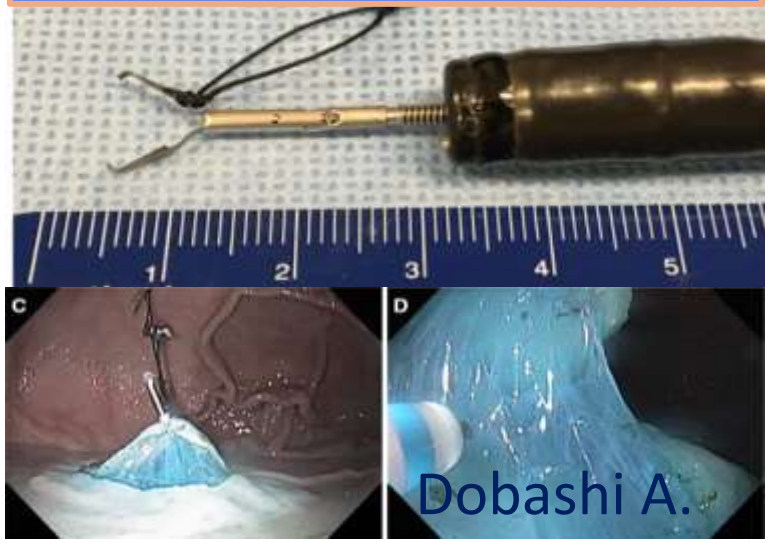
  Gravity, Hood, PCM, WPM etc.

Variety of Mechanical Traction Techniques for ESD

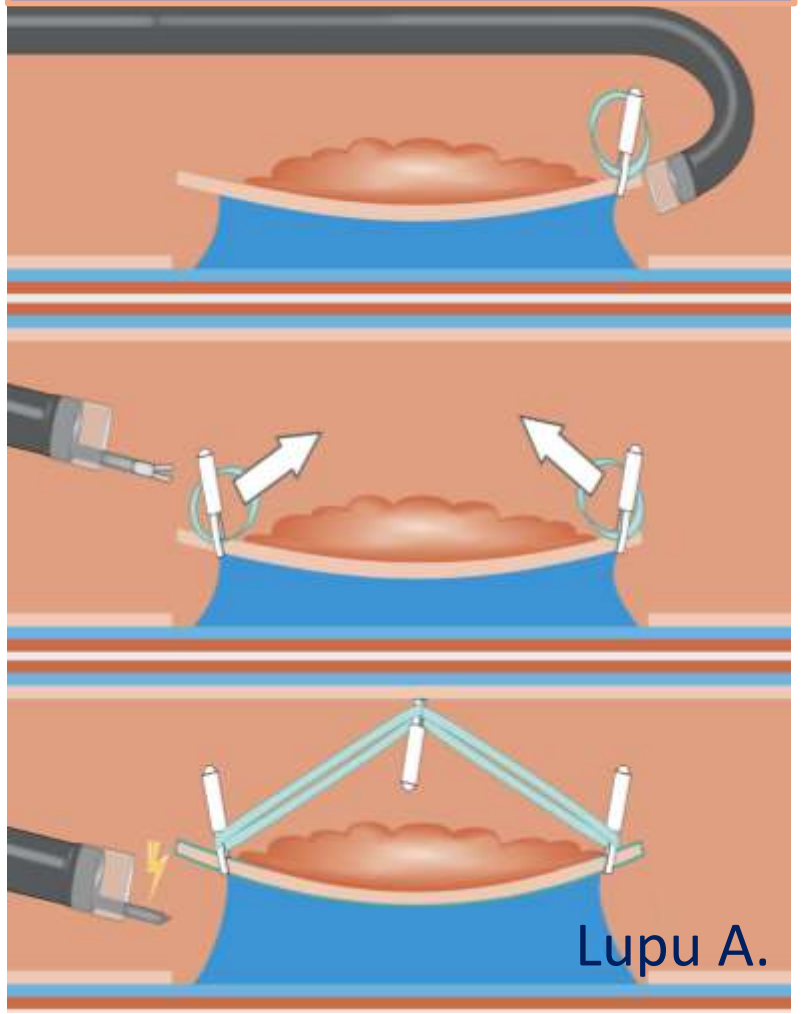
Suture pulley method



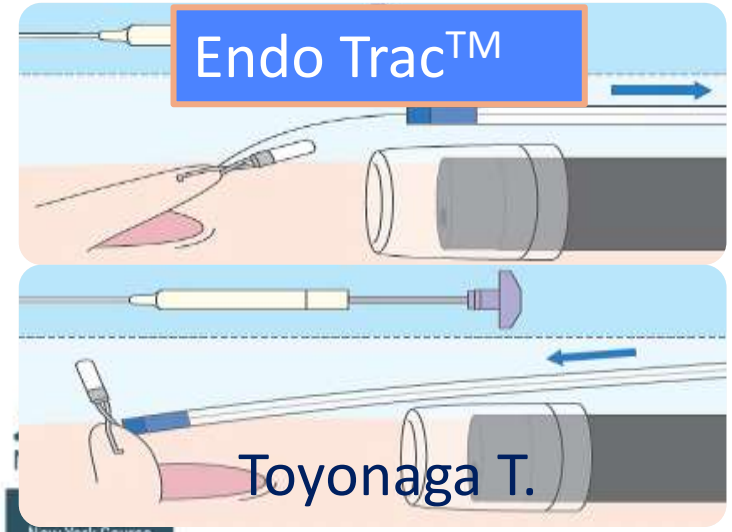
Internal magnet traction



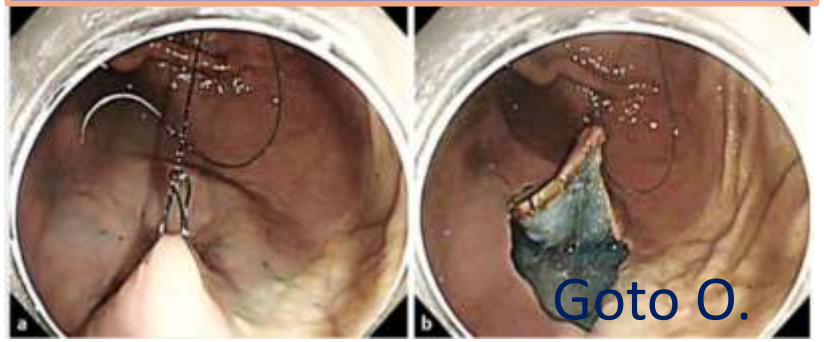
Triangulated traction with clip and rubber band



Endo Trac™



Flexible traction with endoscopic hand suturing



Traction-assisted ESD (TA-ESD) in Colon

		TA-ESD		C-ESD	
	Institute	Cases	Tx Time (min.) (Mean±SD)	Volume	Tx Timev(min.) (Mean±SD)
Ritsuno 2014 (Surg Endosc)	single	27	37 ± 33	23	67 ± 44
Mori 2017 (Surg Endosc)	single	21	81 ± 24	22	139 ± 46
Yamasaki 2018 (DEN)	single	42	44 ± 19	42	88 ± 38
Wang 2019 (Tech in Col)	single	21	85 ± 24	20	104 ± 35
Tamaru 2022 (AJG)	multi	**48**	47 ± 26	**49**	62 ± 40
Ichijima 2023 (DEN)	multi	**128**	median 53 IQR 40–76	**123**	Median 61 IQR 40–100

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No significant difference in treatment time with multi-center RCT!

Impact of Traction-assisted ESD in Colon on Size

Open

Efficacy of a Traction Device for Endoscopic Submucosal Dissection Using a Scissor-Type Knife: A Randomized Controlled Trial

Yuzuru Tamaru, MD, PhD[1], Toshio Kuwai, MD, PhD FASGE, FJGES[1], Akihiro Miyakawa, MD[2], Noriyoshi Kanazawa, MD[3], Ryusaku Kusunoki, MD, PhD[1], Haruhisa Shimura, MD[1], Shiori Uchiyama, MD, PhD[3], Sauid Ishaq, FRCP, PhD[4] and Hiroshi Kohno, MD, PhD[1]

Table 5. Results of the subgroup analysis of resection speed related to tumor size between the 2 groups (n = 97)

Size, mean ± SD, mm²/min	n	C-ESD group (n = 49)	T-ESD group (n = 48)	*P* value
<30 mm	53	18.6 ± 10.8	20.6 ± 8.6	0.47
≥30 mm	44	27.8 ± 11.9	34.6 ± 10.5	0.054

C-ESD, conventional endoscopic submucosal dissection; T-ESD, traction-assisted endoscopic submucosal dissection.

AJG 2022

Digestive Endoscopy 2023; **35**: 86–93 doi: 10.1111/den.14426

Original Article

Randomized controlled trial comparing conventional and traction endoscopic submucosal dissection for early colon tumor (CONNECT-C trial)

Ryoji Ichijima,[1] Hisatomo Ikehara,[1] Yorinobu Sumida,[4] Taisuke Inada,[4] Daiki Nemoto,[7] Yuki Nakajima,[7] Takeyoshi Minagawa,[8] Tetsuya Sumiyoshi,[8] Kazuya Inoki,[2] Naohisa Yoshida,[9] Ken Inoue,[9] Masakatsu Fukuzawa,[3] Yosuke Minoda,[5] Koshiro Tsutsumi,[10] Mitsuru Esaki[5,6] and Takuji Gotoda[1]

Table 4 Subgroup analysis of endoscopic submucosal dissection (ESD) procedure time according to tumor diameter, location, macroscopic type, and operator experience between the study groups

Characteristic	C-ESD (*n* = 128)	T-ESD (*n* = 123)	*P*-value*
Tumor diameter, min; median (IQR)			
<30 mm	50 (32–80)	46 (31–60)	0.46
≥30 mm	89 (57–132)	69 (50–104)	0.05

DEN 2023

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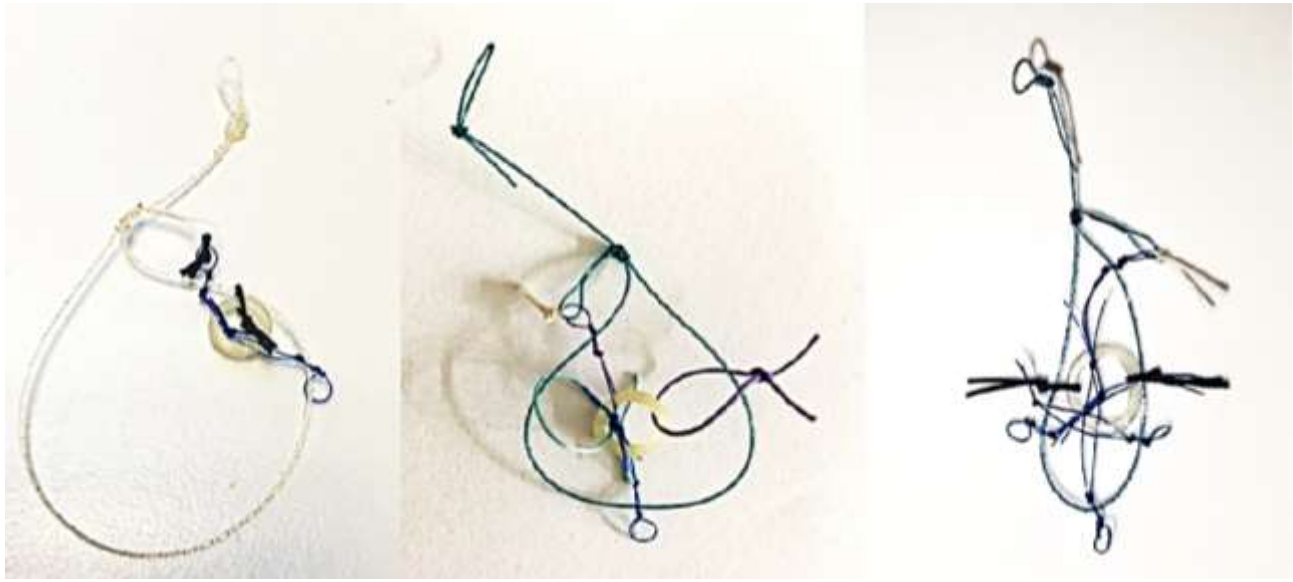
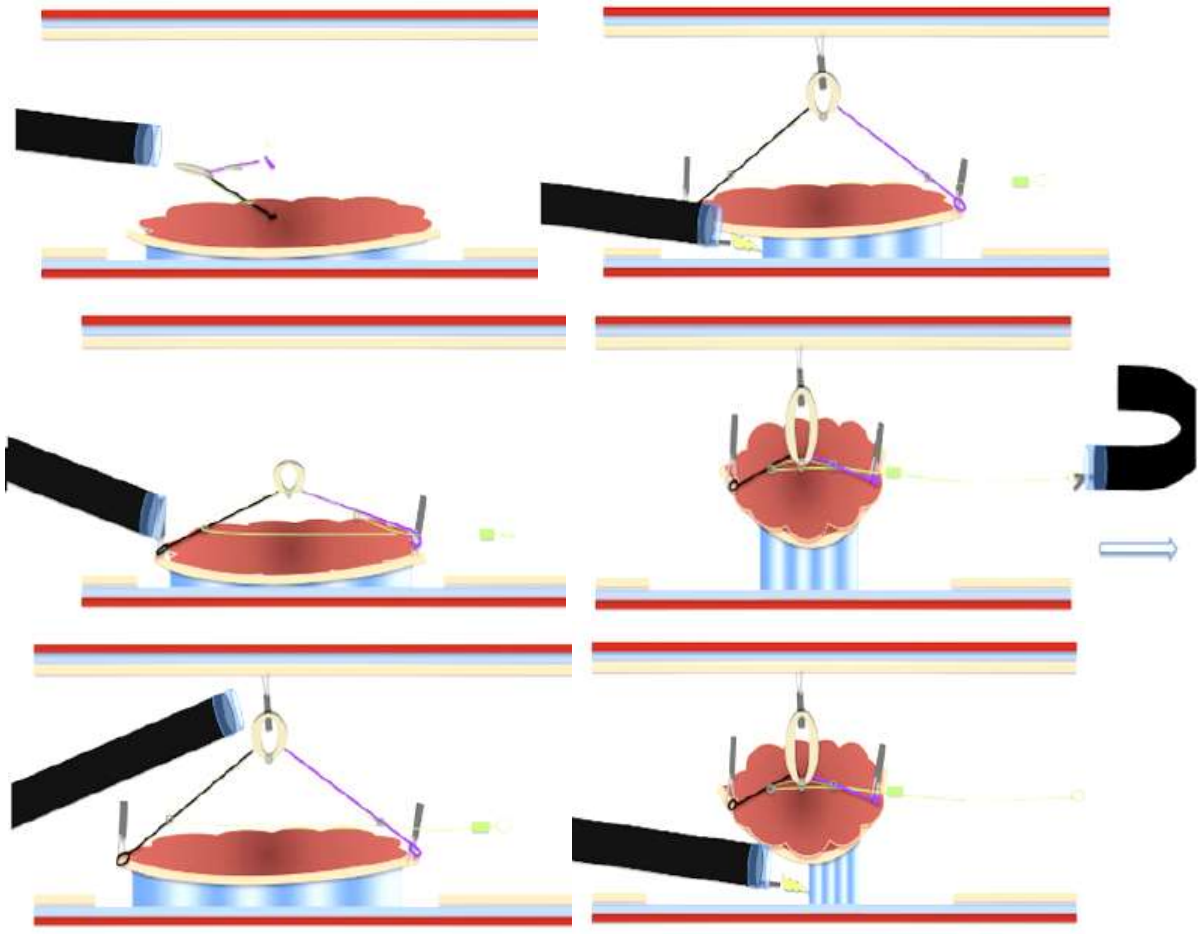
Recent RCTs showed benefits of traction device only for lesions larger than 3cm.

Adaptive Traction Device

Optimal traction can be obtained by adapting the device during the procedure!

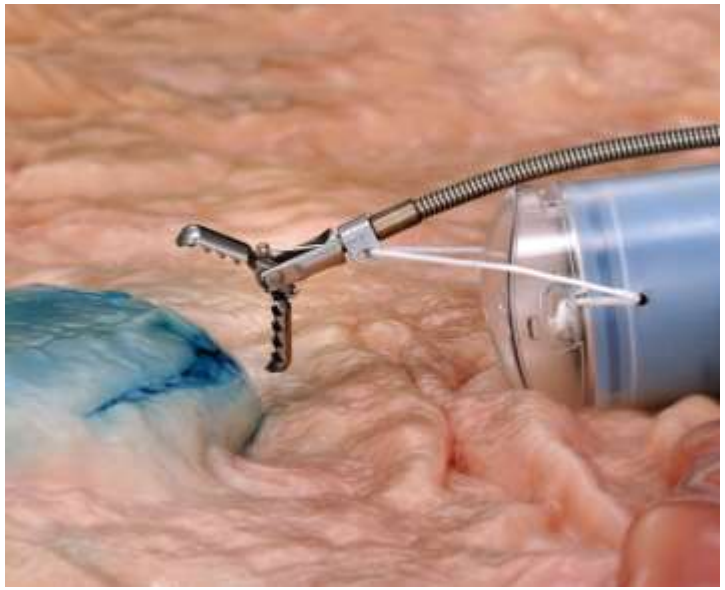


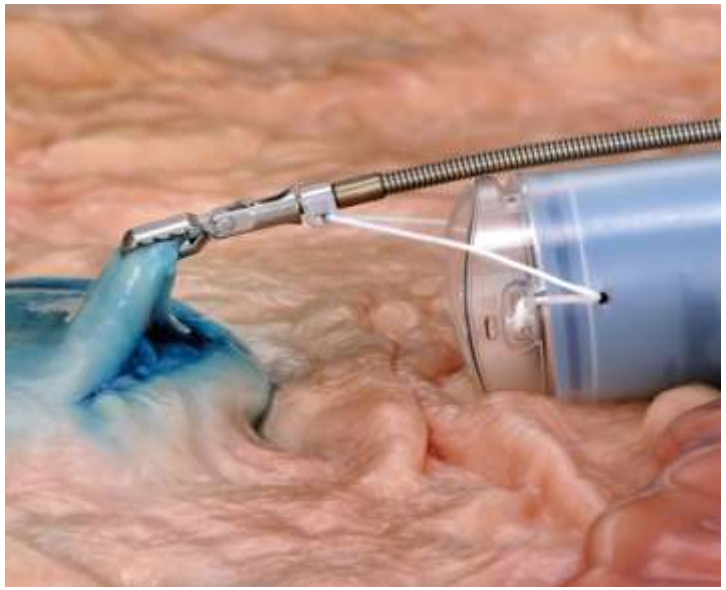
ATRACT2 ATRACT2+2 ATRACT4

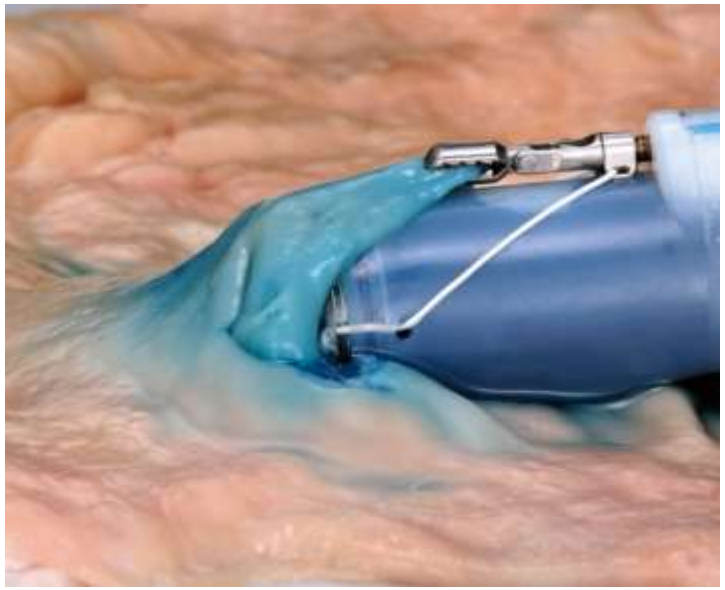


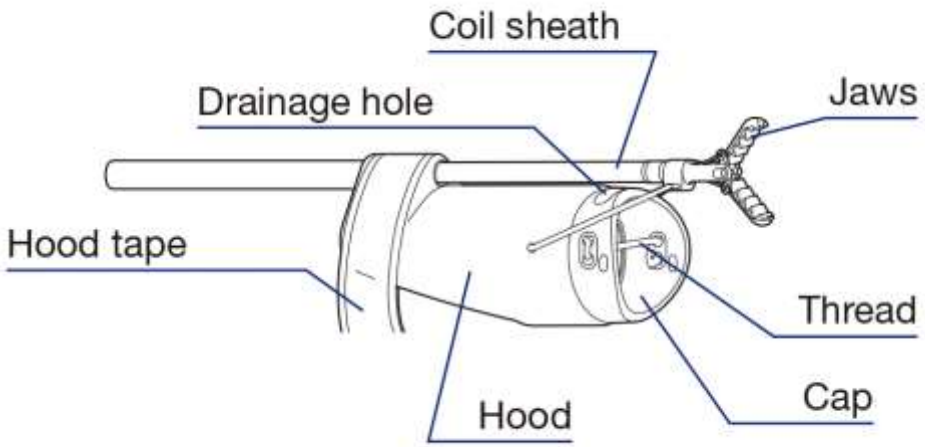
Masgnaux LJ et al. Endoscopy 2024

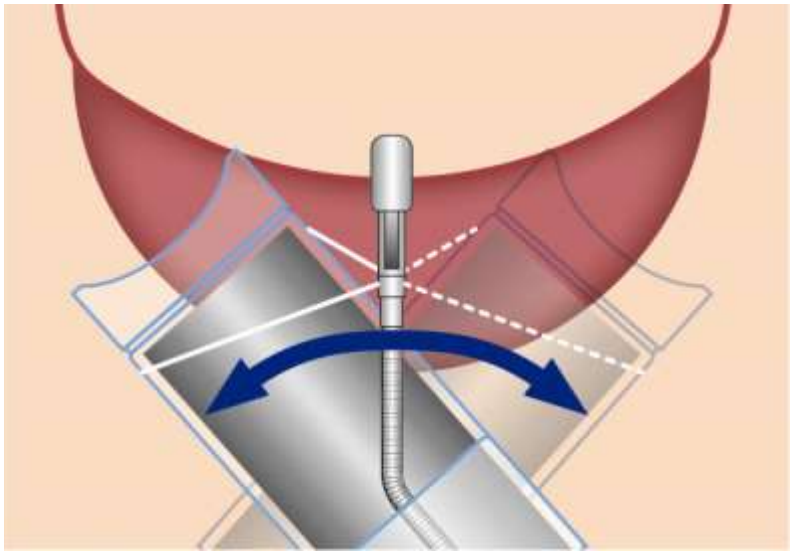
FlexLifter™

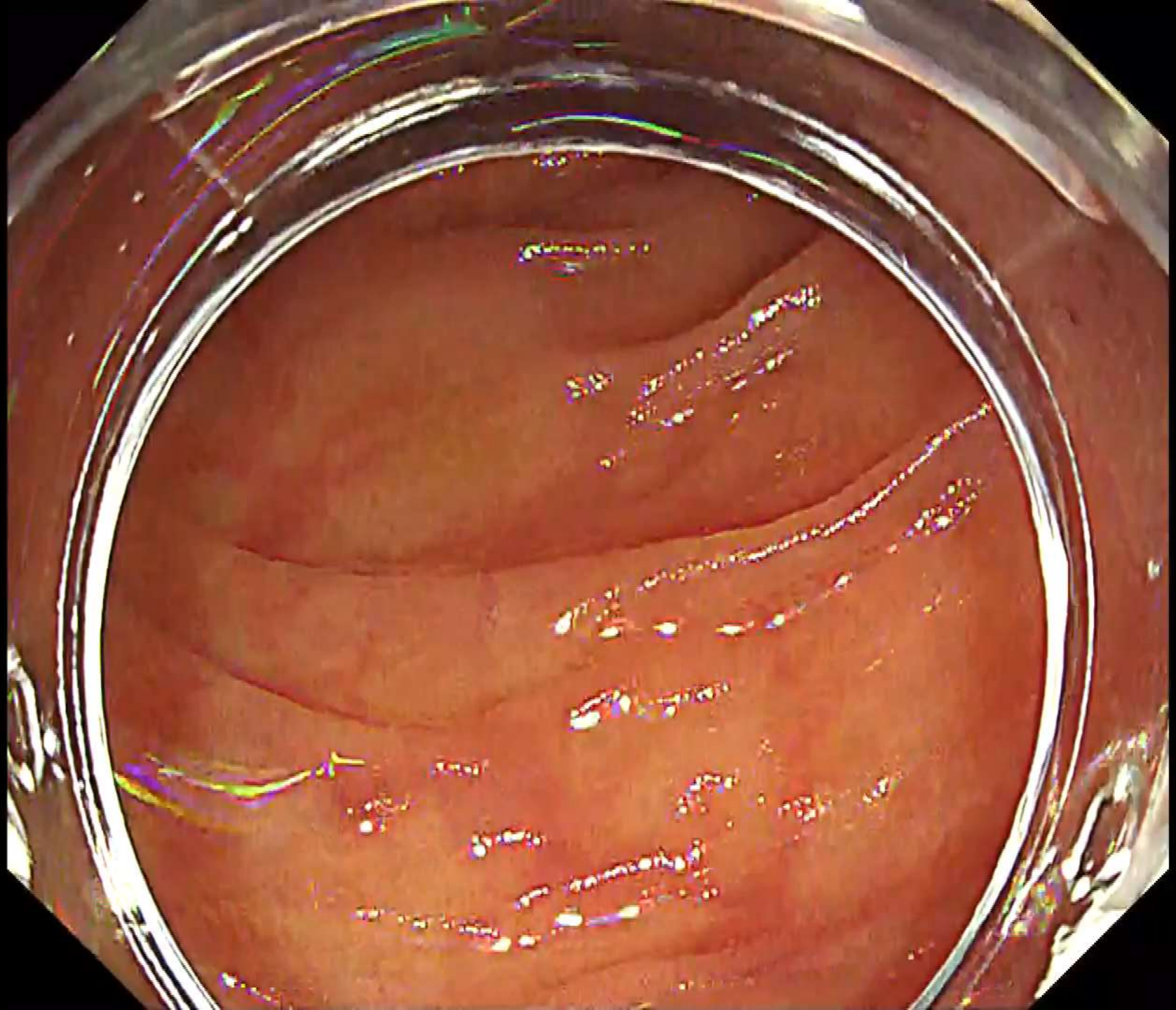












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Currently Available Traction Techniques

- Mechanical traction

  Clip and line, S-O clip, EndoLifter, Endo Trac etc.

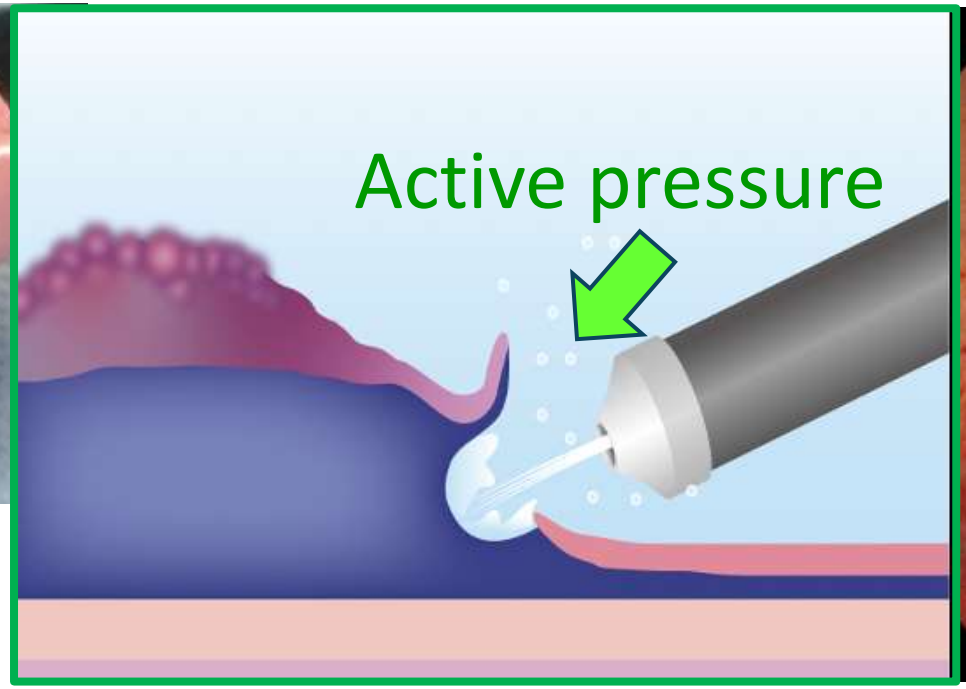
- Natural traction

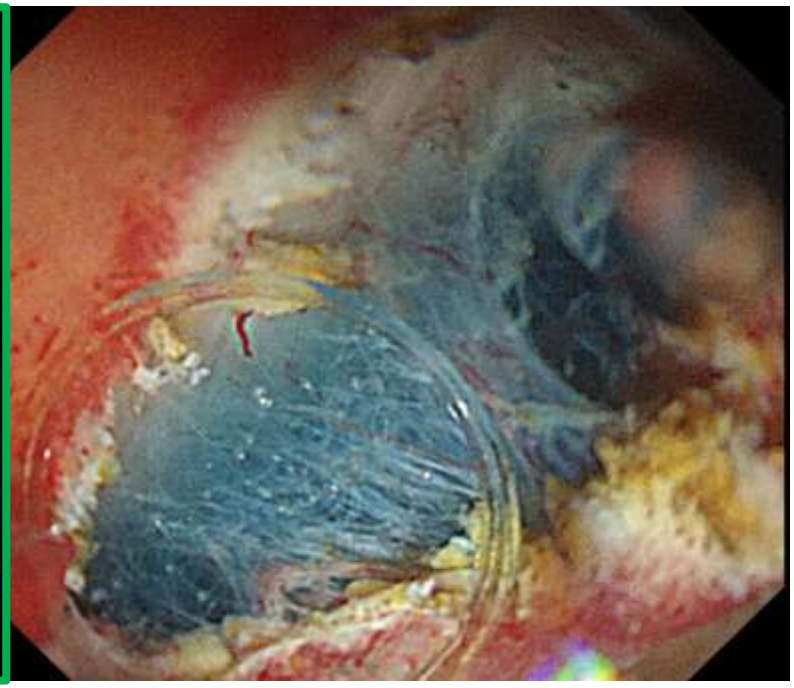
  Gravity, Hood, PCM, WPM etc.

Water Pressure Method (WPM)

ST hood

Fuji film medical , JAPAN





Water pressure helps to open incision line and visualize submucosa

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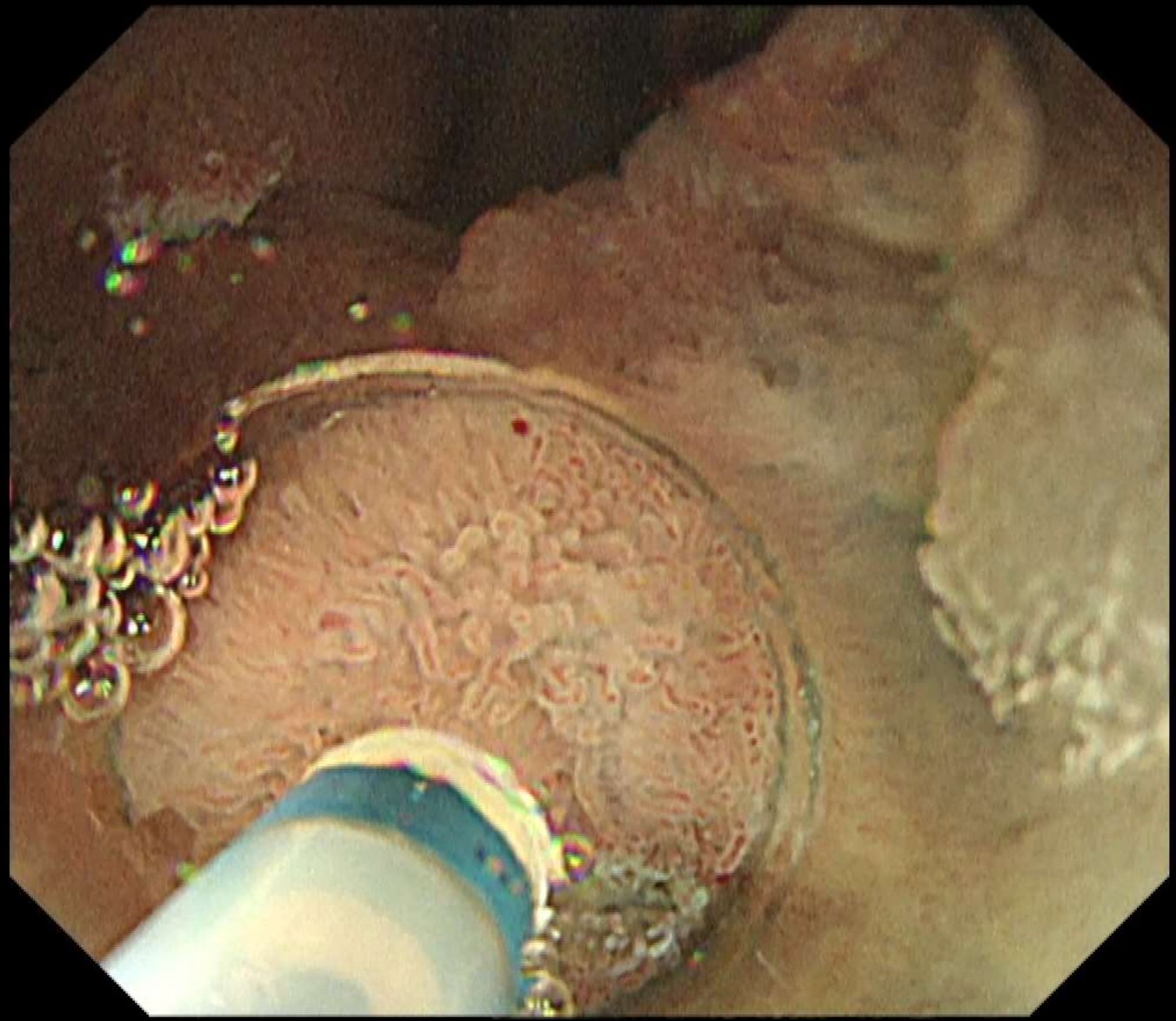
Yahagi N et al. Endoscopy 2017, Kato M et al. GIE 2020



Yahagi N et al. Endoscopy 2017

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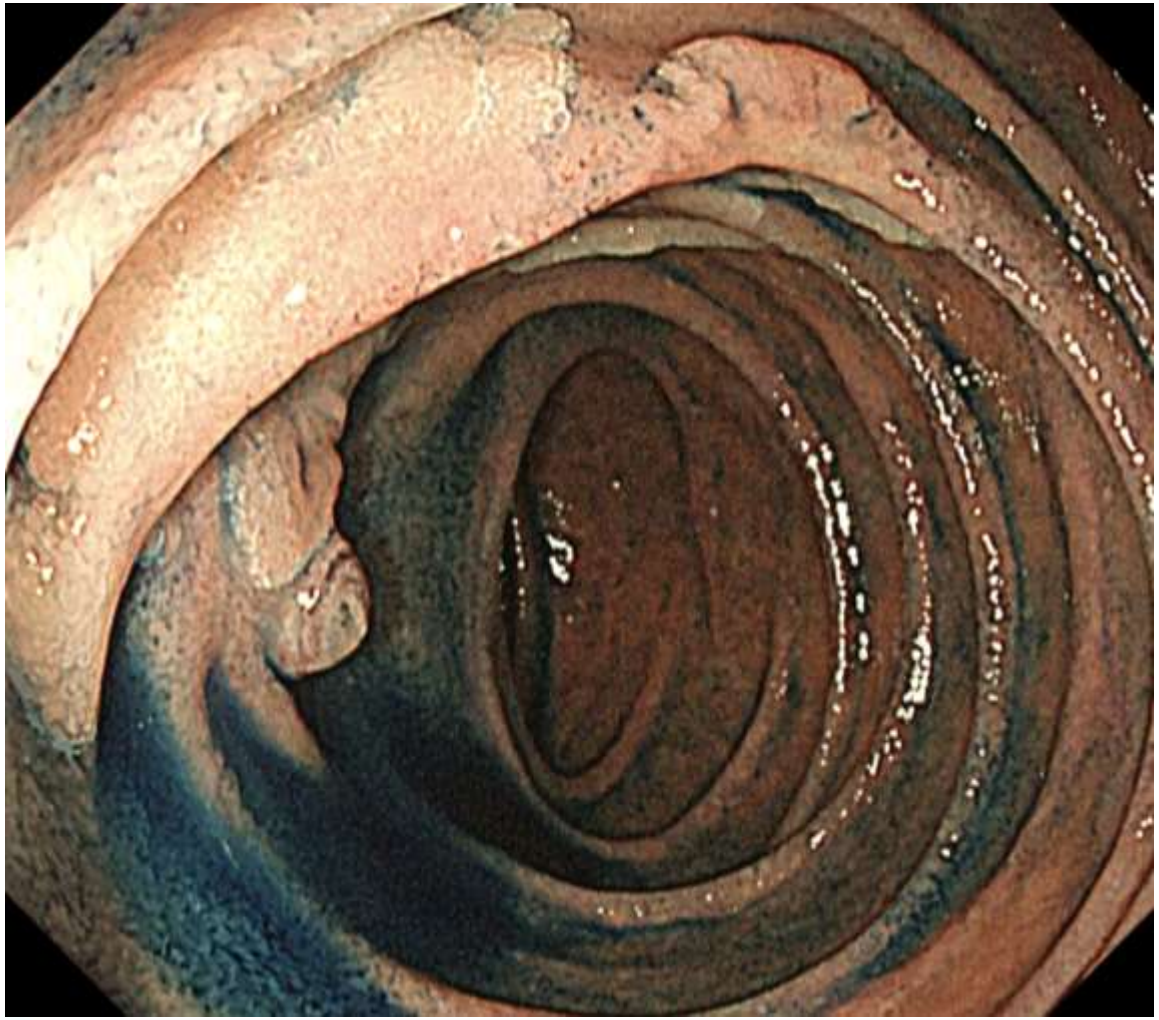
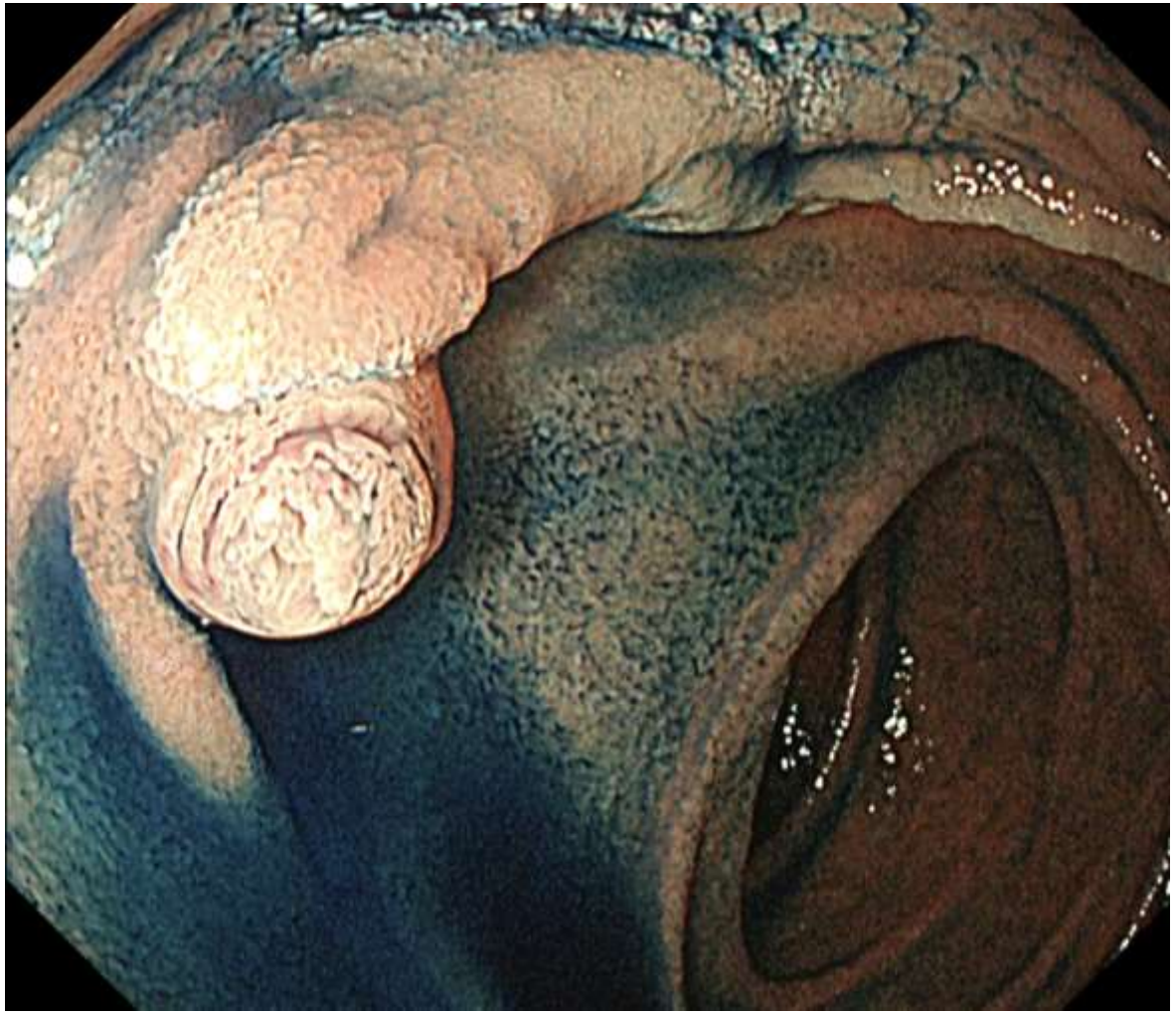
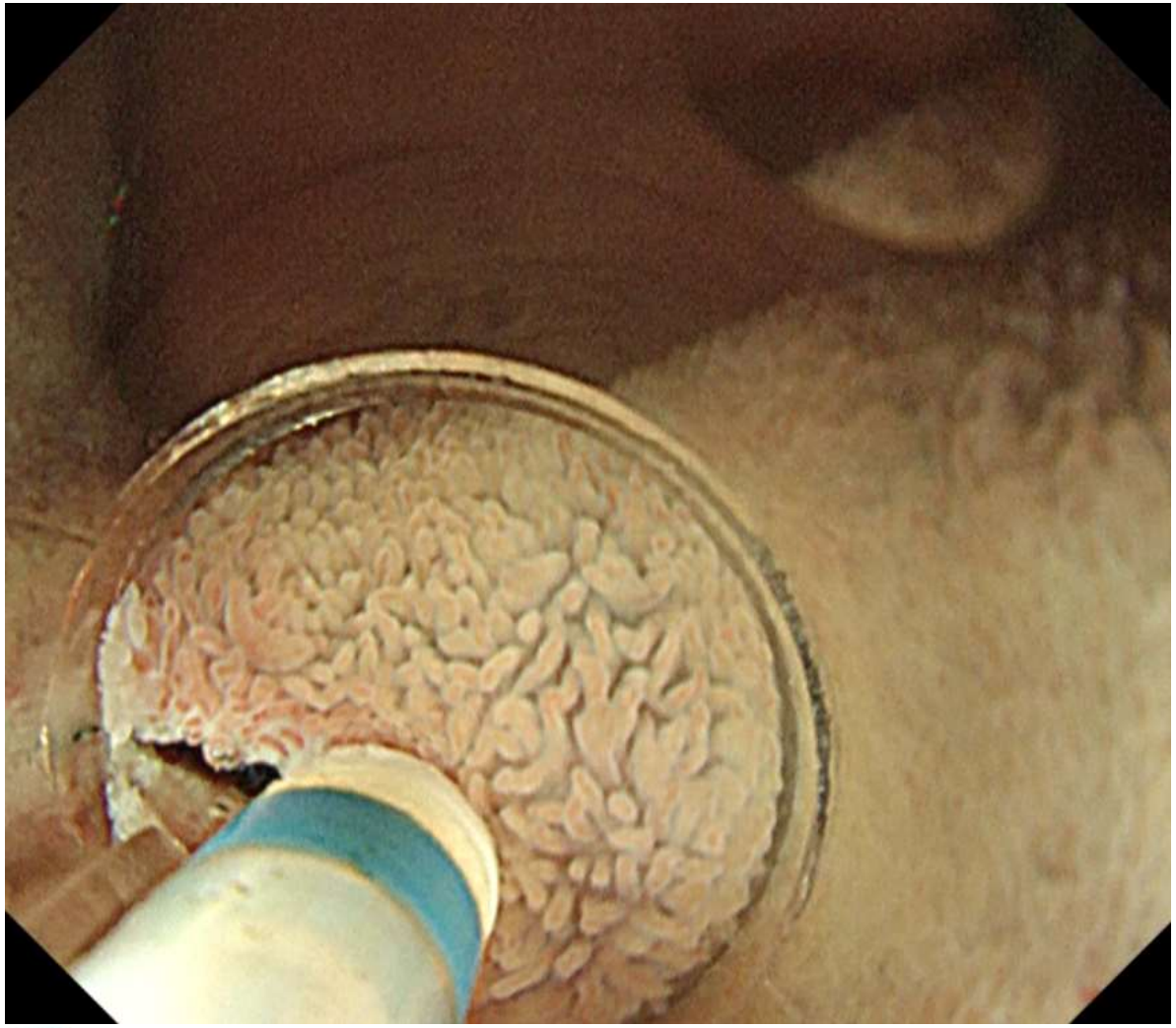
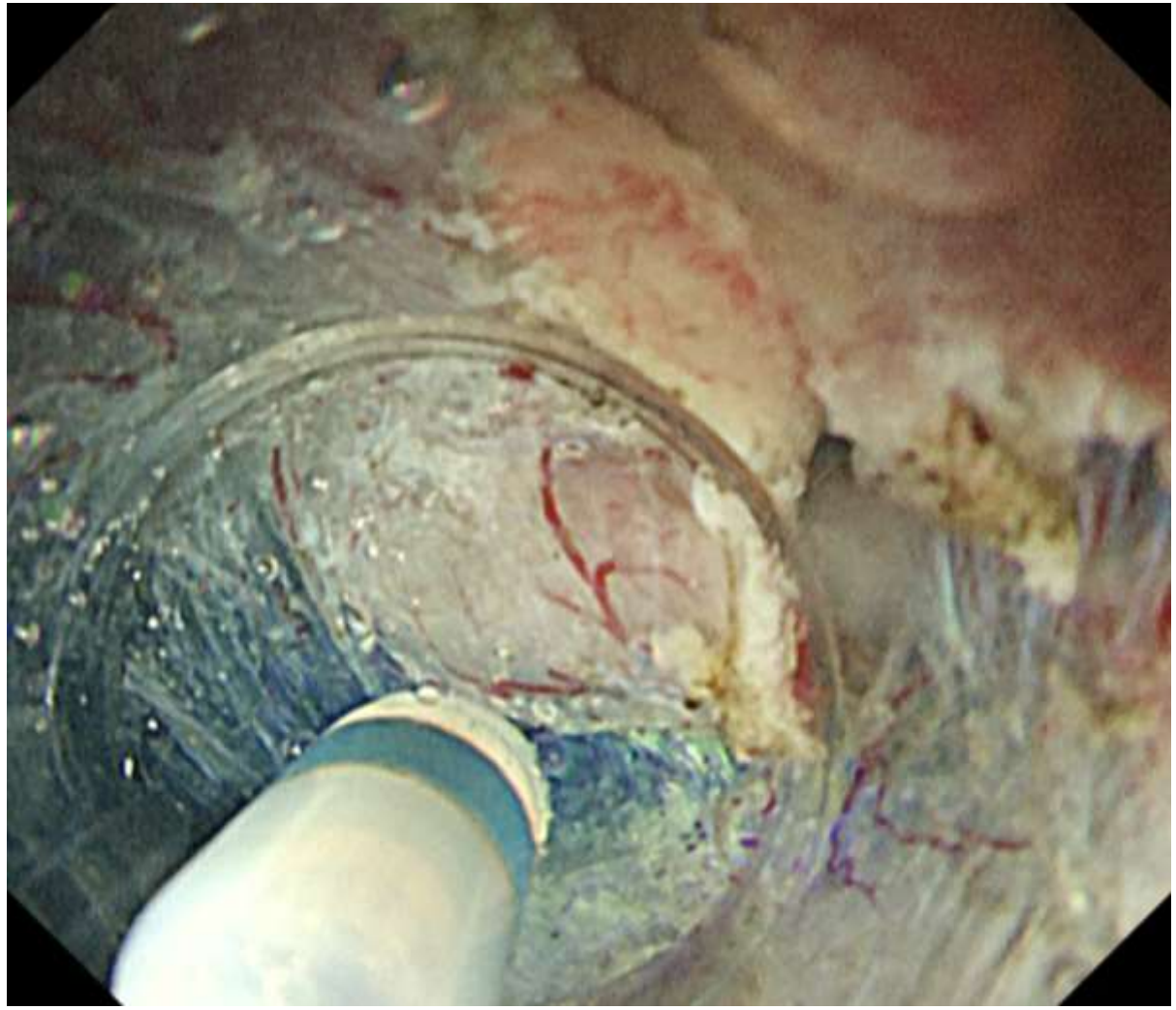
SDET Adjacent to the Major Papilla









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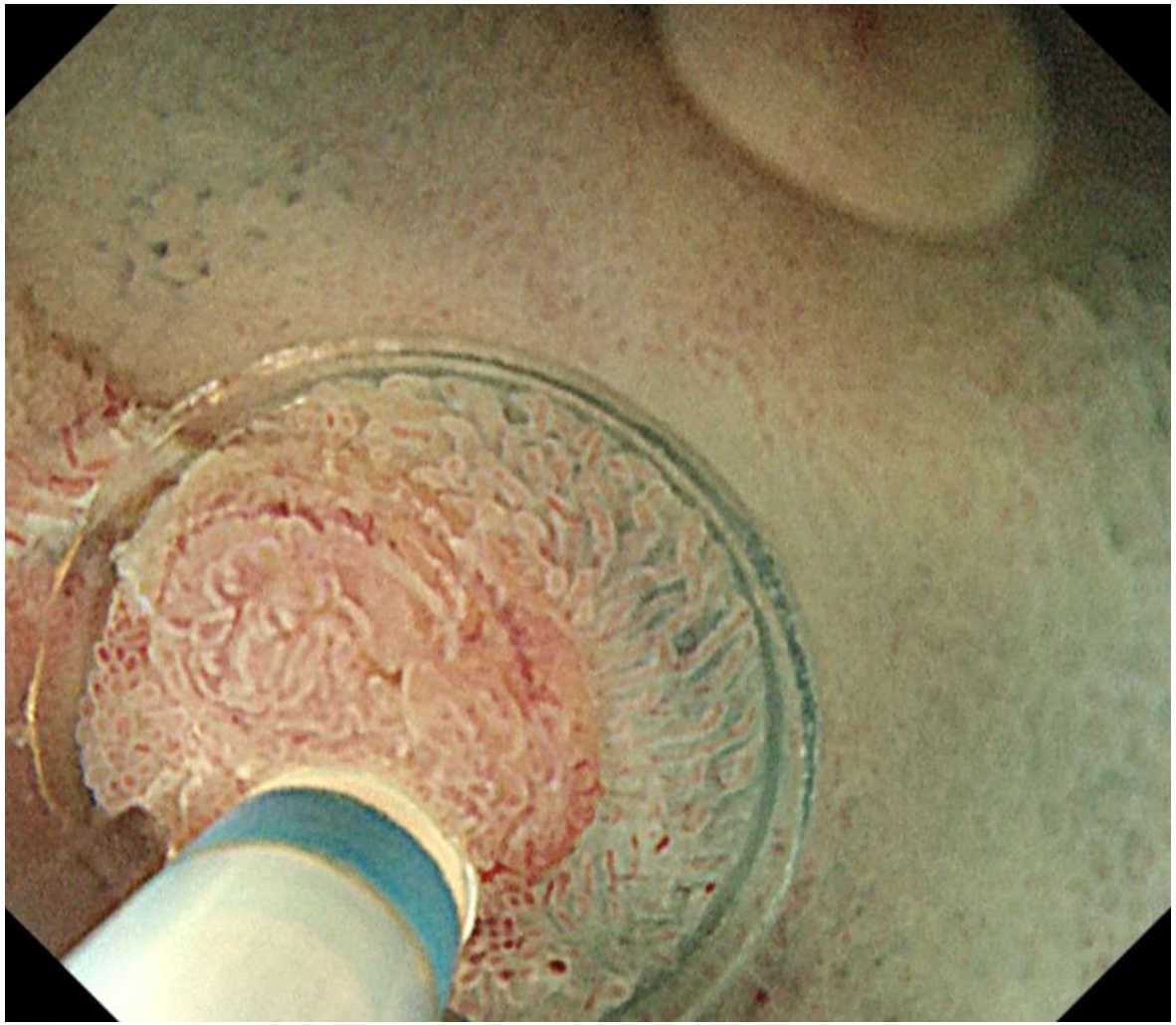

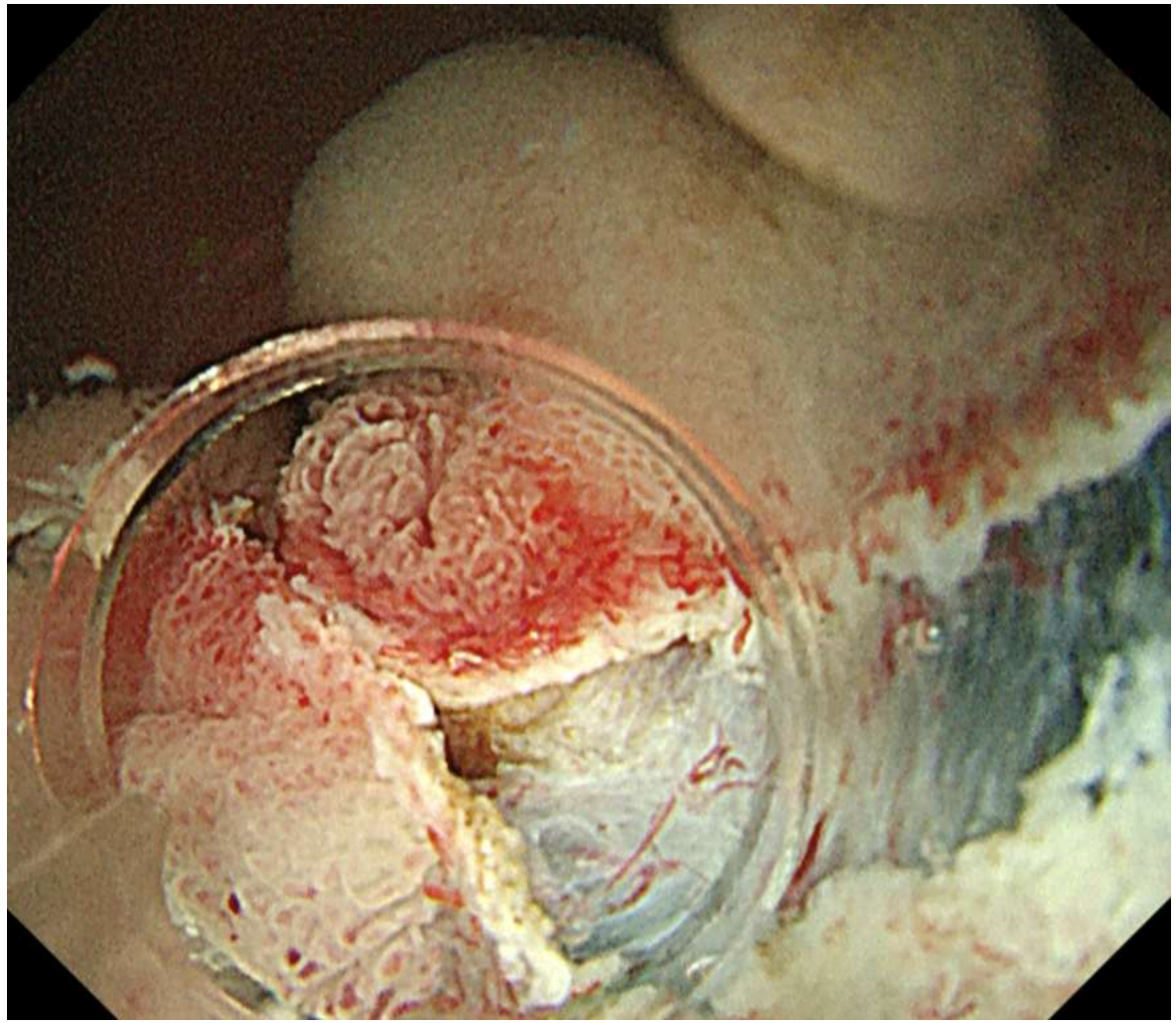

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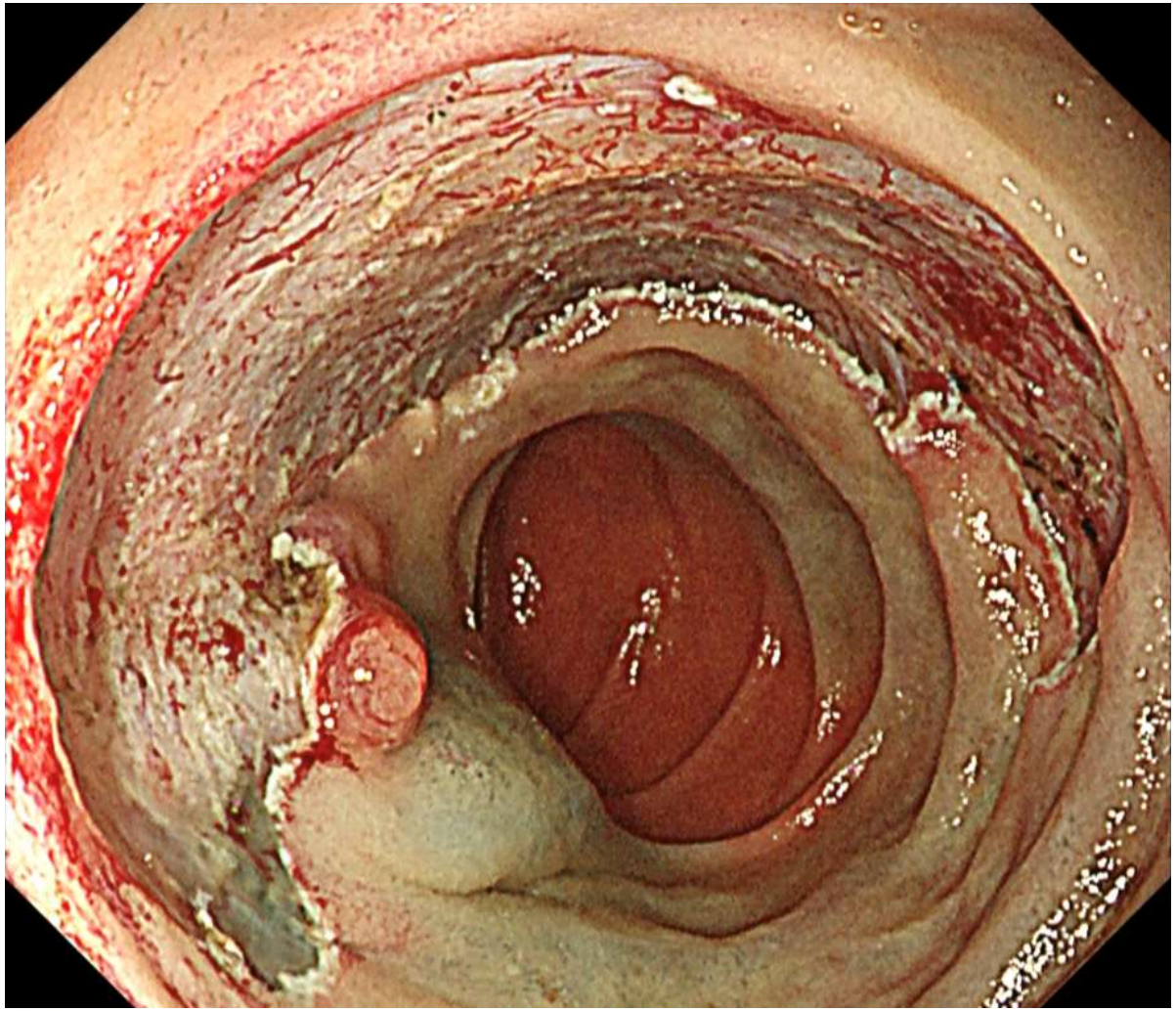

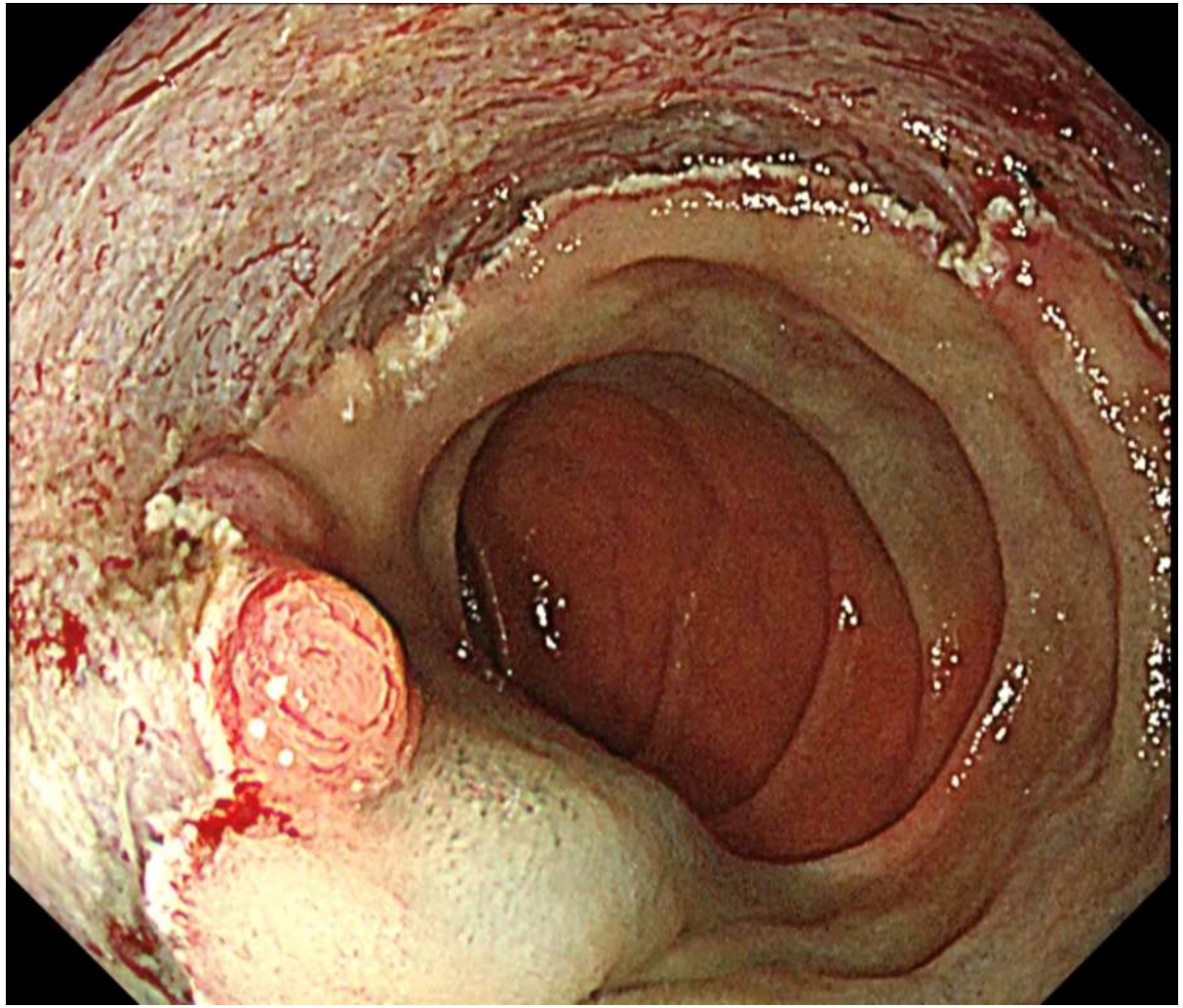

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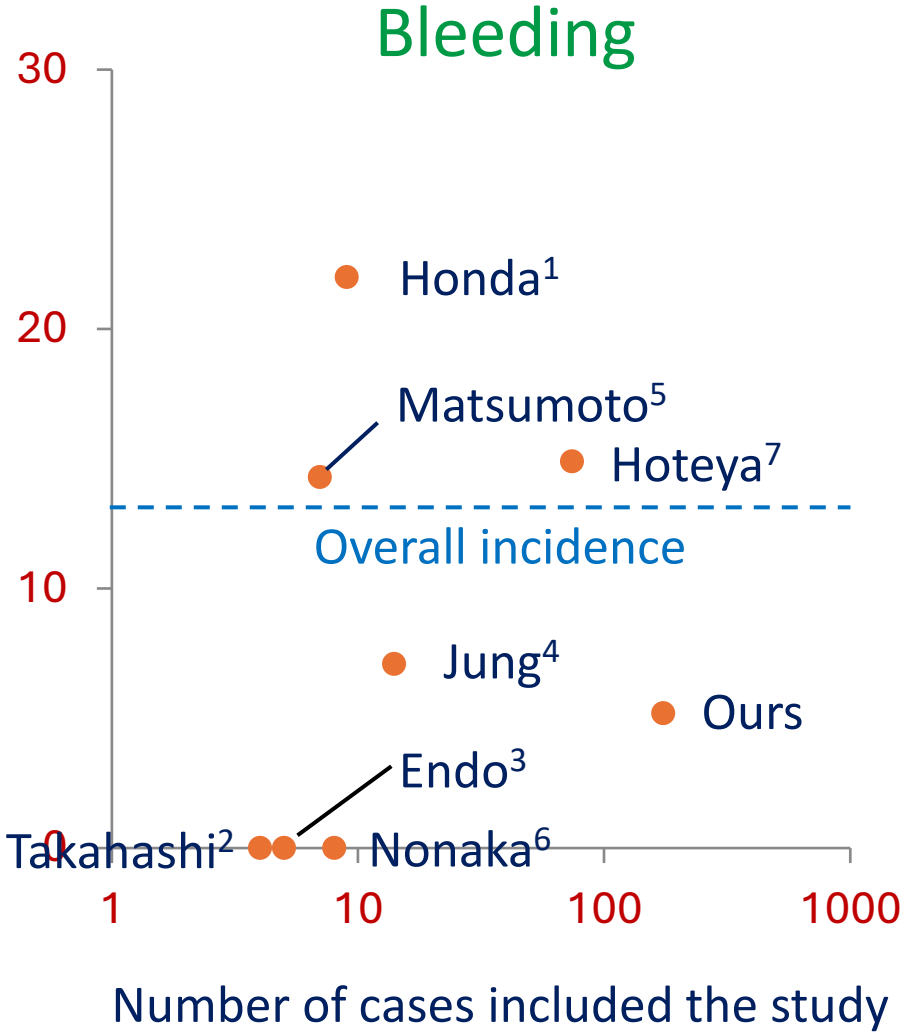
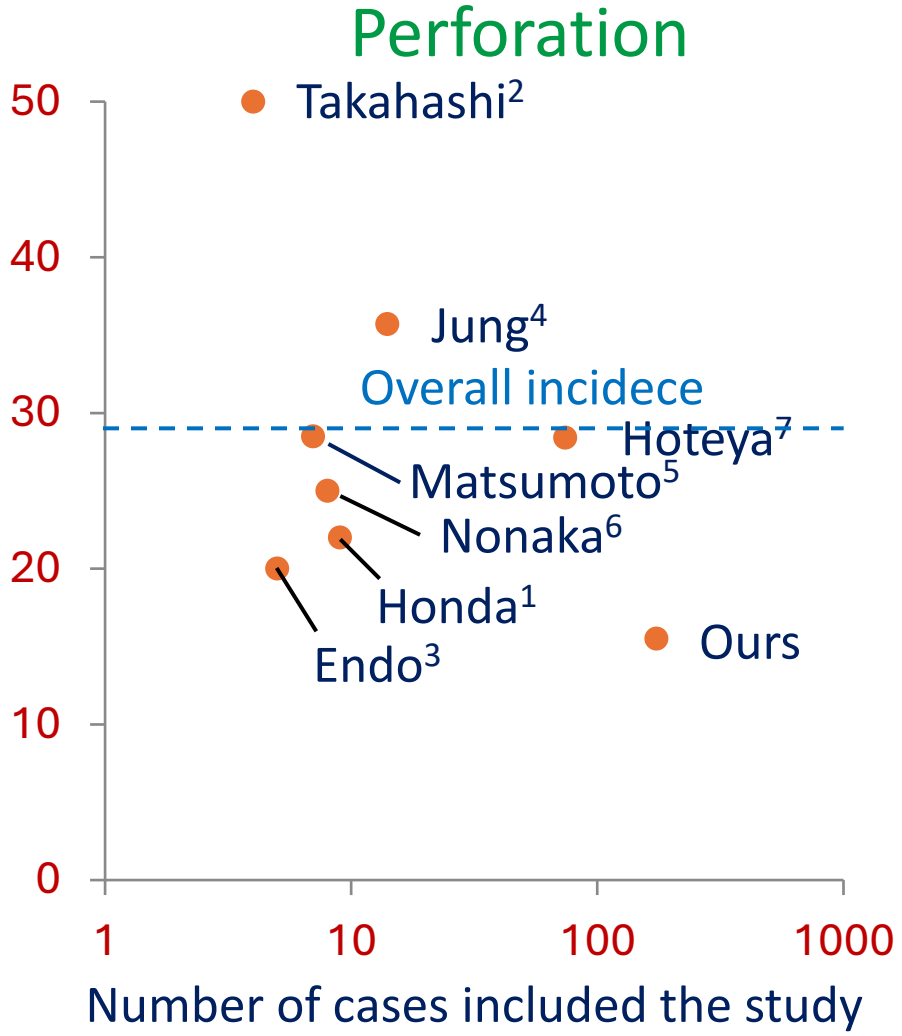
Complication Rate in Duodenal ESD





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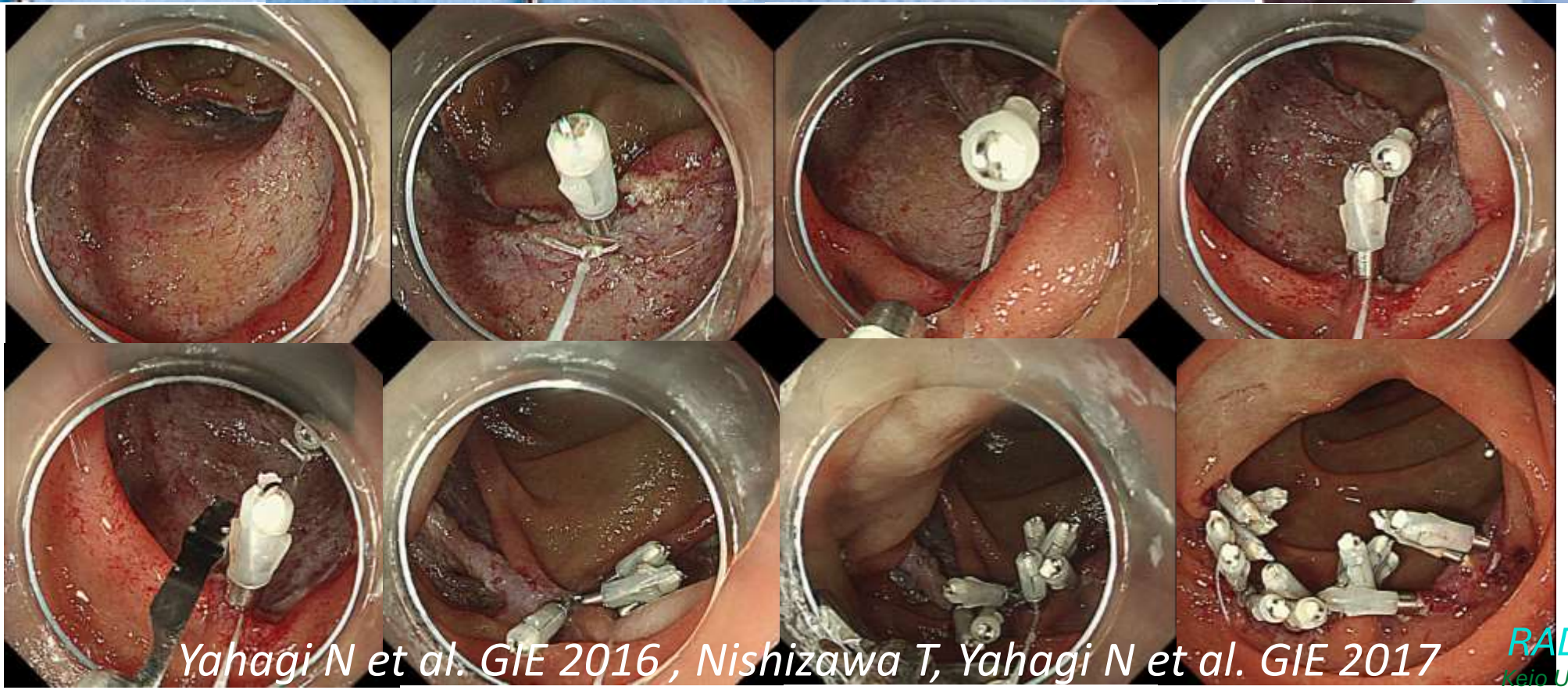
1: Dig Endosc 2009, 2: Scand J Gastroenterol 2009, 3: Dig Endosc 2009, 4: Endoscopy 2013, 5: Endoscopy 2013, 6: Endoscopy 2015, 7: Digestion 2017, 8: Gastrointest Endosc.2018

String Clip Suturing Method



Yahagi N et al. GIE 2016 , Nishizawa T, Yahagi N et al. GIE 2017

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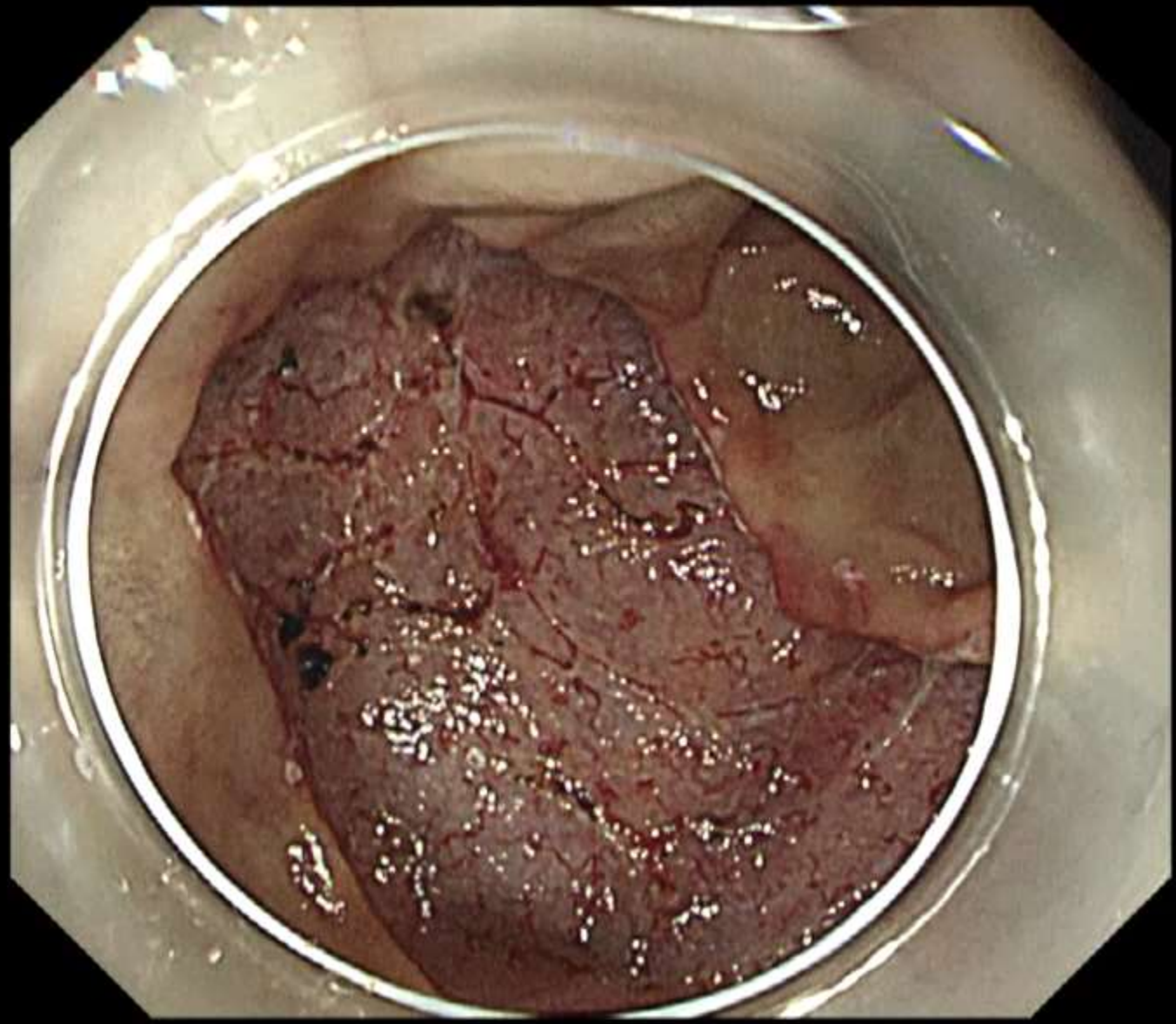
String Clip Suturing Method



Yahagi N et al. GIE 2016 , Nishizawa T, Yahagi N et al. GIE 2017

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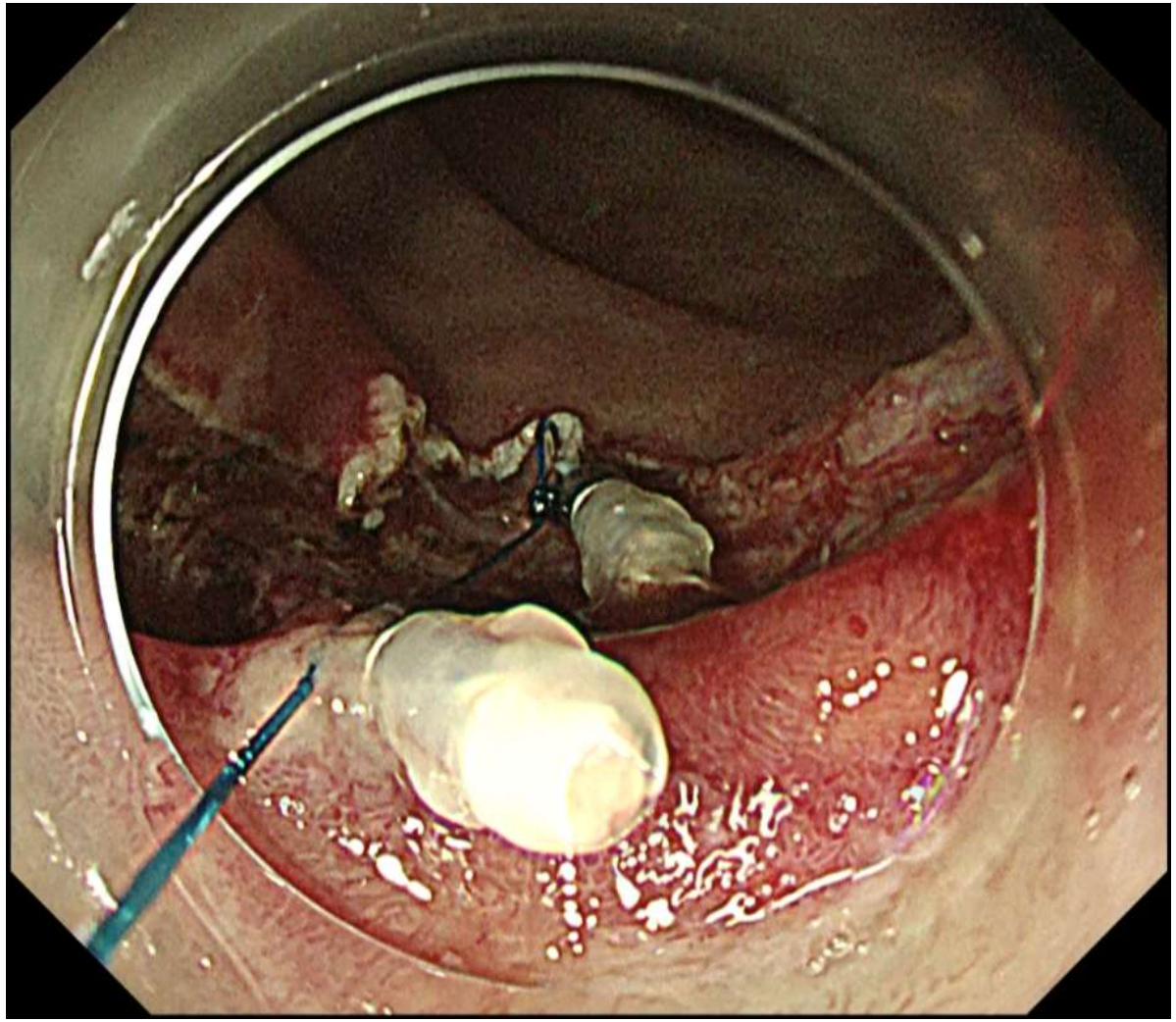

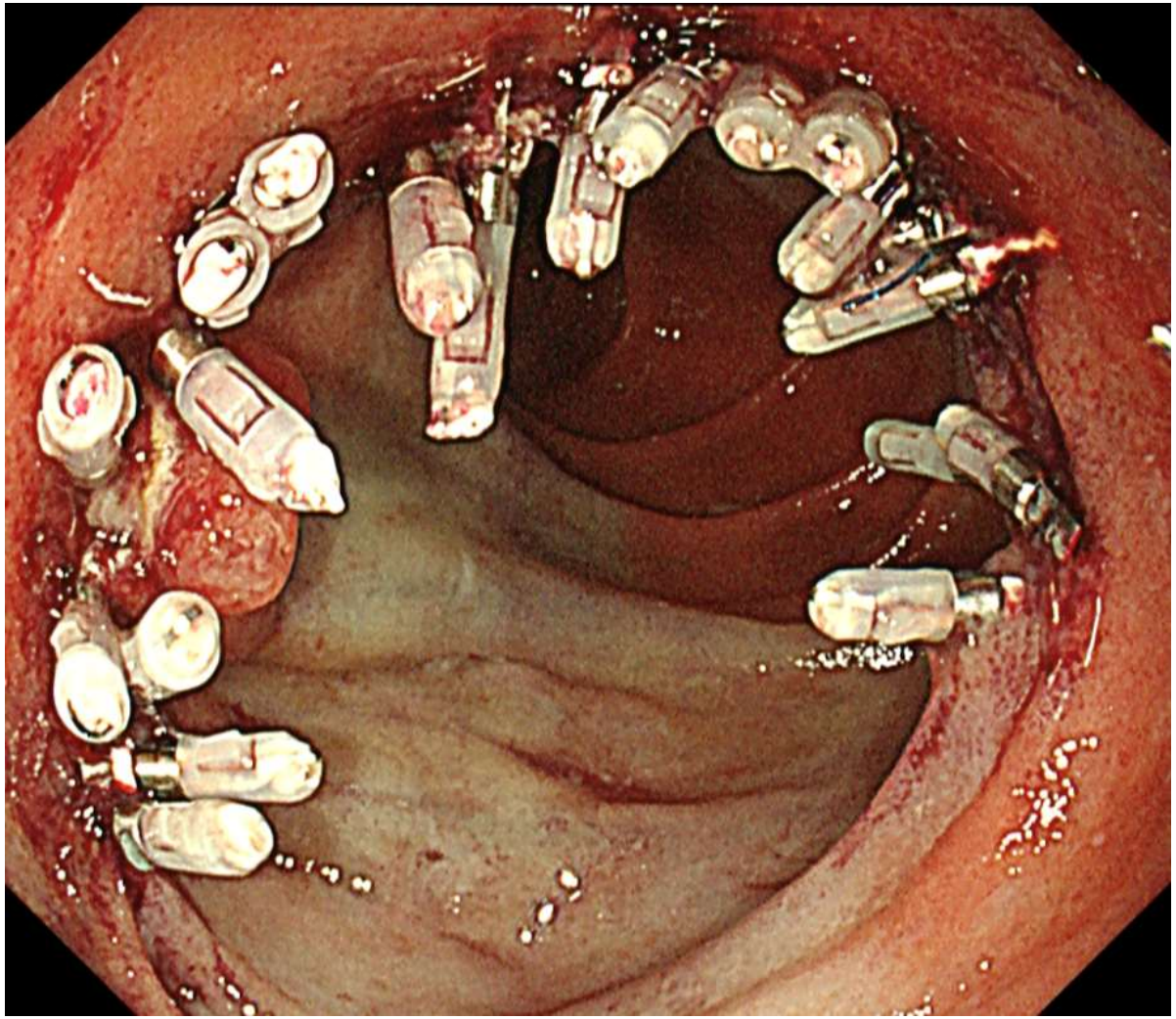

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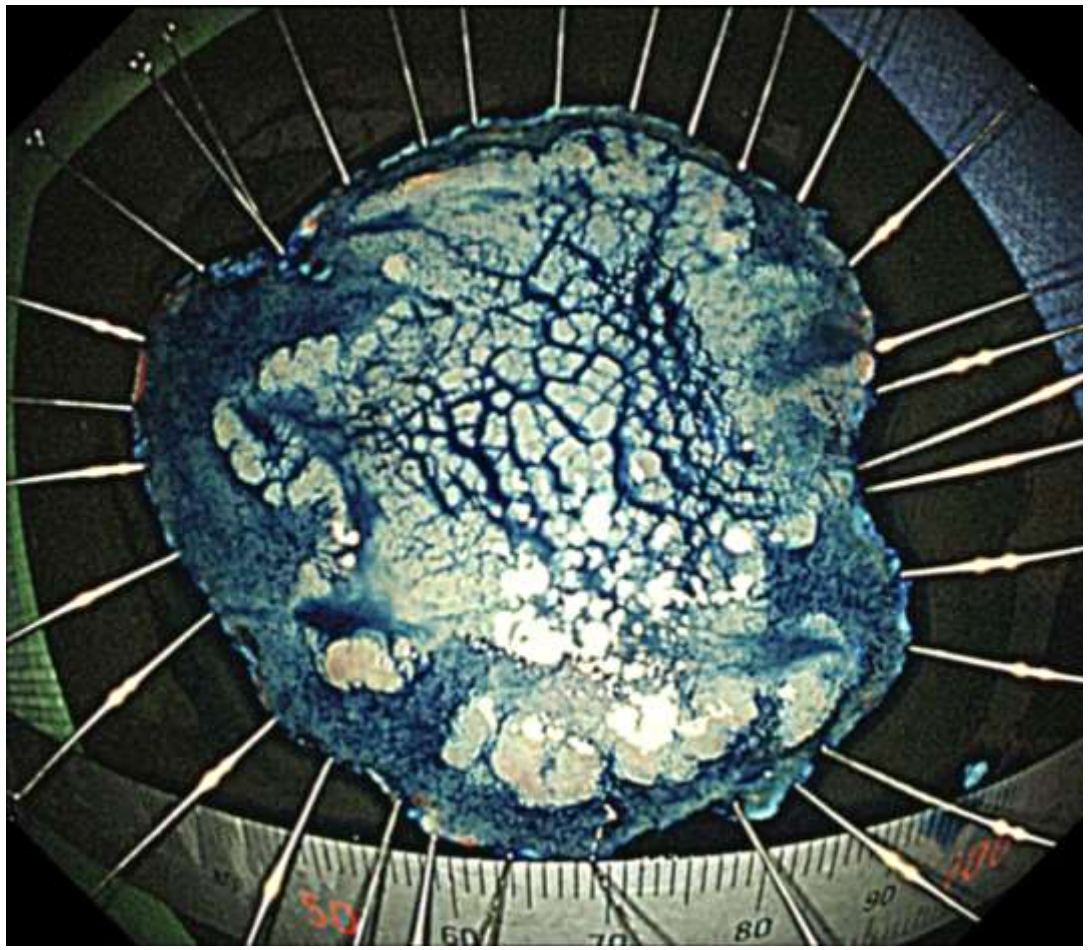
Histopathological Result



Well-differentiated tubular adenocarcinoma

42×40mm, 0-Ⅱa, tub1, pTis(M), ly0, v0, pHM0, pVM0

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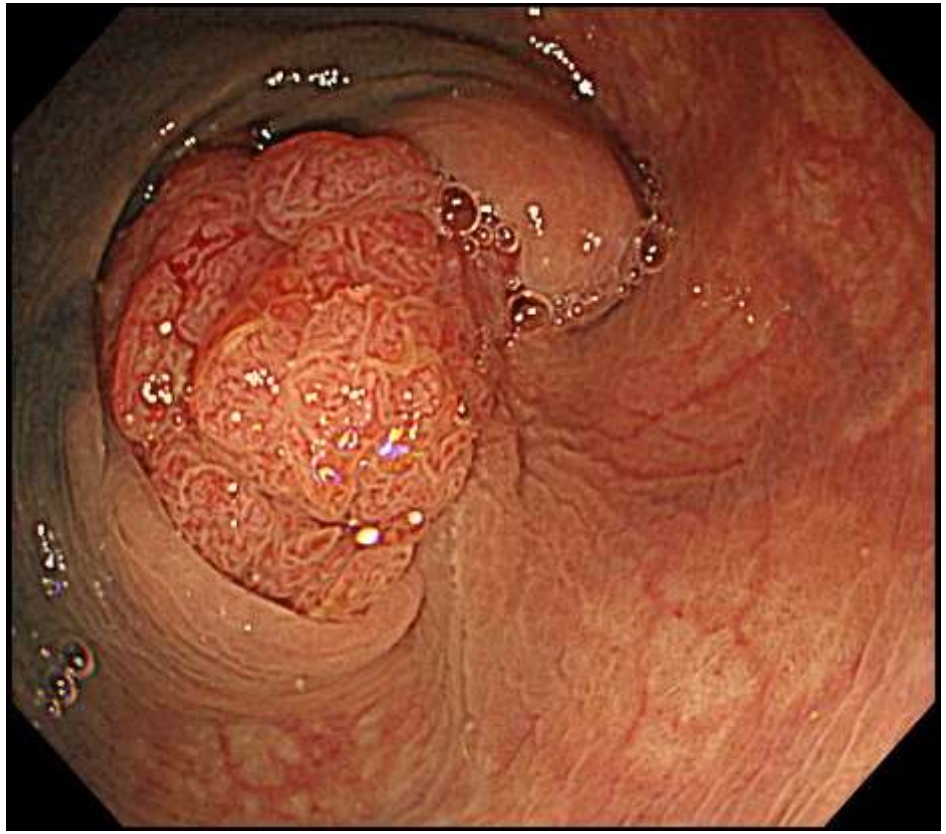
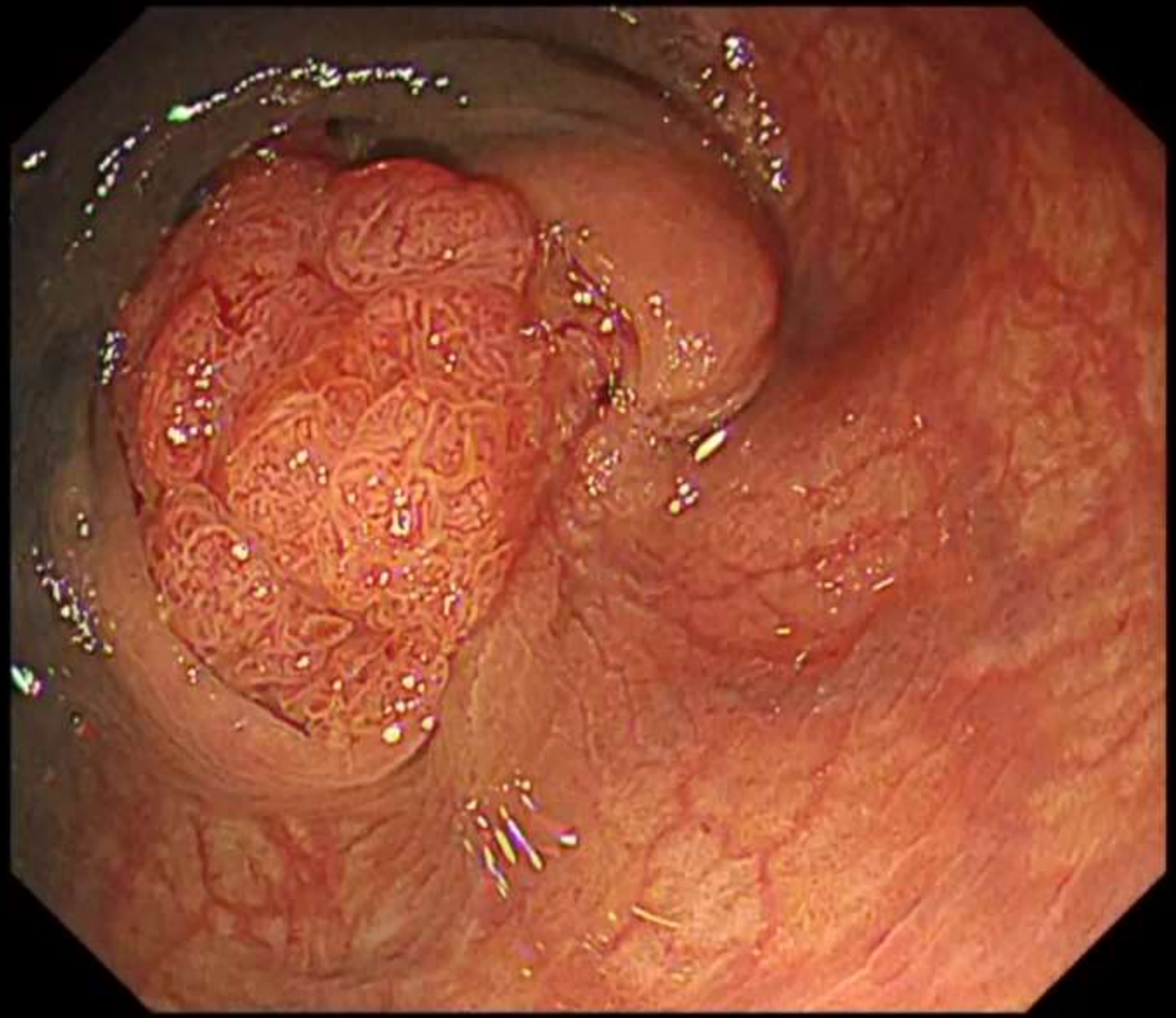
0-Isp Lesion with Muscle Traction Sign



- 0-Isp lesion with muscle traction located at sigmoid colon.
- Biopsy specimen revealed suspicious of carcinoma.



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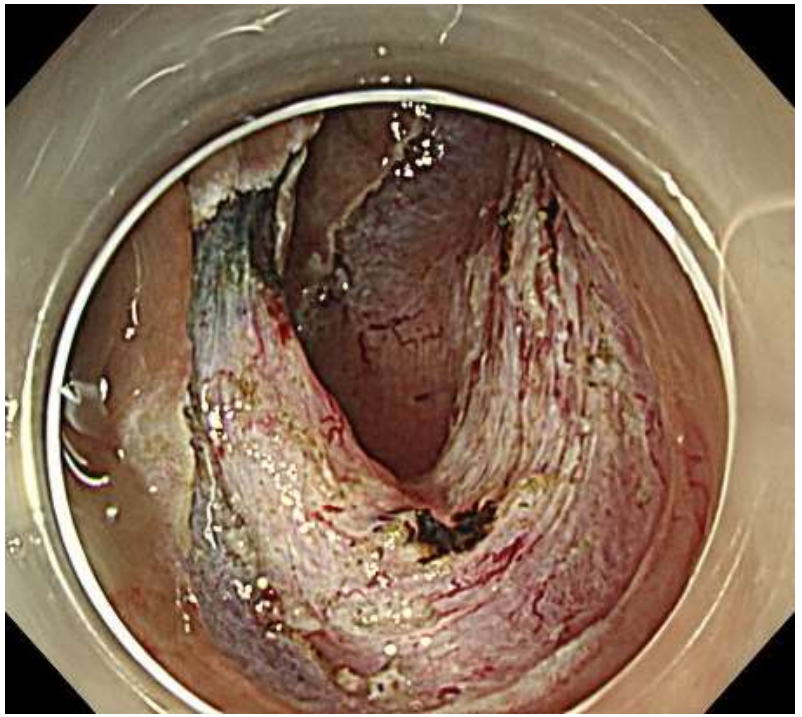
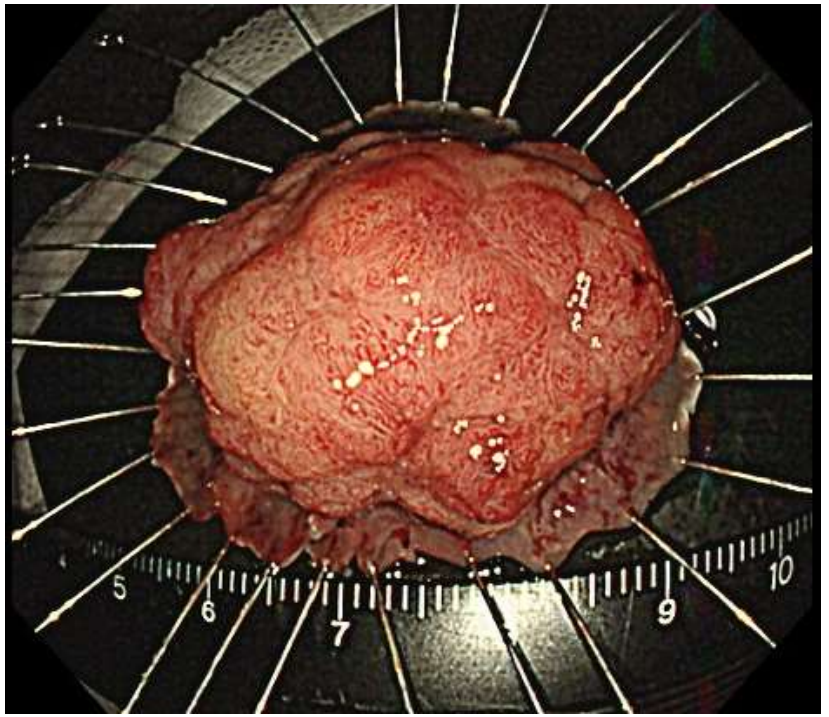
Histopathological Result





Tubular adenocarcinoma, 30×23mm, 0-Isp, tub1>>muc, invasion depth: ≧pT1b, INFb, BD1, Ly1, v1, pHM0, pVM0

Finally, the patient accepted surgical treatment.

WPM for Colorectal ESD

	WPM-ESD			Conventional-ESD		
	Case	Size (mm)	Time (min,)	Case	Size (mm)	Time (min.)
Ozeki 2021 GIE	54	17, 12–25 (Median, IQR)	**44**, 33–73 (Median, IQR)	79	17, 12–27 (Median, IQR)	**72**, 45–105 (Median, IQR)
Koyama, 2023 JGH	62	24, 20–29 (Median, IQR)	60, 30–100 (Median, IQR)	62	25, 20–30 (Median, IQR)	86, 53–114 (Median, IQR)
Kirita, Akimoto (ESGE 2024)	92	23 ± 7.5 (Mean ± SD)	**49** ± 26 (Mean ± SD)	92	24 ± 8.2 (Mean ± SD)	**58** ± 42 (Mean ± SD)

Retrospective study

Procedure time was significantly shorter in WPM!

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Conclusions

- UEMR and PI-UEMR are very effective for most of middle-sized colorectal and duodenal lesions.
- Mechanical traction techniques are useful for lesions larger than 3cm.
- The water pressure method provides safer and faster ESD regardless size.

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Thank you very much!

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