

# Webinar

Resection techniques in endoluminal surgery



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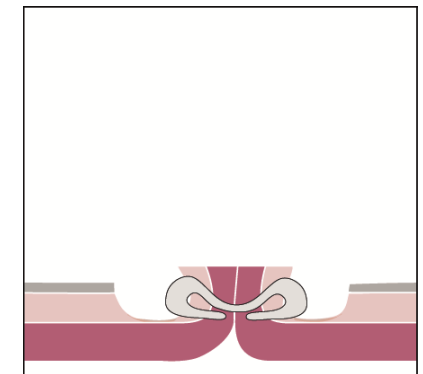
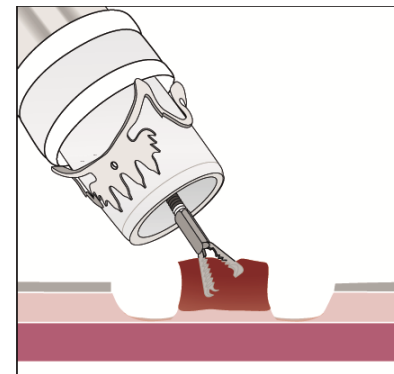
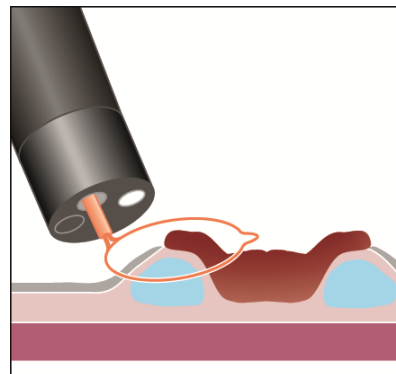
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# Hybrid-EFTR-EMR – Full thickness resection as advanced resection technique for gastrointestinal neoplasia

**Karel Caca**

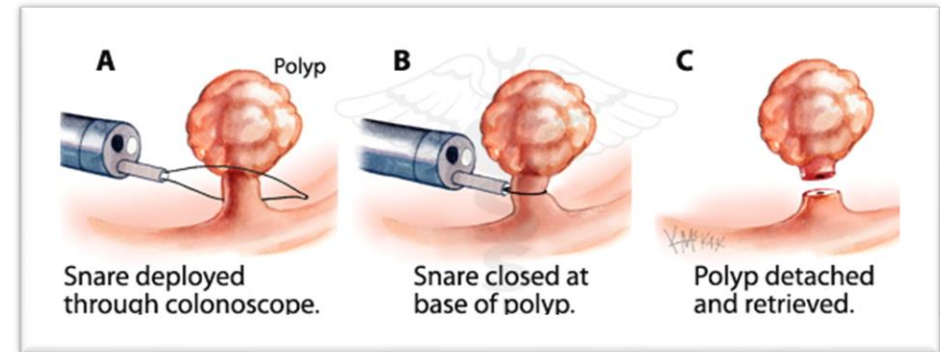
**Medizinische Klinik I, Klinikum Ludwigsburg**



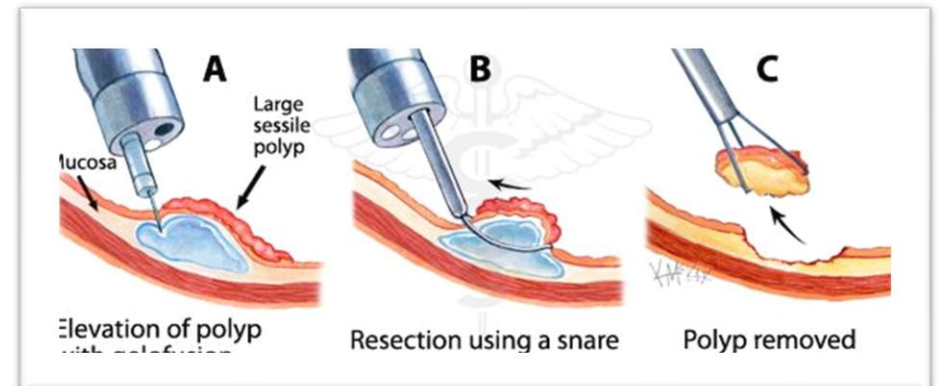


## Endoscopic resection techniques

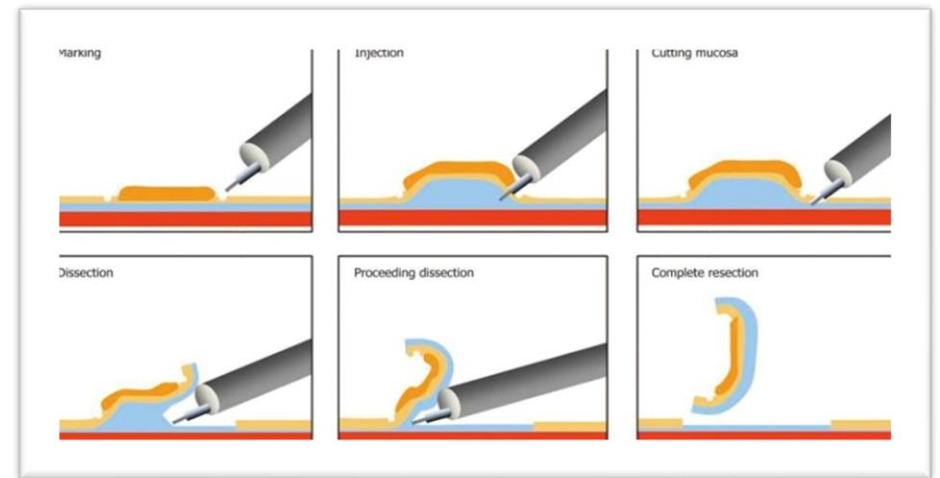
### ➤ Polypectomy



### ➤ Endoscopic Mucosal Resection (EMR)



### ➤ Endoscopic Submucosal Resection (ESD)





# Complete Adenoma Resection Study (CARE)

Polyp characteristics	Neoplastic polyps		Relative risk (95% CI)	
	All (N = 346), n	Incompletely resected (n = 35) (10.1%), n (%)	Univariate	Multivariate <sup>a</sup>
<b>Size, mm</b>				
5–7	172	10 (5.8)	1.00 (reference)	1.00 (reference)
8–9	64	6 (9.4)	1.61 (0.61–4.26)	1.66 (0.62–4.46)
10–14	67	9 (13.4)	2.34 (0.98–5.43)	1.95 (0.87–4.37)
15–20	43	10 (23.3)	4.00 (1.78–9.00)	3.21 (1.41–7.31)
<b>Location in the colon</b>				
Left colon	135	11(8.1)	1.00 (reference)	
Right colon	211	24 (11.4)	1.40 (0.71–2.76)	Not applicable <sup>b</sup>
<b>Location at fold</b>				
Between/on a fold	271	25 (9.2)	1.00 (reference)	
Behind a fold	67	6 (9.0)	0.97 (0.41–2.27)	Not applicable <sup>b</sup>
<b>Morphology</b>				
Nonflat	158	11 (7.0)	1.00 (reference)	1.00 (reference)
Flat	153	19 (12.4)	1.78 (0.88–3.62)	1.45 (0.73–2.91)
<b>Histology</b>				
Adenoma <sup>c</sup>	304	22 (7.2)	1.00 (reference)	1.00 (reference)
SSA/P	42	13 (31.0)	4.28 (2.34–7.83)	3.74 (2.04–6.84)
<b>Resection</b>				
En bloc	286	24 (8.4)	1.00 (reference)	1.00 (reference)
Piecemeal	54	11 (20.4)	2.43 (1.27–4.66)	1.41 (0.66–2.98)
<b>Ease of resection</b>				
Easy	222	17 (7.7)	1.00 (reference)	1.00 (reference)
Moderately difficult	75	10 (13.3)	1.74 (0.83–3.63)	1.56 (0.75–3.24)
Difficult	45	8 (17.8)	2.32 (1.07–5.05)	1.71 (0.67–4.44)



## Incomplete Adenoma (<20 mm) Resection Meta-Analysis

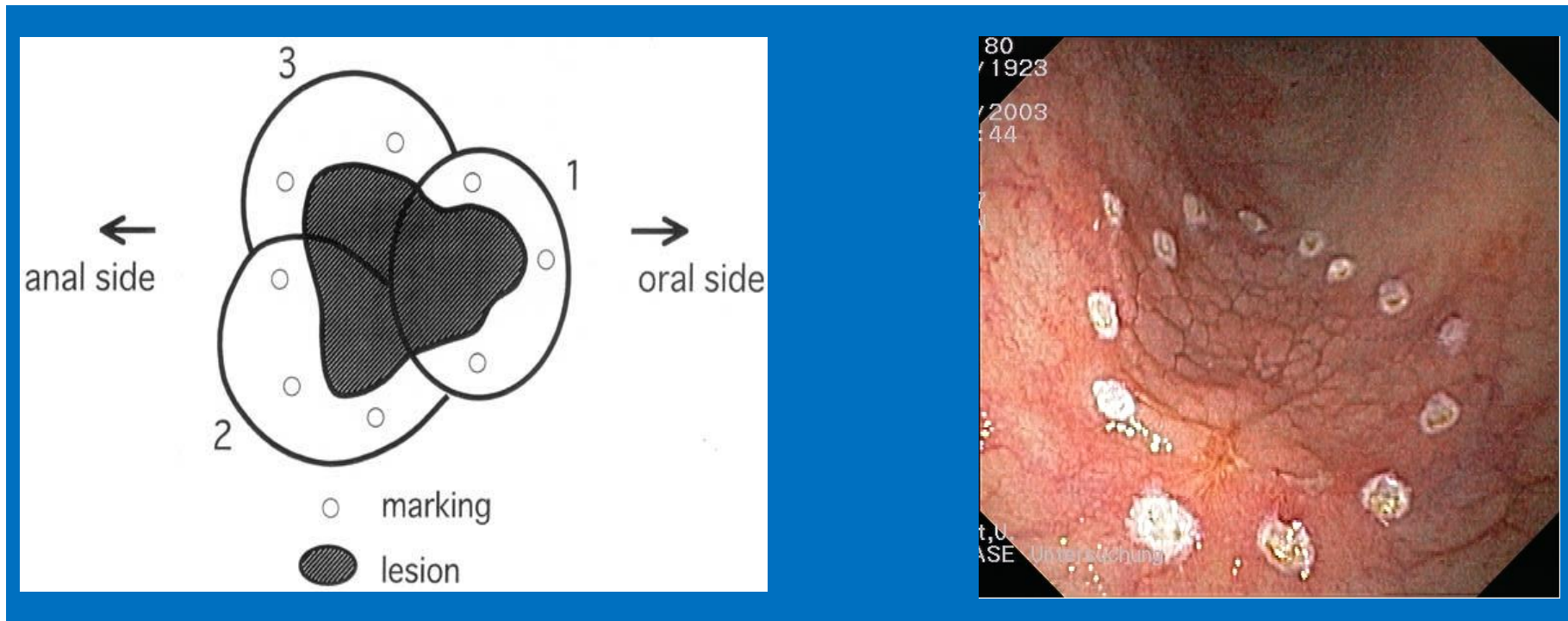
Subgroups	IRR, % (95% CI)	$I^2$ , %
Study type		
Expert	8.0 (4.8–11.3)	86.5
Nonexpert	18.0 (11.8–24.3)	96.1
Geographic origin		
Asian	14.1 (10.1–18.2)	94.9
Non-Asian	4.8 (3.3–6.3)	<sup>a</sup>
Histology		
Adenoma	13.3 (8.9–17.8)	95.9
SSA	28.5 (15.7–41.3)	<sup>a</sup>
1–10 mm		
Submucosal injection	14.2 (5.2–23.2)	95.9
No submucosal injection	17.6 (13.1–22.1)	54.1
<b>Total 1–10 mm</b>	15.9 (9.6–22.1)	94.4
10–20 mm		
Submucosal injection	20.4 (11.6–29.2)	80.0
No submucosal injection	<sup>a</sup>	<sup>a</sup>
Hot snare	14.2 (5.2–23.2)	76.9
Cold snare	17.3 (14.3–20.3)	<sup>a</sup>
<b>Total 10–20 mm</b>	20.8 (12.9–28.8)	76.9

*Djinbachian R et al.; Gastroenterology Online ahead of print 2020*



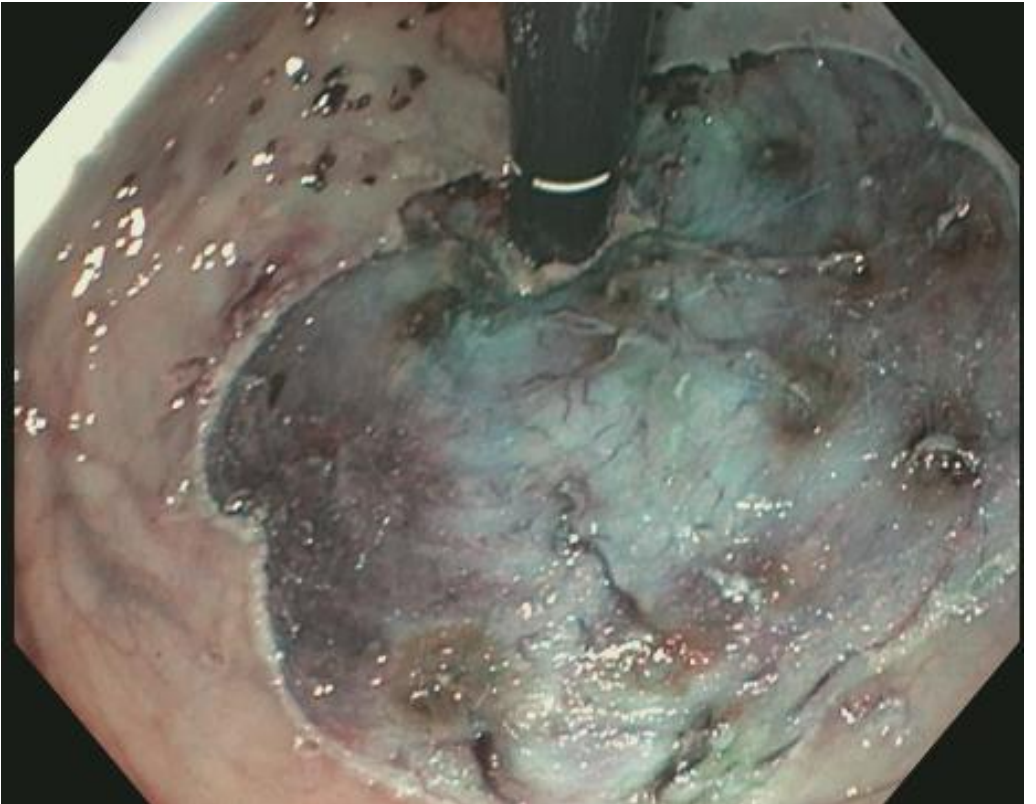
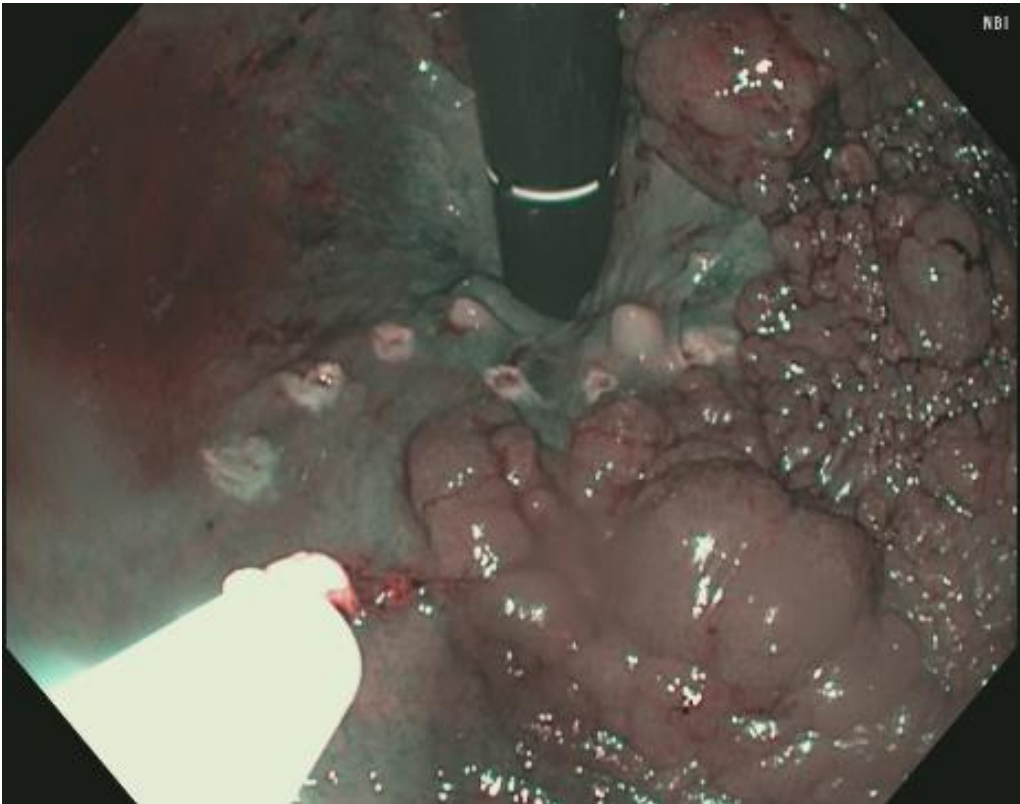
# Endoscopic Mucosal Resection (EMR)

Enbloc for adenomas < 2 cm, otherwise „piece-meal“ = Rx



# Case

- piecemeal - EMR
- procedure time 35 minutes
- tubular adenoma with high grade dysplasia, Rx
- F/U 1 year Ø recurrence





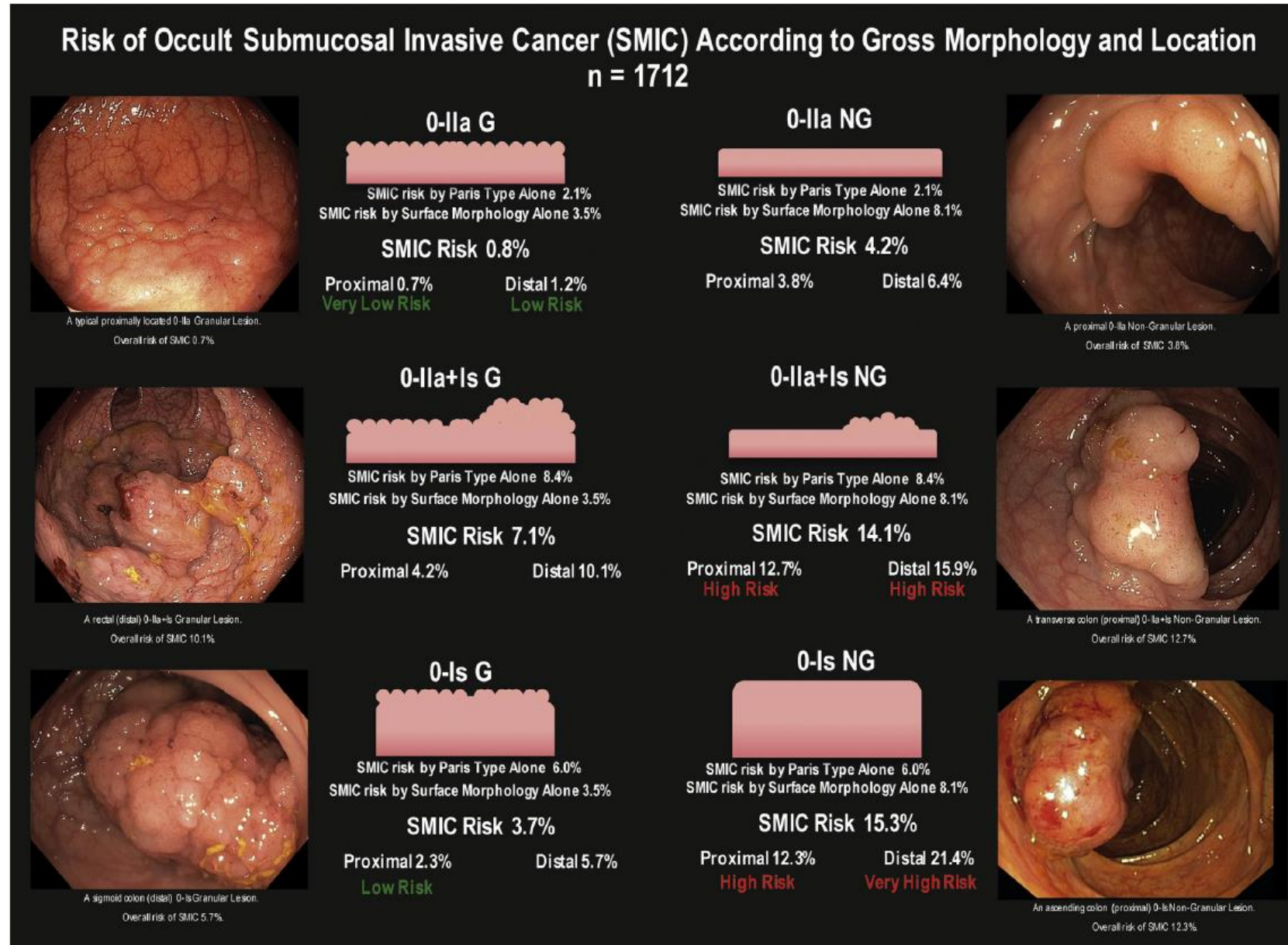
## ESD vs. EMR for colorectal adenomas

Metaanalysis 8 studies (2 case-control) using Prism-scheme

	EMR	ESD
n	973	1326
En bloc Resection	47 %	<b>92 %</b>
Recurrence	12 %	<b>1 %</b>
Complications		
- perforation	<b>1,4 %</b>	6 %
- delayed bleeding	3,5 %	2 %
Procedure time [min]	<b>29 - 30</b>	66 - 108

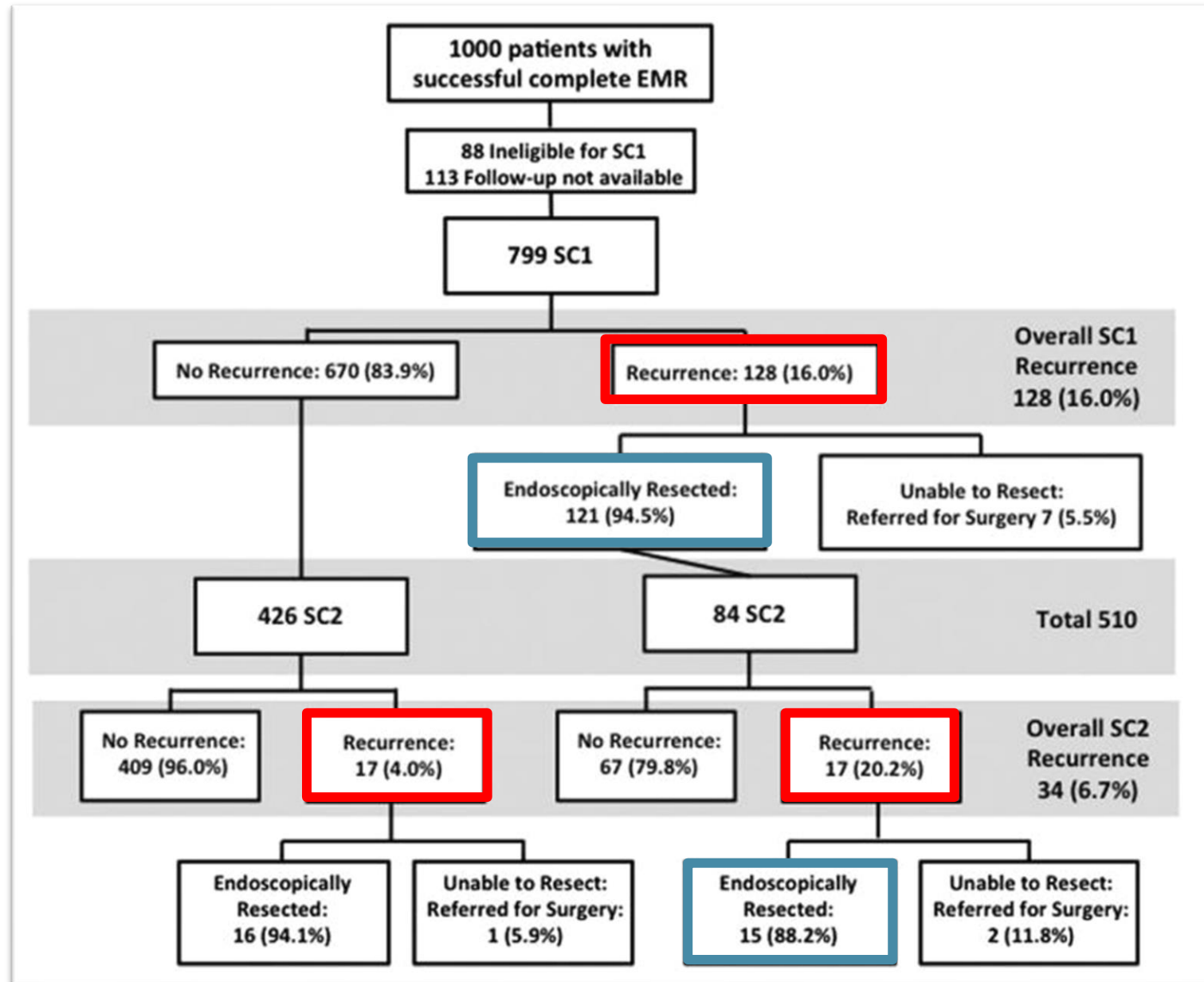
*Fujiya M et al.; GIE 2015*







# ACE study





# Conventional endoscopic resection (PE, EMR, ESD)

→ limited to Mucosa/Submucosa

## Negative „Lifting Sign“

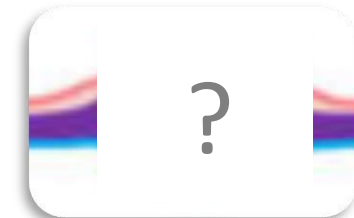
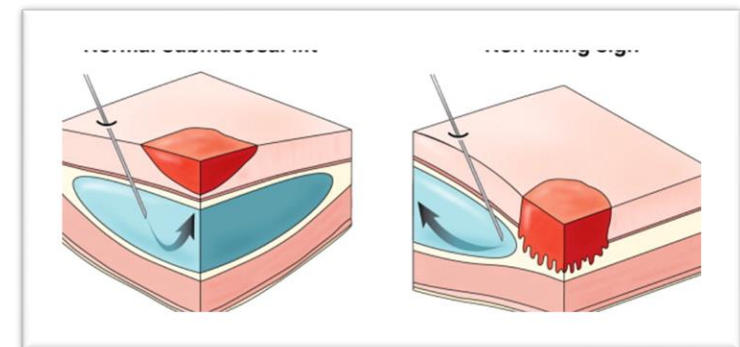
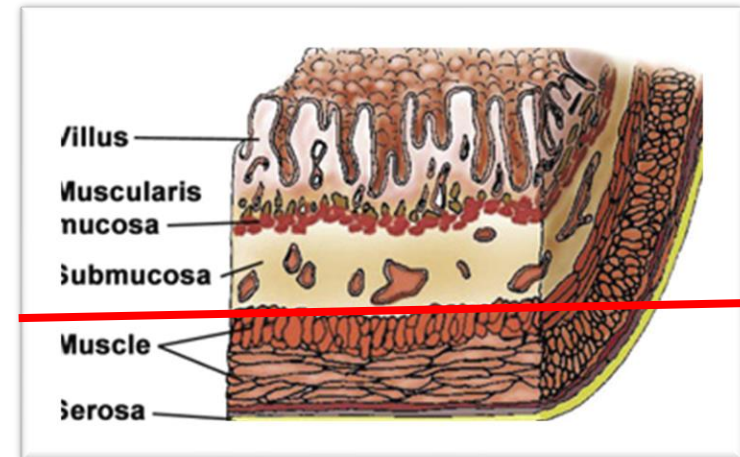
- malignant infiltration
- scarring (recurrent adenomas)

## Difficult location

- appendical orifice
- diverticula
- kinking/fold

## Subepithelial Tumors

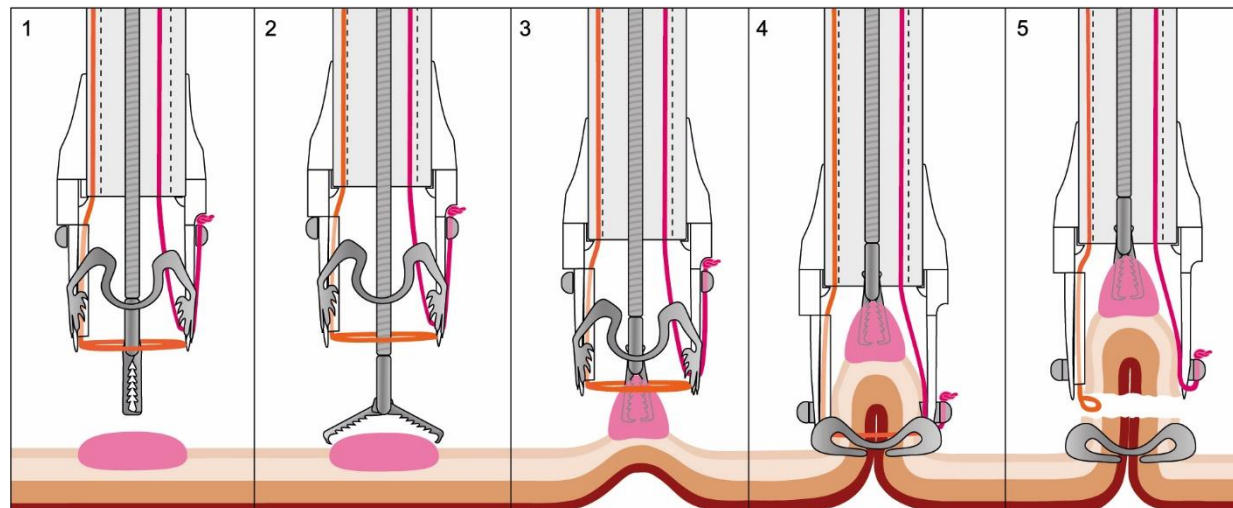
- mostly upper GI-tract
- pretherapeutic diagnosis difficult
- mostly benign esophagus >> stomach





# EFTR using FTRD

Full-thickness Resection Device (FTRD<sup>®</sup>, Ovesco Endoscopy)





## WALL RESECT STUDY (NCT02362126)

Subgroup	Technical success, n (%)	R0 resection, n (%)
<b>Indication</b>		
Difficult adenomas with final benign histology	117/127 (92.1)	98/127 (77.7)
Adenocarcinomas*	24/29 (82.6)	21/29 (72.4)
Subepithelial tumours	21/22 (95.5)	20/22 (87.0)
<b>Lesion size</b>		
≤9 mm	24/24 (100)	21/24 (87.5)
10–20 mm	104/114 (91.2)	93/114 (81.6)
>20 mm	34/43 (79.0)	25/43 (58.1)
<b>Localisation of lesion</b>		
Colon	133/151 (88.1)	117/151 (77.5)
Distal colon†	32/38 (84.2)	28/38 (73.7)
Proximal colon‡	101/113 (89.4)	88/113 (77.8)
Rectum	28/30 (93.3)	23/30 (76.6)
Lower rectum	9/9 (100)	7/9 (77.8)
Upper rectum	19/21 (90.5)	15/21 (71.4)
<b>Prior treatment</b>		
No prior treatment	92/99 (92.9)	79/99 (79.8)
Previous endoscopic therapy	69/82 (84.14)	60/82 (73.2)

\*Including known carcinomas and incidental carcinomas initially classified as non-lifting adenomas.

†Including coecum, ascending and transverse colon.

‡Including descending colon, sigmoid and rectosigmoid transition.

*Schmidt A et al.; Gut 2018*



## German Colonic FTRD Registry

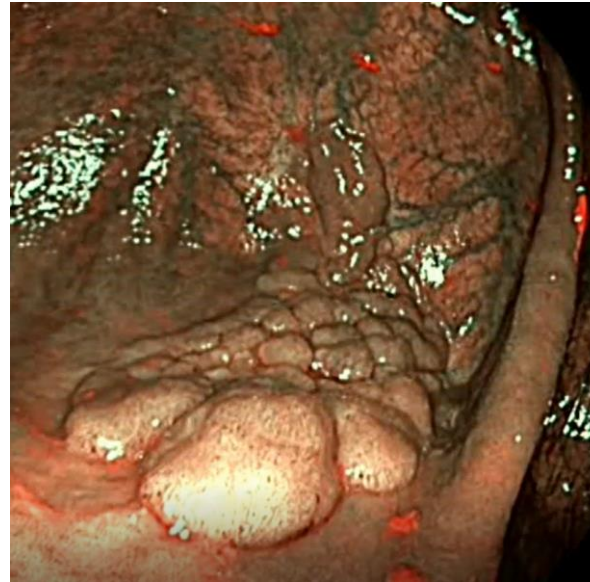
Subgroup	Technical success, n (%) ITT <sup>†</sup> , PP <sup>‡‡</sup>	R0 resection, n (%) ITT <sup>†</sup> , PP <sup>‡‡</sup>
<b>Indication</b>		
„Difficult adenomas“	<b>665/790 (84)</b> , 665/759 (88)	<b>536/761 (70)</b> , 536/694 (77)
T1 carcinoma	<b>176/217 (81)</b> , 176/208 (85)	<b>159/212 (75)</b> , 159/192 (83)
Subepithelial tumor	<b>73/80 (91)</b> , 73/75 (97)	<b>68/80 (85)</b> , 68/70 (97)
<b>Lesion size</b>		
< 20 mm	301/360 (84)*	250/322 (78)*
≥ 20 mm	697/771 (90)*	573/707 (81)*
<b>Location of lesion</b>		
Colon	<b>756/901 (84)</b> , 756/859 (88)	<b>619/879 (70)</b> , 619/785 (79)
Rectum	<b>242/277 (87)</b> , 242/272 (89)	<b>204/263 (78)</b> , 204/244 (84)
lower rectum (≤ 5 cm from anus)	<b>58/62 (94)</b> , 58/61 (95)	<b>50/59 (85)</b> , 50/55 (91)
<b>Prior treatment</b>		
Endoscopic pretreatment	<b>764/904 (85)</b> , 764/872 (88)	<b>648/863 (75)</b> , 648/794 (82)
No pretreatment	<b>234/274 (85)</b> , 234/259 (90)	<b>175/269 (65)</b> , 175/235 (74)



## (partially) non-EMRable + too big to FTRD enbloc ?

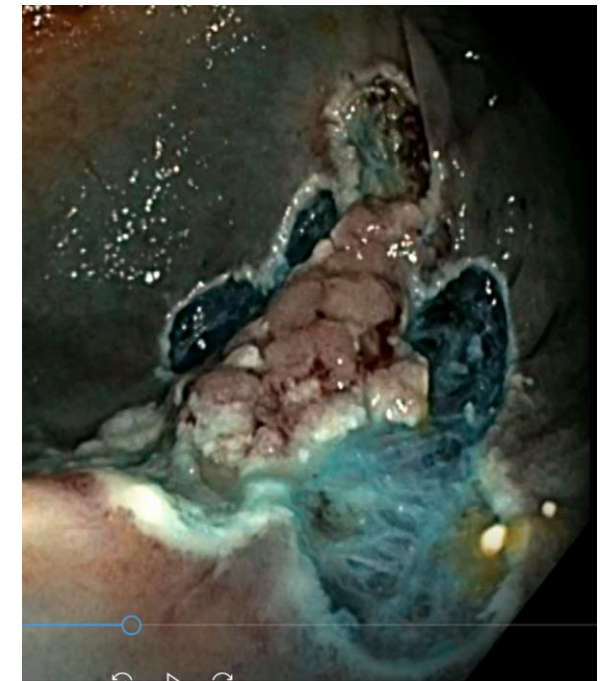
Too big to FTRD enbloc

> (2)-3 cm



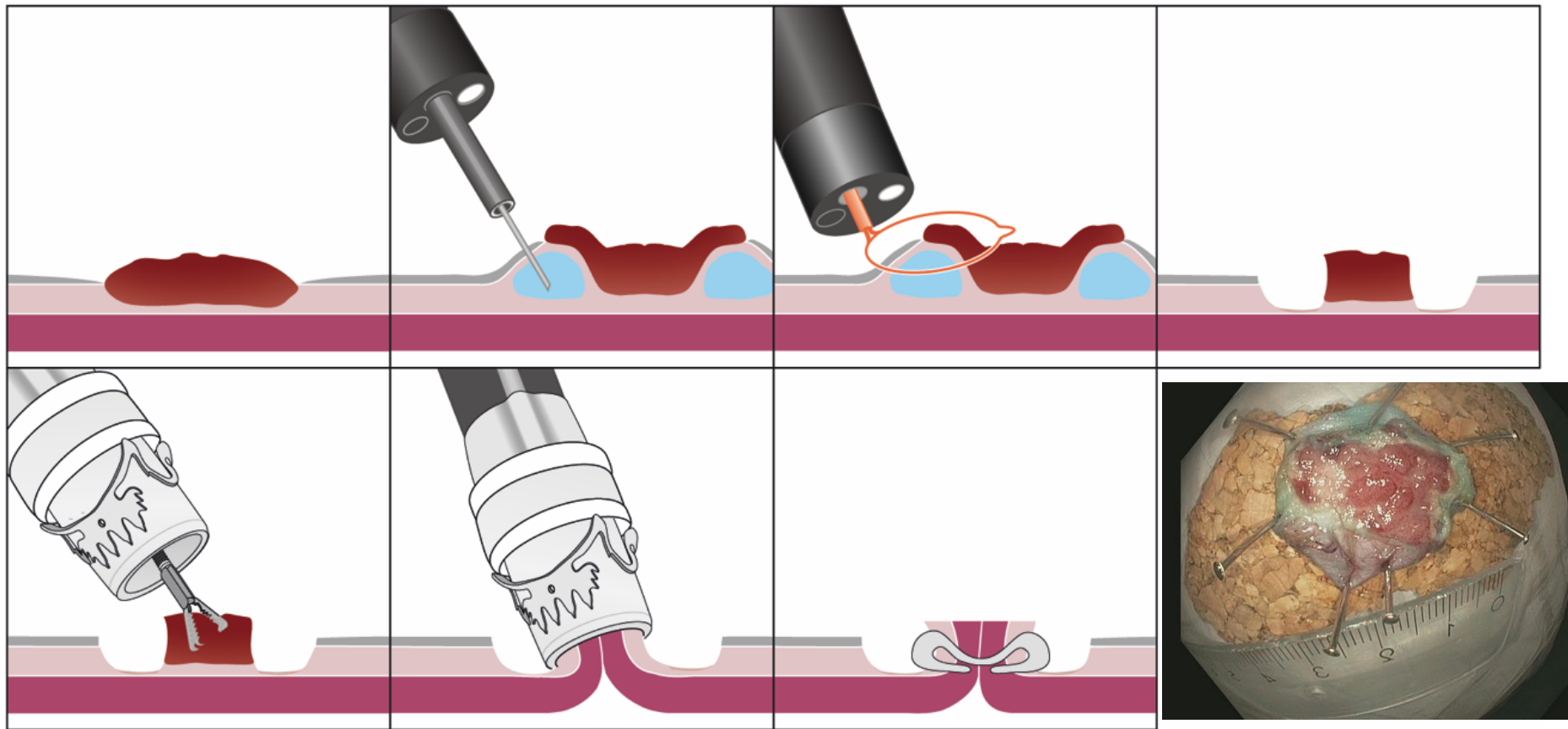
**Non-EMRable complete**

- negative lifting sign
- difficult location (e.g. appendix)





## Hybrid-EFTR-EMR using FTRD



*Meier B et al.; Surg Endoscopy 2017*



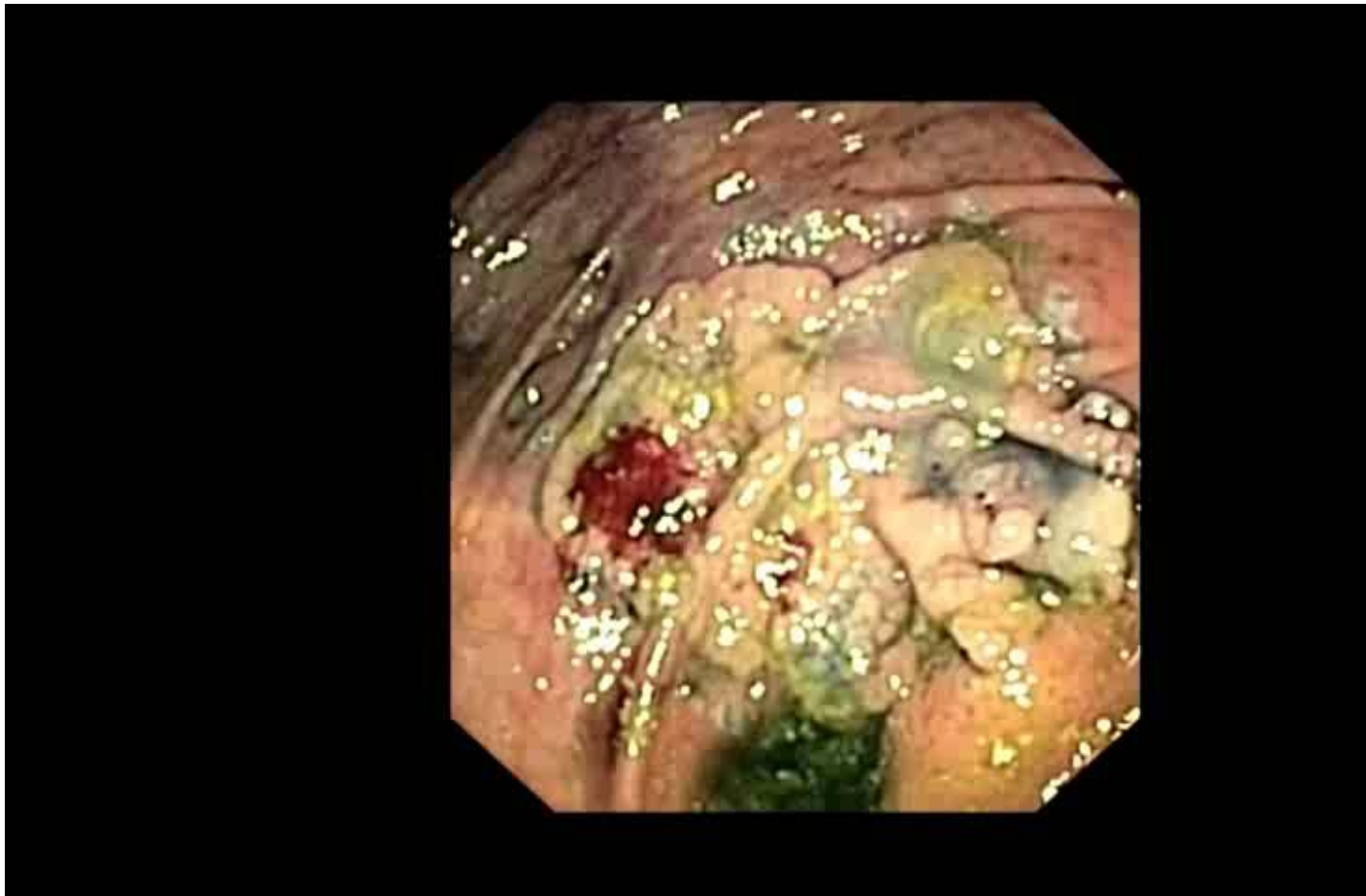


## Coecal Adenoma (LST – G-type, homogenous)





## Coecal Adenoma (LST – G-type, mixed nodular) involving appendical orifice





Patient	Age (y)	Sex	Lesion location	Lesion size (mm)	Classification	Indication	Time (min)	R0**	Adverse events	Follow Up (3 months)
1	53	F	Rectosigmoid	35 (estimated)	Paris: 0-IIa NICE II	Recurrent non-lifting adenoma with high-grade dysplasia	65	Yes	None	OTSC detached spontaneously. No signs of a residual or recurrent adenoma
2	77	F	Cecum	30 (estimated)	LST-G Paris: 0-IIa NICE II	Non-lifting adenoma (lateral spreading type) with low-grade dysplasia	85	Yes	None	Deep ingrowth of the OTSC. No removal of the OTSC. No signs of a residual or recurrent adenoma
3	78	F	Ascending colon	30 (estimated)	Paris: 0-Is + IIc NICE II	Non-lifting adenoma with high-grade dysplasia	80	Yes	None	Removal of the OTSC. No signs of a residual or recurrent adenoma
4	73	M	Cecum	50 (estimated)	LST-G Paris: 0-IIa NICE II	Non-lifting adenoma (lateral spreading type) with high-grade dysplasia	95	Yes	None	OTSC detached spontaneously. No signs of a residual or recurrent adenoma
5	82	M	Ascending colon	40 (estimated)	Paris: 0-IIa NICE II	Recurrent non-lifting adenoma with high-grade dysplasia	130*	Yes	None	Removal of the OTSC. No signs of a residual or recurrent adenoma
6	79	M	Cecum	35 (estimated)	Paris: 0-IIa NICE II	Non-lifting adenoma with high-grade dysplasia	140*	Yes	None	OTSC detached spontaneously. No signs of a residual or recurrent adenoma
7	71	M	Ascending colon	30 (estimated)	Paris: 0-Is NICE II	Recurrent non-lifting adenoma with low-grade dysplasia	78	Yes	None	OTSC detached spontaneously. No signs of a residual or recurrent adenoma
8	78	F	Cecum	35 (estimated)	Paris: 0-Is/IIa NICE II	Non-lifting adenoma with low-grade dysplasia	82	Yes	None	Removal of the OTSC. No signs of a residual or recurrent adenoma
9	62	M	Sigmoid	35 (estimated)	Paris: 0-Is NICE II	Non-lifting adenoma with low-grade dysplasia	69	Yes	None	OTSC detached spontaneously. No signs of a residual or recurrent adenoma
10	72	M	Ascending colon	35 (estimated)	Paris: 0-IIa NICE II	Recurrent non-lifting adenoma with low-grade dysplasia	77	Yes	None	OTSC detached spontaneously. No signs of a residual or recurrent adenoma



# Hybrid-EFTR-EMR using FTRD

**Klinikum Ludwigsburg**

**N = 32**

**4 left-sided, 28 right-sided (12 coecum)**

**Procedure time: 40-140 minutes**

**No major complications**

**F/U: 5 recurrences**



## Conclusions

- Nearly 100% benign colorectal lesions can be resected endoscopically  
**= 3 x Hurra**
- Aim for complete resection ( $\neq$  enbloc resection)
- Know your limits: look for signs of overt SMIC (depressed lesion)
- FTRD-EFTR closed a major therapeutic gap
- Hybrid-EMR-FTRD is closing a small but important therapeutic gap  
= logic next step when „in trouble“

**When in doubt**

**Take it out**

**Take it out endoscopically!**