

When Do You Need EMR vs ESD?

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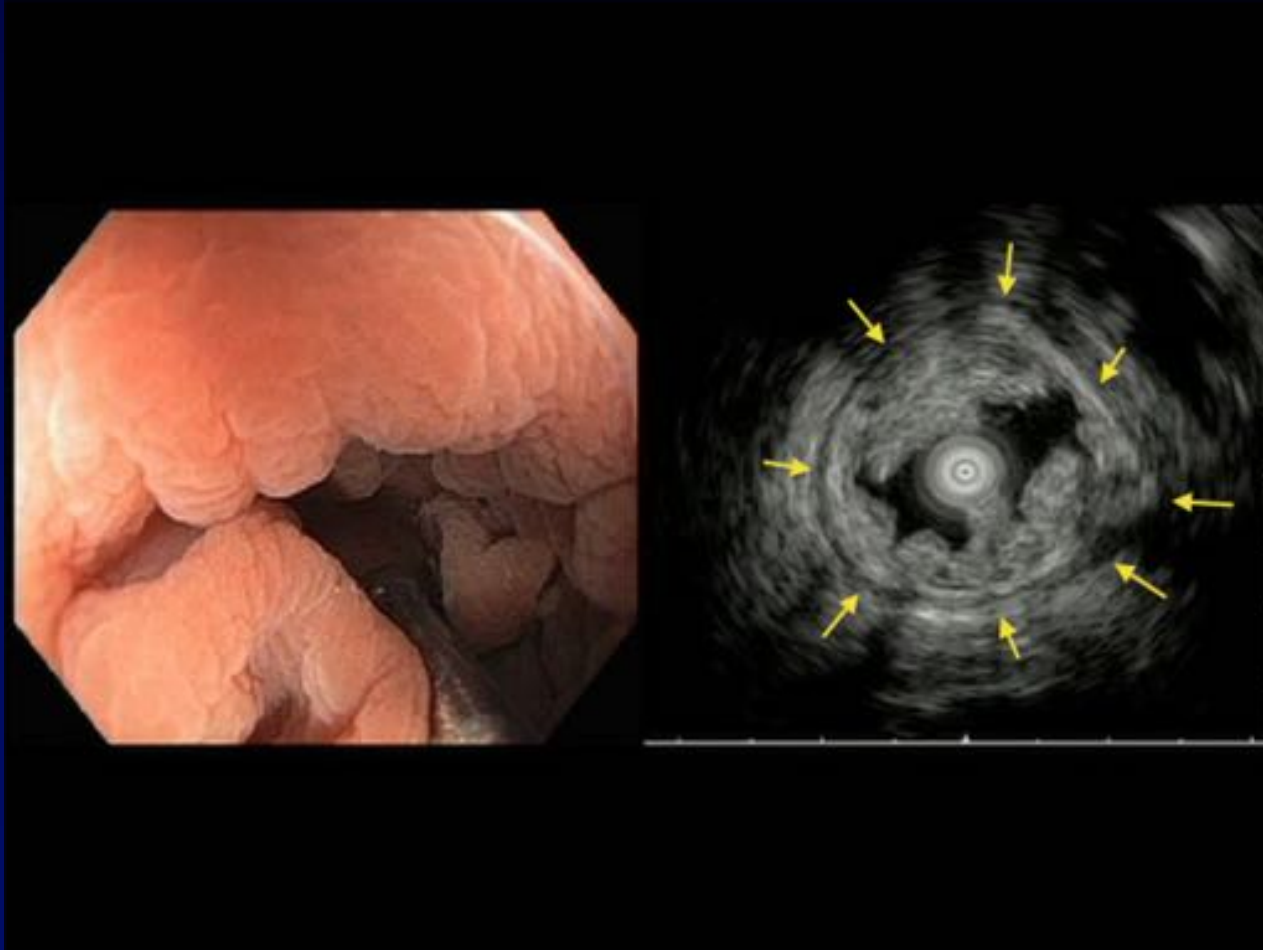
University of Florida



Colonic EMR

- Relatively easy with shorter procedure duration
- Successful and safe in most cases
- Long track record
- Ongoing improvements of technique

Underwater EMR

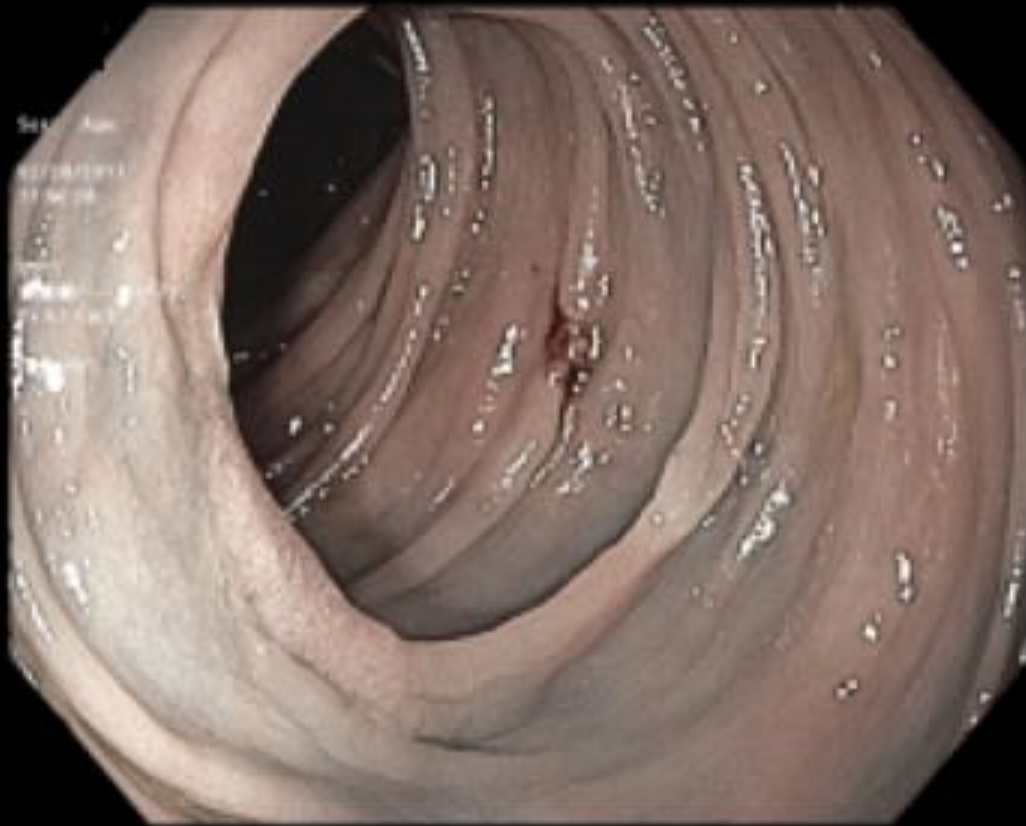


Underwater EMR

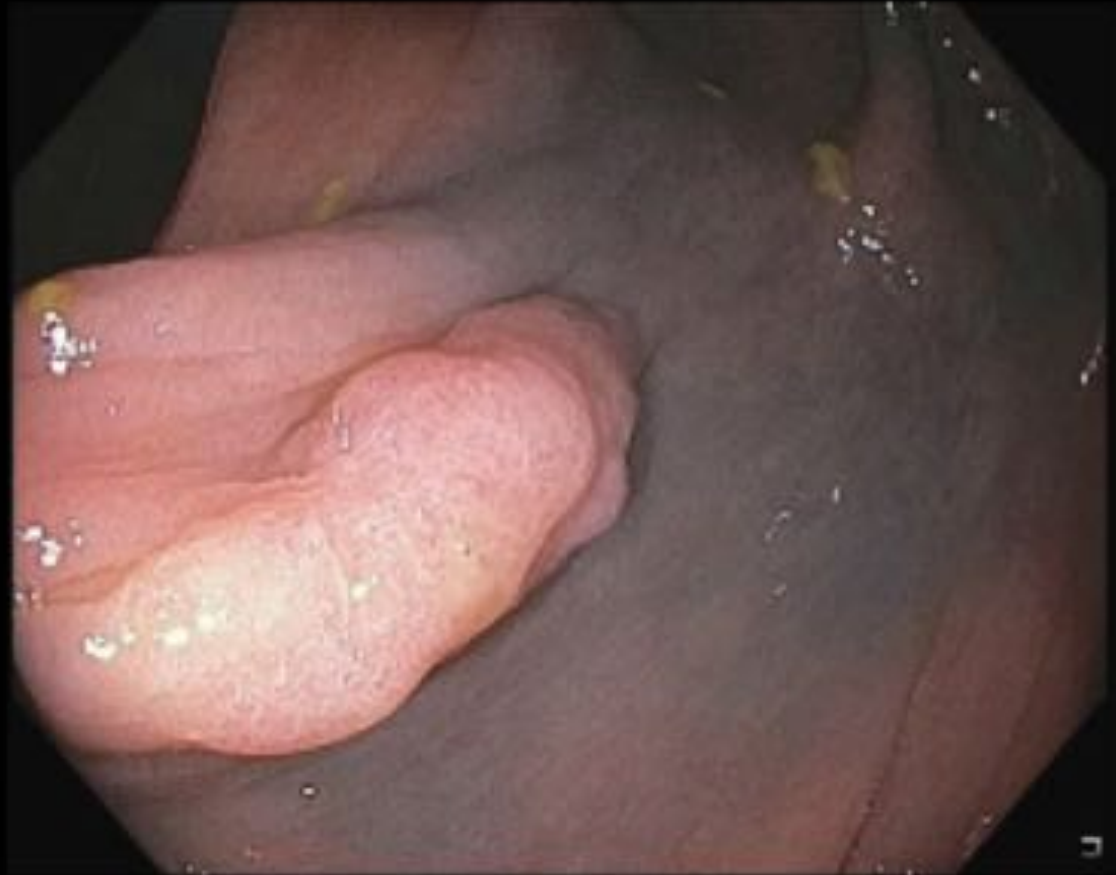


11/11/2011
 10:04:14
 0.11
 11/11/2011
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 11/11/2011
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Avulsion technique



Tip anchor technique



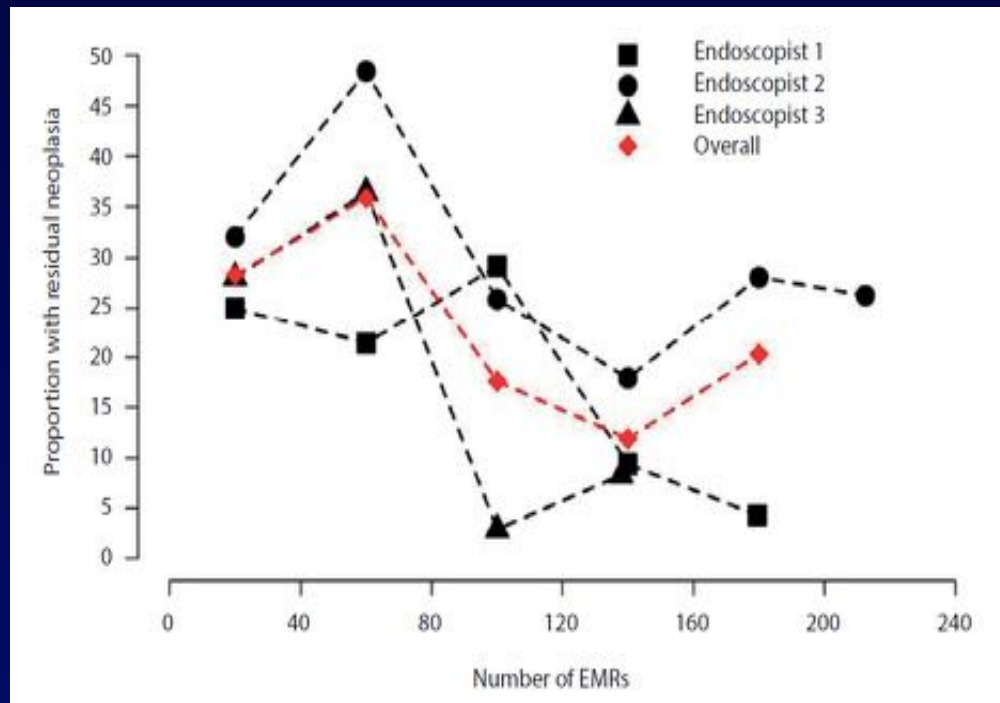
Colonic EMR

But!!!

- Complete resection not possible in all cases:
 - Difficult access
 - Fibrosis
 - Residual/recurrent lesion
 - Tattoo at the base
- Adjunctive therapy frequently needed
- Fragmented specimen
- High recurrence rate: 15-20%
- Easier than ESD but not easy

EMR Learning Curve

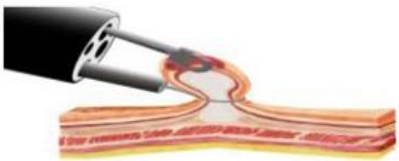
- 3 experienced endoscopists
- 578 colonic EMRs
- Outcome measures
 - residual neoplasia on surveillance - 23%
 - incomplete EMR - 28%
 - immediate bleeding - 7%
- It took > 100 EMR for the residual/recurrence to be consistently $< 20\%$



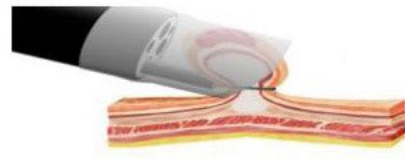
We are products of our past, but we don't
have to be prisoners of it.

Rick Warren

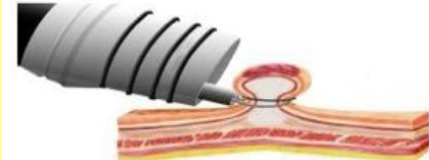
All introduced in Japan!



Strip Biopsy; Tada et al.,
Gastroenterol Endosc, 1984



EMR-C; Inoue et al.,
Gastrointest Endosc, 1993



EMR-L; Akiyama et al.,
Gastrointest Endosc, 1997

1970s

1980s

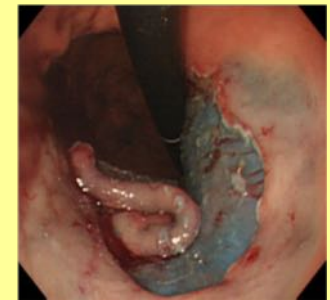
1990s

2000s

2010 2018



Polypectomy; Shinya H.
1969 (colon)



ESD; Ono H, Gotoda T et al.
Gut, 2001

Colonic ESD

- Ontologically sound procedure providing en bloc resection
- Lower recurrence rate/Higher curative rate
- Allows resection when EMR is not feasible
- Accurate histopathologic assessment of curative treatment
- Preserves organ integrity with higher quality of life



Colorectal endoscopic submucosal dissection: a systematic review and meta-analysis

Endosc Int Open. 2016 Oct;4(10):E1030

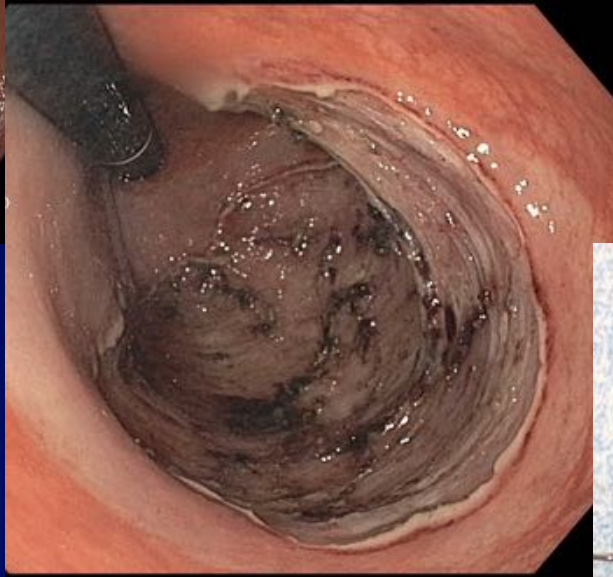
- 13,603 patients
- En bloc resection - 92%
- R0 resection - 83%
- Curative resection - 92%
- Perforation – 4%
- Recurrence - 1%

Recurrence

- EMR \approx 15-20%
- ESD \approx <1%

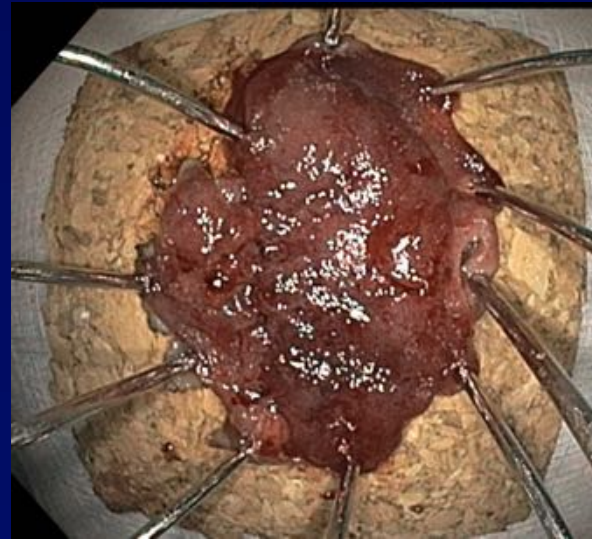
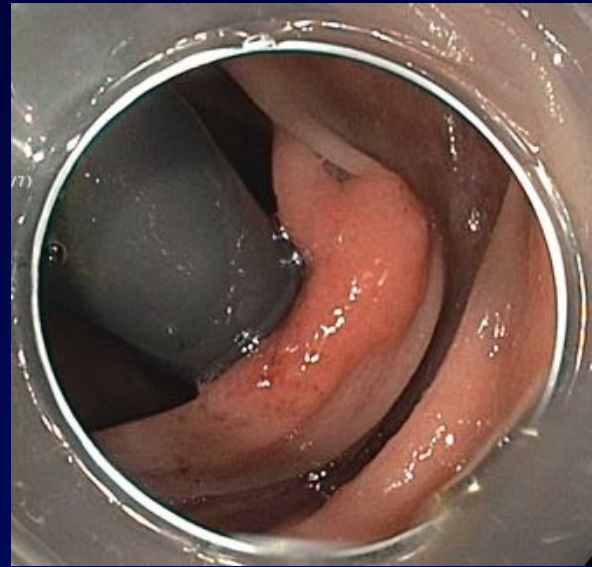
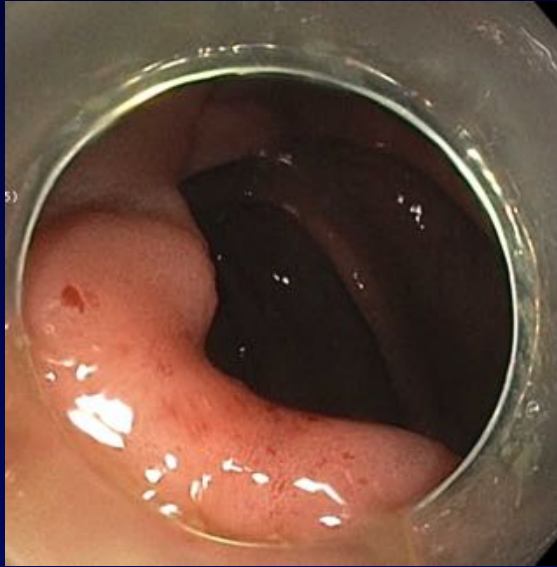
Fujiya M. Gastrointest Endosc. 2015;81(3):583
Wang J. World J Gastroenterol. 2014;20(25):8282

This endoscopic image shows a large, lobulated, and polypoid lesion on the colonic mucosa. The lesion is reddish and protrudes significantly from the surrounding mucosal surface. The surrounding mucosa appears relatively normal. The image is labeled with '157' in the top left corner and '10/13' in the bottom left corner.



ESD Allows Resection When EMR is not Feasible

LST-NG depressed center and tattoo



ESD Preserves Organ Integrity and Patient Quality of Life

Open



ESD Preserves Organ Integrity and Patient Quality of Life

Open



Laparoscopic



ESD Preserves Organ Integrity and Patient Quality of Life

Open



Laparoscopic



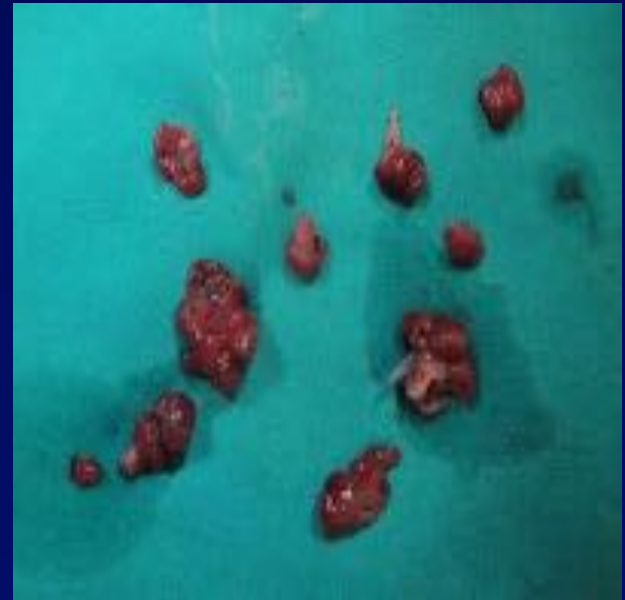
ESD



ESD Allows for Accurate Histopathologic Assessment

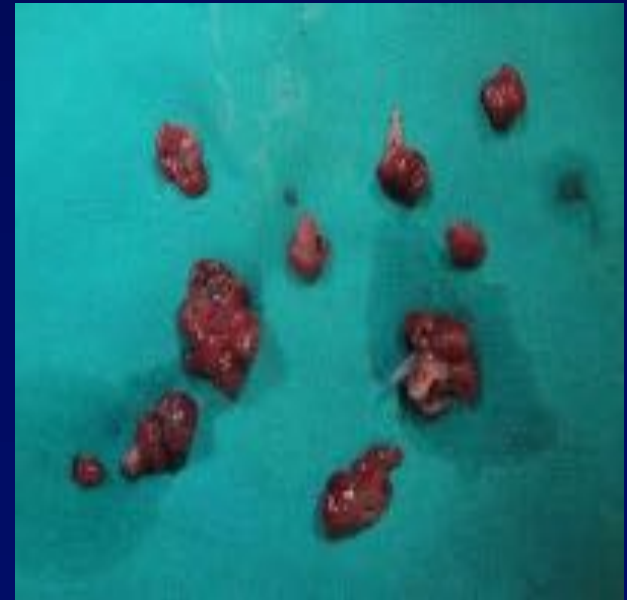
EMR = ESD

(except lateral margin evaluation)



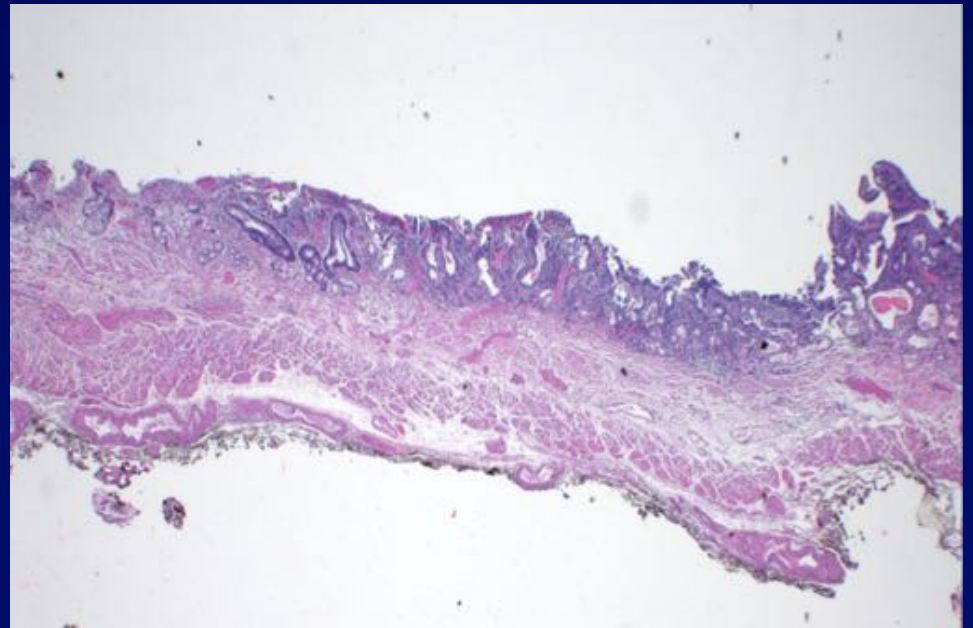
ESD Allows for Accurate Histopathologic Assessment

~~EMR = ESD~~
(except lateral margin evaluation)



Why is ESD sample superior?

- Lateral margin evaluation
- Deep margin evaluation
 - ESD dissection gets deeper in the submucosa
 - ESD allows for better deep margin evaluation



Japan has simple solutions to
complex problems





Could ESD be another great Japanese invention that the West has overlooked?

Why Not ESD in the West?

The Early European Experience

- 188 patients
- 16 centers
- 6 cases per center (median)
- 26 mm median lesion size
- 71% *en-bloc* resection
- 18% perforation

Why Not ESD in the West?

- Long procedure/not reimbursed in the West
- High complication rate
- Requires extensive training
- Laparoscopic surgery or TEMS is now easily available

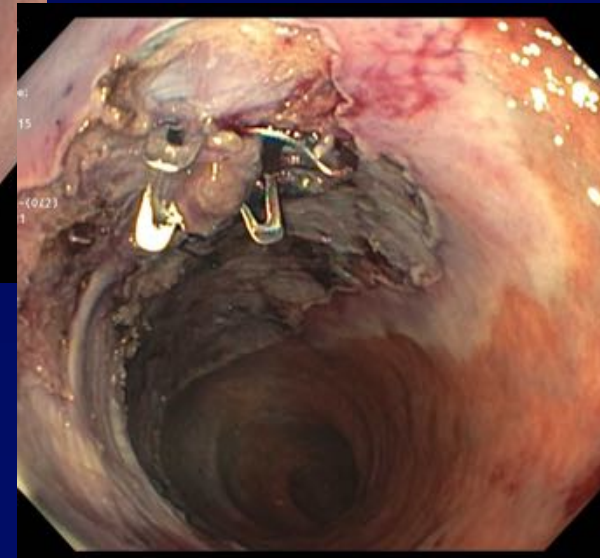
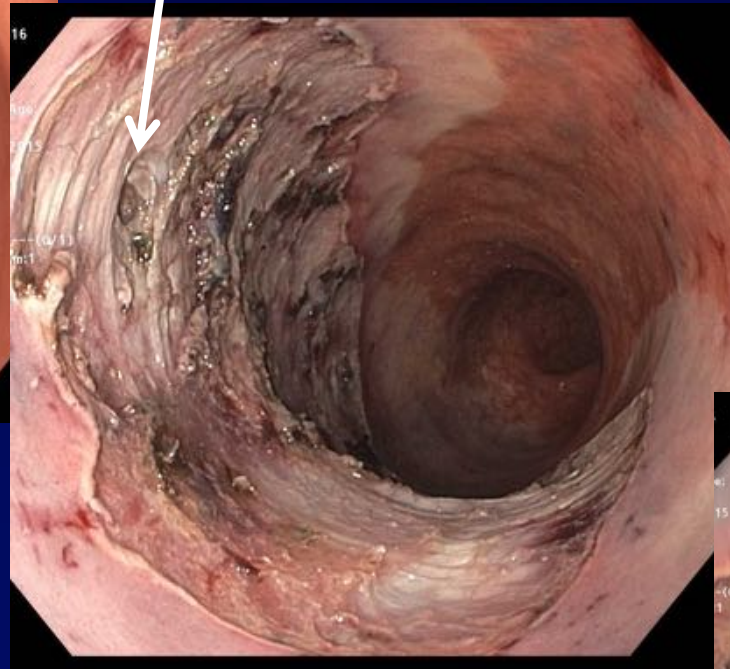
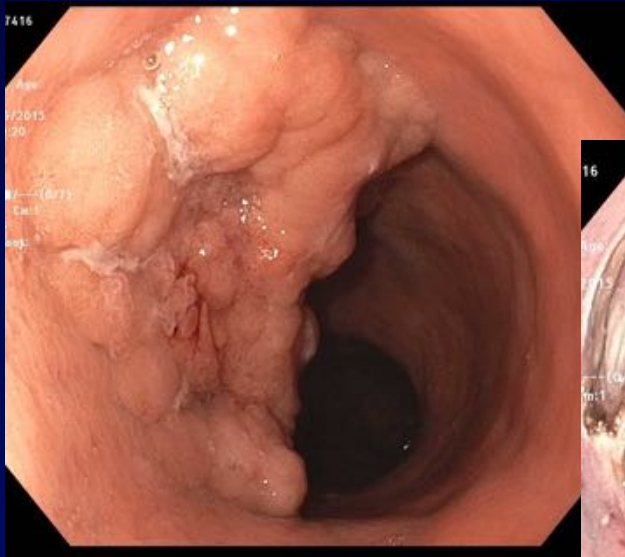


Perforation

- EMR \approx 1%
- ESD \approx 4-5%

Fujiya M. Gastrointest Endosc. 2015;81(3):583
Wang J. World J Gastroenterol. 2014;20(25):8282

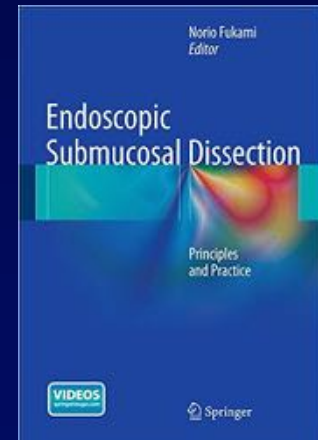
Most perforations can be treated endoscopically



Training Model for ESD in the US is Evolving

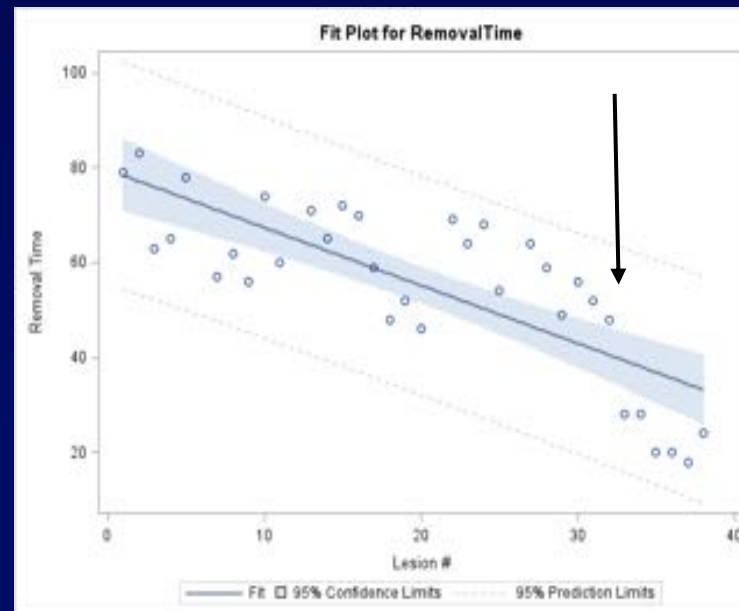
Mentorship

- 1st tier exposure courses
- 2nd tier courses
 - ASGE ESD Course
 - University of Florida Course
- 3rd tier Olympus ESD Masters Program
- Self learning resources available
 - Books
 - Videos
- ESD experts from Japan at conferences
- Opportunity for observation in the US
- Observation outside of the US



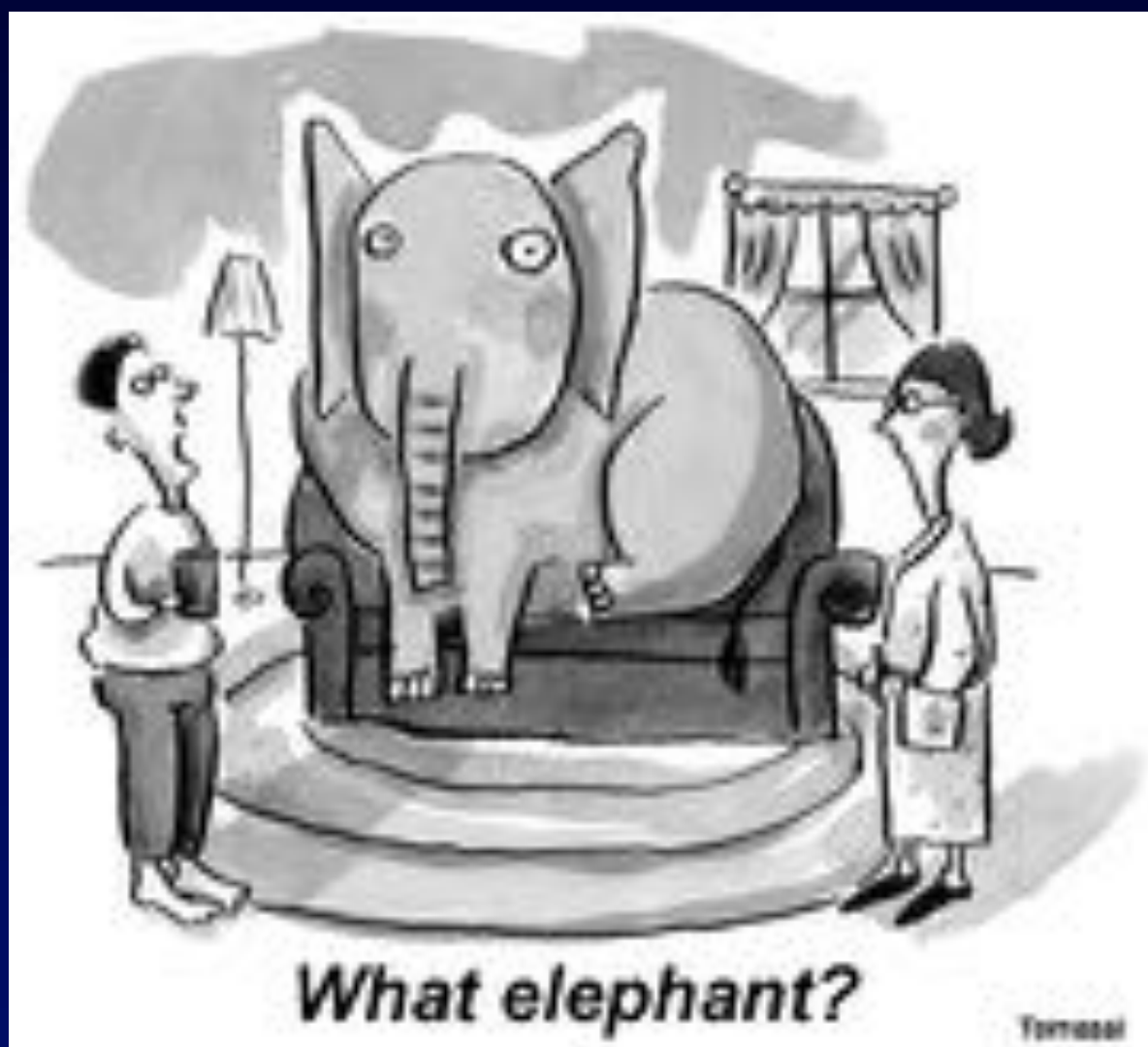
ESD Requires Extensive Training

- Visit to Japan to observe experts
- Can you learn by observing?
 - 38 ESDs in animal model (29 pre-, 9 post-observation).
 - The removal times post-observation were significantly shorter than those pre-observation (32.7 ± 15.0 min vs. 63.5 ± 9.8 min, $p < 0.001$)



You Can Teach an Old Dog New Tricks?



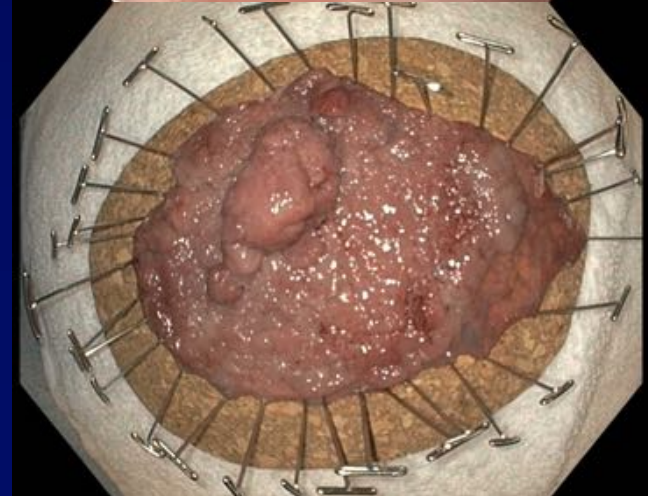


The Role of Surgery?

The Role of Surgery

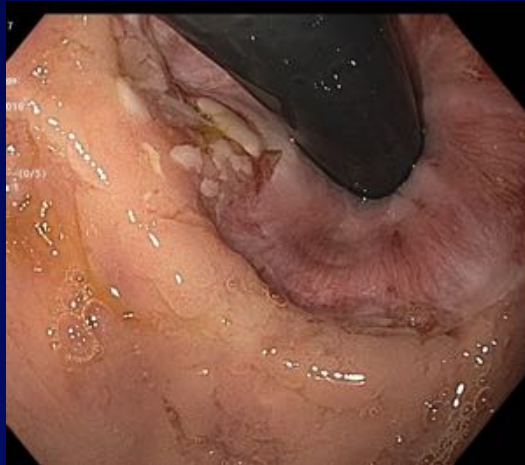
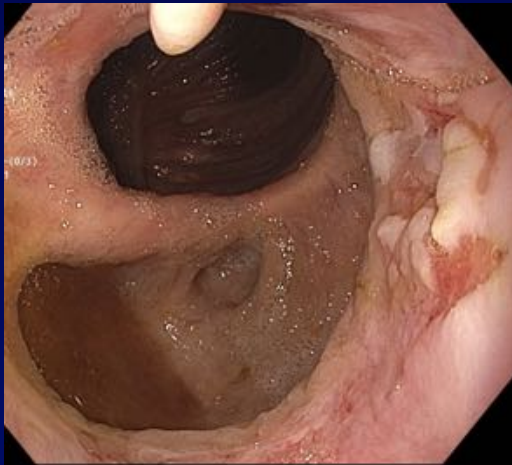
- It is expensive
- It not feasible in many cases
- It carries high complication rate

When is ESD the preferred approach? Large LST Extending to the Dentate Line



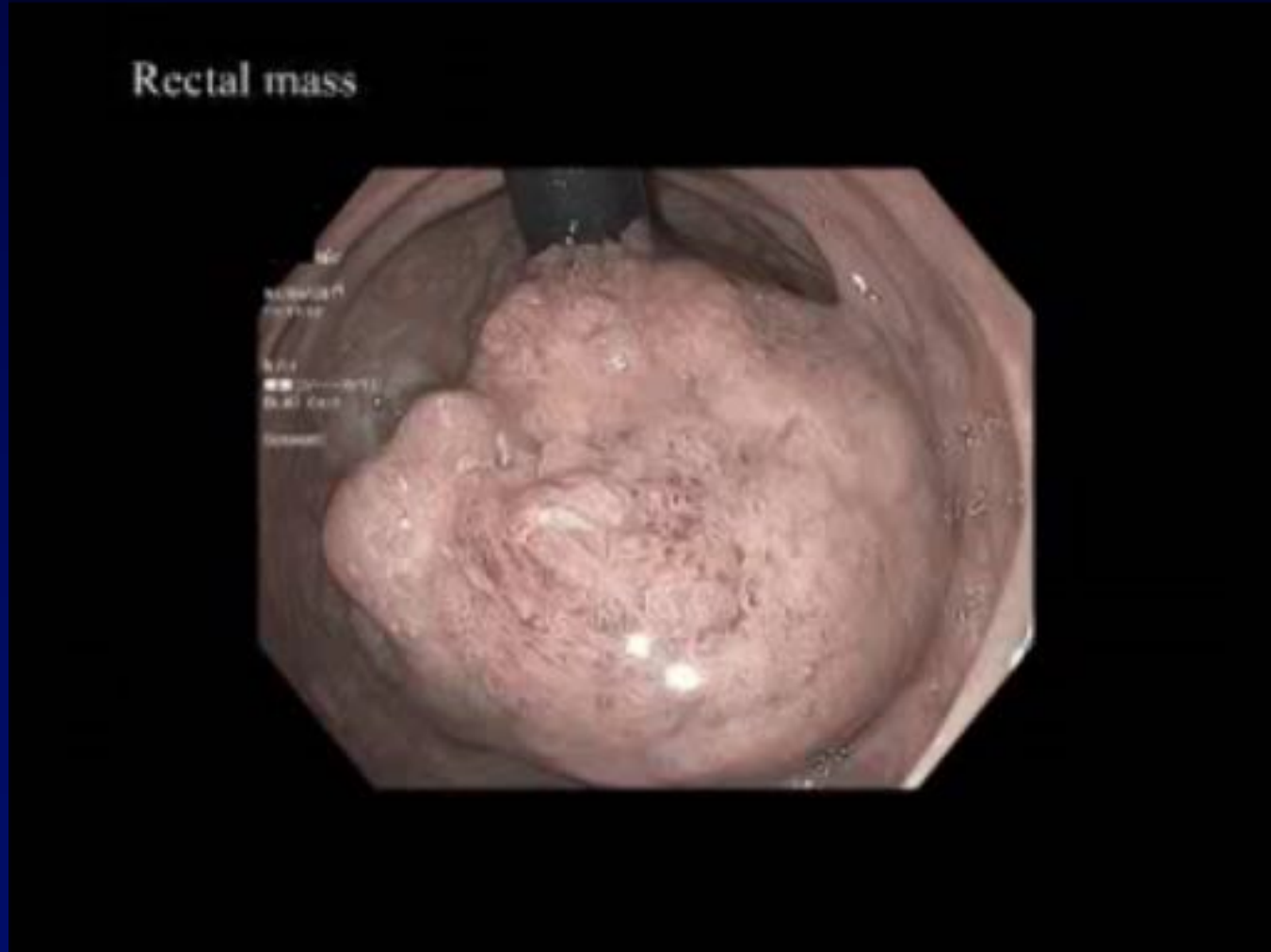
In some cases ESD is the option

- FAP with rectal cuff adenoma



ESD is feasible in cases where EMR or TEMS are not

Large LST extending to the dentate line



Laparoscopic surgery for benign polyps

- 25% of benign polyps in the US are treated with laparoscopic colonic resection
- High price to pay
 - Mortality – 0.7% (1 out of 142)
 - Colostomy or ileostomy – 2.2% (1 out of 45)
 - For rectal lesions - risk of colostomy 6 times higher
 - Second major surgery – 3.6% (1 out of 28)
 - Major complication – 14% (1 out of 7)

ESD at the University of Florida

- 152 patients
- Lesion location:
 - Esophagus - 55 %
 - Stomach - 15 %
 - Duodenum - 2 %
 - Colon - 8 %
 - Rectum - 21 %
- En-bloc resection rate: 95.4%
- Median procedure duration: 92 min

Living in Japan can be challenging







「お客様アンケート」ご記入のお願い

Information



主編

附：《中国城市人口统计年鉴》人口统计资料来源：中国统计出版社。

[illegible][illegible]**HOTEL
MONTEREY**

TUESDAY

— 200 —

[illegible]

11-14-92

「この本は、読者の心を揺るがす力がある。そして、その力は、読者の心に残る。」

——著者からのメッセージ——



由デキセンの「エーデル」が主眼



Warning (注意)

清潔で美しい快適な街づくり

市街地部道路工事関係告示第1号

市街地部道路工事関係告示第2号



市街地部道路工事関係告示第3号

市街地部道路、市街地部道路及び市街地部道路は、路上喫煙区と区域に指定されています。

タバコは決められた場所で
マナーを守って吸いましょう。

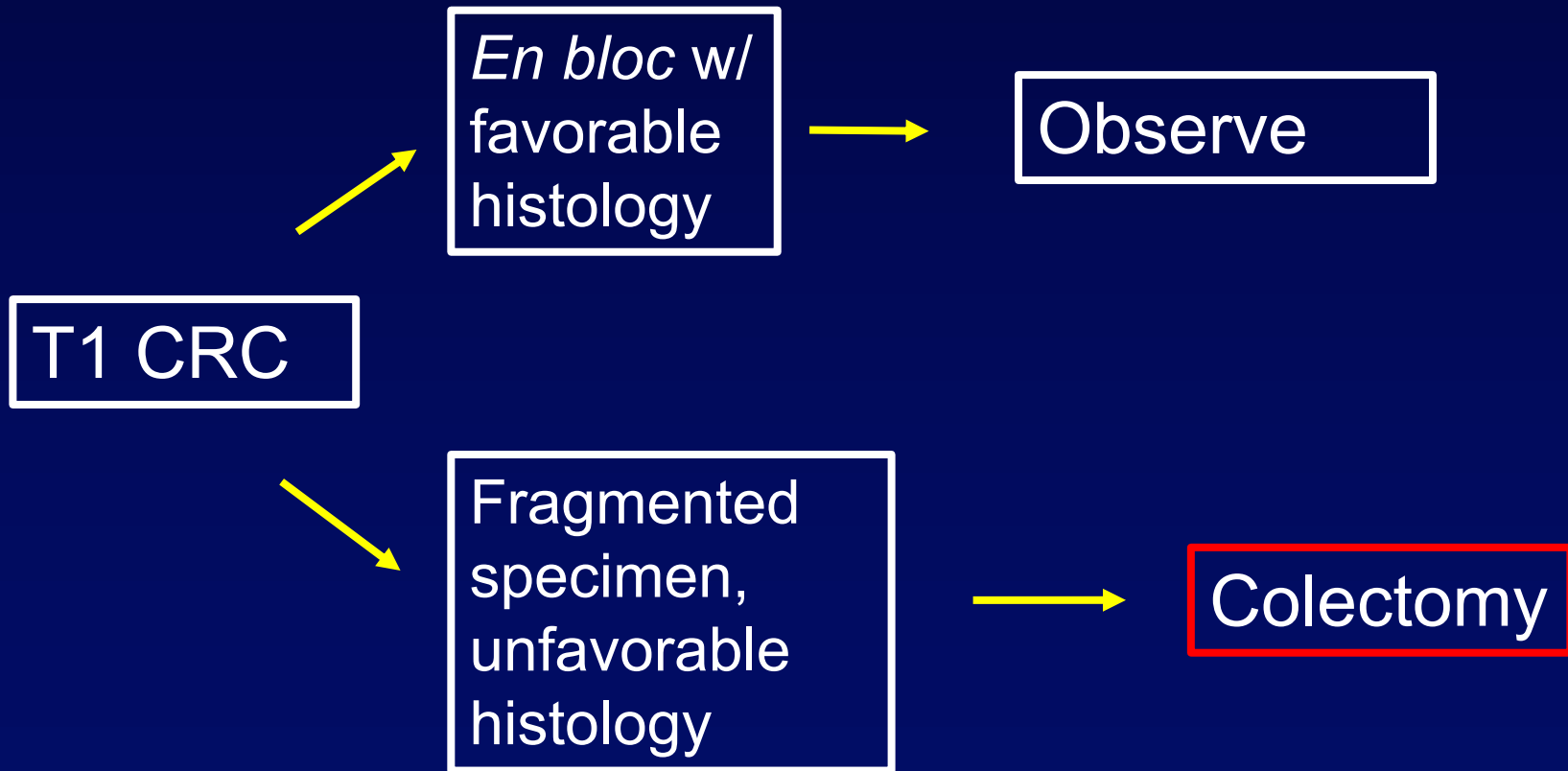


お問い合わせ先 : 市街地部環境課 環境課長室 0427-321111

Indications for ESD

- Lesions that cannot be removed by EMR
- Lesions may have submucosa invasion

Piecemeal removal of T1 CRC can lead to unnecessary surgery



What Are the Covert Predictors of Submucosal Invasion?

- Factors associated with submucosal invasion
 - Non-granular LST
 - Recto-sigmoid location
 - Increasing size
 - Paris
 - IIc
 - Is or IIa+Is (a.k.a. as skirt)
 - Combined Paris classification
 - Kudo pit pattern V



Selective Use of ESD

- Anticipated submucosal fibrosis
 - Prior EMR attempt
 - Tattoo underneath the lesion
 - Recurrent lesion
- Possible superficial submucosal invasion
 - Non-granular LST
 - Large Granular LST
 - Rectum
 - Large nodules
 - Depressed areas

Pimentel-Nunes, P. Endoscopy. 2015;47(9):829-54

Tanaka, Shinji. Digestive Endoscopy 27.4 (2015): 417

EMR versus ESD

EMR ~~versus~~ ESD

EMR and ESD

Immediate Goals

- Move away from the EMR versus ESD debate
- Continue to improve both techniques
- Continue to study and critically evaluate our experiences
- Better training opportunities
- Better devices
- Industry involvement
- Society involvement

Change is the law of life. And those who
look only to the past or present are certain to
miss the future.

John F. Kennedy