CORE
Centro Oncologico ed Ematologico Reggio Emilia

«Adenomi cancerizzati» l'approccio diagnostico

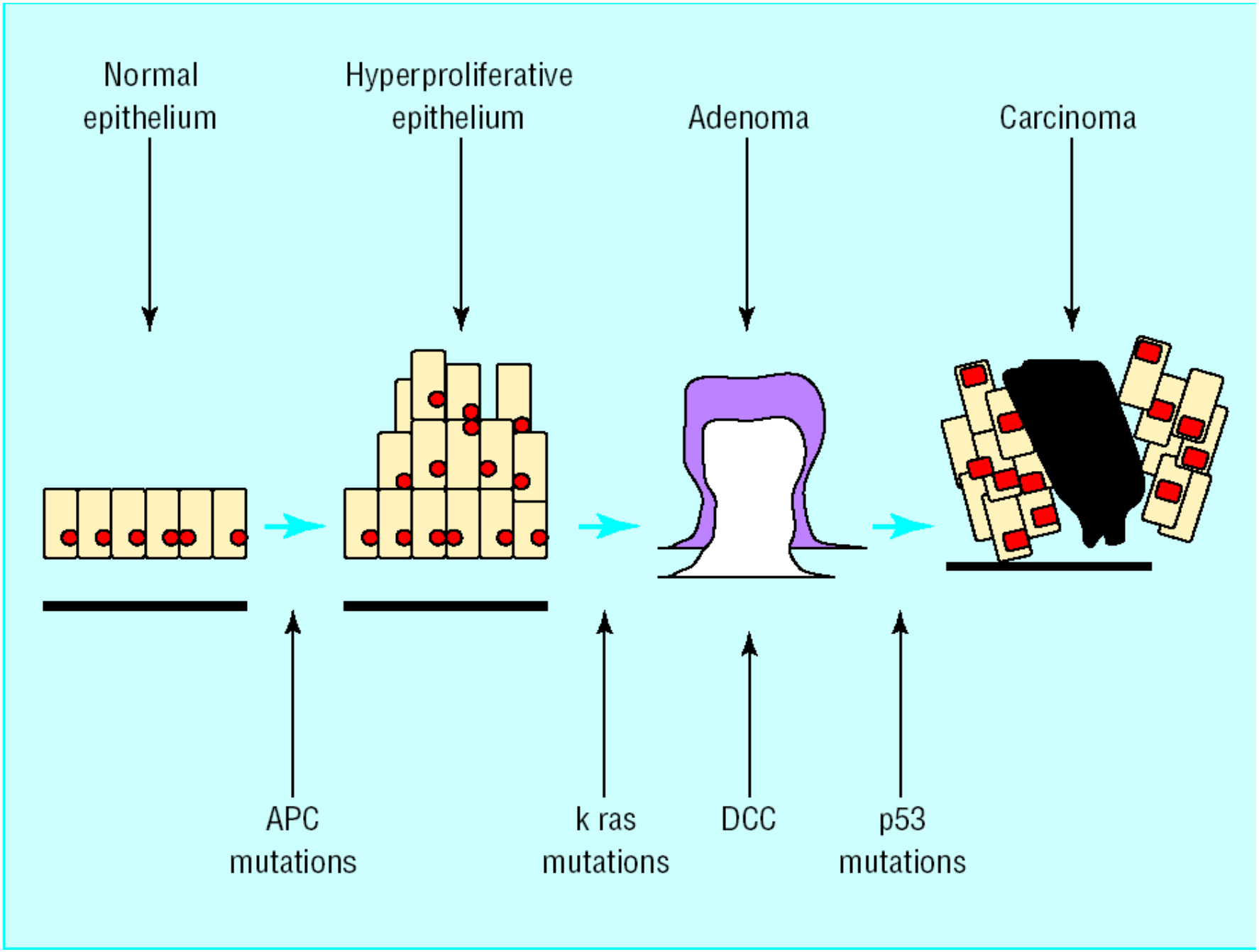
Romano Sassatelli

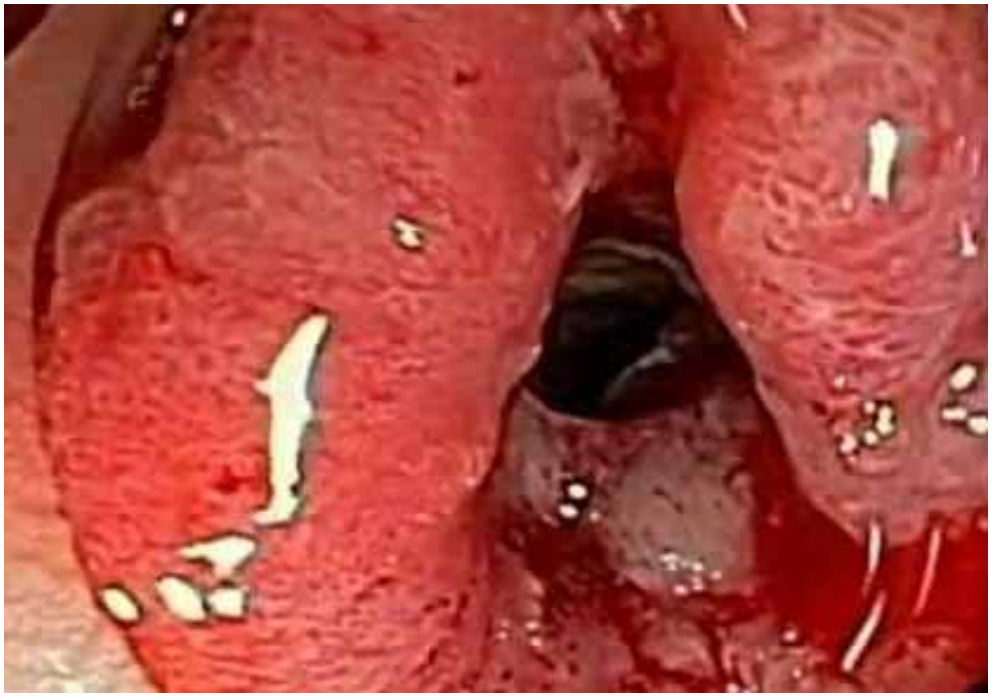
Gastroenterologia Endoscopia Digestiva

AUSL IRCCS di Reggio Emilia

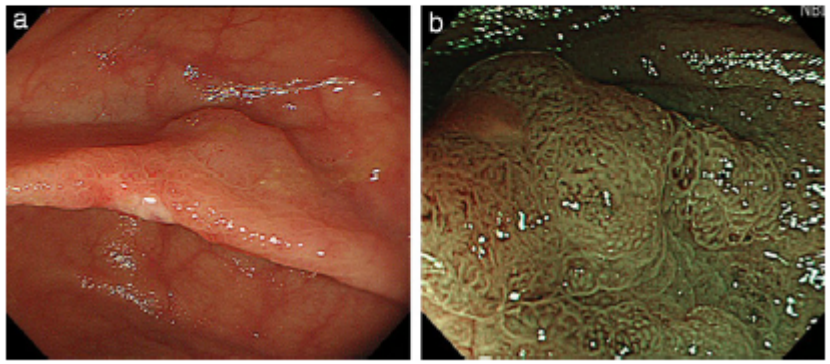
T1 : di cosa parliamo

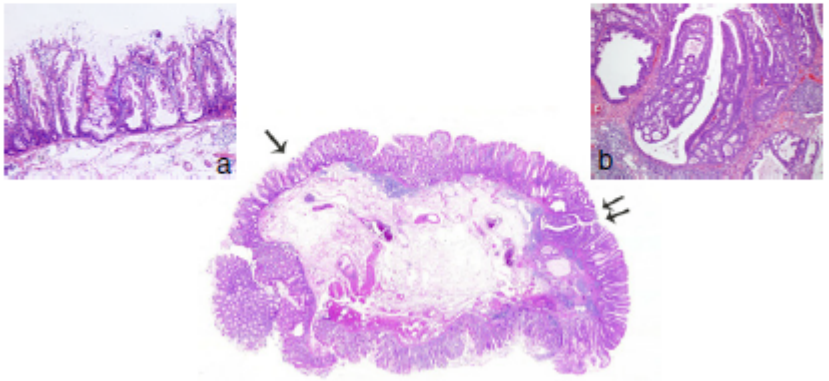
di un **cancro** con caratteristiche
morfologiche per cui
si è ritenuta possibile
l'asportazione **endoscopica**
con intento radicale


Normal epithelium
Hyperproliferative epithelium
Adenoma
Carcinoma
APC mutations
k ras mutations
DCC
p53 mutations



Gastrointestinal: Sessile serrated adenoma/polyps with a minute T1 colorectal carcinoma





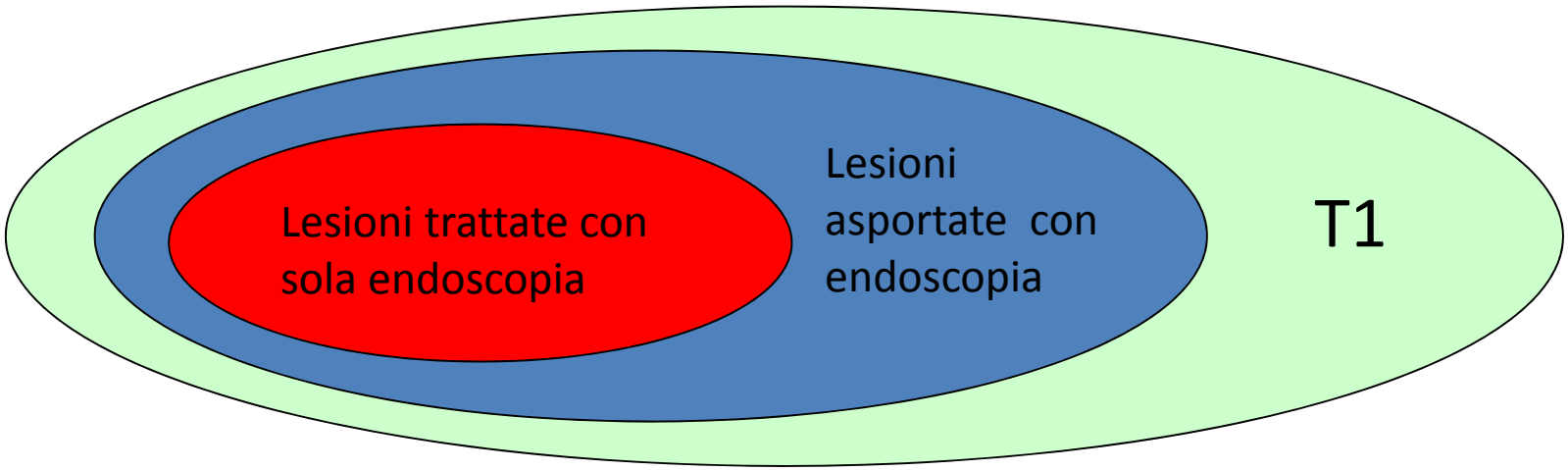
doi:10.1111/jgh.12465

Cosa succede, di solito

	≤T1	> T1 o T1 AR
Biopsie e chirurgia	**Overtreatment**	
Asportazione endoscopica		**Biologia / Inadeguato trattamento**

Pazienti con diagnosi istologica di polipo cancerizzato del colon retto, dopo asportazione giudicata completa dall'endoscopista.

Studio Sec-Giscor (criteri di inclusione)



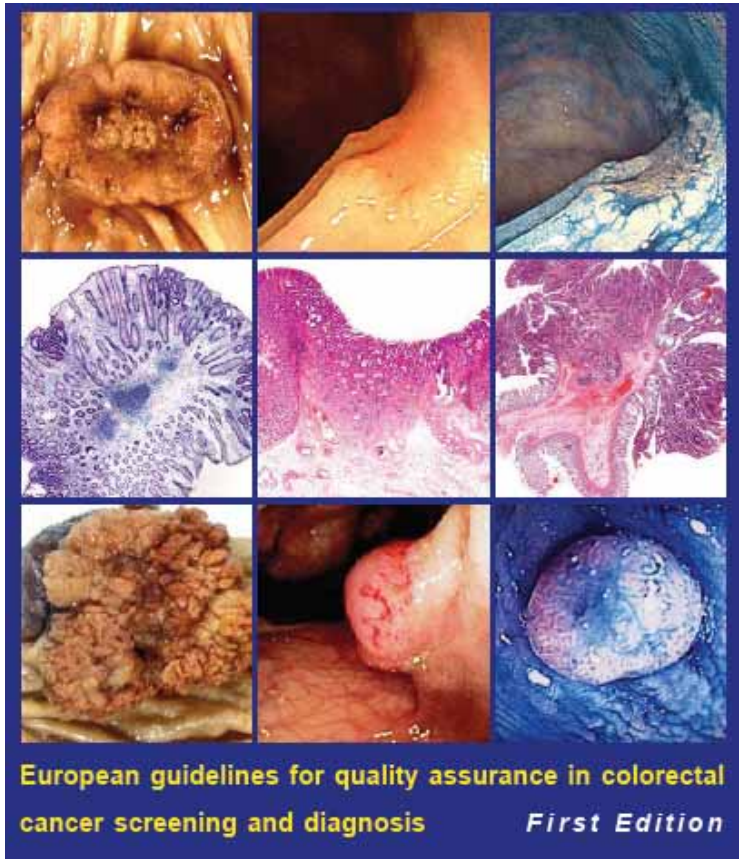


Table 7.1: Adaptation of the revised Vienna classification[1] for colorectal cancer screening

1. NO NEOPLASIA:[2]
- Vienna Category 1 (Negative for neoplasia)

2. MUCOSAL LOW GRADE NEOPLASIA:
- Vienna Category 3 (Mucosal low-grade neoplasia
  - Low-grade adenoma
  - Low-grade dysplasia);
- Other common terminology
  - mild and moderate dysplasia;
- WHO: low-grade intra-epithelial neoplasia

3. MUCOSAL HIGH GRADE NEOPLASIA:
- Vienna: Category 4.1–4.4 (Mucosal high grade neoplasia
  - High-grade adenoma/dysplasia
  - Non-invasive carcinoma (carcinoma *in situ*)
  - Suspicious for invasive carcinoma
  - Intramucosal carcinoma);
- Other common terminology
  - severe dysplasia;
  - high-grade intraepithelial neoplasia;
  - WHO: high-grade intraepithelial neoplasia
  - TNM: pTis

4. CARCINOMA invading the submucosa or beyond:
- 4a. Carcinoma confined to submucosa
  - Vienna: Category 5 (Submucosal invasion by carcinoma);
  - TNM: pT1
- 4b. Carcinoma beyond submucosa
  - TNM: pT2-T4

Management of pT1 colorectal cancer

8.16 If there is clinical suspicion of a pT1 cancer, a site of excision should be marked with sub-mucosal India ink **(VI - C).**[Sect 8.4.1]

8.17 Where a pT1 cancer is considered high-risk for residual disease consideration should be given to completion colectomy along with radical lymphadenectomy, both for rectal cancer **(II - A)** and colon cancer **(VI - A)**. If surgical resection is recommended, consideration should be given to obtaining an opinion from a second histopathologist as variation exists in evaluating high risk features (see also Ch. 7, Rec. 7.7) **(VI - B).**[Sect 8.4.2; 7.5.3]

8.18 After excision of a pT1 cancer, a standardised follow-up regime should be instituted **(VI - A).** The surveillance policy employed for high-risk adenomas is appropriate for follow-up after removal of a low-risk pT1 cancer (see Ch. 9, Rec. 9.16) **(III - B).**[Sect 8.4.3; 9.5.1]

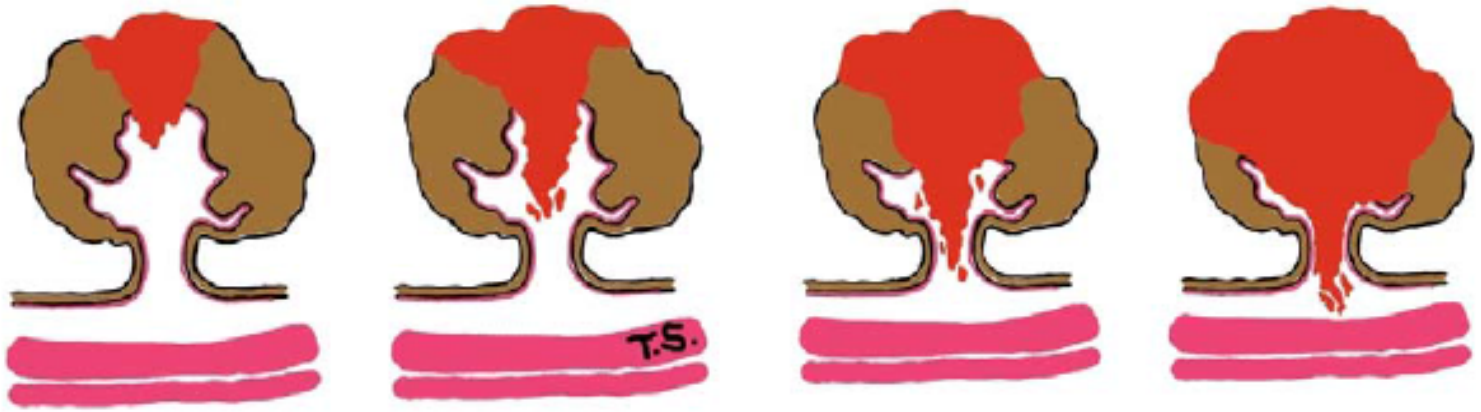
pT1 cancers can be categorised into low-risk and high-risk lesions according to their likelihood of being associated with lymph node metastases:

- Low risk: Well or moderately differentiated and no lymphovascular invasion; rate of lymph node metastases <5%
- High risk: Poorly differentiated and/or lymphovascular invasion; rate of lymph node metastases ~35%

The significance of venous invasion is currently unknown.

Polipi peduncolati

Figure 7.2: Haggitt levels of invasion in polypoid carcinomas



Level 1:
invasion of the submucosa but limited to the head of the polyp

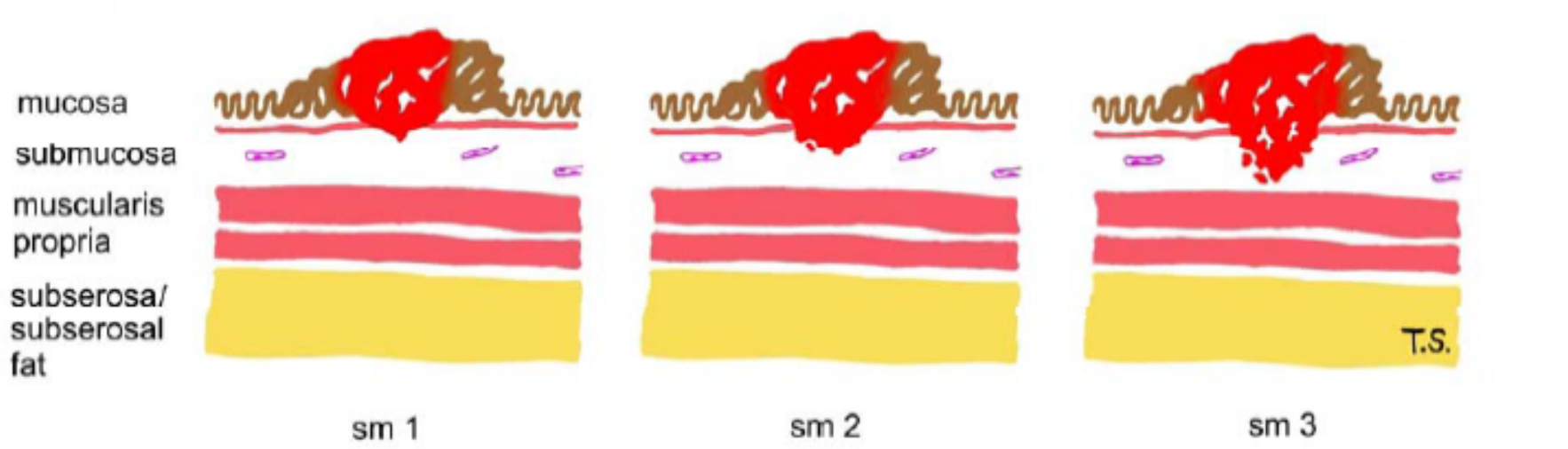
Level 2:
invasion extending into the neck of polyp

Level 3:
invasion into any part of the stalk

Level 4:
invasion beyond the stalk but above the muscularis propria

Polipi sessili

Figure 7.1: Kikuchi levels of submucosal infiltration modified from Nascimbeni et al. (2002)



Kikuchi cannot be used in the absence of muscularis propria

Haggitt is not applicable in non-polypoid lesions**, and measurement depends on a recognisable submucosa from which to measure**

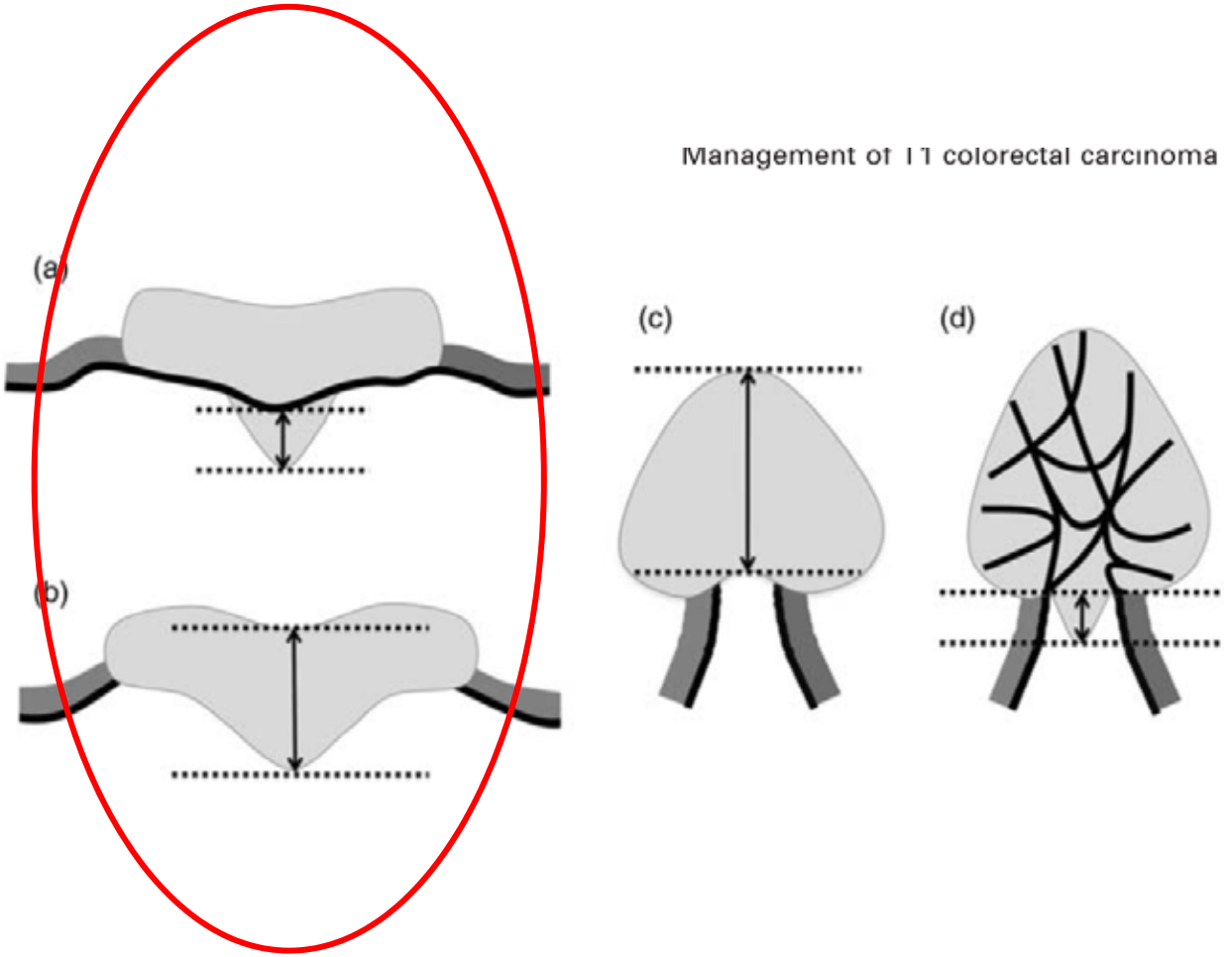
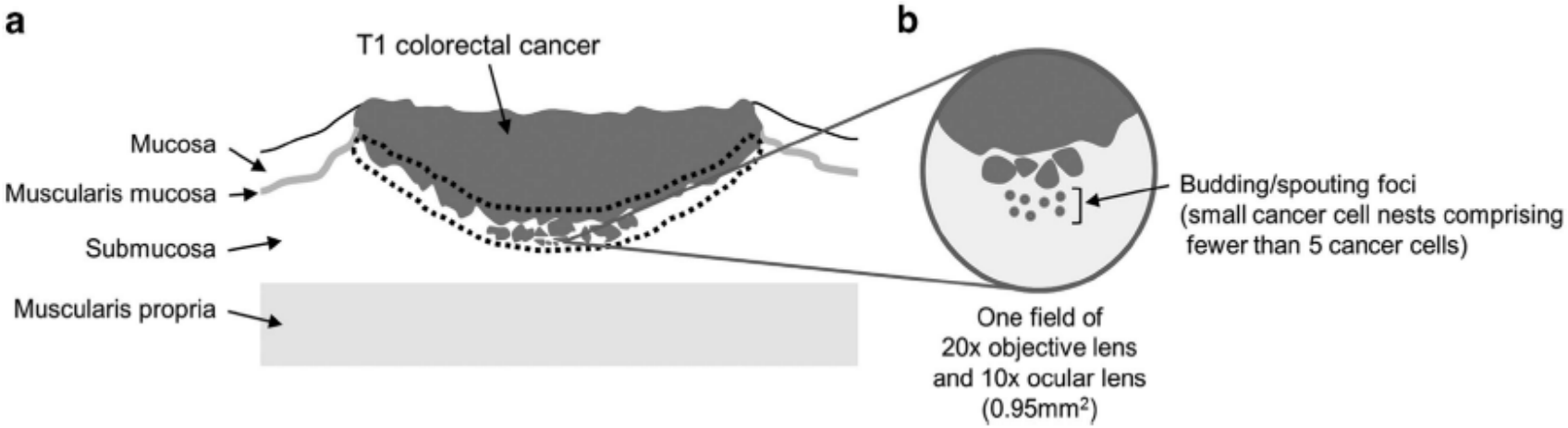


Figure 2 Measurement of the depth of submucosal invasion of colorectal carcinoma. (a) When the level of the muscularis mucosae can be detected or presumed, the distance from the muscularis mucosae to the tumor apex is measured. (b,c) When the level of the muscularis mucosae cannot be detected or presumed, the distance from the tumor surface to the tumor apex is measured. (b, sessile polyp; c, pedunculated polyp). (d) If a pedunculated polyp involves the muscularis mucosae (such as a Peutz-Jeghers polyp), the distance from the neck to the tumor apex is measured (deeper than Haggitt level 2).


a
T1 colorectal cancer
Mucosa
Muscularis mucosa
Submucosa
Muscularis propria
b
Budding/spouting foci
(small cancer cell nests comprising
fewer than 5 cancer cells)
One field of
20x objective lens
and 10x ocular lens
(0.95mm²)

Caveat

- **Are we accurately measuring depth of SM invasion mm vs Kikuchi?**

(Haboubi, Colorect Dis 2013)

- **Condition of muscolaris mucosae (< for clearly identiefid) as a risk factor for LNM**

(Nakadoi, Surg Endosc 2014)

Integrating European GL

Invasione linfatici (vascolare), margini, profondità di invasione,
Grading, Budding in funzione di LNM (SYST REV)

Evidenze di efficacia ET/surgery in popolazione,
variabilità di trattamento

Systematic review and meta-analysis of histopathological factors influencing the risk of lymph node metastasis in early colorectal cancer

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Colorectal Disease © 2013 The Association of Coloproctology of Great Britain and Ireland. **15,** 788–797

Abstract

Aim Lymph node (LN) metastases are present in up to 17% of early colorectal cancers (pT1). Identification of associated histopathological factors would enable counselling of patients regarding this risk.

Method Pubmed and Embase were employed utilizing the terms 'early colorectal cancer', 'lymph node metastasis', 'submucosal invasion', 'lymphovascular invasion', 'tumour budding' and 'histological differentiation'. Analysis was performed using REVIEW MANAGER 5.1.

Results Twenty-three cohort studies including 4510 patients were analysed. There was a significantly higher risk of LN metastasis with a depth of submucosal invasion > 1 mm than with lesser degrees of penetration (OR 3.87, 95% CI 1.50–10.00, $P = 0.005$). Lymphovascular invasion was significantly associated with LN metastasis (OR 4.81, 95% CI 3.14–7.37, $P < 0.00001$). Poorly differentiated tumours had a higher risk of LN metastasis compared with well or moderately differentiated tumours (OR 5.60, 95% CI 2.90–10.82, $P < 0.00001$). Tumour budding was found to be significantly associated with LN metastasis (OR 7.74, 95% CI 4.47–13.39, $P < 0.001$).

Conclusion Meta-analysis of the current literature demonstrates that in early colorectal cancer a depth of submucosal invasion by the primary tumour of > 1 mm, lymphovascular invasion, poor differentiation and tumour budding are significantly associated with LN metastasis.

Keywords Early colorectal cancer, lymph node metastasis, submucosal invasion, lymphovascular invasion, tumour budding, histological differentiation

Pathologic predictive factors for lymph node metastasis in submucosal invasive (T1) colorectal cancer: a systematic review and meta-analysis

Shanshan Mou · Roy Soetikno · Tadakasu Shimoda · Robert Rouse · Tonya Kaltenbach

Surg Endosc (2013) 27:2692–2703

Received: 21 July 2012 / Accepted: 21 December 2012 / Published online: 8 February 2013

Abstract

Background Colorectal adenocarcinoma with depth of invasion ≤1,000 μm from the muscularis mucosa and favorable histology is now considered for local resection. We aimed to examine the strength of evidence for this emerging practice.

Methods We searched Medline, Scopus, and Cochrane (1950–2011), then performed a meta-analysis on the risk of lymph node metastasis in nonpedunculated (sessile and nonpolypoid) T1 colorectal cancers. We included studies with nonpedunculated lesions, actual invasion depth, and pathologic factors of interest. Synchronous, polyposis or secondary cancers, and chemoradiation studies were excluded. Our primary outcome was the risk of LNM. We analyzed using Review Manager; we estimated heterogeneity using Cochran Q χ^2 test and I^2. We generated summary risk ratios using a random effects model, performed sensitivity analyses, and evaluated the quality of evidence using GRADEPro.

Results We identified 209 articles; 5 studies ($n = 1213$ patients) met the inclusion criteria. The risk of LNM in nonpedunculated ≤1,000 μm is 1.9 % (95 % confidence interval 0.5–4.8 %). The risk for all T1 is 13 % (95 % confidence interval 11.5–15.4 %). Characteristics protective against LNM were ≤1,000 μm invasion, well differentiation, absence of lymphatic and vascular invasion, and absence of tumor budding. We did not detect significant study heterogeneity. The quality of evidence was poor.

Conclusions Well-differentiated nonpedunculated T1 colorectal cancer invasive into the submucosa ≤1,000 μm, without lymphovascular involvement or tumor budding, has the lowest risk of nodal metastasis. Importantly, the risk was not zero (1.9 %), and the qualitative formal analysis of data was not strong. As such, endoscopic resection alone may be adequate in select patients with submucosal invasive colorectal cancers, but more studies are needed. Overall, the quality of evidence was poor; data were from small retrospective studies from limited geographic regions.

Predicting lymph node metastasis in pT1 colorectal cancer: a systematic review of risk factors providing rationale for therapy decisions

Endoscopy 2013; 45: 827–834

Authors Steven L. Bosch[1], Steven Teerenstra[2], Johannes H. W. de Wilt[3], Chris Cunningham[4], Iris D. Nagtegaal[1]

Background and study aim: Population screening for colorectal cancer (CRC) is expected to increase the number of pT1 CRCs. Local excision is an attractive treatment option, but is only oncologically safe in the absence of lymph node metastasis (LNM). A systematic review of the predictive value of pathological risk factors for LNM in pT1 CRC was conducted to provide data for an evidence-based decision regarding follow-up or radical surgery after local excision.

Methods: PubMed was searched for reports on predictors of LNM in pT1 CRC. Published papers written in English and containing at least 50 patients were included. Meta-analyses were performed using Review Manager 5.1.

Results: A total of 17 studies were included involving a total of 3621 patients with available nodal status. The strongest independent predictors of LNM were lymphatic invasion (relative risk [RR] 5.2, 95% confidence interval [CI] 4.0–6.8), submucosal invasion ≥1 mm (RR 5.2, 95%CI 1.8–15.4), budding (RR 5.1, 95%CI 3.6–7.3), and poor histological differentiation (RR 4.8, 95%CI 3.3–6.9). Limitations of the study were: results could not be stratified according to location in the colon or rectum; very early tumors removed by polypectomy without surgical resection were not included in the meta-analysis; and included studies were primarily from Asian countries and results therefore need to be verified in Western populations.

Conclusion: The absence of lymphatic invasion, budding, submucosal invasion ≥1 mm, and poor histological differentiation were each associated with low risk of LNM. Risk stratification models integrating these factors need to be investigated further.

J Gastroenterol
DOI 10.1007/s00535-015-1057-0

The Japanese Society of Gastroenterology

REVIEW

Systematic review and meta-analysis of histopathological predictive factors for lymph node metastasis in T1 colorectal cancer

Hiroo Wada · Manabu Shiozawa · Kayoko Katayama · Naoyuki Okamoto · Yohei Miyagi · Yasushi Rino · Munetaka Masuda · Makoto Akaike

Abstract

Background In this study we examined whether histopathological findings, specifically lymphatic vessel invasion identified by an anti-human podoplanin antibody, and several other factors are associated with lymph node metastasis in T1 colorectal cancer.

Methods We searched PubMed and Cochrane Library, and also handsearched relevant journals, for reports written in English and published between 1998 and 2012, utilizing combination headings, such as 'colorectal cancer,' 'lymph node metastasis,' and 'risk factors.' For the report to be included in our study, the following criteria had to be met: (1) data on the frequency of lymph node metastasis in T1 colorectal cancer in relation to histopathological factors were reported; (2) patients had undergone bowel resection and had histologically diagnosed T1 colorectal cancer; (3) lymphatic vessel invasion was identified by immunohistochemistry with an anti-human podoplanin antibody rather than by hematoxylin and eosin staining; (4) univariate and multivariate analyses were conducted. Studies investigating molecular markers were excluded. The independent predictive factors were confirmed in at least one study included in the meta-analysis in the present systematic review. Microsoft Excel 2013 for Windows was used for the statistical analysis.

Results Initially, 369 publications were identified in the database searches and handsearches, of which five ultimately met all of the inclusion criteria and selected for this systematic review. The meta-analysis revealed that only two factors were significantly associated with T1 colorectal cancer lymph node metastasis: (1) lymphatic vessel invasion identified by an anti-human podoplanin antibody [Mantel–Haenszel odds ratio (OR) 5.19; (95 % confidence interval (CI) 3.31–8.15; $P = 0.01$]; (2) tumor budding (OR 7.45; 95 % CI 4.27–13.02; $P = 0.0077$).

Conclusion Our meta-analysis revealed that lymphatic vessel invasion identified by an anti-human podoplanin antibody and tumor budding were significantly associated with T1 colorectal cancer lymph node metastasis.

Endoscopic and surgical treatment of malignant colorectal polyps: a population-based comparative study

Rawad Mounzer, MD,[1] Ananya Das, MD,[2] Roy D. Yen, MD, MPH,[1] Amit Rastogi, MD,[3] Ajay Bansal, MD,[3] Lindsay Hosford, BA,[1] Sachin Wani, MD[1,4]

Denver, Colorado; Gilbert, Arizona; Kansas City, Missouri, USA

Background: Long-term population-based data comparing endoscopic therapy (ET) and surgery for management of malignant colorectal polyps (MCPs) are limited.

Objective: To compare colorectal cancer (CRC)–specific survival with ET and surgery.

Design and Setting: Population-based study.

Patients: Patients with stage 0 and stage 1 MCPs were identified from the Surveillance Epidemiology and End Results (SEER) database (1998-2009). Demographic characteristics, tumor size, location, treatment modality, and survival were compared. Propensity-score matching and Cox proportional hazards regression models were used to evaluate the association between treatment and CRC-specific survival.

Interventions: ET and surgery. No LNM

Main Outcome Measurements: Mid-term (2.5 years) and long-term (5 years) CRC-free survival rates and independent predictors of CRC-specific mortality.

Results: Of 10,403 patients with MCPs, 2688 (26%) underwent ET and 7715 (74%) underwent surgery. Patients undergoing ET were more likely to be older white men with stage 0 disease. Surgical patients had more right-sided lesions, larger MCPs, and stage 1 disease. There was no difference in the 2.5-year and 5-year CRC-free survival rates between the 2 groups in stage 0 disease. Surgical resection led to higher 2.5-year (97.8% vs 93.2%; $P < .001$) and 5-year (96.6% vs 89.8%; $P < .001$) CRC-free survival in stage 1 disease. These results were confirmed by propensity-score matching. ET was a significant predictor for CRC-specific mortality in stage 1 disease (hazard ratio 2.40; 95% confidence interval, 1.75-3.29; $P < .001$).

Limitations: Comorbidity index not available, selection bias.

Conclusions: ET and surgery had comparable mid- and long-term CRC-free survival rates in stage 0 disease. Surgical resection is the recommended treatment modality for MCPs with submucosal invasion. (Gastrointest Endosc 2015;81:733-40.)

TABLE 2. Comparison of CRC-free survival at 2.5 and 5 years after endoscopic therapy and surgery in patients with stage 0 (Tis) and stage 1 (T1N0) malignant colorectal polyps

Variable	Endoscopic treatment (n = 2688)	Surgery (n = 7715)	*P* value
Overall 2.5-y CRC-free survival rate, %	95.9	97.7	<.001
Stage 0, %	97.6	97.5	.75
Stage 1, %	93.2	97.8	<.001
Overall 5-y CRC-free survival rate, %	94	96.5	<.001
Stage 0, %	96.3	95.9	.75
Stage 1, %	89.8	96.6	<.001

CRC, Colorectal cancer.

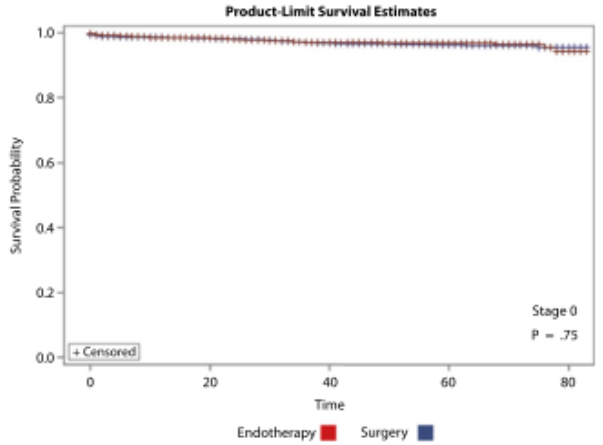


Figure 2. Kaplan-Meier colorectal cancer–specific survival curves comparing endoscopic therapy and surgical resection for patients with stage 0 colorectal cancer.

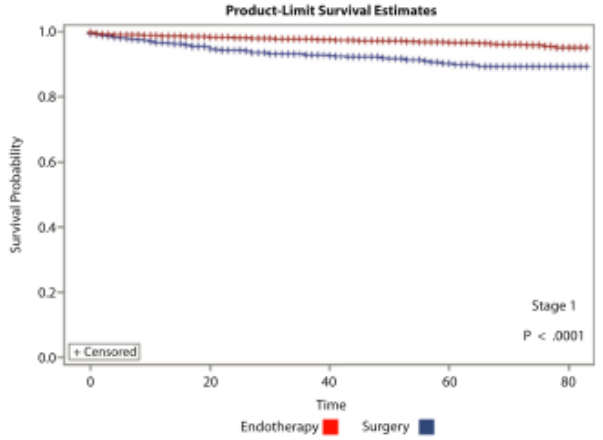


Figure 3. Kaplan-Meier colorectal cancer–specific survival curves comparing endoscopic therapy and surgical resection for patients with stage 1 colorectal cancer.

COLORECTAL

Ann R Coll Surg Engl 2013; **95**: 477–480
doi 10.1308/003588413X13629960048271

Variability in management of T1 colorectal cancer in Wales

U Khalid, MD Evans, GL Williams, J Hanson, M Davies

on behalf of the Colorectal Cancer Subgroup of the National Specialist Advisory Group for Cancer, Wales, UK

ABSTRACT

INTRODUCTION The management of T1 colorectal cancer is controversial. Surgical resection should offer cure in the majority of patients and can stage lymph nodes accurately. Nevertheless, there can be significant associated morbidity and it potentially risks overtreating the patient. Endoscopic/local excision has significantly reduced morbidity but risks undertreating undetected metastatic lymph nodes, thereby compromising oncological outcomes. The aim of this study was to review the practice across Wales over a two-year period.

METHODS Data on T1 tumours for the period of 2009–2011 were collected from the Cancer Network Information System Cymru.

RESULTS A total of 161 patients were diagnosed as having T1 colorectal cancer (without prior neoadjuvant treatment). The median age was 68 years (range: 14–91 years) and 66% of the patients were male. Forty-eight (30%) of these tumours were screen detected. There were 112 colonic and 49 rectal tumours. Ninety-five patients with colonic tumours (85%) underwent major surgical resections, 51% of which were laparoscopic. Forty patients with rectal cancers (82%) underwent major surgical resection and 45% of these procedures were laparoscopic. The rest of the patients underwent local excision in the form of endoscopic polypectomy or transanal resection.

CONCLUSIONS This study demonstrates that there is no consensus in the management of T1 disease across Wales. With the advent of screening and the development of more sophisticated endoscopic techniques, the decision of how to treat T1 colorectal cancer will become a more regular challenge for the colorectal multidisciplinary team. The treatment needs standardisation. For now, however, this balance of risk will need to be made on an individual patient basis.

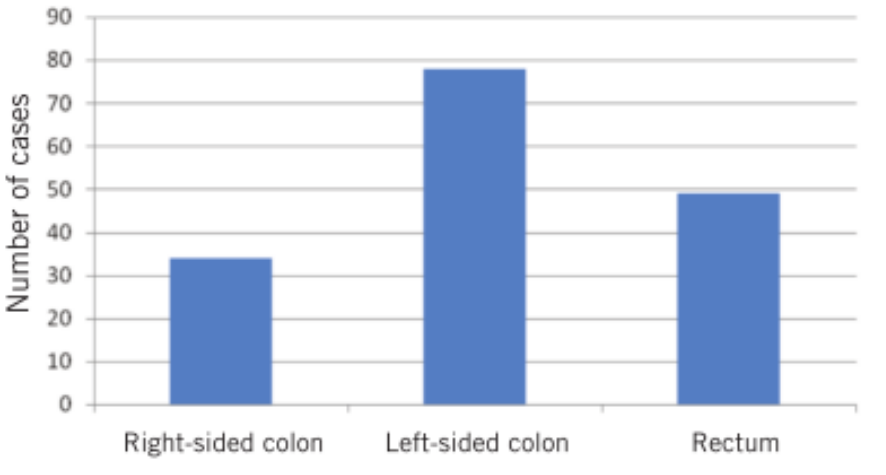


Figure 1 Distribution of T1 tumours according to tumour site

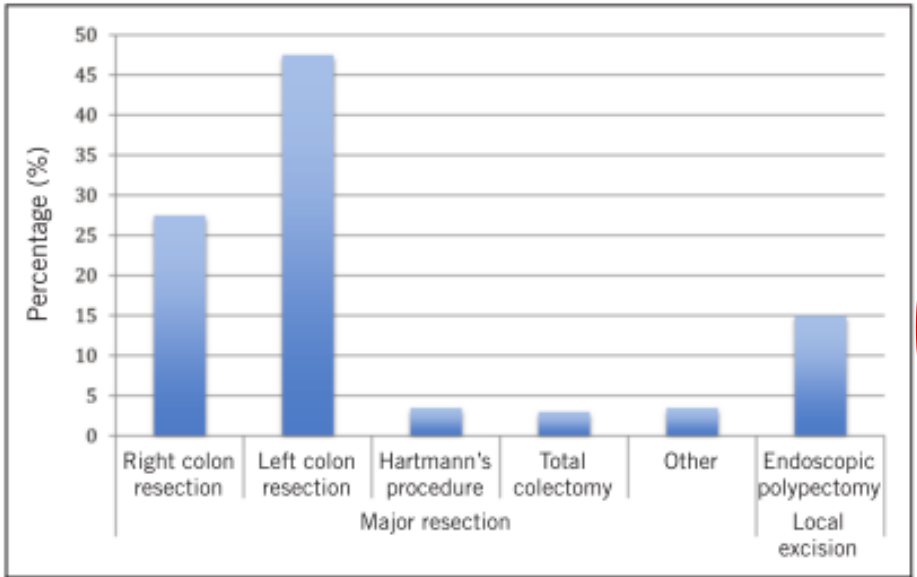


Figure 2 Treatment for T1 cancers originating in the colon

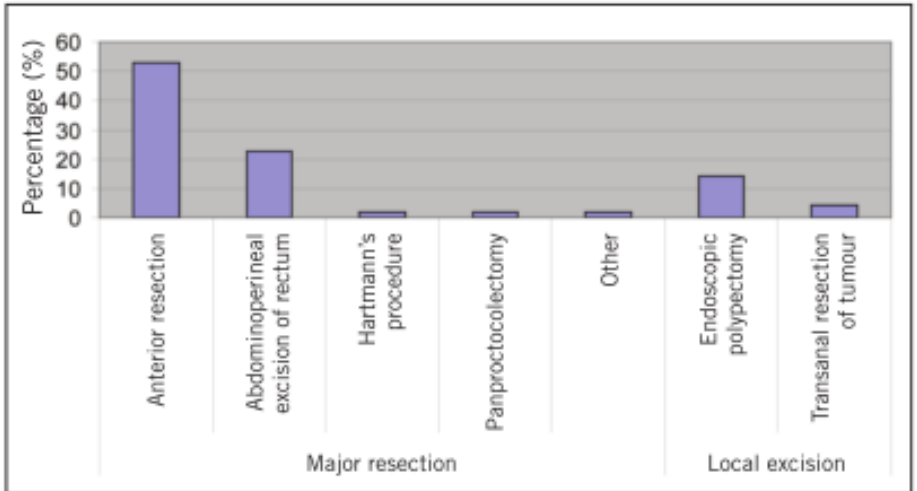


Figure 3 Treatment for T1 cancers originating in the rectum

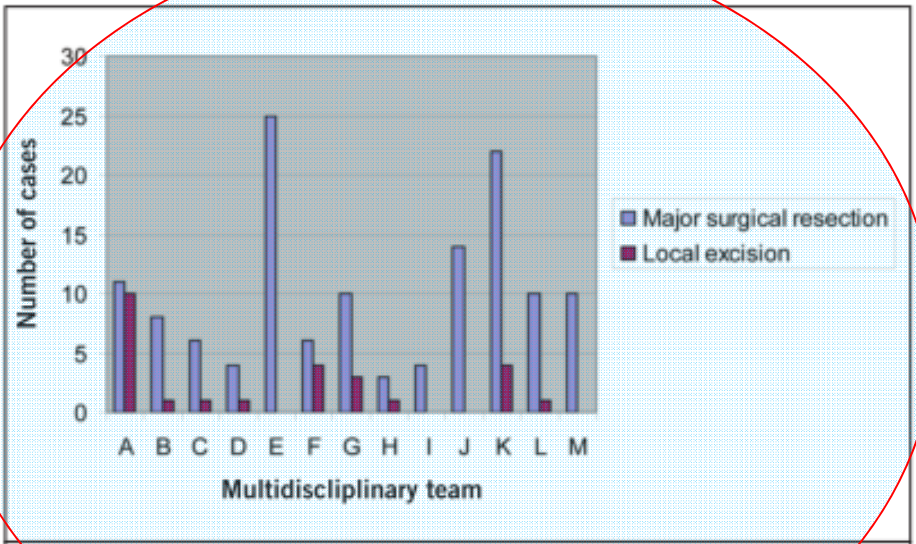
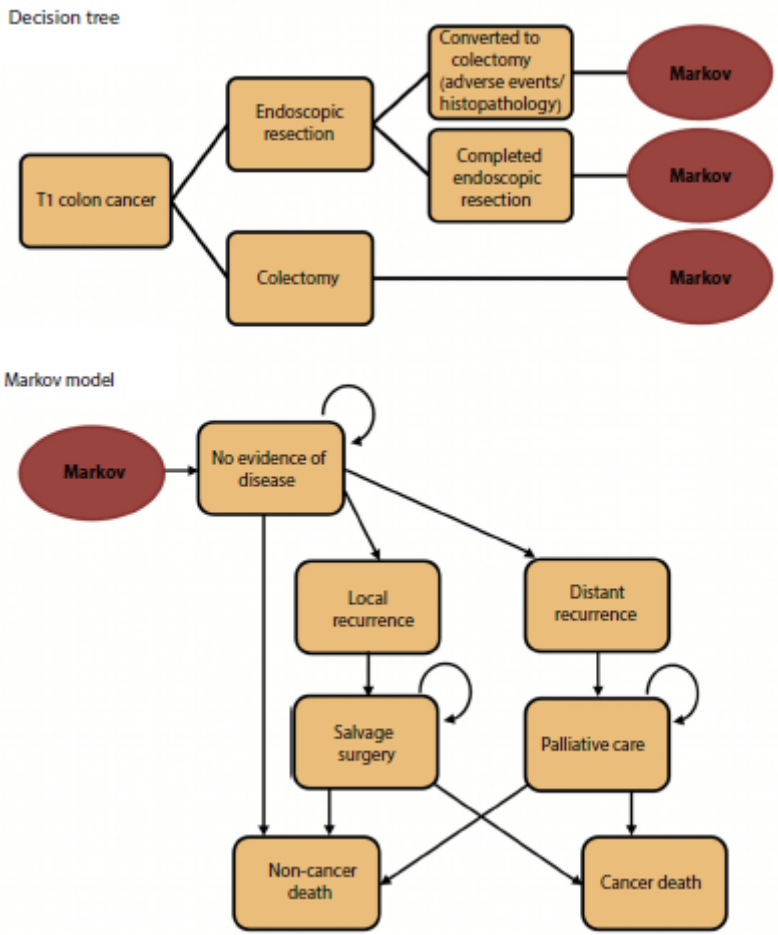


Figure 4 Treatment type by the different multidiscliplinary teams in Wales

The potential impact of local excision for T1 colonic cancer in elderly and comorbid populations: a decision analysis

Andrew C. Currie, MRCS,[1] Alan Askari, MRCS,[1] Christopher Rao, PhD, MRCS,[2] Brian P. Saunders, MD, FRCP,[3,4] Thanos Athanasiou, MD, PhD,[4] Omar D. Faiz, MS, FRCS,[1,4] Robin H. Kennedy, MS, FRCS[1,4]

Harrow, London, United Kingdom



Conclusions: Under broad assumptions, endoscopic resection is a reasonable treatment option for both low-risk and high-risk T1 colonic cancer, particularly in elderly, comorbid patients. Exploration of methods to facilitate endoscopic resection of T1 colonic neoplasia appears warranted. (Gastrointest Endosc 2016;84:986-94.)

“Aiuto Molecolare”

Table 2. Molecular markers associated with the risk of lymph node metastasis in early colorectal cancer

Tumor suppressor genes and their products
p53 overexpression
Loss of p27 expression
Markers involved in tumor vascularization
Microvessel density
VEGF/VEGF-C
COX-2
Markers related to cell adhesion and invasion
E-cadherin
α-Catenin/β-catenin
CD44 variant 6
Additional markers identified by gene expression analysis
CITED1

- **MMR, p53, MSI not predictive**
  (Wook Huh, J Surg Oncol 2014)

- **CD10 expression associated with LNM**
  (Nishida Dis Col Rectum 2014)

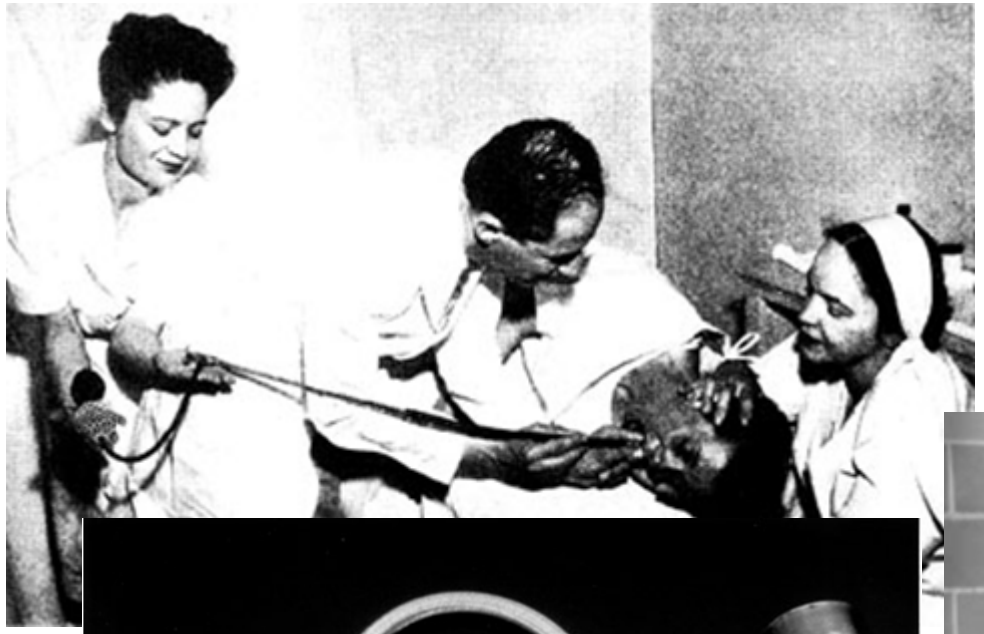
- **Lymphatic invasion better identified with D2-40 immunostaining**
  (Wada Int J Clin Oncol 2013)

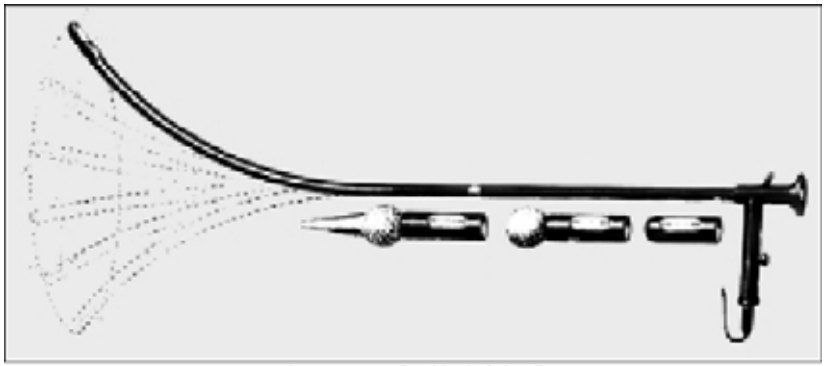
- **No LNM in MSI-H**
  (Kang Yonsei Med J 2015)

Il problema principale: come diagnosticare un T1 (e come trattarlo)

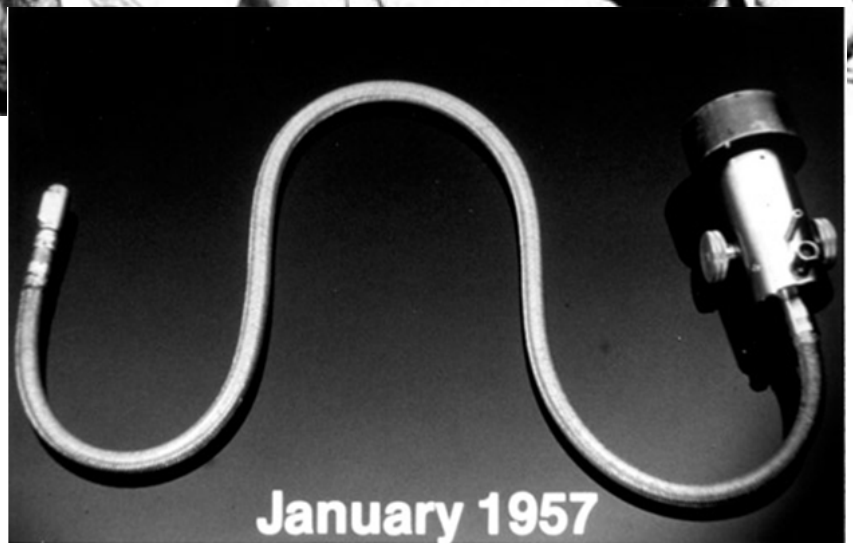
Obiettivi

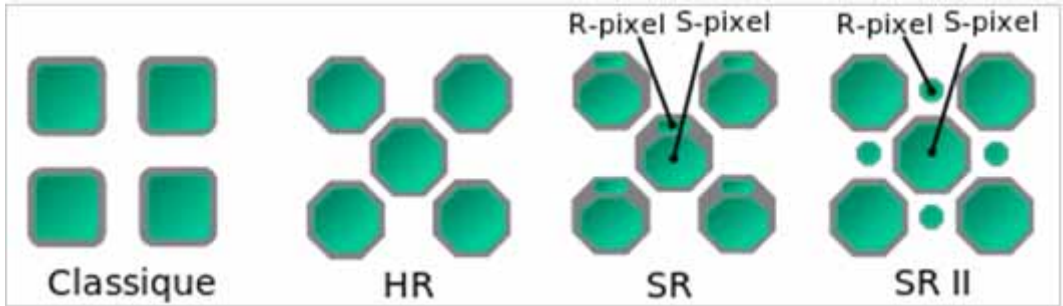
- Identificare lesioni (pre)cancerose
- Effettuare una resezione endoscopica





endoscope semi-flexible de Schindler

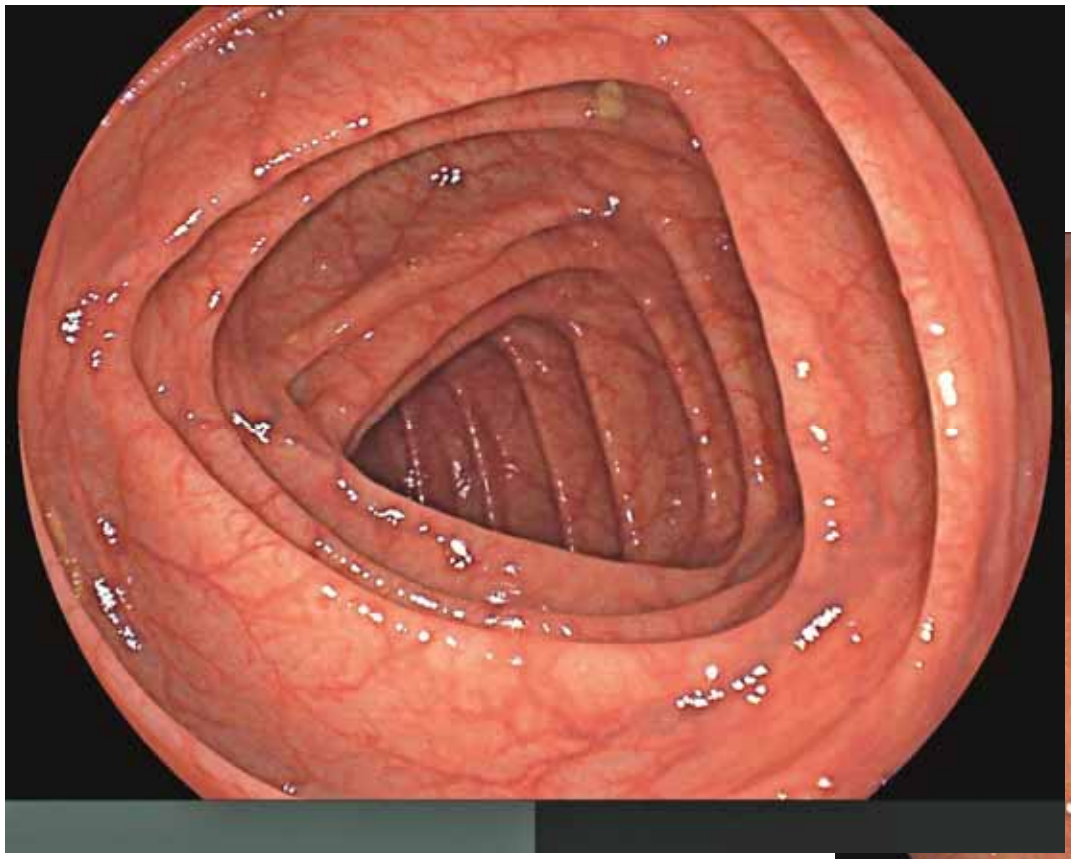




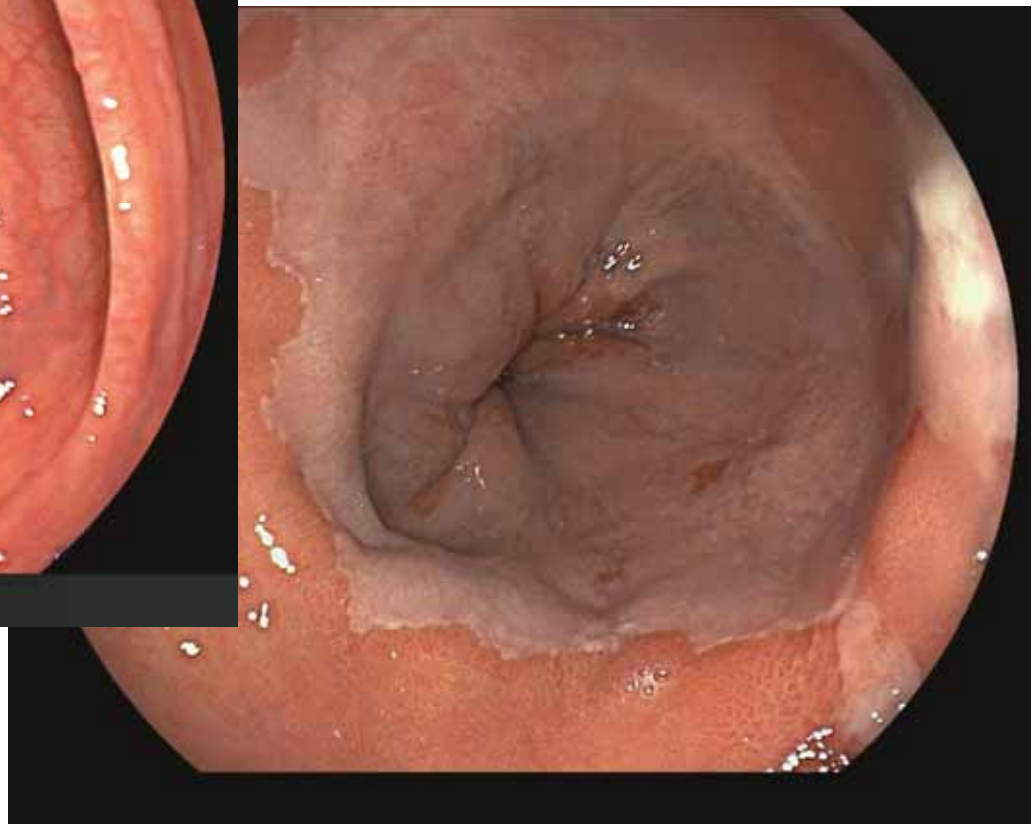
Endoscopia potenziata

- Immagine HD e zoom (o magnificazione)
- Cromoendoscopia virtuale

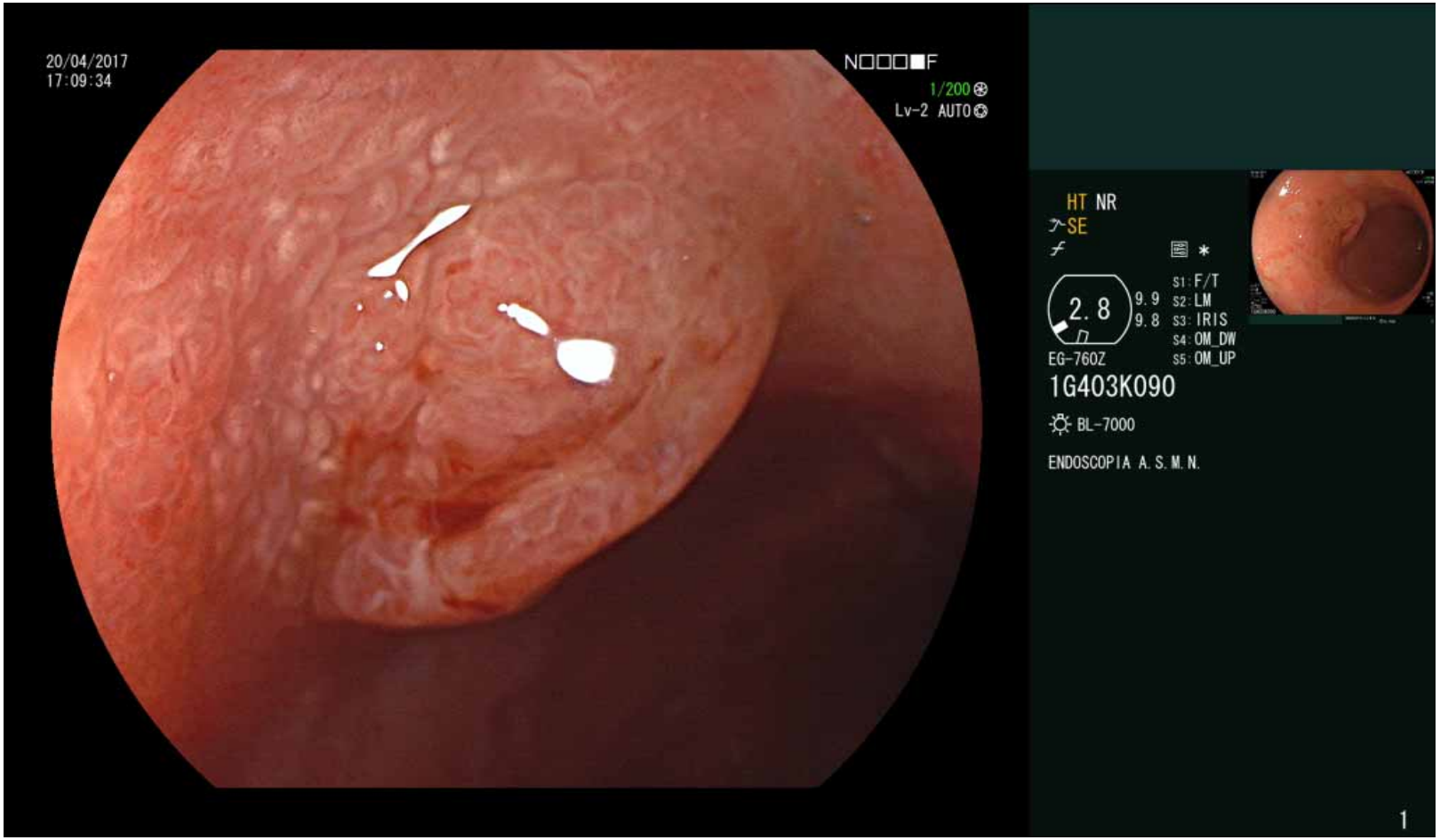
Alta definizione



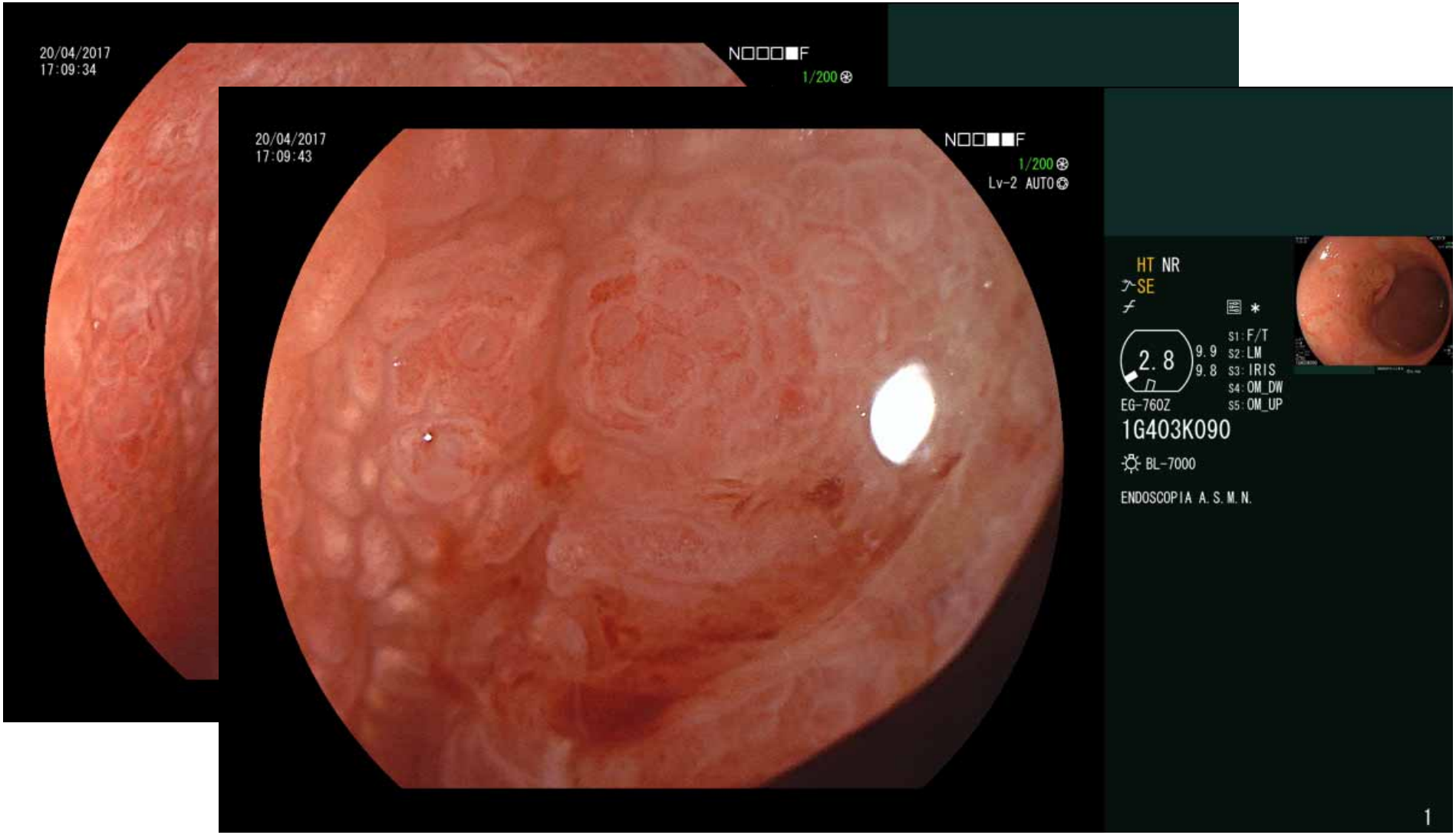
…fino a 800k pixel



Zoom o Magnificazione

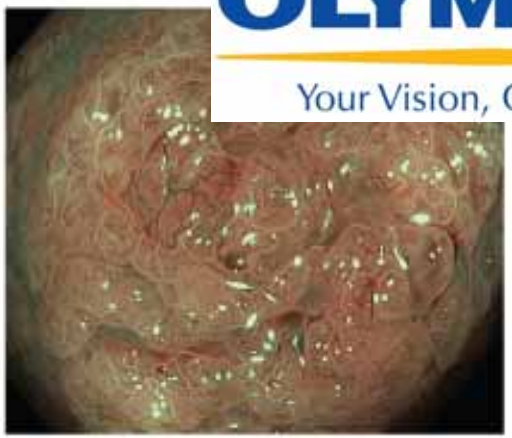


Zoom o Magnificazione



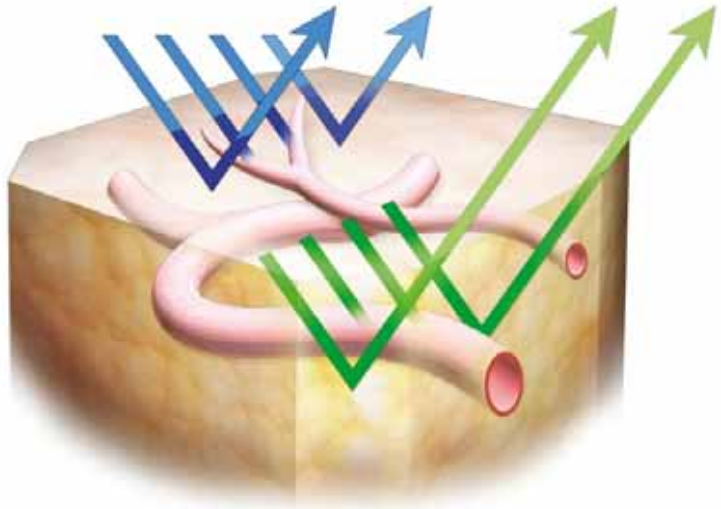
NBI (narrow band imaging)

NBI

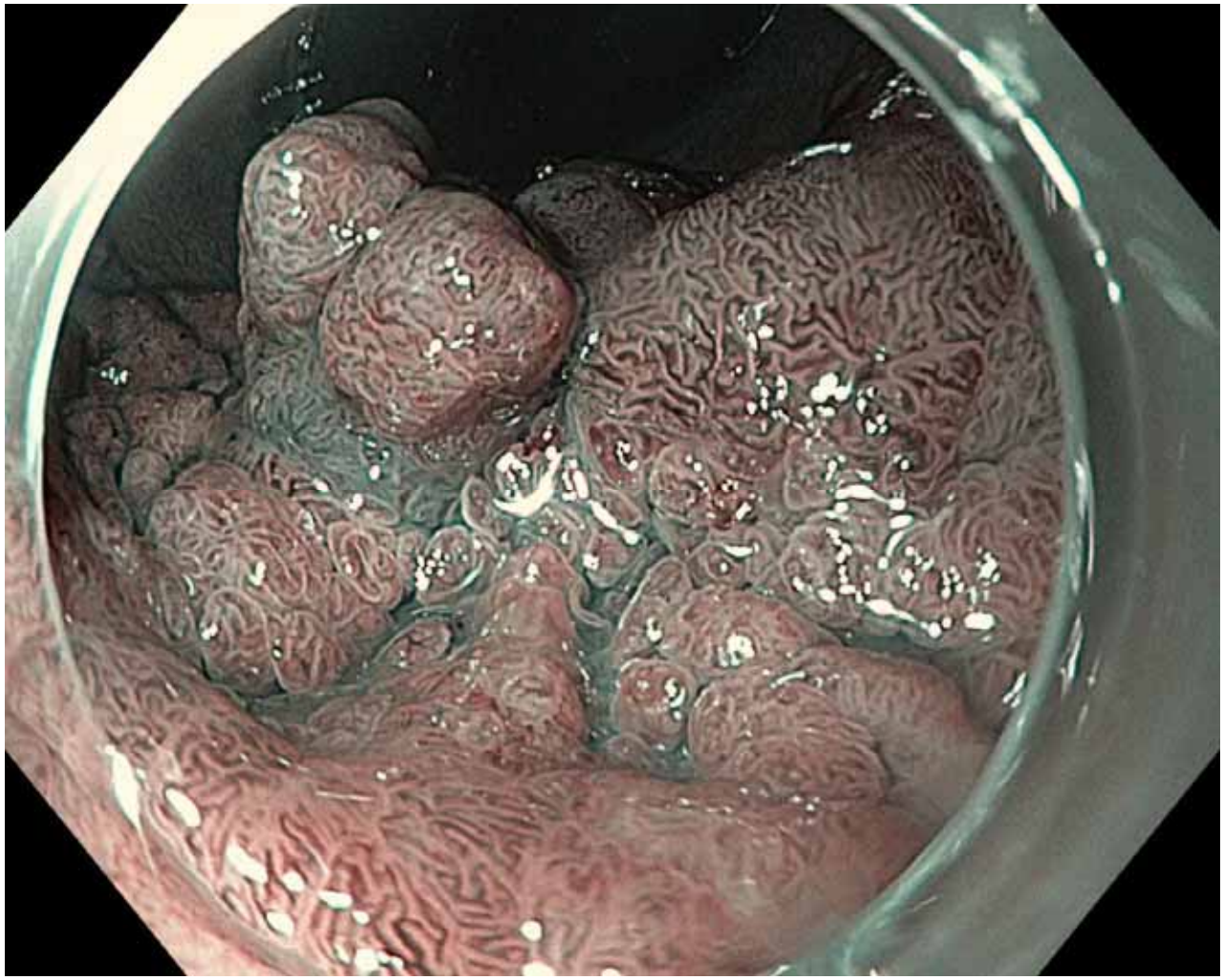


OLYMPUS

Your Vision, Our Future



NBI (narrow band imaging)



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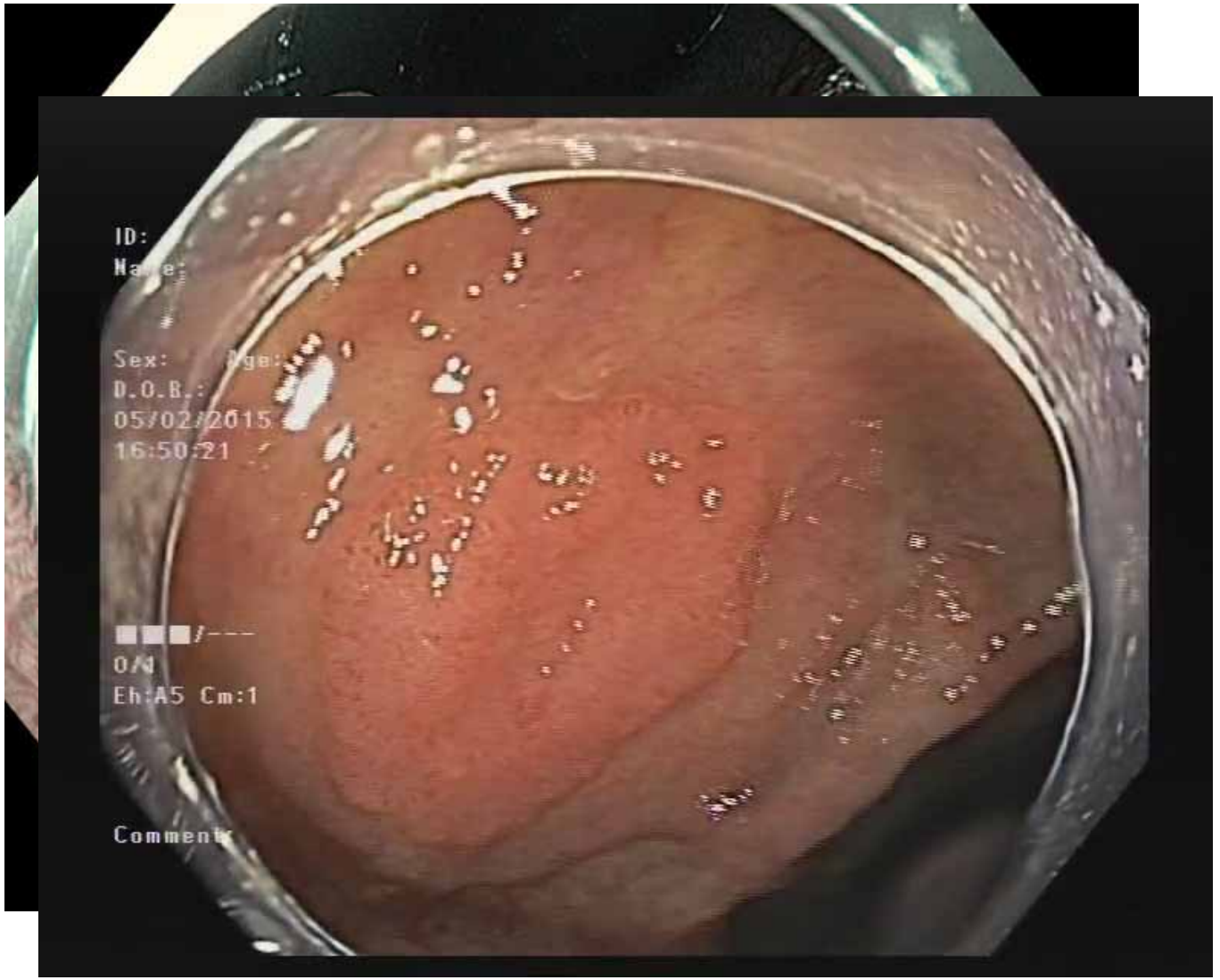

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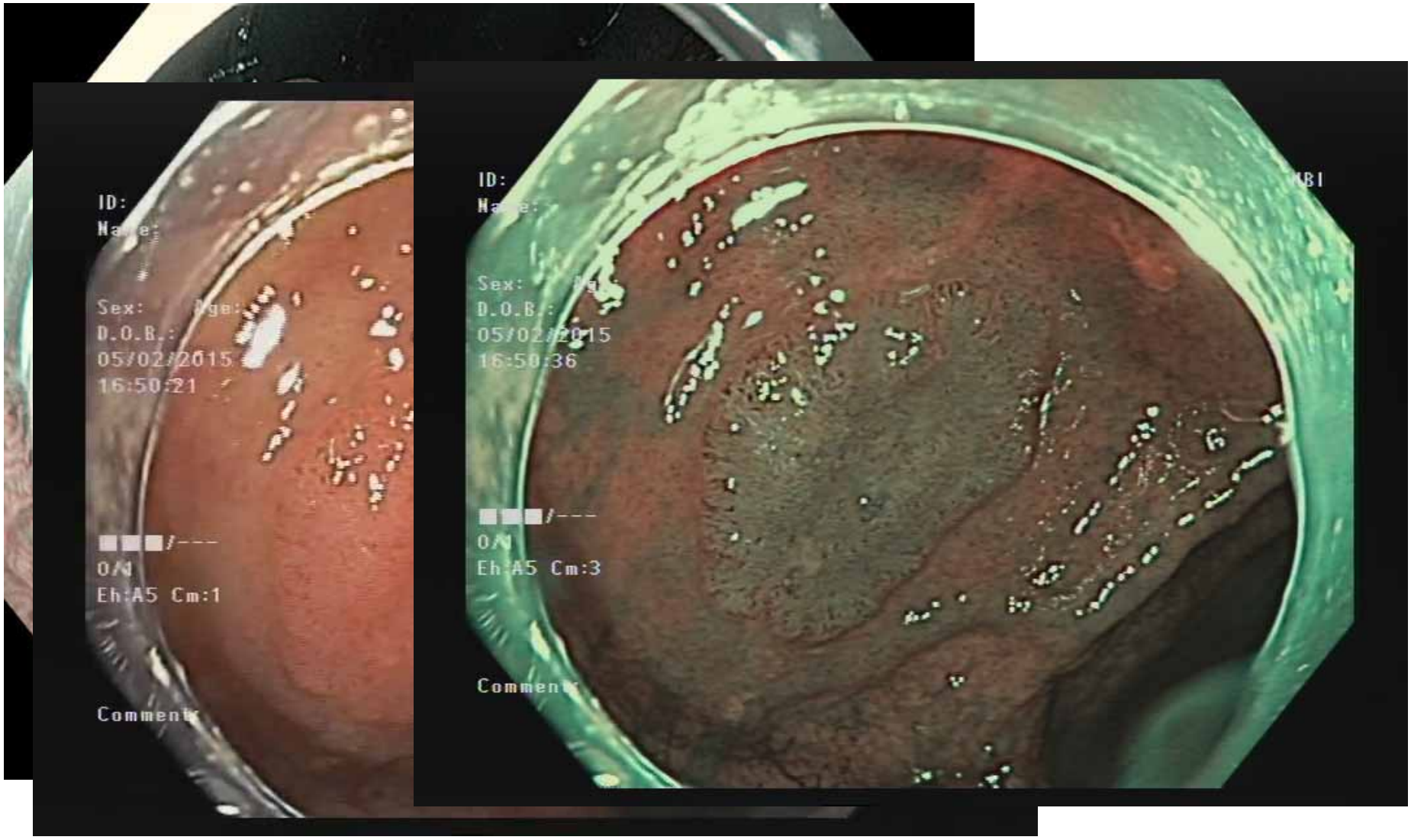


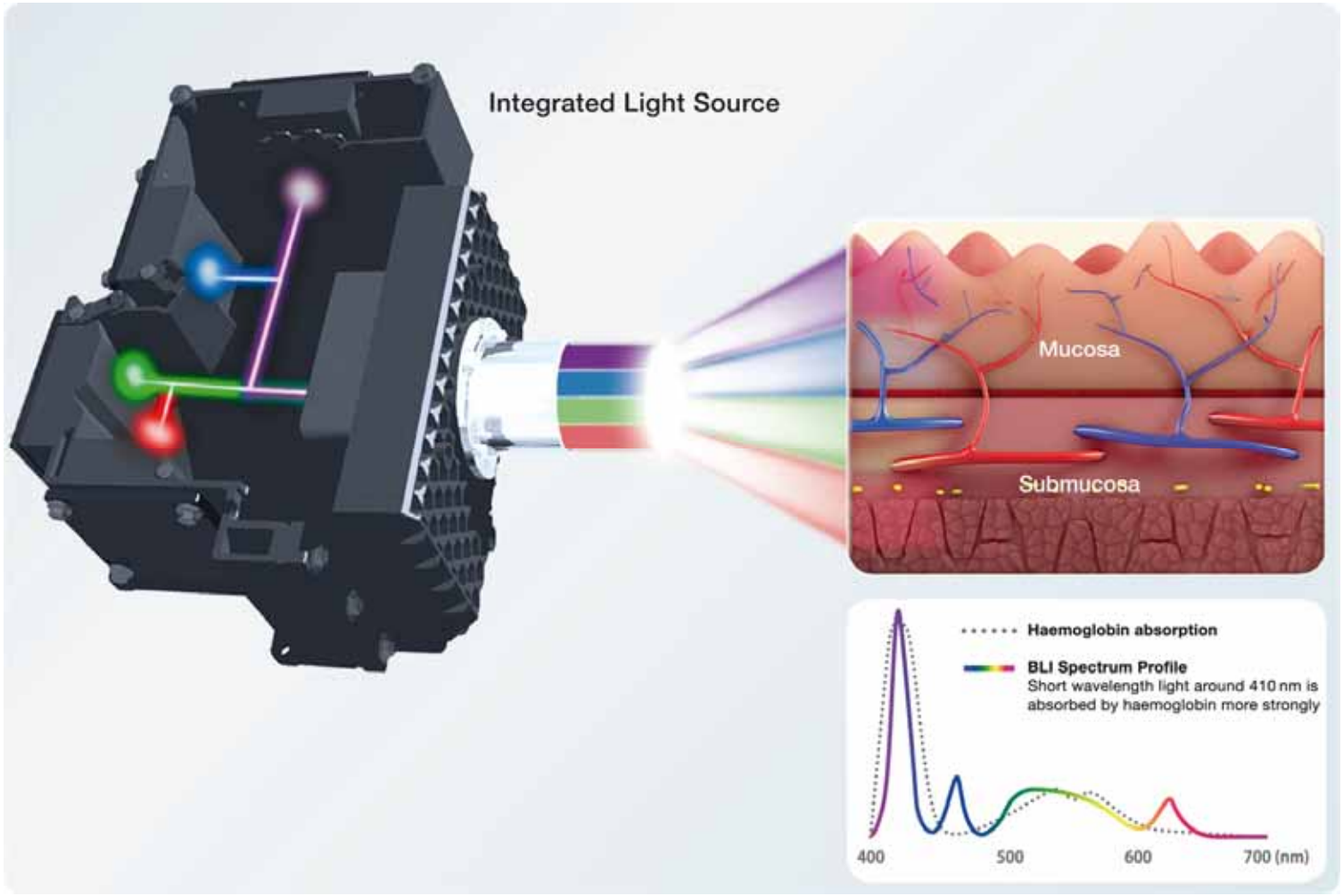
I-Scan

PENTAX

BLI (Blue light imaging)

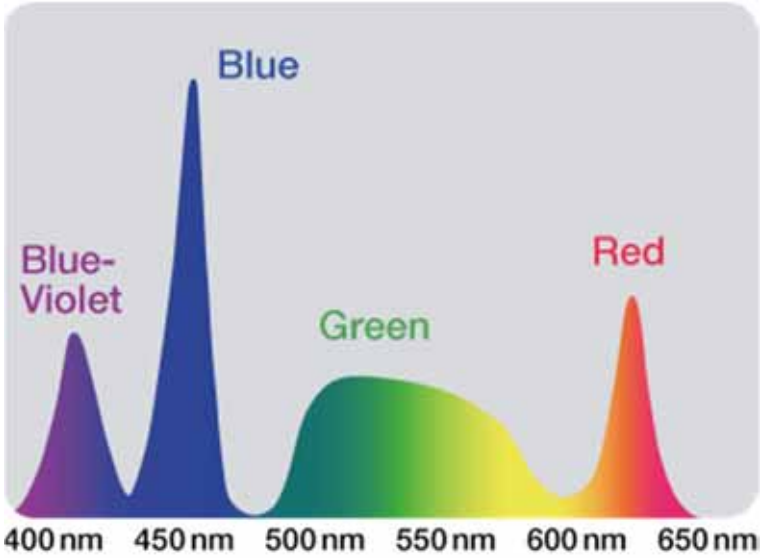
FUJIFILM
Value from Innovation

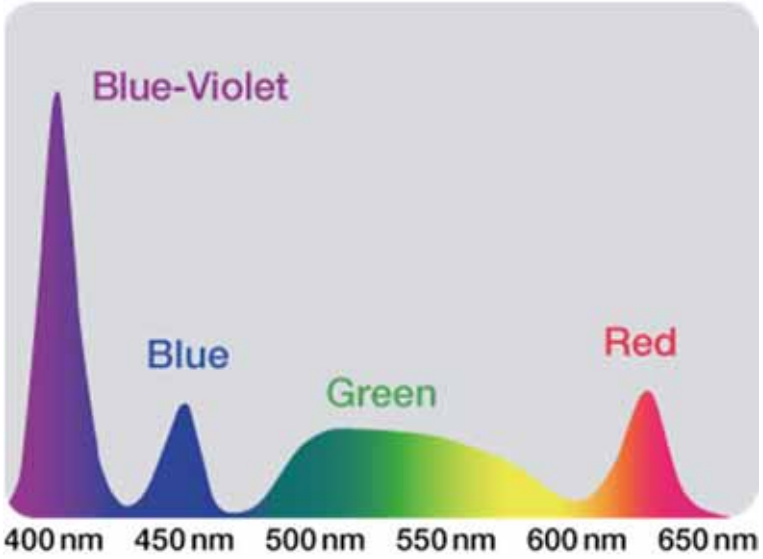
BLI (Blue light imaging)



BLI (Blue light imaging)

FUJIFILM
Value from Innovation





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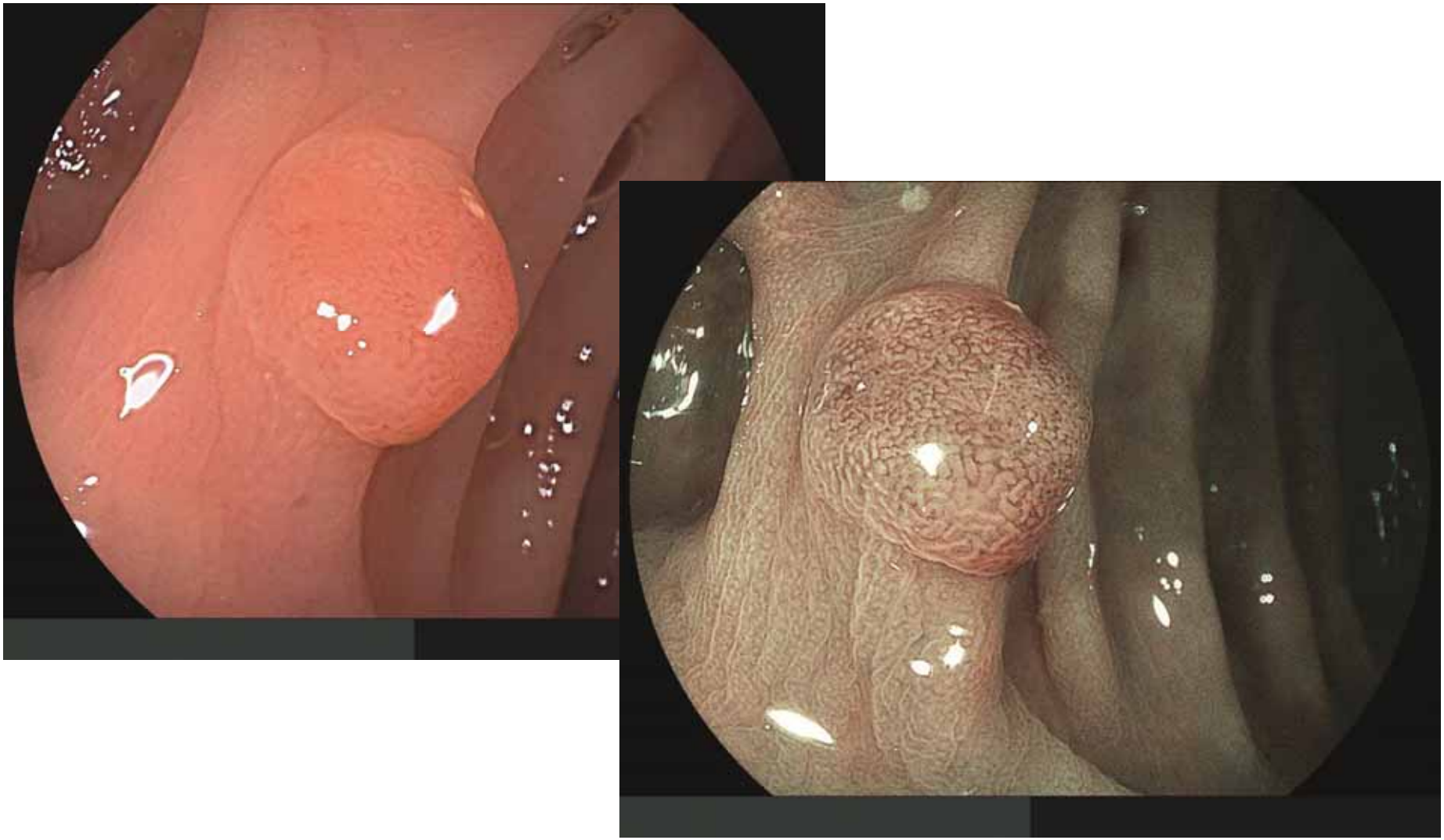
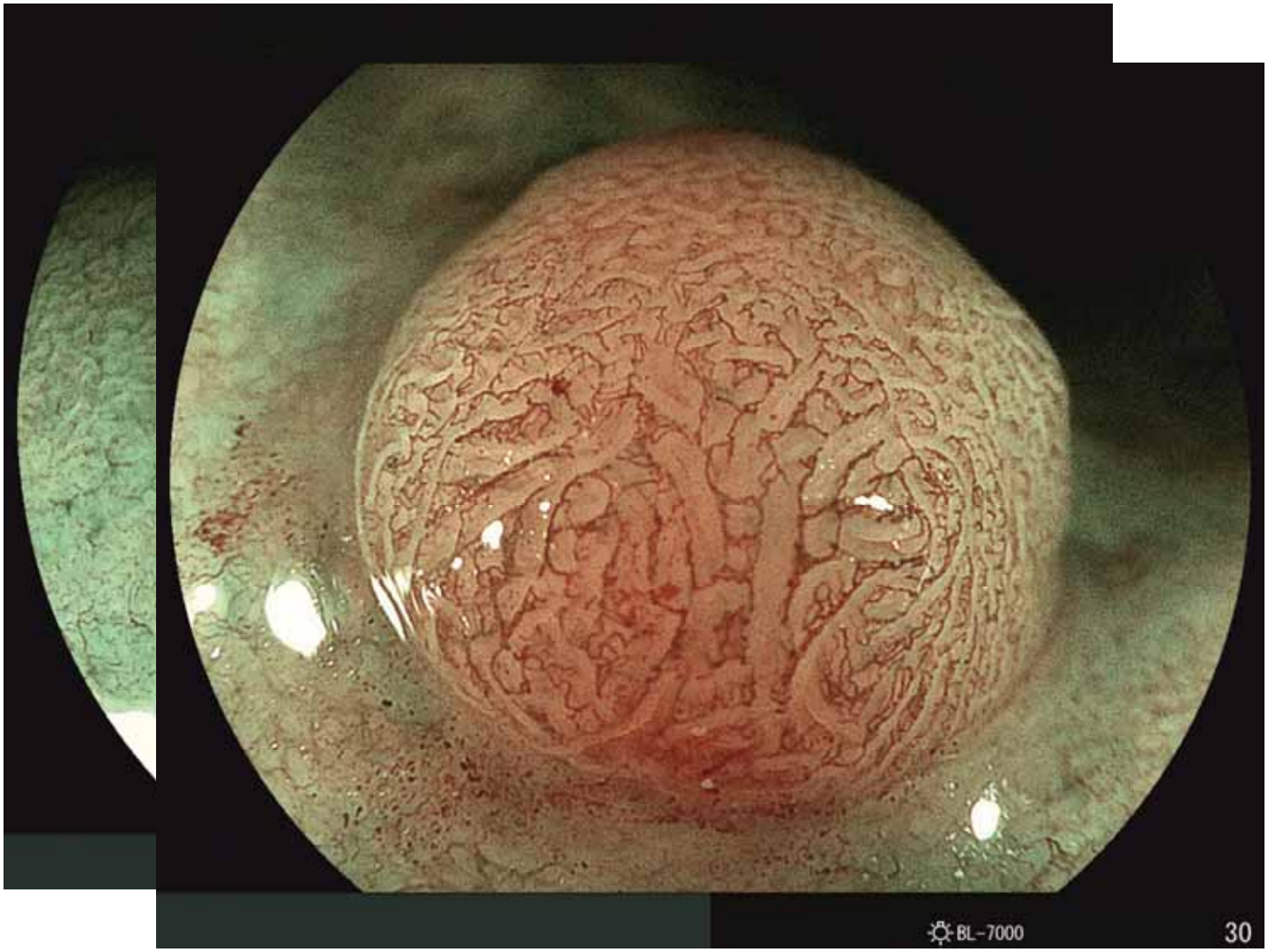
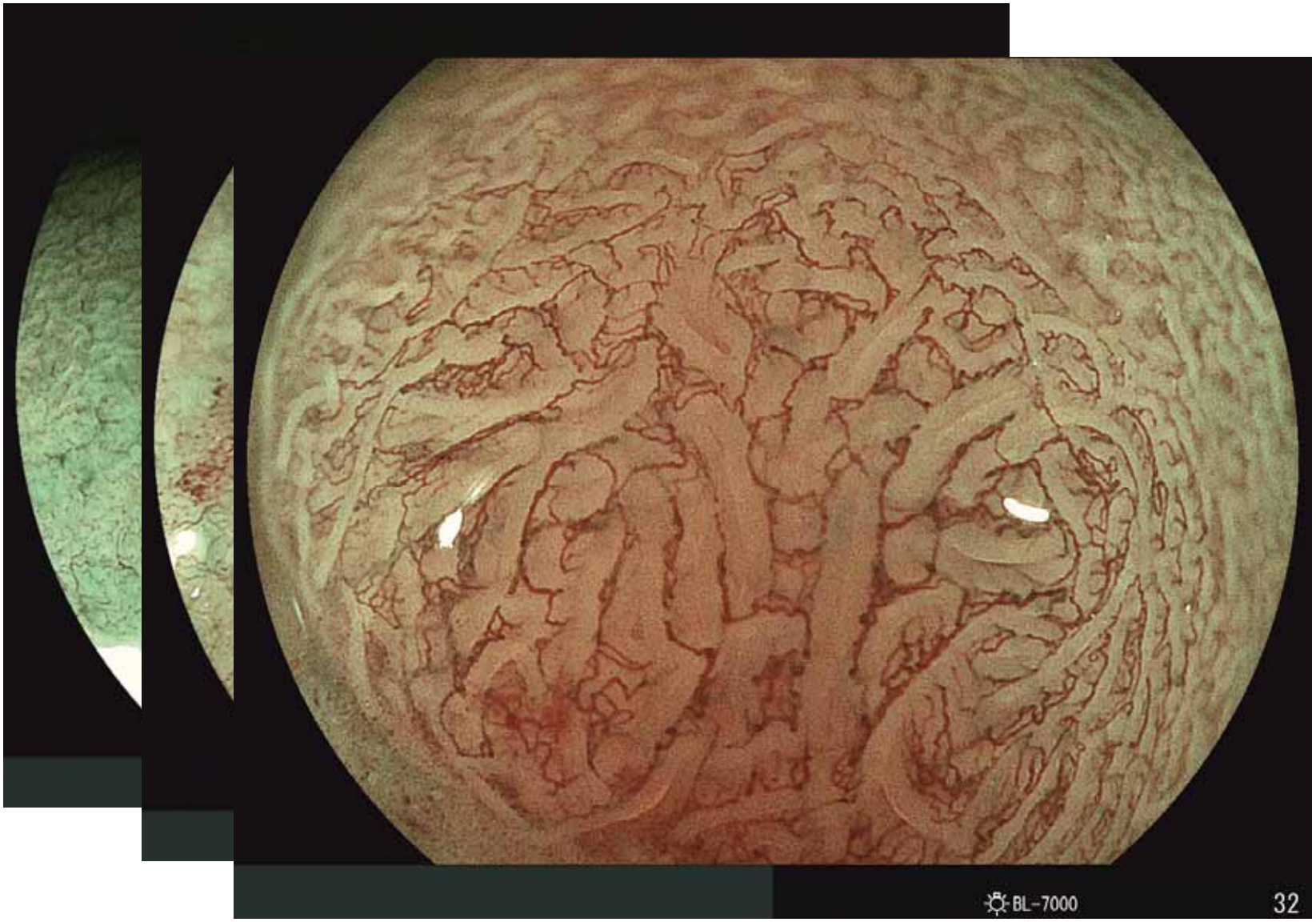


BLI + Zoom

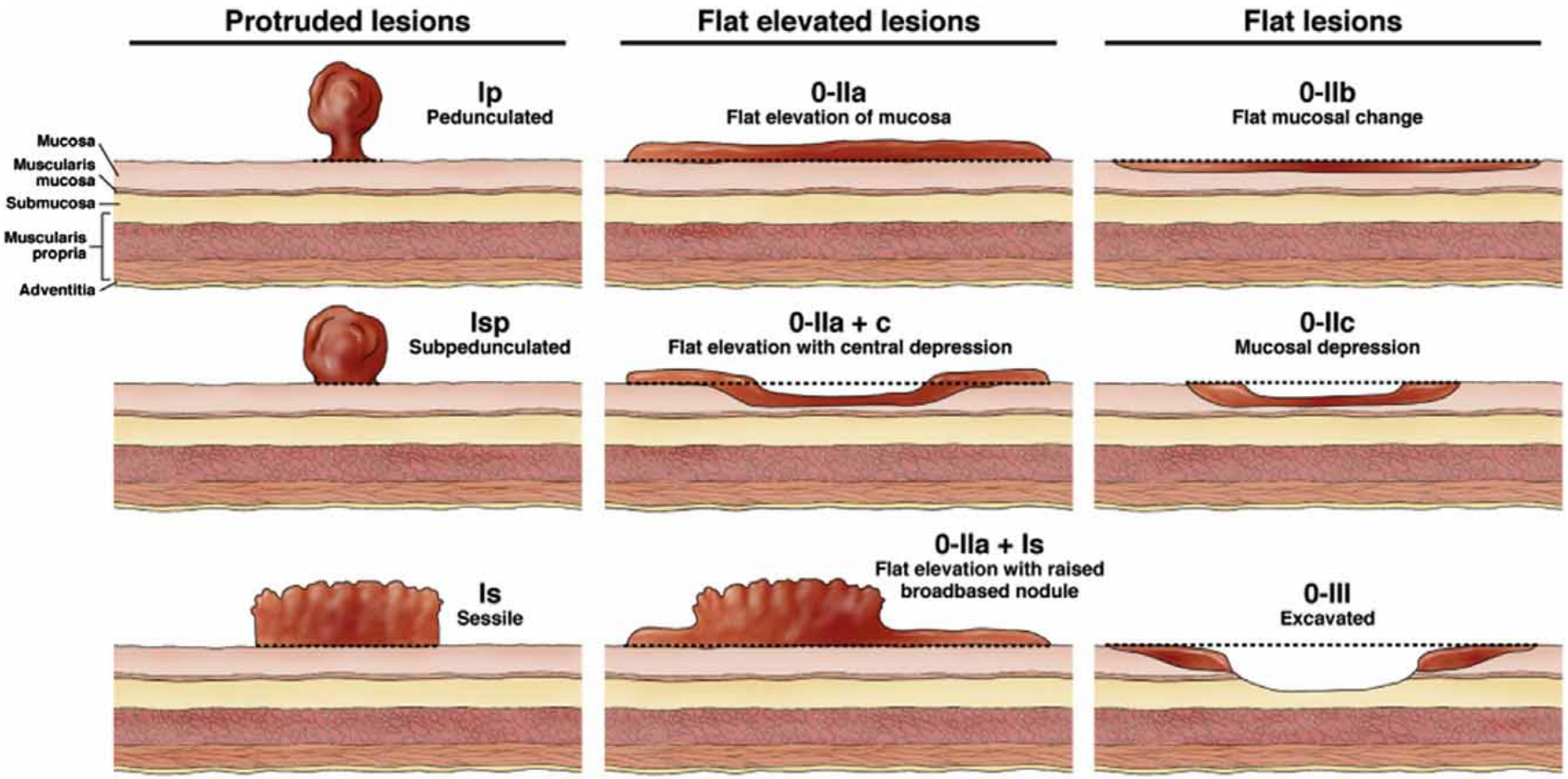
BLI + Zoom



BLI + Zoom



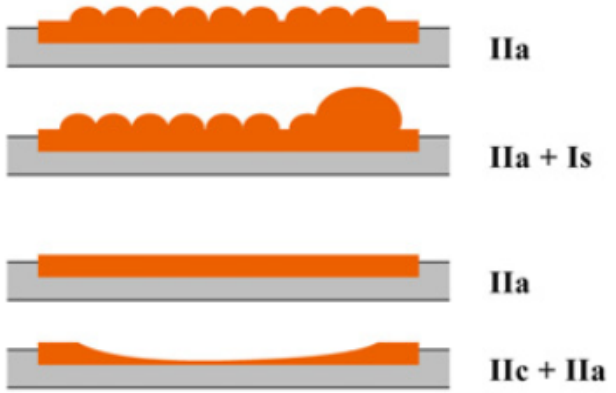
Classificazione di Parigi



Classificazione di Kioto

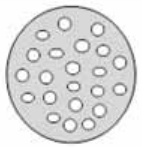
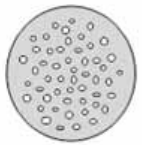
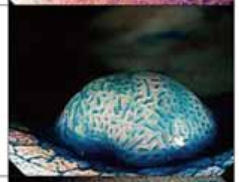
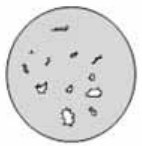
Subtypes of LST† lesions: Morphological classification of LST lesions and their correspondence in the Paris-Japanese classification

Subtypes of LST	Classification of type 0
LST granular (LST-G)	
Homogenous type	0-IIa
Nodular mixed type	0-IIa, 0-Is + IIa, 0-IIa + Is
LST non-granular (LST-NG)	
Flat elevated	0-IIa
Pseudo-depressed type	0-IIa + IIc, 0-IIc + IIa



† The term 'LST (laterally spreading tumor)' refers to the lateral growth of lesions at least 10 mm in diameter; this is in opposition to traditional polypoid (upward growth) or flat and depressed lesions (downward growth).

Kudo classification

I		Round pit (normal pit)	
II		Asteroid pit	
III_S		Tubular of round pit that is smaller than the normal pit (type I)	
III_L		Tubular of round pit that is larger than the normal pit (type I)	
IV		Dendritic or gyrus-like pit	
V_I		Irregular arrangement and sizes of III_L, III_S, IV type pit pattern	
V_N		Loss or decrease of pits with an amorphous structure	

Normal mucosa

Type II pit pattern is specific for hyperplasia. Also, superficial type serrated adenoma and SSA/P show this pit like pattern.

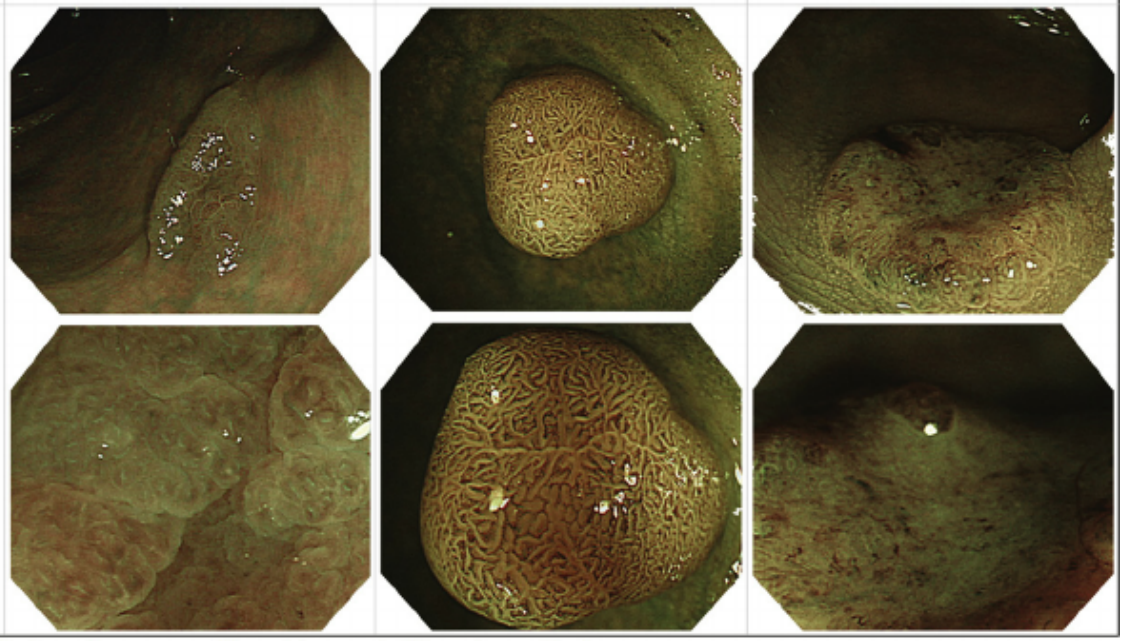
Regular pattern → intramucosal lesion

Irregular pattern
→ mucosal-submucosal deep invasion

Nonstructure pattern
→ Submucosal deep invasion

NICE classification

NBI International Colorectal Endoscopic (NICE) Classification*

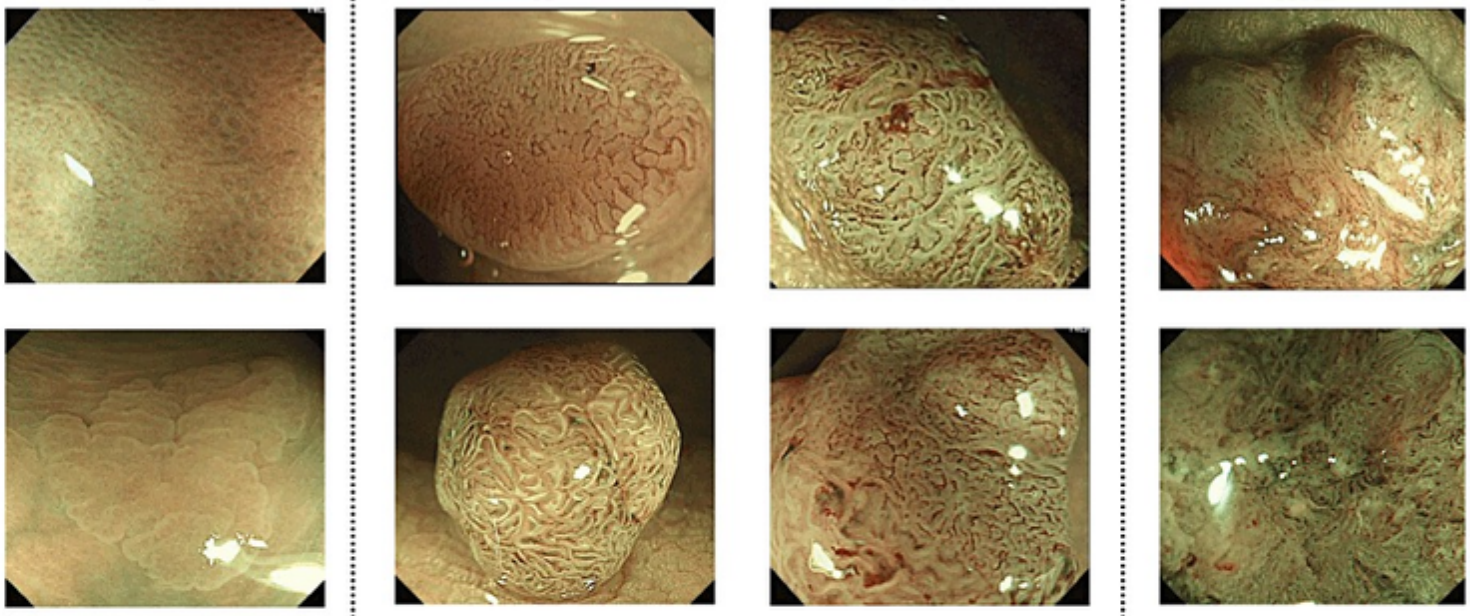
	Type 1	Type 2	Type 3
Color	Same or lighter than background	Browner relative to background (verify color arises from vessels)	Brown to dark brown relative to background; sometimes patchy whiter areas
Vessels	None, or isolated lacy vessels coursing across the lesion	Brown vessels surrounding white structures**	Has area(s) of disrupted or missing vessels
Surface Pattern	Dark or white spots of uniform size, or homogeneous absence of pattern	Oval, tubular or branched white structure surrounded by brown vessels**	Amorphous or absent surface pattern
Most likely pathology	**Hyperplastic**	**Adenoma*** **	**Deep submucosal invasive cancer**
Examples			

* Can be applied using colonoscopes with or without optical (zoom) magnification

** These structures (regular or irregular) may represent the pits and the epithelium of the crypt opening.

*** Type 2 consists of Vienna classification types 3, 4 and superficial 5 (all adenomas with either low or high grade dysplasia, or with superficial submucosal carcinoma). The presence of high grade dysplasia or superficial submucosal carcinoma may be suggested by an irregular vessel or surface pattern, and is often associated with atypical morphology (e.g., depressed area).

Classificazione di Sano



	I	II	IIIA	IIIB
Endoscopic Findings	Meshed Capillary Vessels (-)	• Meshed Capillary Vessels (+) • Capillary Vessels Surround Mucosal Glands	Meshed Capillary Vessels Characterized by Branching, Curtailed Irregularity & Blind Endings • Lack of Uniformity • High Density of Capillary Vessels	• Nearly Avascular or Loose Microcapillary Vessels
Histopathology	Normal Hyperplastic Polyp	Adenoma M*	SM-Superficial**	SM-Deep***
Treatment Strategy	No Treatment	Endoscopic Treatment (Polypectomy or EMR)		Surgical Treatment

*Intramucosal Cancer **SM Superficial Invasion (<1,000μm) ***SM Deep Invasion (≥1,000μm)

Classificazione di Hiroshima

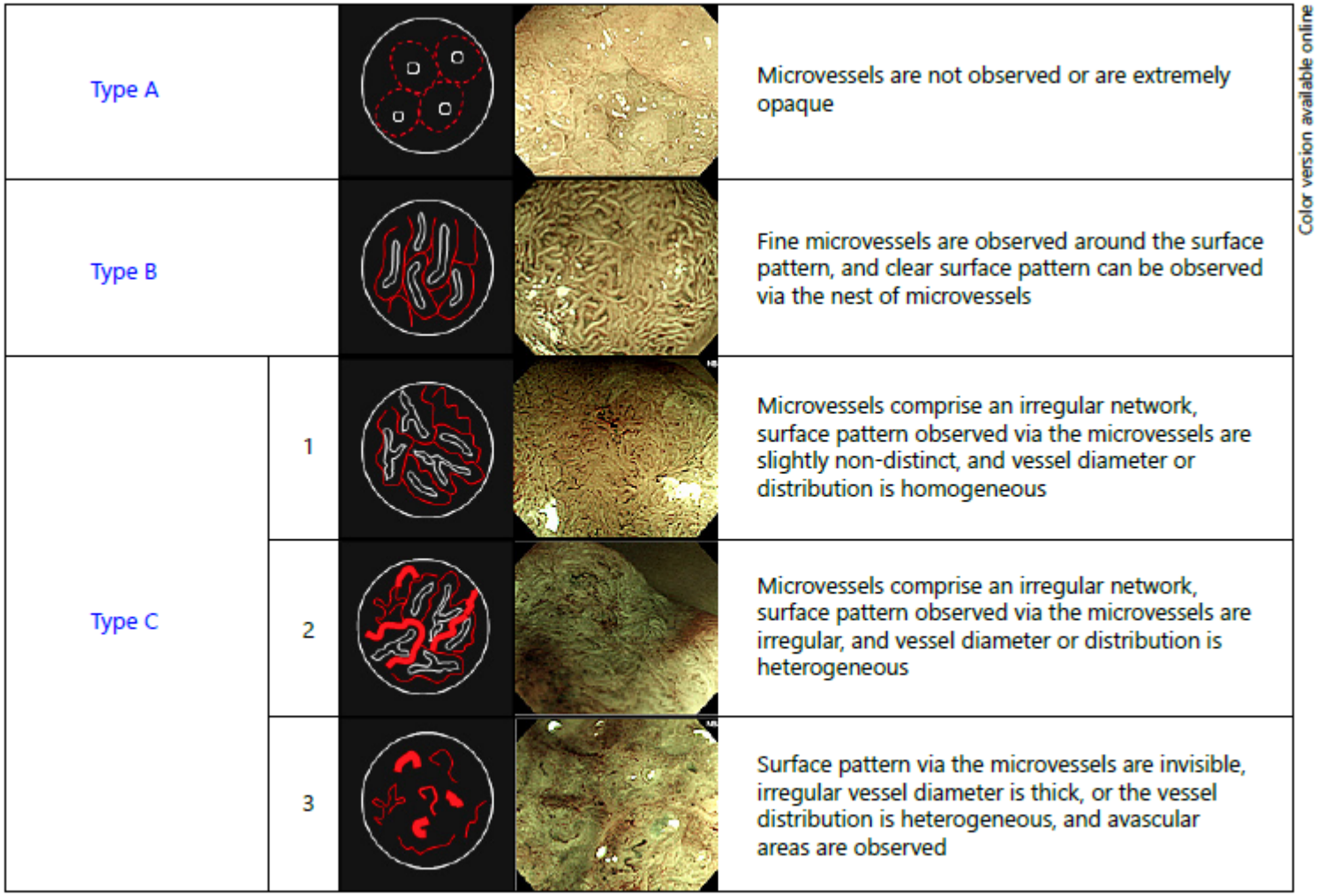


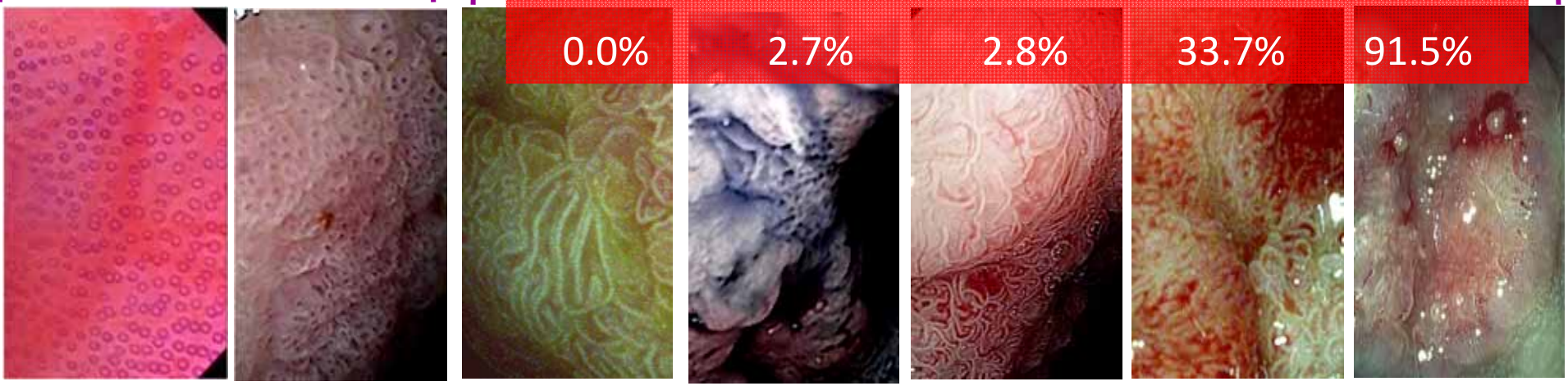
Fig. 1. NBI magnifying classification (Hiroshima classification).

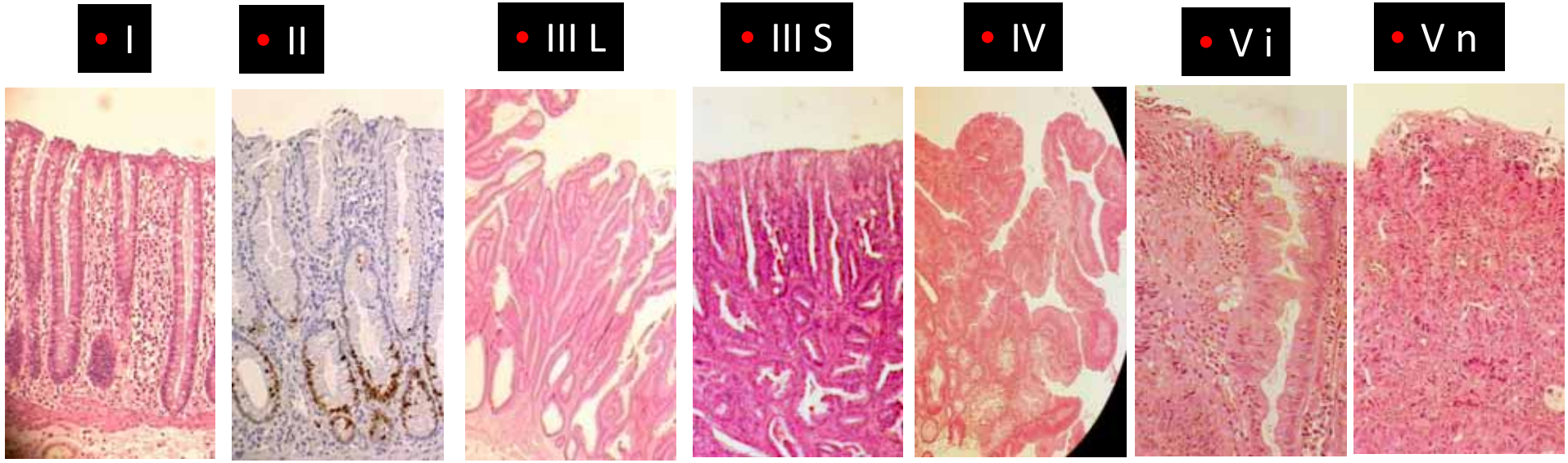
pit pattern

non neoplastic pattern

neoplastic pattern

invasive cancer risk *

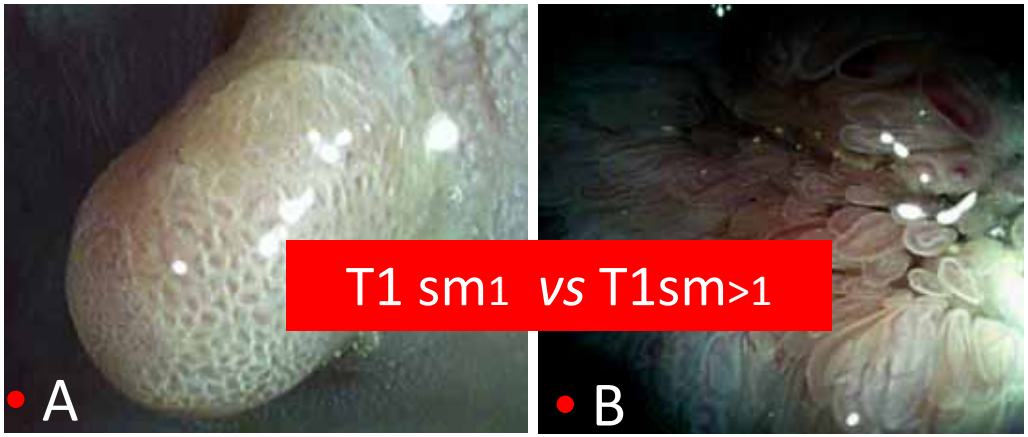


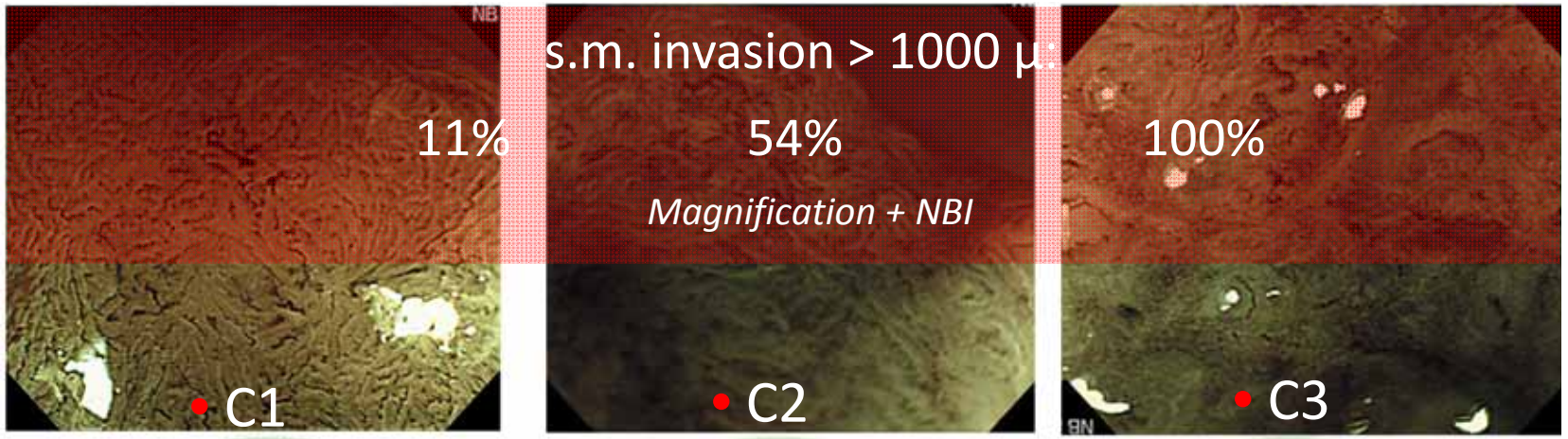


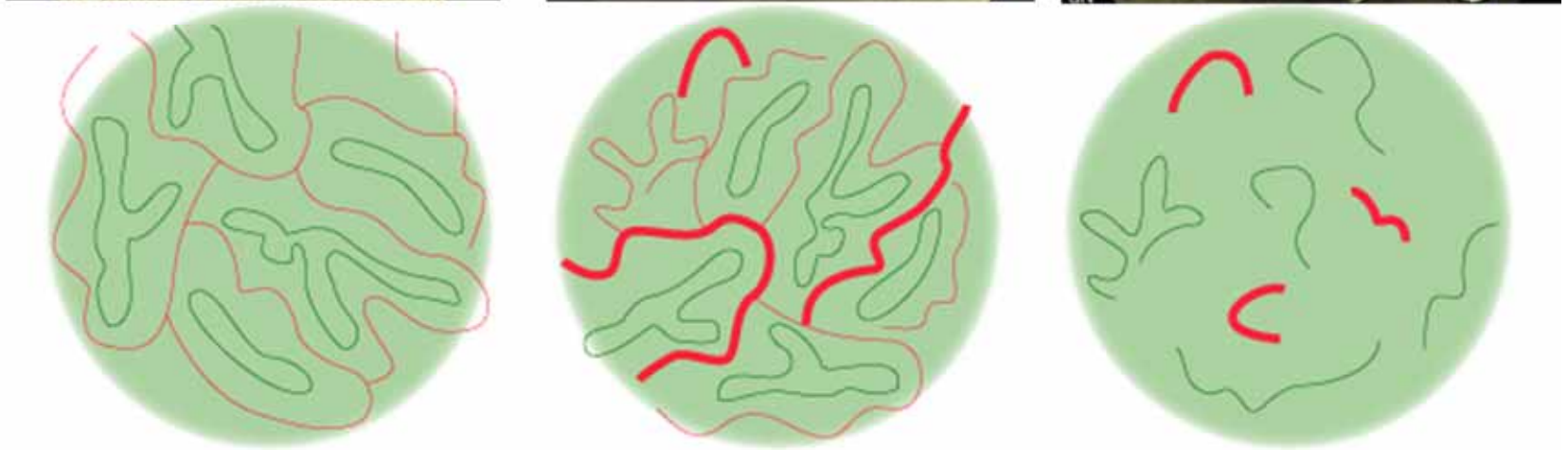
GASTROINTESTINAL ENDOSCOPY Volume 68, No. 4 : 2008

*

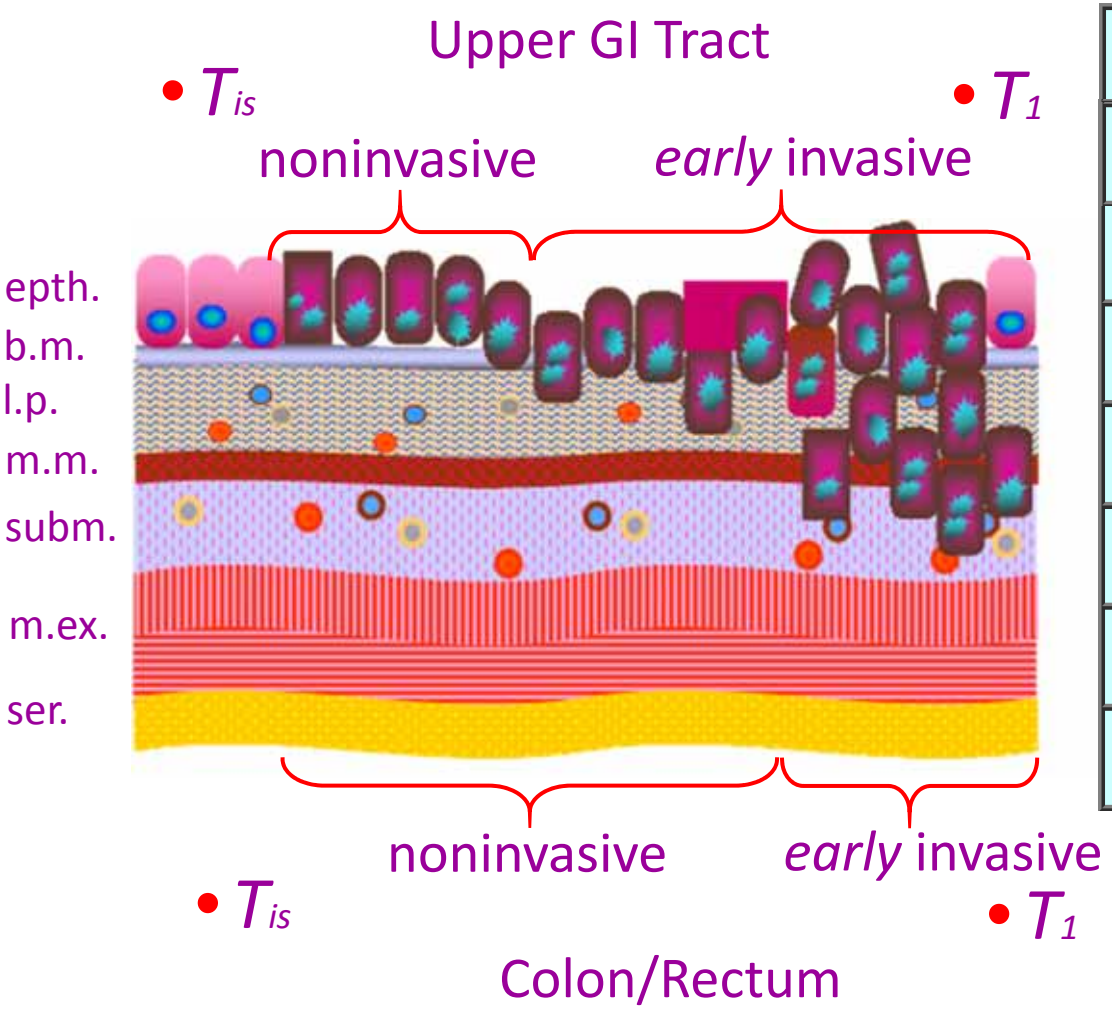
vascular pattern







By Hiroyuki Kanao, 2009 (mod. Gizzi)



Stage 0	Tis	N0	M0
Stage I	T1,	N0	M0
Stage IIA	T3	N0	M0
IIB	T4	N0	M0
Stage IIIA	T1, T2	N1	M0
IIIB	T3, T4	N1	M0
IIIC	Any T	N2	M0
Stage IV	Any T	Any N	M1

Narrow Band Imaging, Magnifying Chromoendoscopy, and Gross Morphological Features for the Optical Diagnosis of T1 Colorectal Cancer and Deep Submucosal Invasion: A Systematic Review and Meta-Analysis

Y. Backes, MD[1], A. Moss, MBBS (Hons), MD[2,3], J.B. Reitsma, MD, PhD[4], P.D. Siersema, MD, PhD[1,5] and L.M.G. Moons, MD, PhD[1]

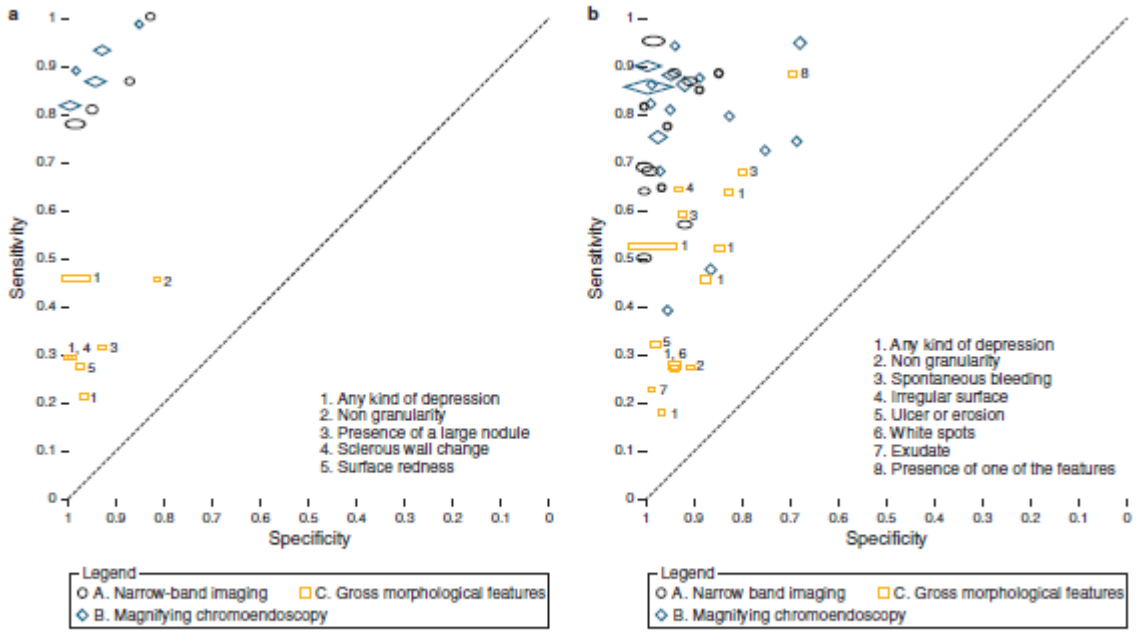


Figure 2. Receiver operating characteristic plot of the sensitivity and specificity of optical diagnosis of T1 CRC (**a**) and T1 CRC with deep submucosal invasion (**b**) of narrow band imaging (diamonds) and magnifying chromoendoscopy (circles) in the context of gross morphologic features (squares). Scale of the size of points is based on the sample size of the studies. CRC, colorectal cancer.

Study Highlights

WHAT IS CURRENT KNOWLEDGE

- ✓ Accurate optical diagnosis of T1 colorectal cancer (CRC) and T1 CRC with deep submucosal invasion is important in guiding the decision to proceed with either piecemeal endoscopic resection, en-bloc endoscopic resection, or surgery.
- ✓ The systematic use of advanced imaging is not yet widely performed in daily clinical practice in Western countries.

WHAT IS NEW HERE

- ✓ Advanced imaging techniques appear to result in a three-fold better recognition of T1 CRC and an almost twofold better recognition of deep invasion as compared with gross morphological features seen with conventional view.
- ✓ On the basis of current available literature, a preference for either microvessel or microsurface assessment with narrow band imaging or pit-pattern assessment with magnifying chromoendoscopy could not be observed.

Am J Gastroenterol 2017; 112:54–64; doi: 10.1038/ajg.2016.403;

Obiettivo: discriminare

- Lesioni trascurabili
- Lesioni da rimuovere con l'endoscopia con tecniche standard
- Lesioni da rimuovere con tecniche di endoscopia avanzata
- Lesioni chirurgiche

Resezione endoscopica*

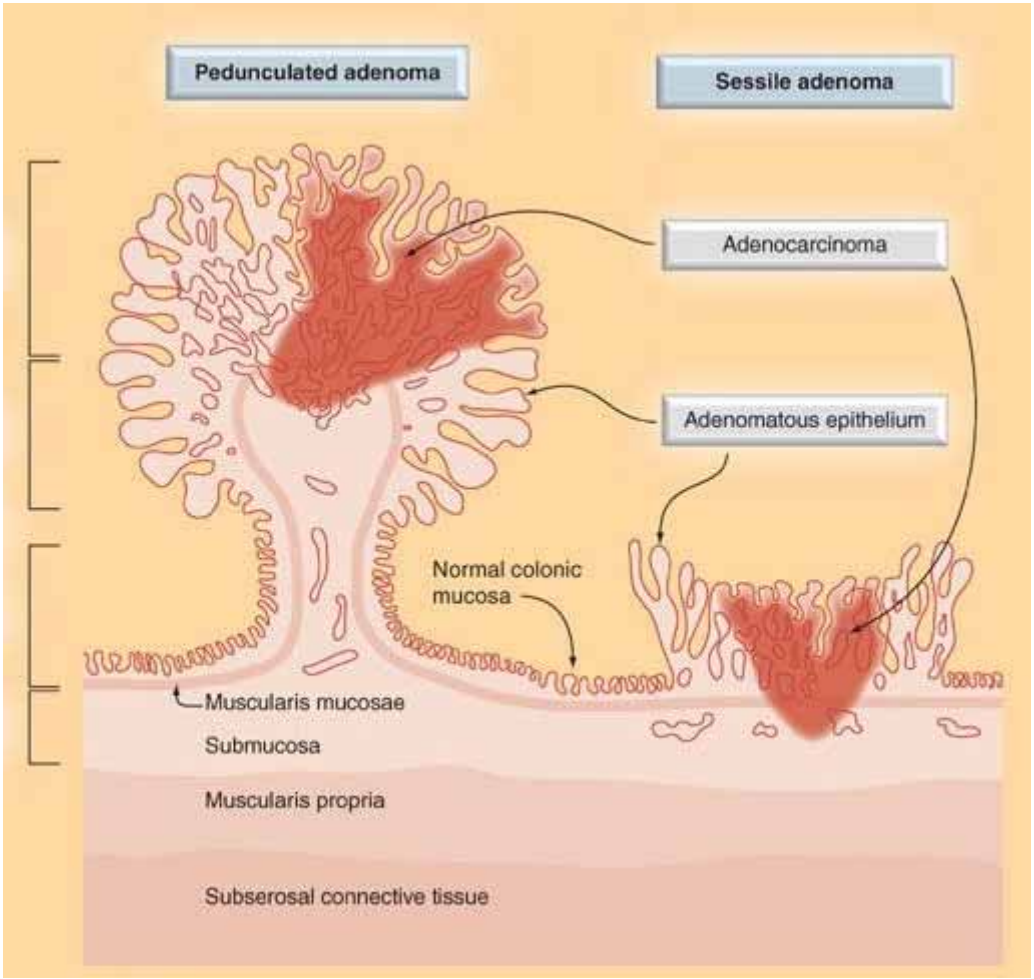
- **Resezione radicale delle lesioni neoplastiche superficiali, cioè l'asportazione di lesioni confinate alla mucosa (m) o allo strato più superficiale della sottomucosa (sm), in assenza di invasione vascolare e/o linfatica.**

- **Resezione 'enbloc' (margini di resezione negativi o R0) in caso di sospetta invasione sottomucosa per permettere una corretta stadiazione e per stabilire il rischio di malattia residua (locale o metastatica)**

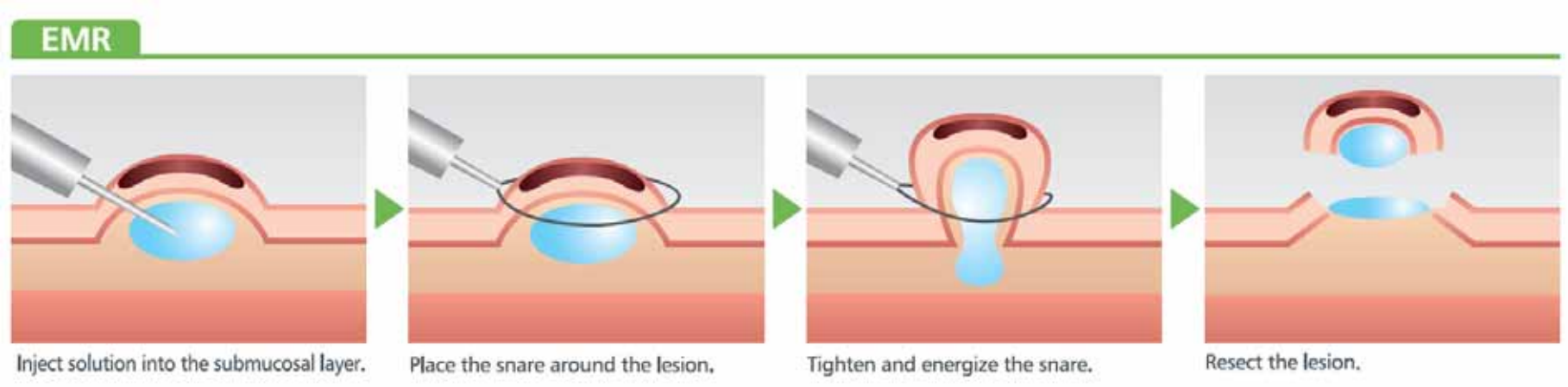
- **Tecniche endoscopiche sono: la Resezione Mucosa Endoscopica (EMR) e la Dissezione Endoscopica Sottomucosa (ESD)**

* il mio paziente di ieri

Resezione endoscopica

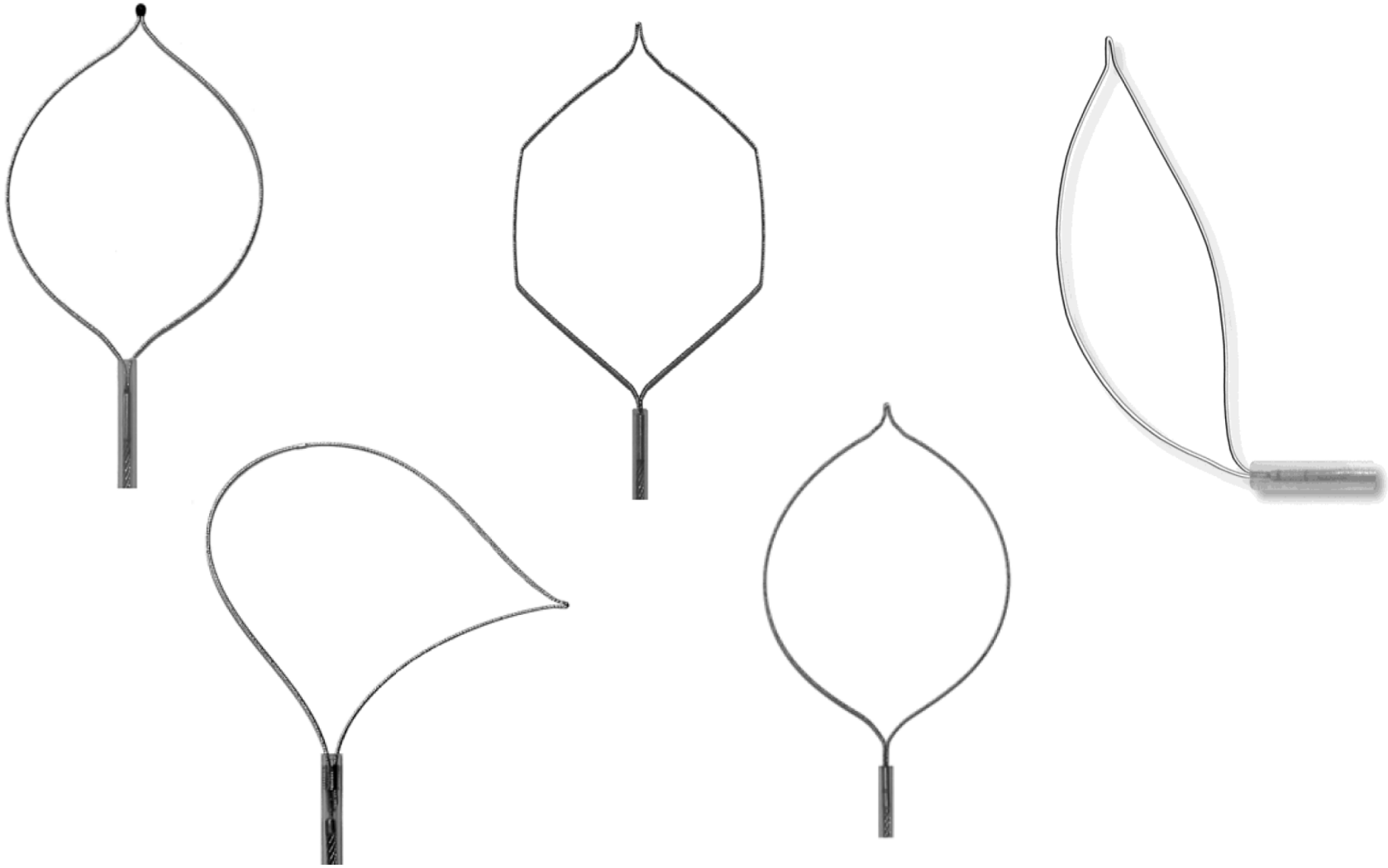


EMR



- Cold snare polipectomy (ansa a freddo)
- Hot snare polipectomy or en bloc EMR
- Piecemeal EMR (in più frammenti)

EMR



Linee guida

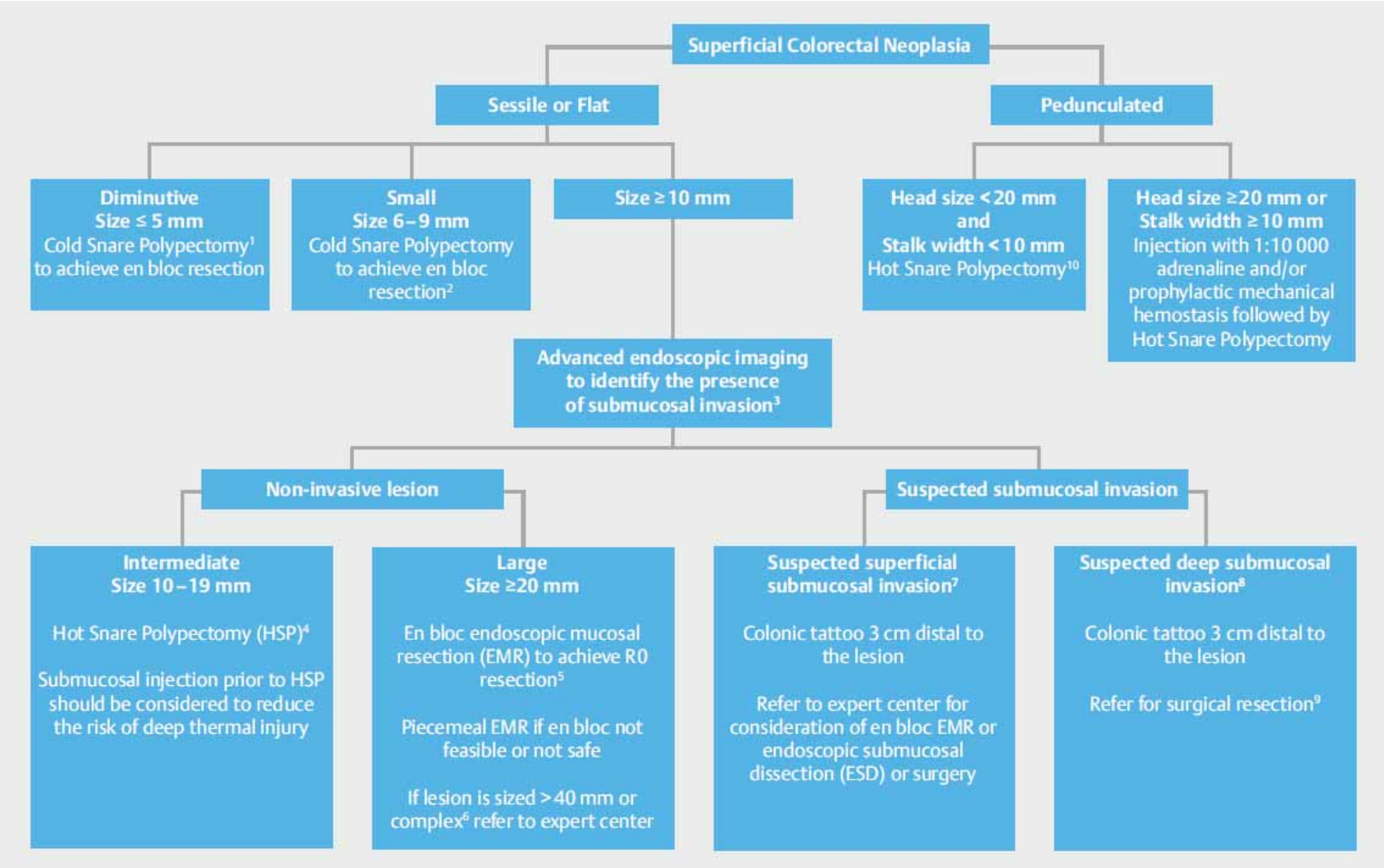
Guideline

Thieme

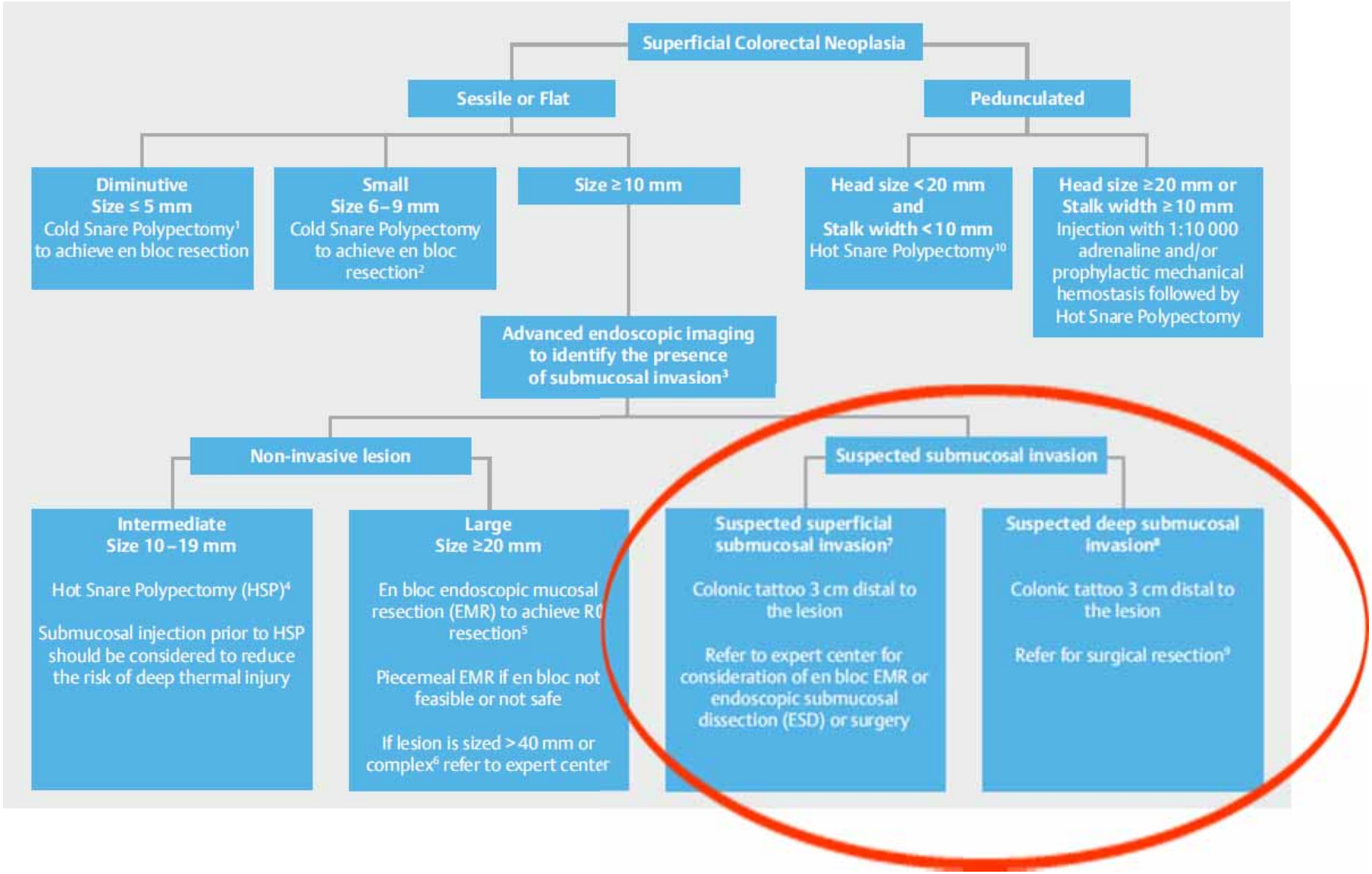
Colorectal polypectomy and endoscopic mucosal resection (EMR): European Society of Gastrointestinal Endoscopy (ESGE) Clinical Guideline

Ferlitsch Monika et al. Colorectal polypectomy and… Endoscopy 2017; 49: 270–297

EMR


Superficial Colorectal Neoplasia
Sessile or Flat
Pedunculated
Diminutive
Size ≤ 5 mm
Cold Snare Polypectomy[1] to achieve en bloc resection
Small
Size 6–9 mm
Cold Snare Polypectomy to achieve en bloc resection[2]
Size ≥ 10 mm
Head size < 20 mm and Stalk width < 10 mm
Hot Snare Polypectomy[10]
Head size ≥ 20 mm or Stalk width ≥ 10 mm
Injection with 1:10 000 adrenaline and/or prophylactic mechanical hemostasis followed by Hot Snare Polypectomy
Advanced endoscopic imaging to identify the presence of submucosal invasion[3]
Non-invasive lesion
Suspected submucosal invasion
Intermediate
Size 10–19 mm
Hot Snare Polypectomy (HSP)[4]
Submucosal injection prior to HSP should be considered to reduce the risk of deep thermal injury
Large
Size ≥20 mm
En bloc endoscopic mucosal resection (EMR) to achieve R0 resection[5]
Piecemeal EMR if en bloc not feasible or not safe
If lesion is sized > 40 mm or complex[6] refer to expert center
Suspected superficial submucosal invasion[7]
Colonic tattoo 3 cm distal to the lesion
Refer to expert center for consideration of en bloc EMR or endoscopic submucosal dissection (ESD) or surgery
Suspected deep submucosal invasion[8]
Colonic tattoo 3 cm distal to the lesion
Refer for surgical resection[9]

EMR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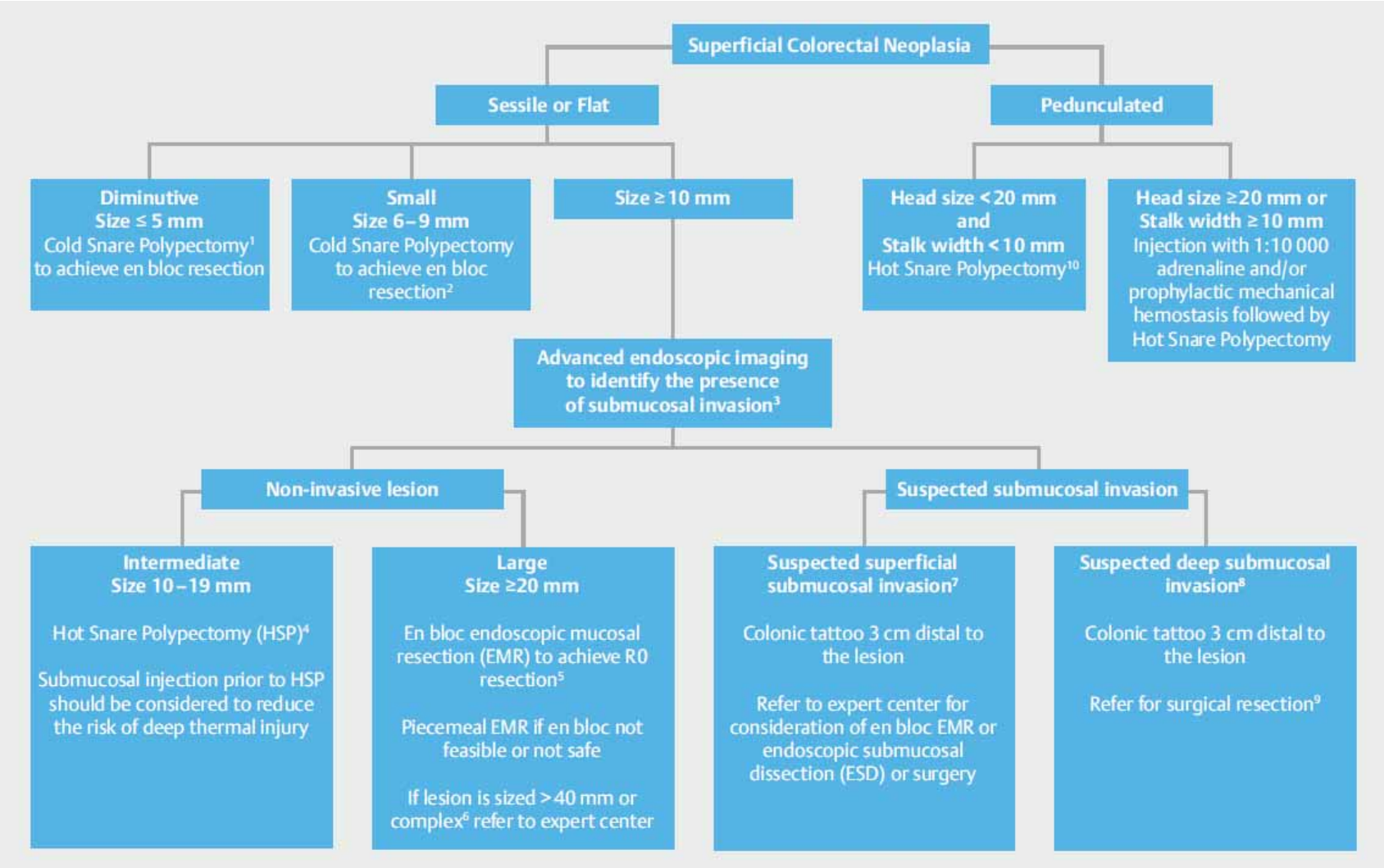
EMR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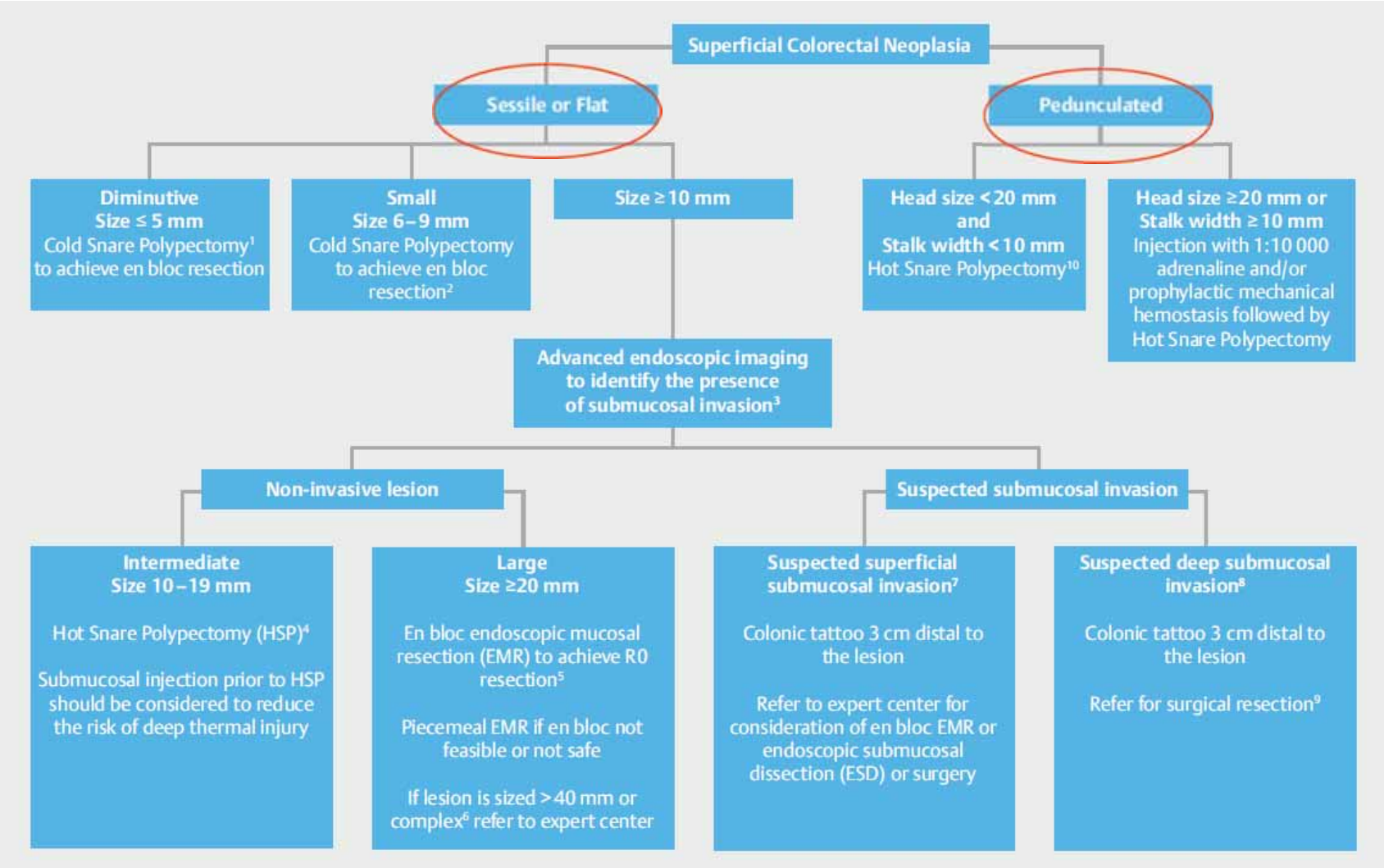
EMR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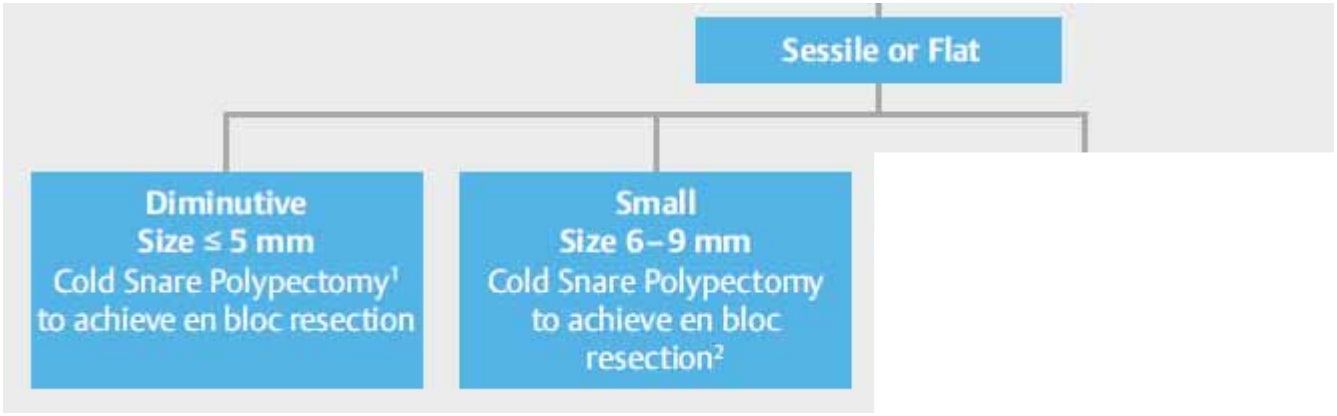
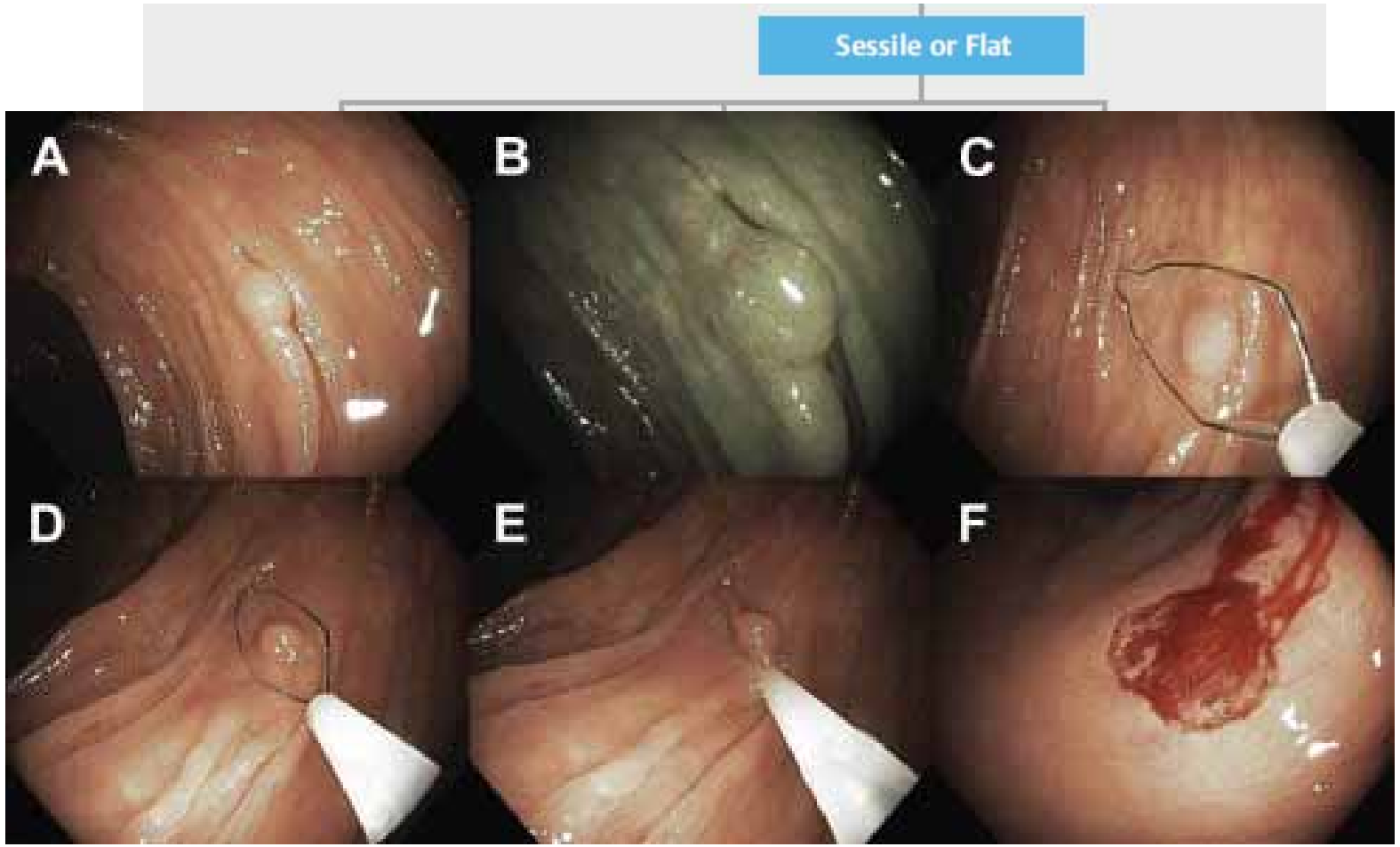
Small
Size 6–9 mm
Cold Snare Polypectomy to achieve en bloc resection[2]
Size ≥ 10 mm
Head size < 20 mm and Stalk width < 10 mm
Hot Snare Polypectomy[10]
Head size ≥ 20 mm or Stalk width ≥ 10 mm
Injection with 1:10 000 adrenaline and/or prophylactic mechanical hemostasis followed by Hot Snare Polypectomy
Advanced endoscopic imaging to identify the presence of submucosal invasion[3]
Non-invasive lesion
Suspected submucosal invasion
Intermediate
Size 10–19 mm
Hot Snare Polypectomy (HSP)[4]
Submucosal injection prior to HSP should be considered to reduce the risk of deep thermal injury
Large
Size ≥20 mm
En bloc endoscopic mucosal resection (EMR) to achieve R0 resection[5]
Piecemeal EMR if en bloc not feasible or not safe
If lesion is sized > 40 mm or complex[6] refer to expert center
Suspected superficial submucosal invasion[7]
Colonic tattoo 3 cm distal to the lesion
Refer to expert center for consideration of en bloc EMR or endoscopic submucosal dissection (ESD) or surgery
Suspected deep submucosal invasion[8]
Colonic tattoo 3 cm distal to the lesion
Refer for surgical resection[9]

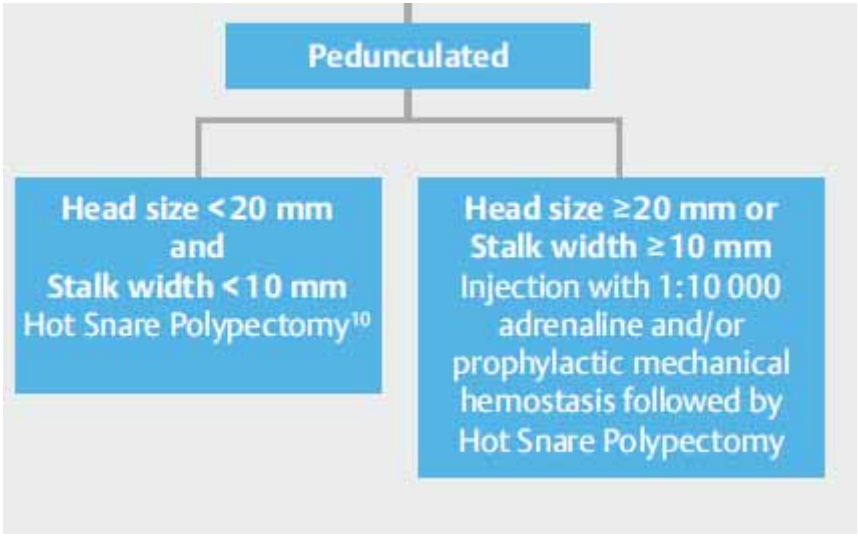
EMR


Sessile or Flat
Diminutive
Size ≤ 5 mm
Cold Snare Polypectomy[1]
to achieve en bloc resection
Small
Size 6–9 mm
Cold Snare Polypectomy
to achieve en bloc
resection[2]

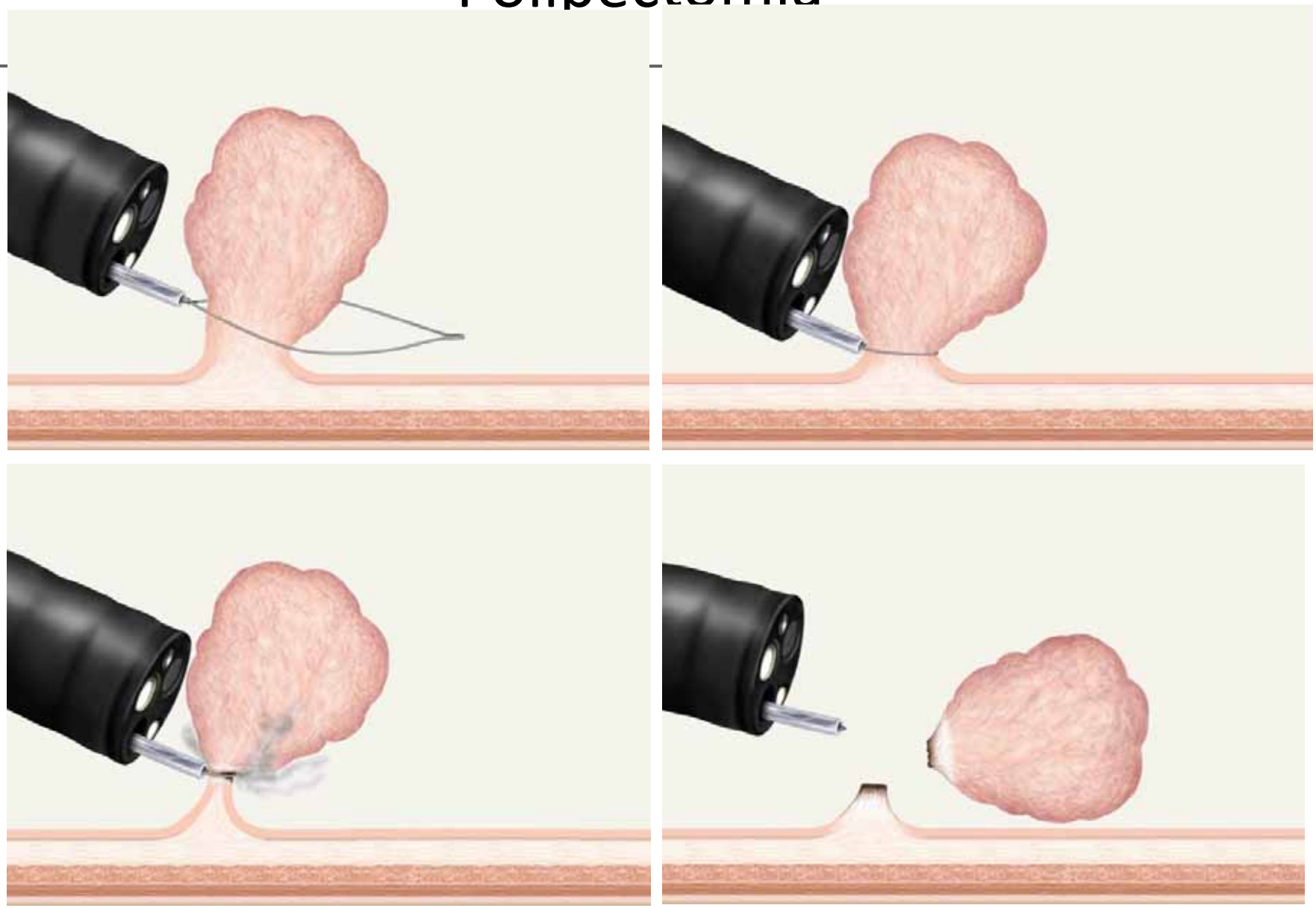
EMR



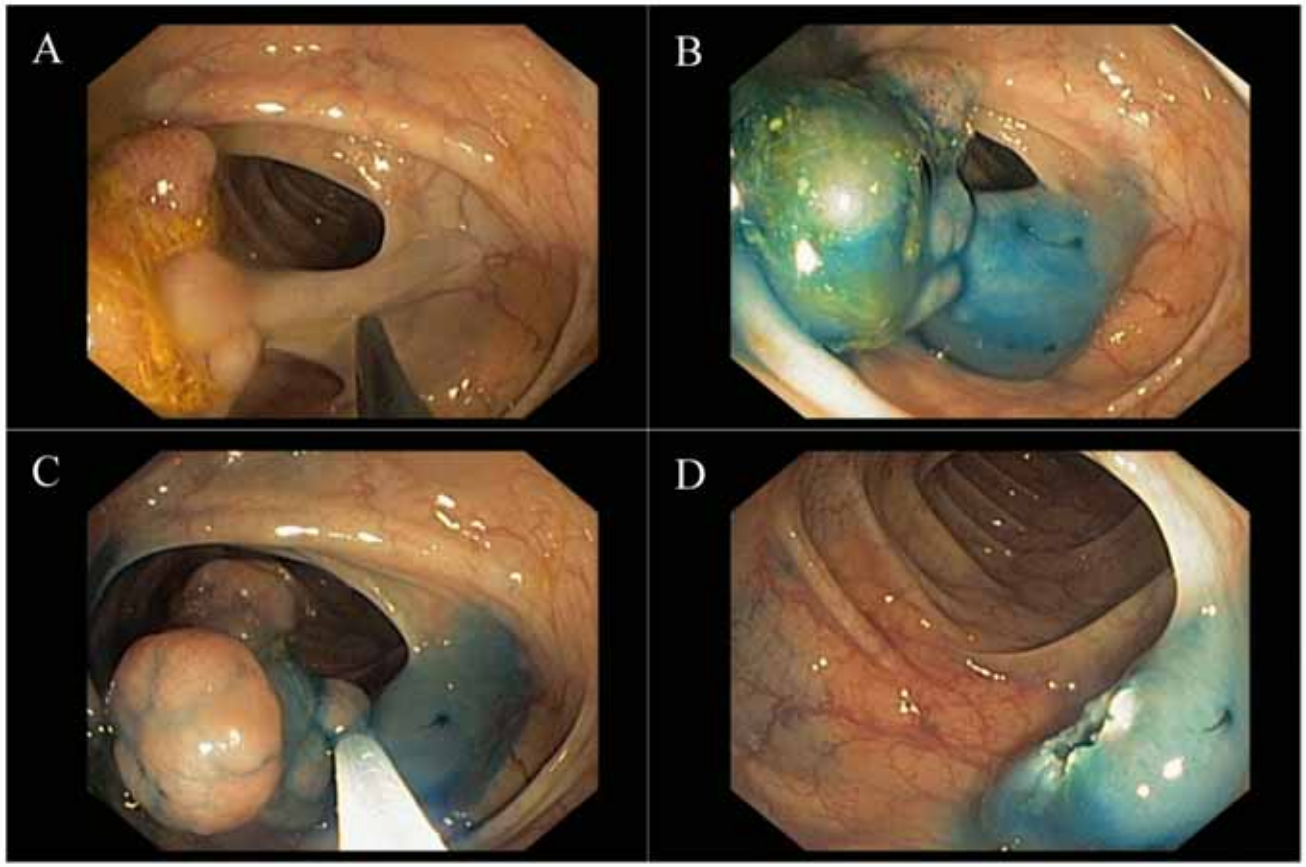
Polipectomia



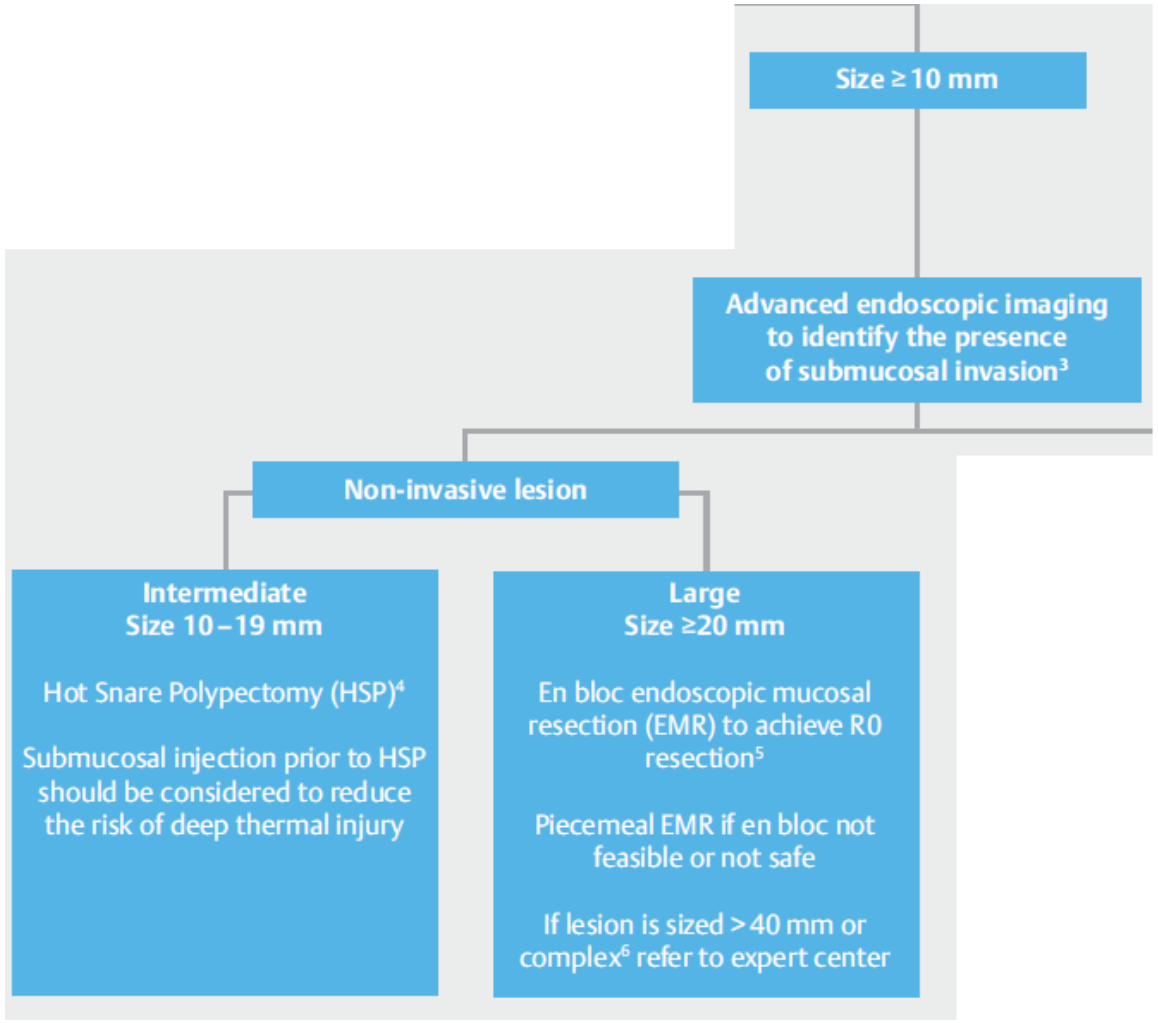
Polipectomia



Polipectomia



EMR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Non-invasive lesion
Intermediate
Size 10–19 mm
Hot Snare Polypectomy (HSP)[4]
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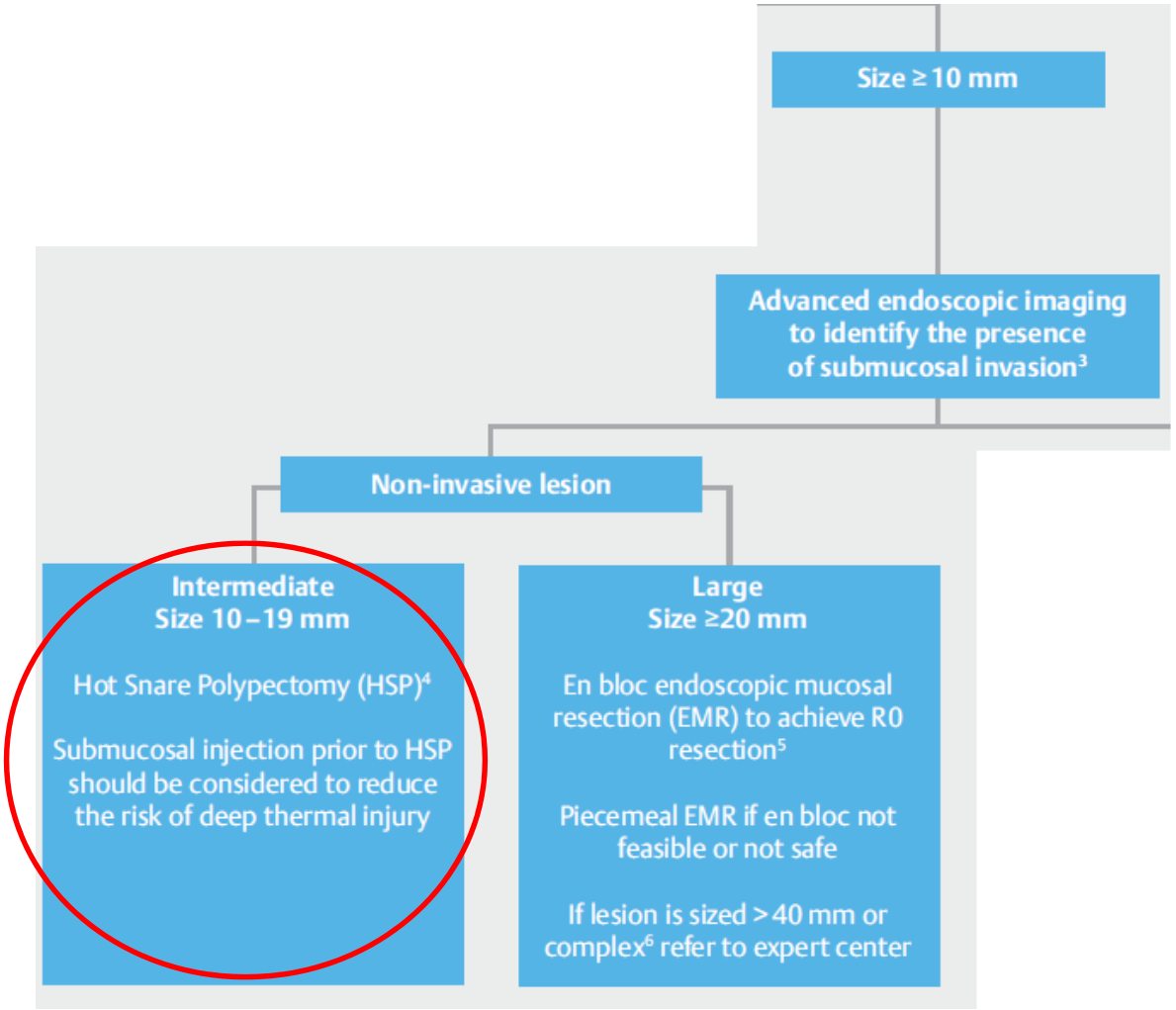
EMR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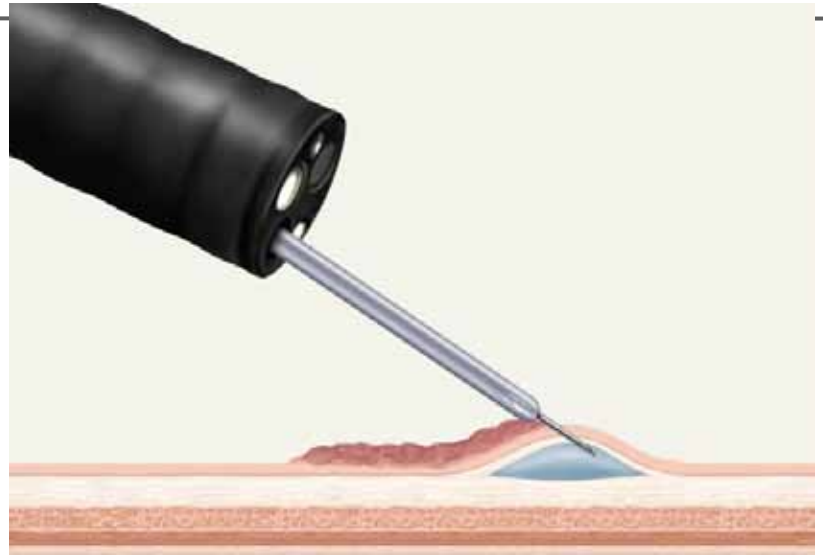
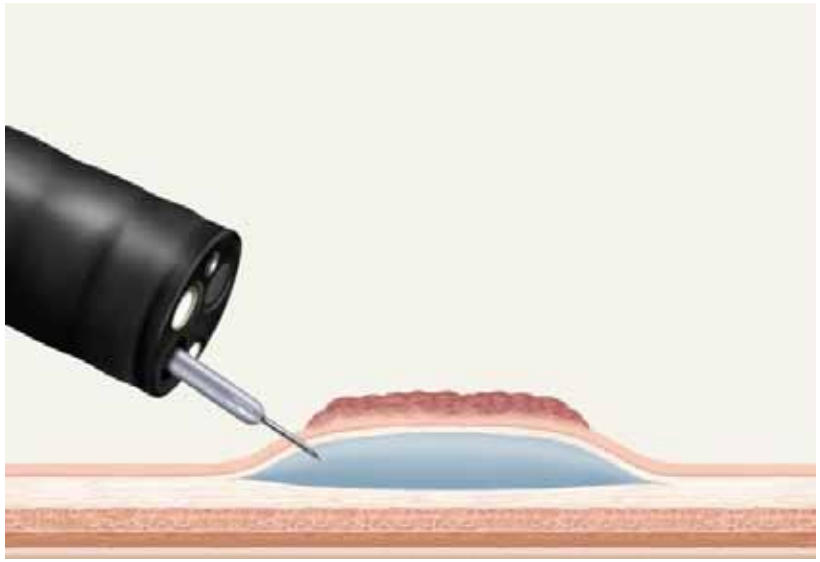
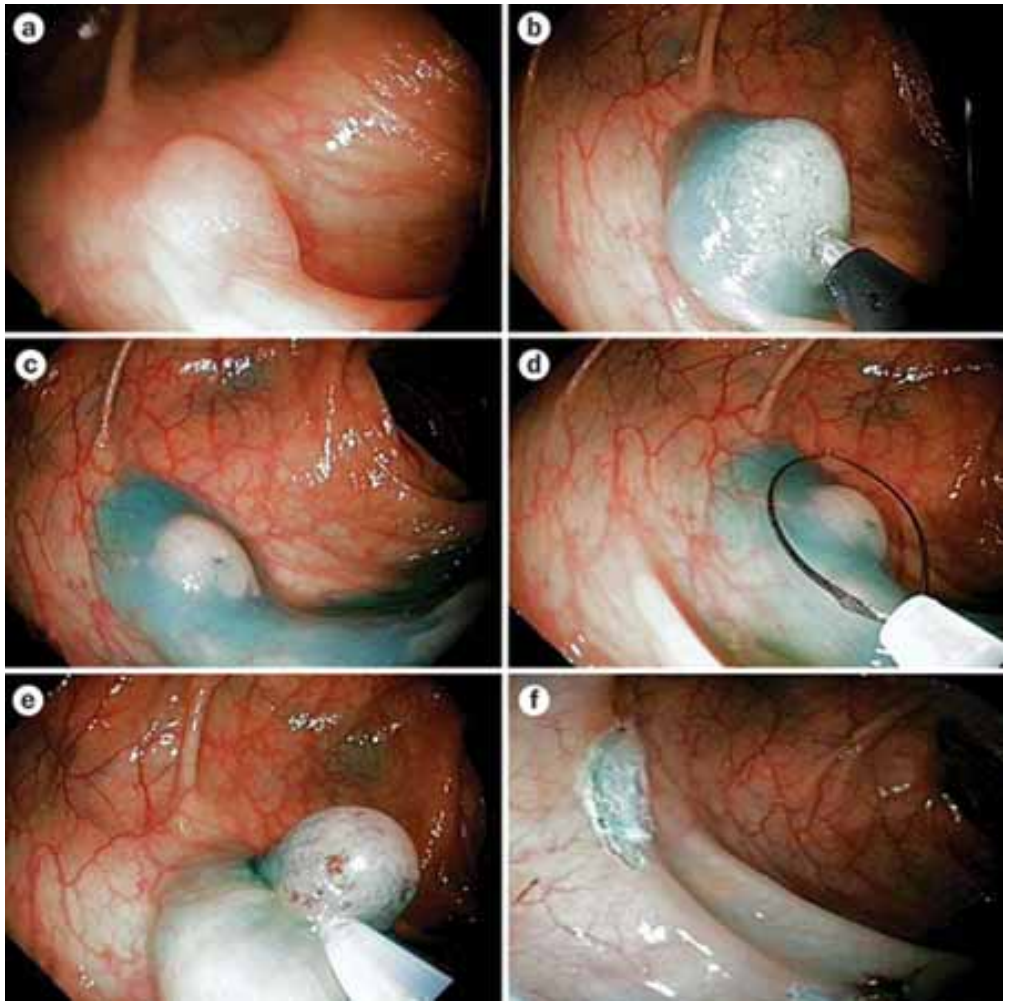
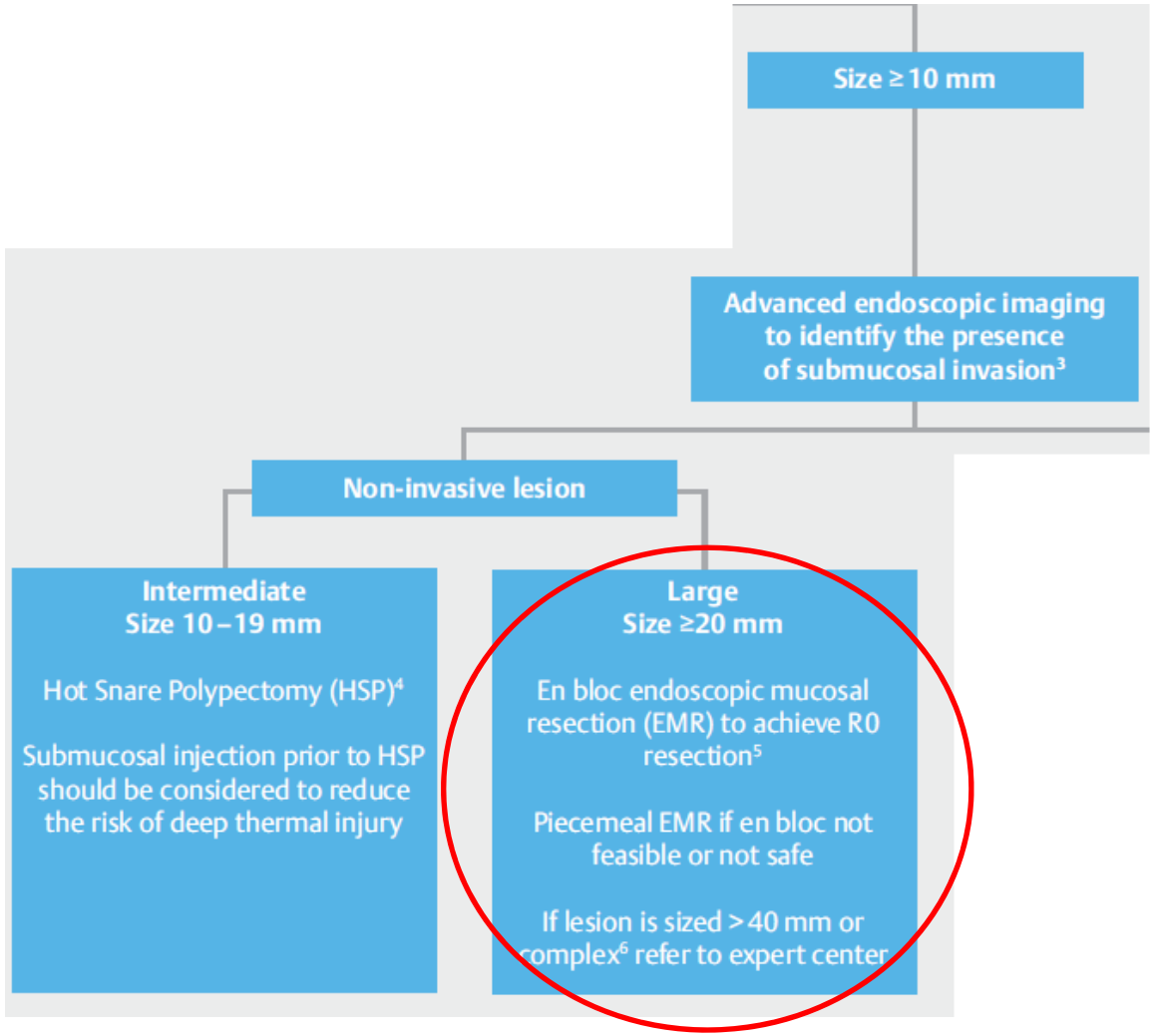




EMR



EMR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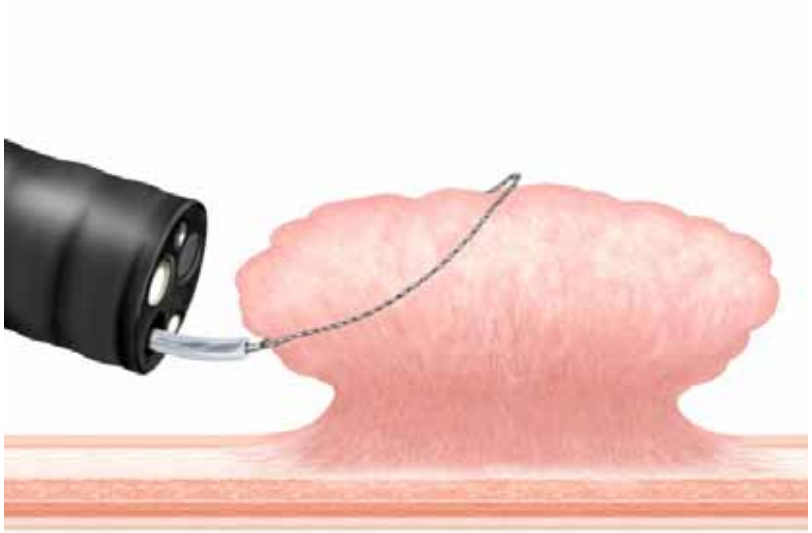
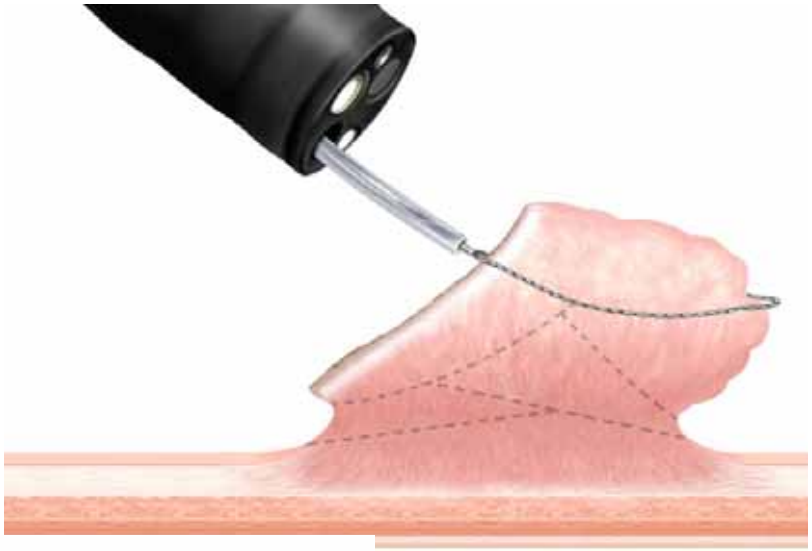
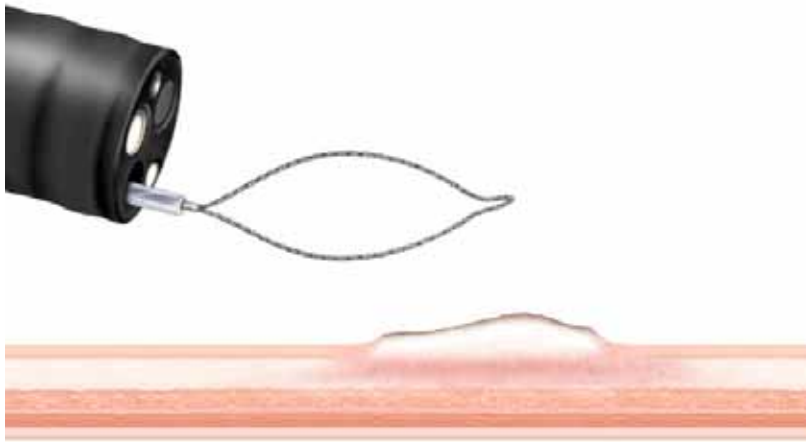
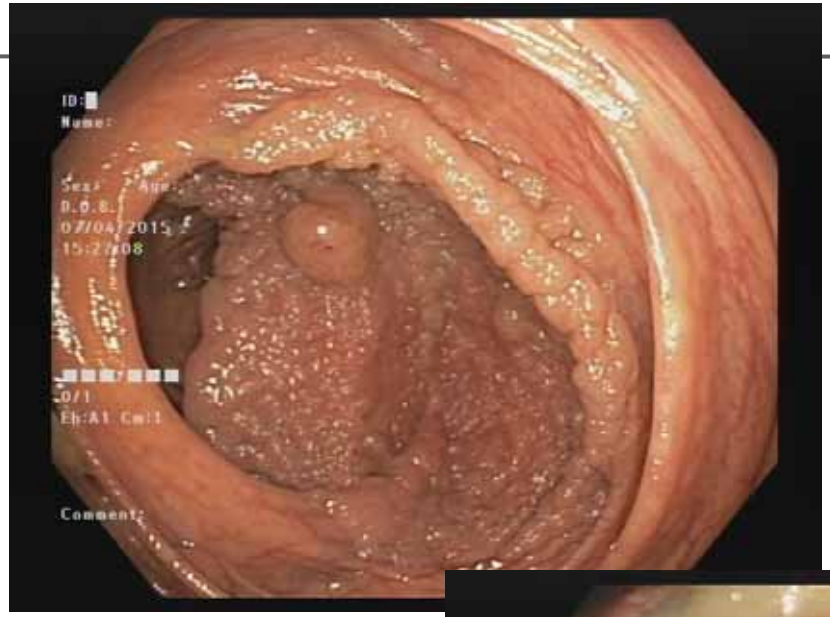
EMR







EMR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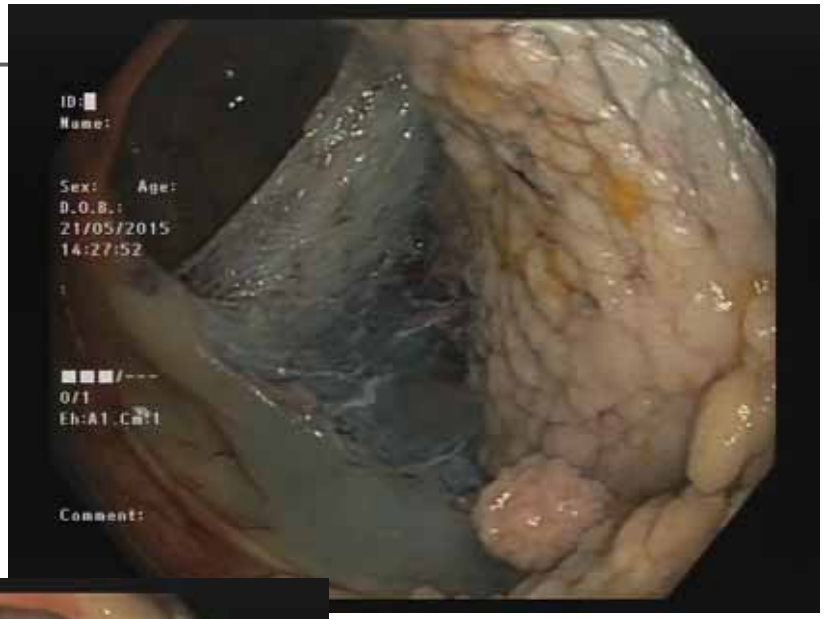
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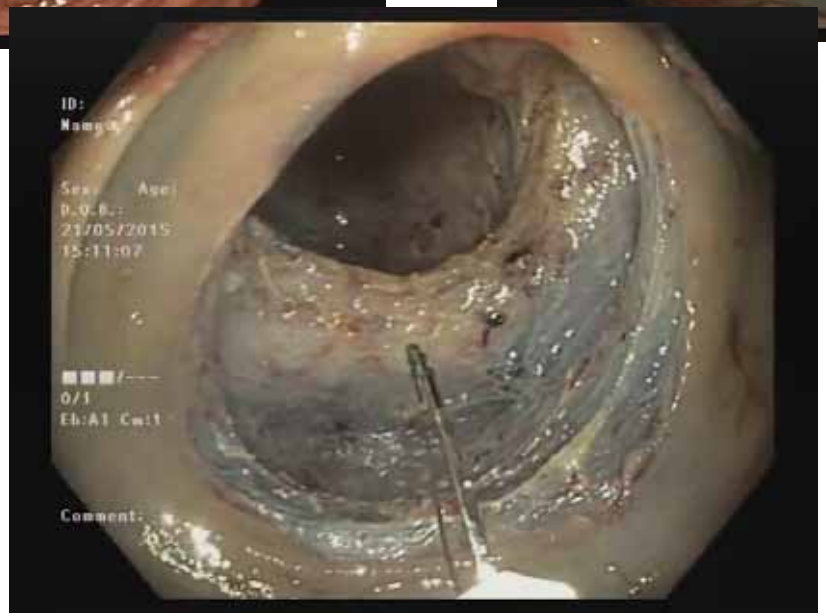
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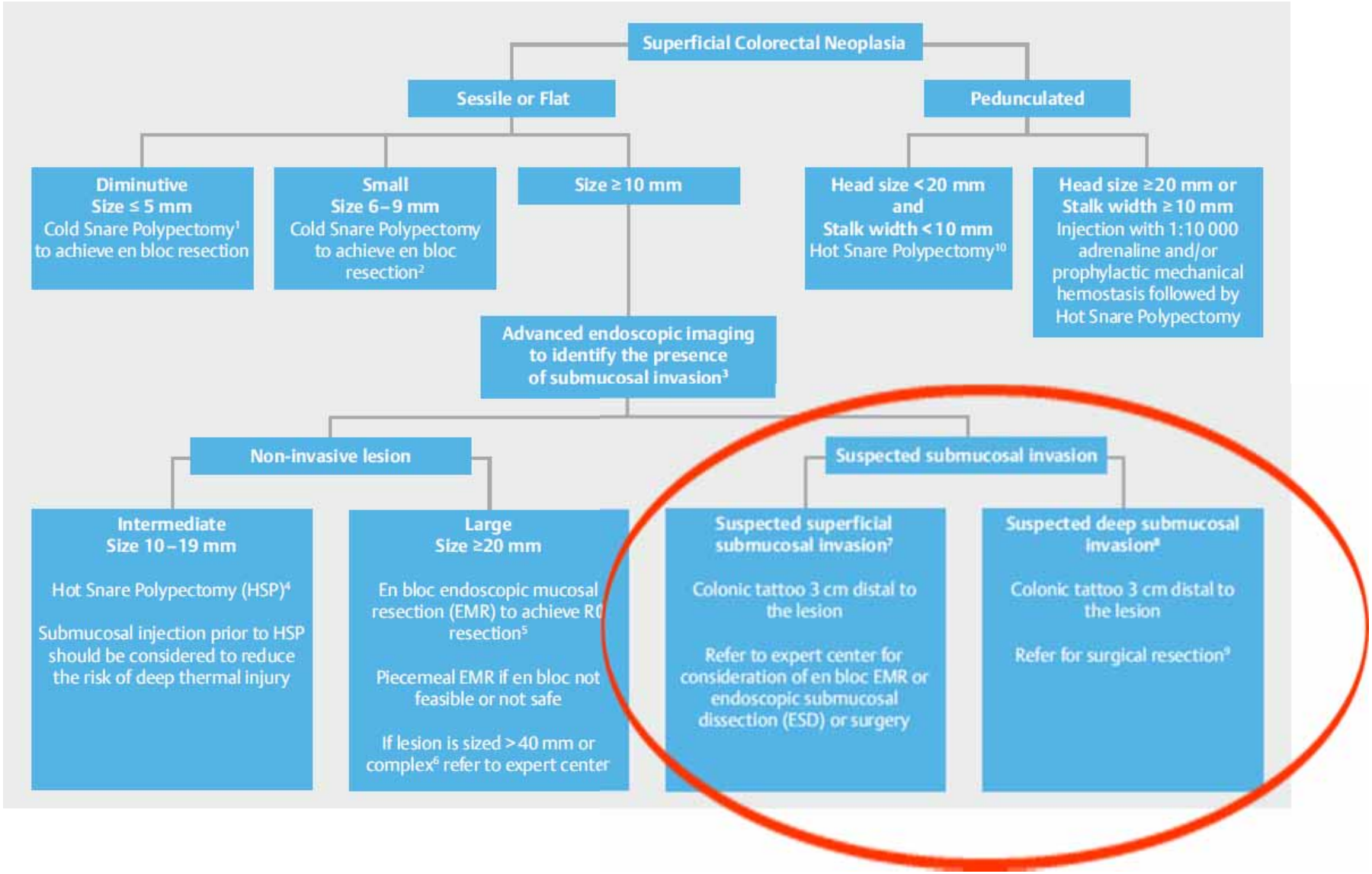
EMR


Superficial Colorectal Neoplasia
Sessile or Flat
Pedunculated
Diminutive
Size ≤ 5 mm
Cold Snare Polypectomy[1] to achieve en bloc resection
Small
Size 6–9 mm
Cold Snare Polypectomy to achieve en bloc resection[2]
Size ≥ 10 mm
Head size < 20 mm and Stalk width < 10 mm
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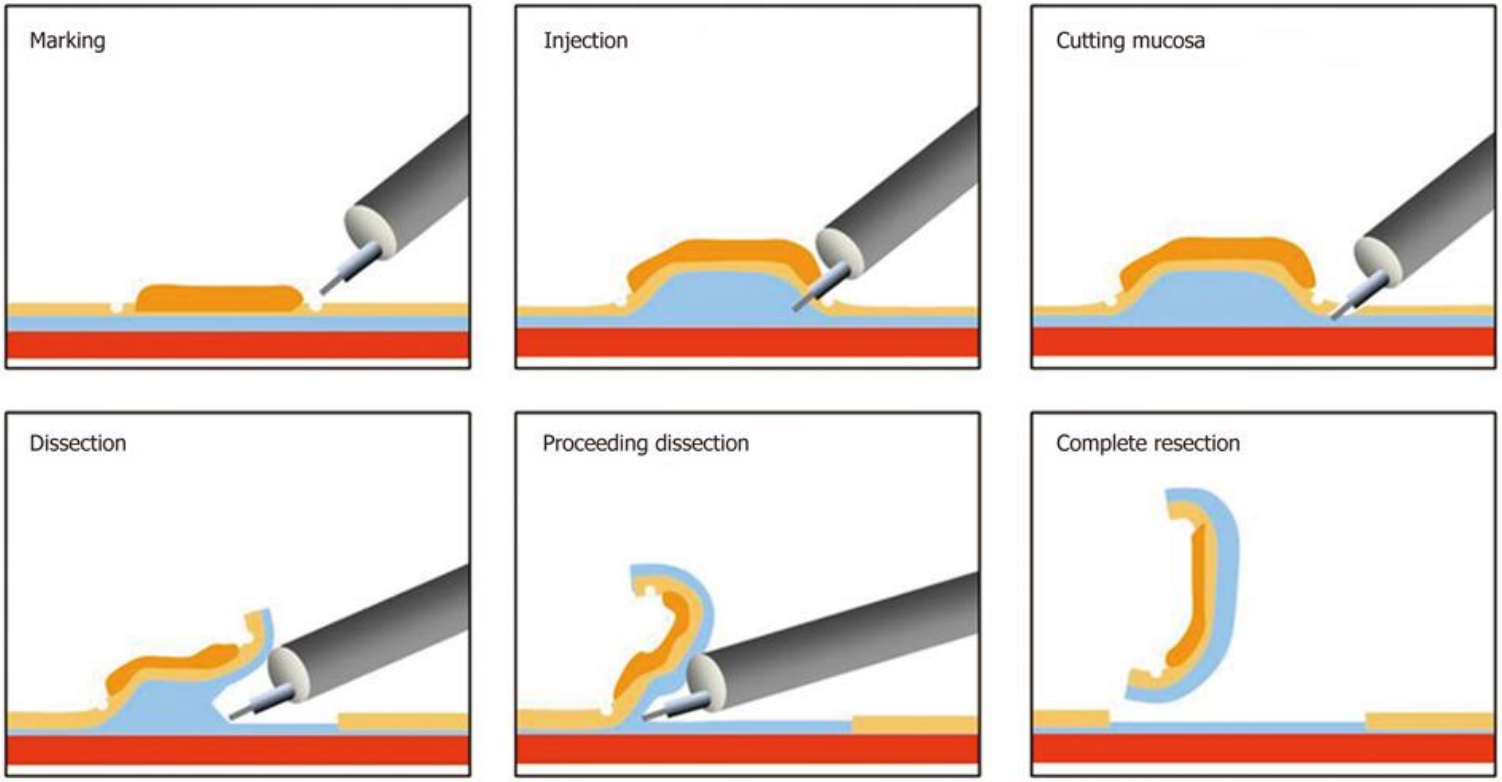
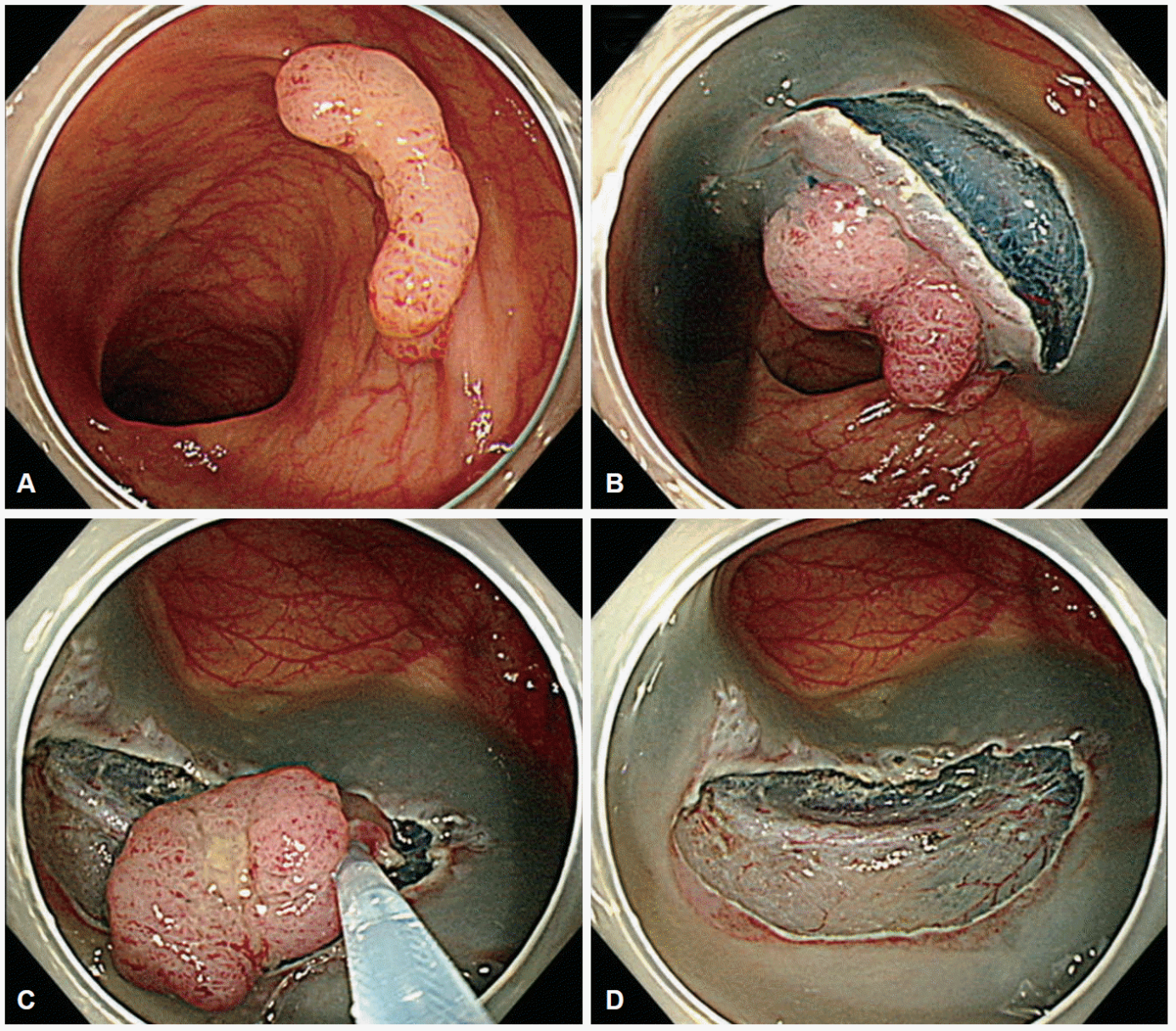
ESD


Marking
Injection
Cutting mucosa
Dissection
Proceeding dissection
Complete resection

ESD



ESD

ESD

HybridKnife®

per la resezione en-bloc

erbe

I VANTAGGI

- Nessun cambio di strumento necessario, quindi riduzione dei tempi operatori
- Semplice ed immediata possibilità di regolazione della pressione del getto d'acqua
- Funzione di protezione meccanica e termica del cuscinetto d'acqua per tutta la durata della procedura
- Migliore visione del campo operatorio; il rischio di sanguinamento viene ridotto al minimo (compressione dei vasi sanguigni da parte del "cuscinetto d'acqua" creatosi)
- La pressione del getto d'acqua può essere dosata in modo variabile a seconda della lesione, dello strato del tessuto e dell'area di applicazione

ESD

FUJINON
FUJIFILM

FlushKnife series

Water Jet System—Maintaining the sharpness of the knife

ESD

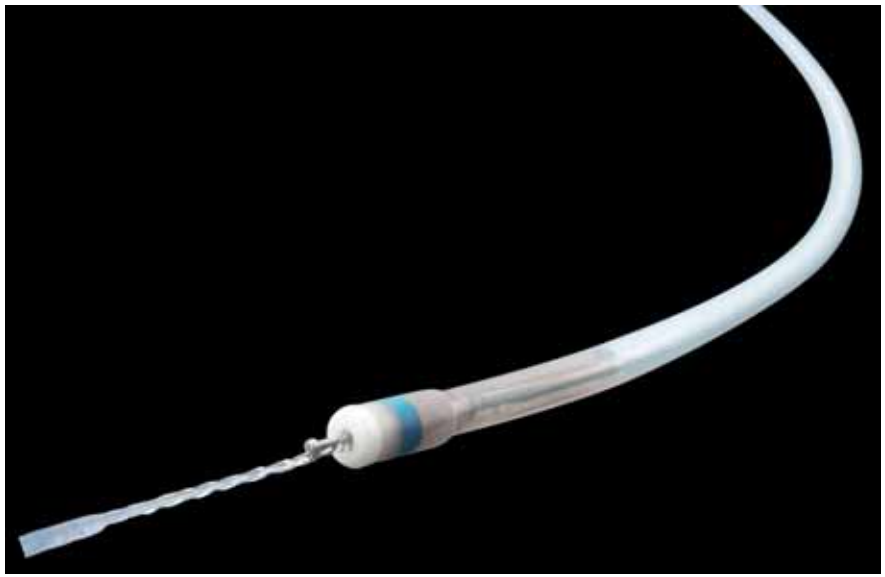
Single-Use Electrosurgical Knife

DUALKNIFE J

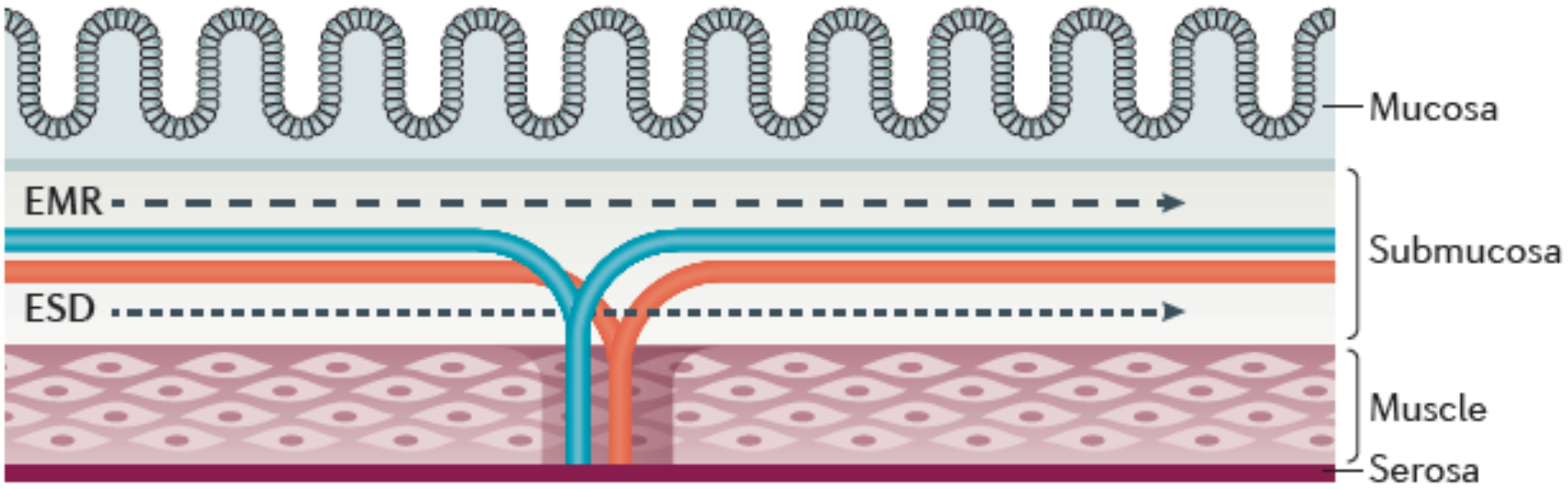
New Jet Function to Help Shorten Procedure Times

OLYMPUS

Your Vision, Our Future



ESD



EFTR

Endoscopic full-thickness resection in the colorectum with a novel over-the-scope device: first experience

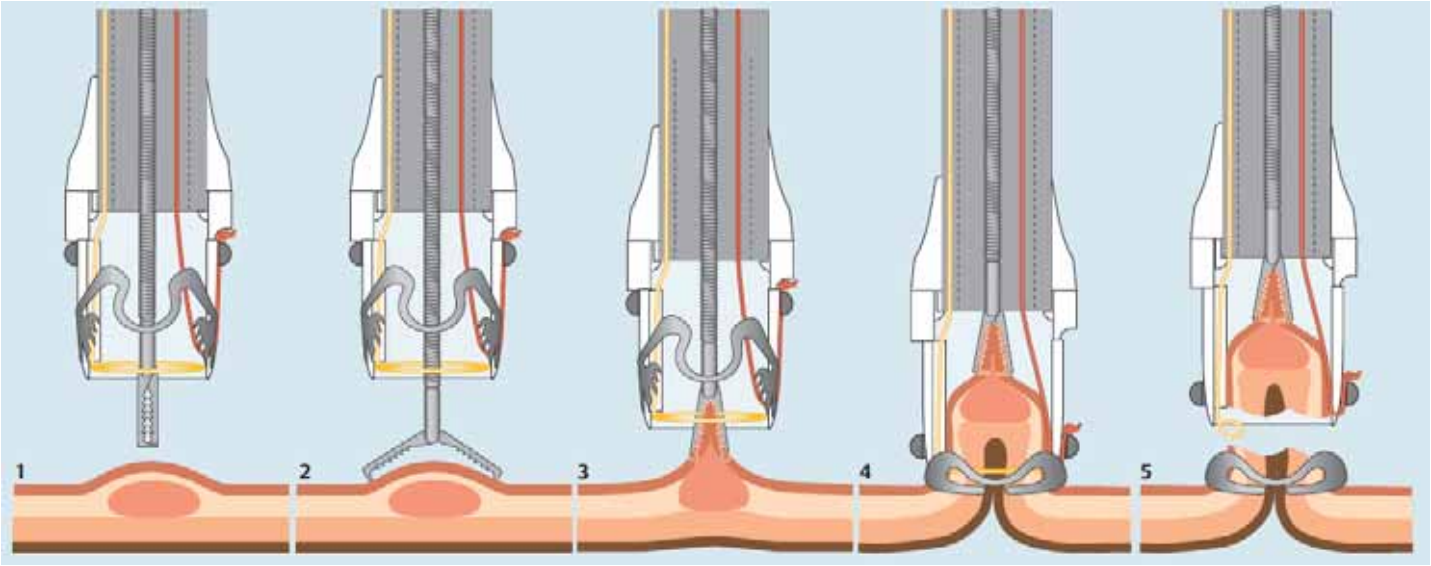
Authors Arthur Schmidt[1,*], Peter Bauerfeind[2,*], Christoph Gubler[2], Michael Damm[1], Markus Bauder[1], Karel Caca[1]

Institutions
[1] Department of Gastroenterology and Oncology, Klinikum Ludwigsburg, Ludwigsburg, Germany
[2] Department of Gastroenterology and Hepatology, Zürich, Switzerland

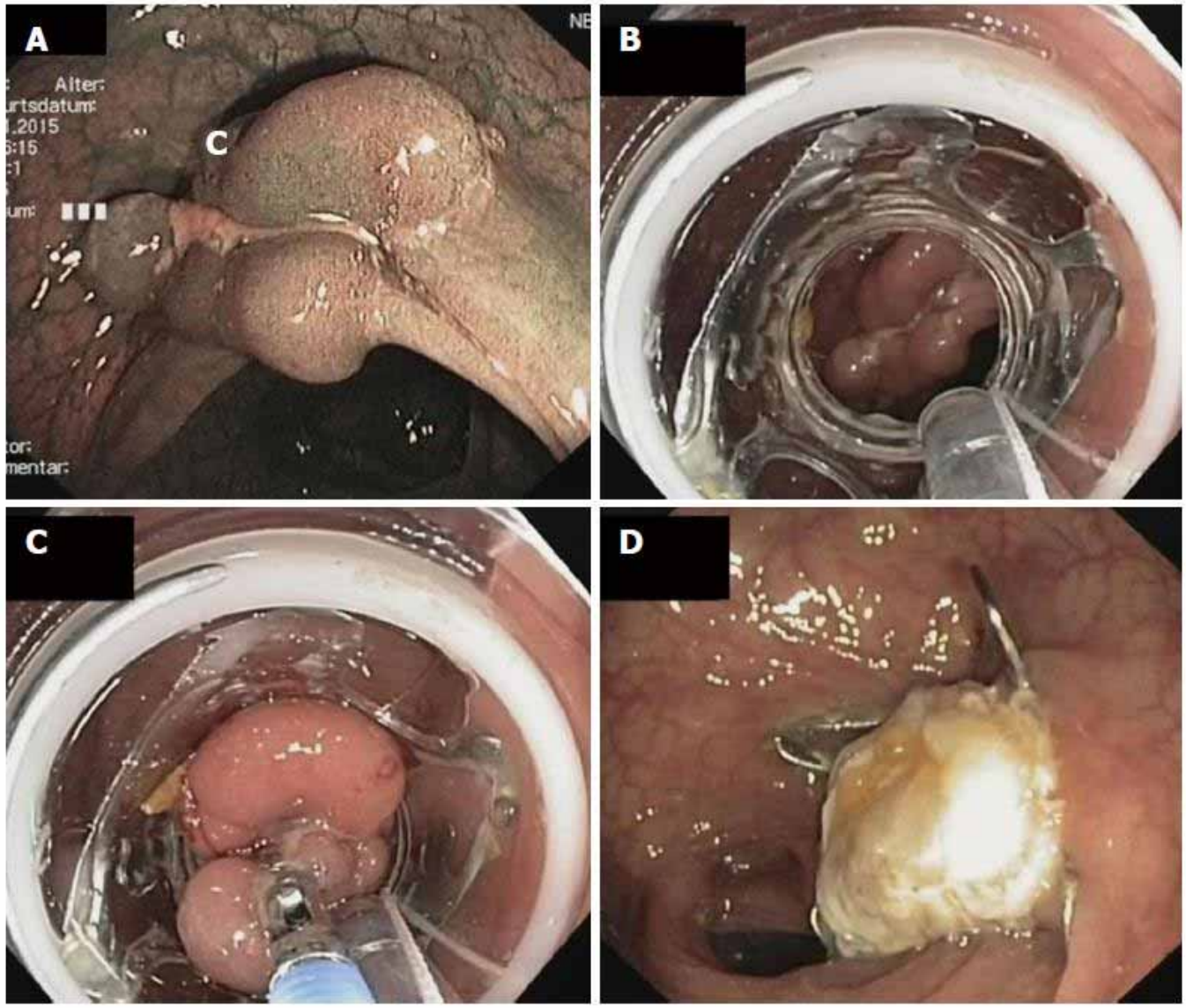
Schmidt Arthur et al. New over-the-scope device for endoscopic full-thickness resection ... Endoscopy 2015; 47: 719–725

Conclusions: Full-thickness resection in the lower gastrointestinal tract with the novel FTRD was feasible and effective. Prospective studies are needed to further evaluate the device and technique.

EFTR

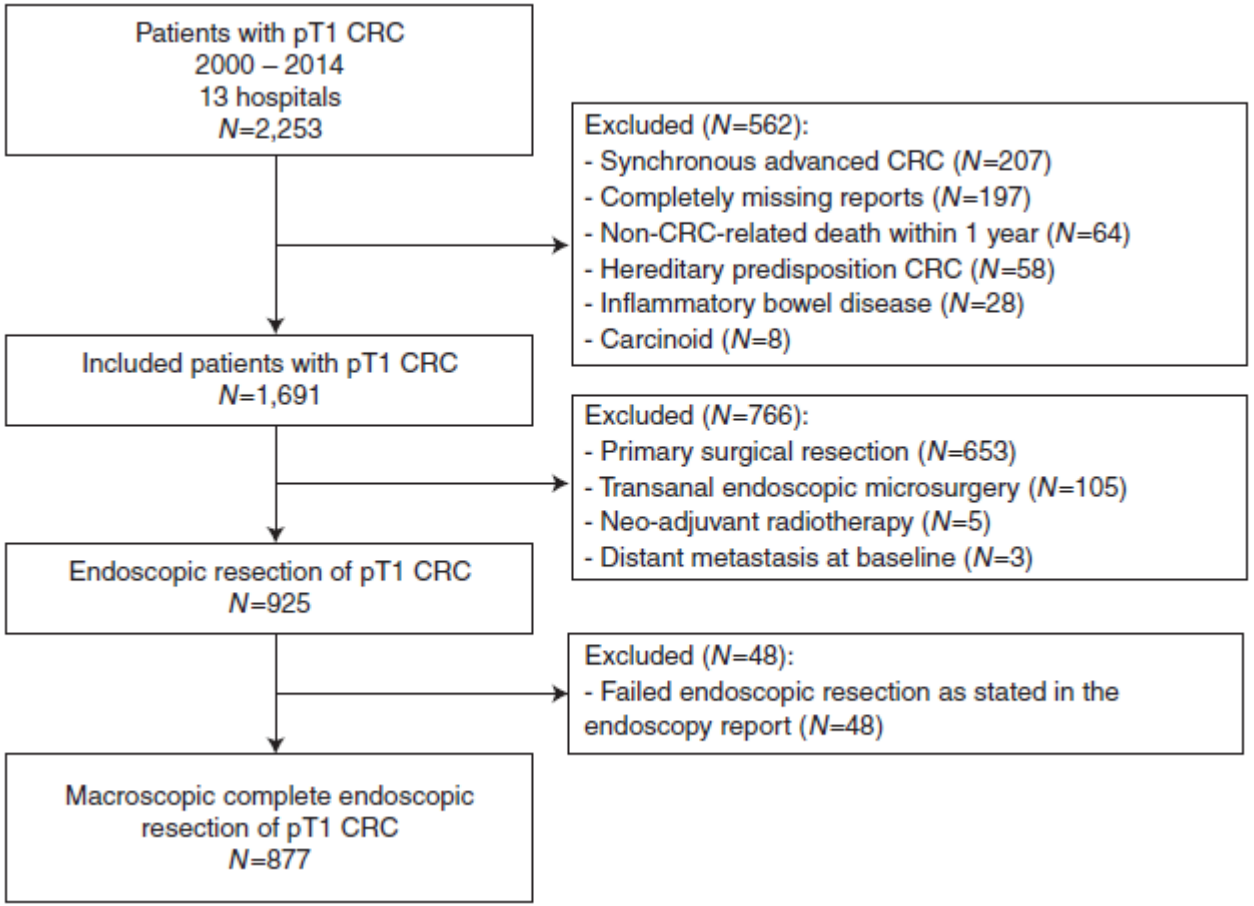


EFTR

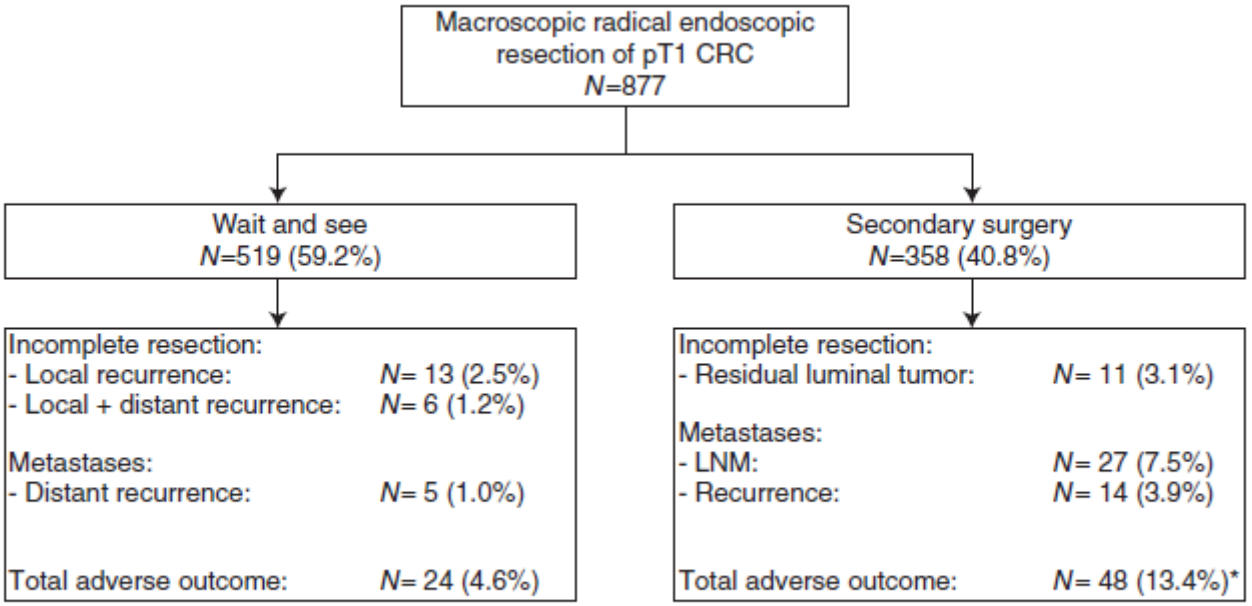


Risk for Incomplete Resection after Macroscopic Radical Endoscopic Resection of T1 Colorectal Cancer: A Multicenter Cohort Study

Y. Backes, MD[1], W.H. de Vos tot Nederveen Cappel, MD, PhD[2], J. van Bergeijk, MD, PhD[3], F. ter Borg, MD, PhD[4], M.P. Schwartz, MD, PhD[5], B.W.M. Spanier, MD, PhD[6], J.M.J. Geesing, MD[7], K. Kessels, MD[8], M. Kerkhof, MD, PhD[9], J.N. Groen, MD[10], F.H.J. Wolfhagen, MD, PhD[11], T.C.J. Seerden, MD, PhD[12], N. van Lelyveld, MD, PhD[13], G.J.A. Offerhaus, MD, PhD[14], P.D. Siersema, MD, PhD[1,15], M.M. Lacle, MD, PhD[14] and L.M.G. Moons, MD, PhD[1] (on behalf of the Dutch T1 CRC Working Group)



Am J Gastroenterol 2017; 112:785–796; doi: 10.1038/ajg.2017.58;



* Within the secondary surgery group, in 4 patients both residual luminal tumor and recurrent cancer during follow-up was observed

In the absence of histological high-risk factors, a 'wait-and-see' policy with limited follow-up is justified. Piecemeal resection and non-pedunculated morphology are independent risk factors for incomplete endoscopic resection of T1 CRC.

Am J Gastroenterol 2017; 112:785–796; doi: 10.1038/ajg.2017.58;

Summary

- Le innovazioni tecnologiche in endoscopica consentono di operare una diagnostica accurata delle lesioni sospette T1
- La conseguente scelta appropriata della modalità di resezione endoscopica ha un ruolo fondamentale per il percorso successivo del paziente