L'endoscopia di screening: una diversa operatività ?

Lucio Petruzziello, MD

Digestive Endoscopy Unit

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European Endoscopy Training Centre (EETC)

Roma - Italy

Starting point

UK National Intercollegiate Colonoscopy Audit

Prospective 4 month audit:

- 9223 examinations
- **Caecal intubation rate: 77%**
- Perforation rate 1:769
- Only 17% had received supervised training
- Only 39% had attended a course

Bowles et al Gut 2004

Italian Colonoscopy Survey

Available online at www.sciencedirect.com
ScienceDirect
Digestive and Liver Disease xxx (2008) xxx–xxx
Digestive and Liver Disease
www.elsevier.com/locate/dld

Digestive Endoscopy

Colonoscopy practice in Italy: A prospective survey on behalf of the Italian Association of Hospital Gastroenterologists☆

F. Radaelli*, G. Meucci, G. Minoli,
the Italian Association of Hospital Gastroenterologists (AIGO)[1]
Department of Gastroenterology, Valduce Hospital, Via Dante 11, 22100 Como, Italy

Received 19 January 2008; accepted 18 February 2008

- 13.7% Screening colonoscopies
- 66.0% Specific Informed Consent
- 44.9% No Sedation
- 80.7% Completion Rate

Rationale for Colonoscopy
Continuous Quality Improvement (CQI)

"The effectiveness of colonoscopy depends on the quality of the examination"

Douglas K. Rex

JAG Joint Advisory Group on GI Endoscopy

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Screening Colonoscopy

Do we still need
a better performance ?

Optimizing Screening Colonoscopy

1. Maximize CIR (≥ 95%)
2. Optimize pts compliance
3. Improve ADR
4. Make better decisions and actions for identified CR neoplastic lesions

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Colonoscopy:
a “complex” procedure …

Progress
in Colonoscopy

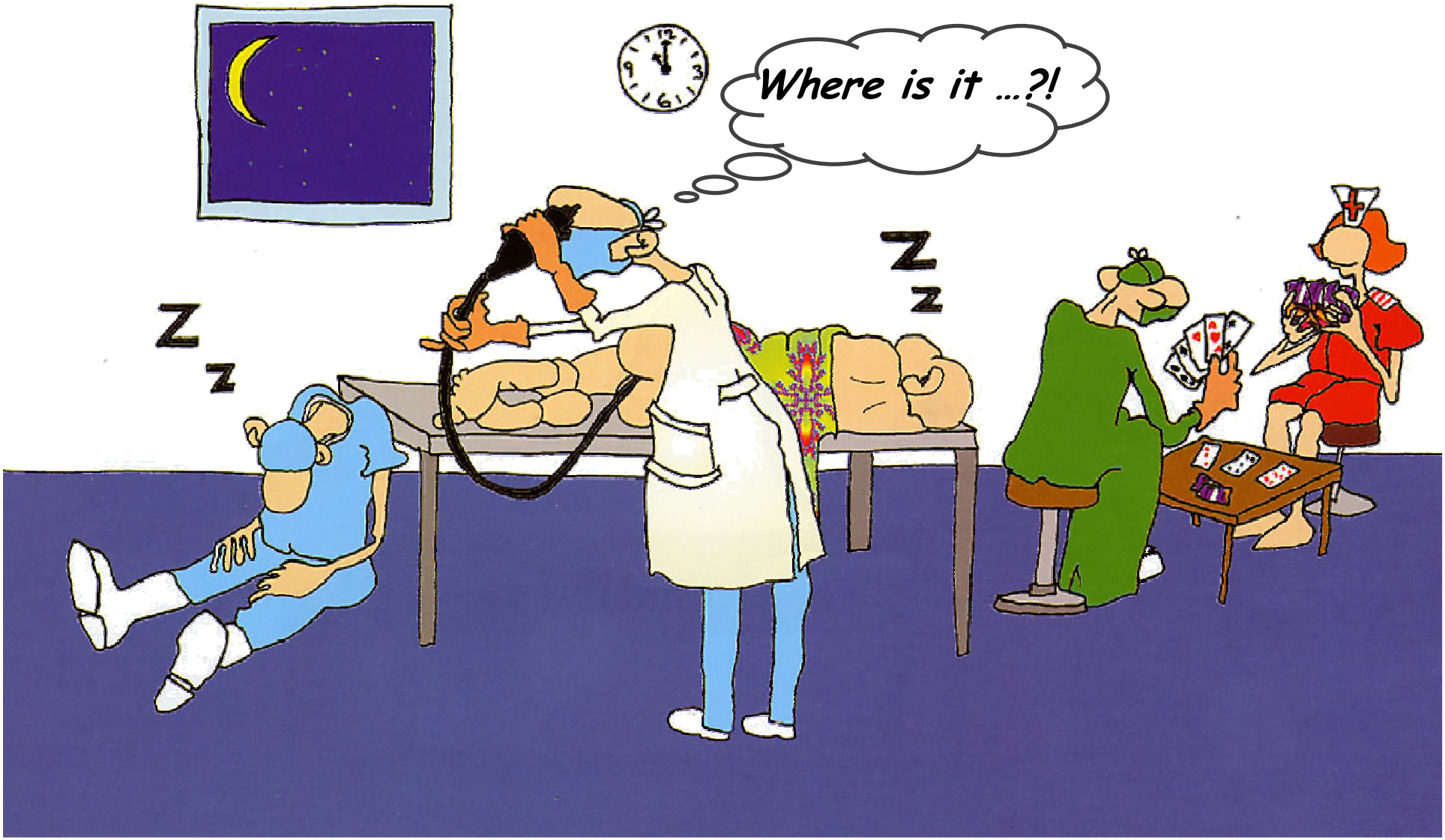
Colonoscopy

No

alternative technique

ready for clinical use

Caecal Intubation Rate



Programmi Sof. Risultati principali nei bienni 2006-07, 2008-09, 2010-11 e nel 2012

	2006-2007	2008-2009	2010-2011	2012	Standard accettabile GISCoR
Numero di persone invitate	4.693.213	5.658.326	7.751.779	4.018.489	-
Numero di persone sottoposte a screening	**2.058.544**	**2.627.459**	**3.244.363**	**1.770.520**	-
Adesione corretta all'invito	44%	46%	47%	46%	>45%
Numero di persone con test positivo richiamate a colonscopia	111.538	133.868	156.315	-	-
Proporzione di persone con test positivo	5,4%	5,1%	4,8%	-	Primo esame: <6% Esami successivi: <4,5%
Proporzione di aderenti all'approfondimento	80%	79%	81%	-	>85%
Numero di colonscopie totali	89.059	106.256	126.512	-	-
Proporzione di colonscopie complete	89%	90%	90%	-	>85%

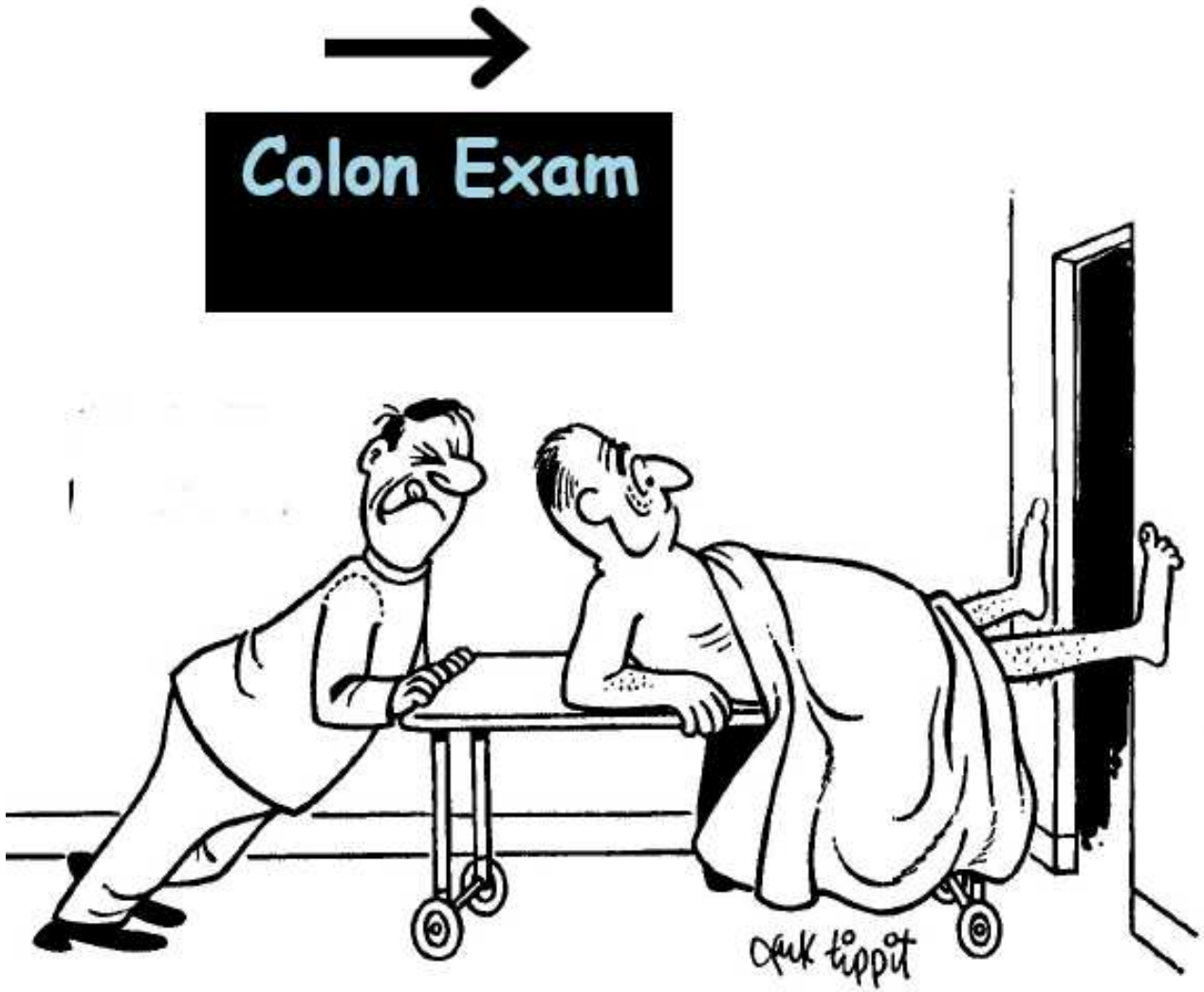
EQuIPE Study
Cecal Intubation Rate (CIR)

- 75,569 colonoscopies for +FIT
- 479 endoscopists in 79 centres

- **CIR: 58.8% and 100%** (mean: 93.1%)
- Independent predictors of CIR:
  - Endoscopist level:
    - **Yearly number of screening colonoscopies performed** (OR: 1.51 for endoscopists with >600 colonoscopies)
  - Endoscopy centre level:
    - **Screening-dedicated sessions** (OR: 2.18)
    - Higher rates of sedation (OR: 0.47 if occasional)

Zorzi M. Gut 2014

Colonoscopy



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Zorzi M. Gut 2014

Optimizing Screening Colonoscopy

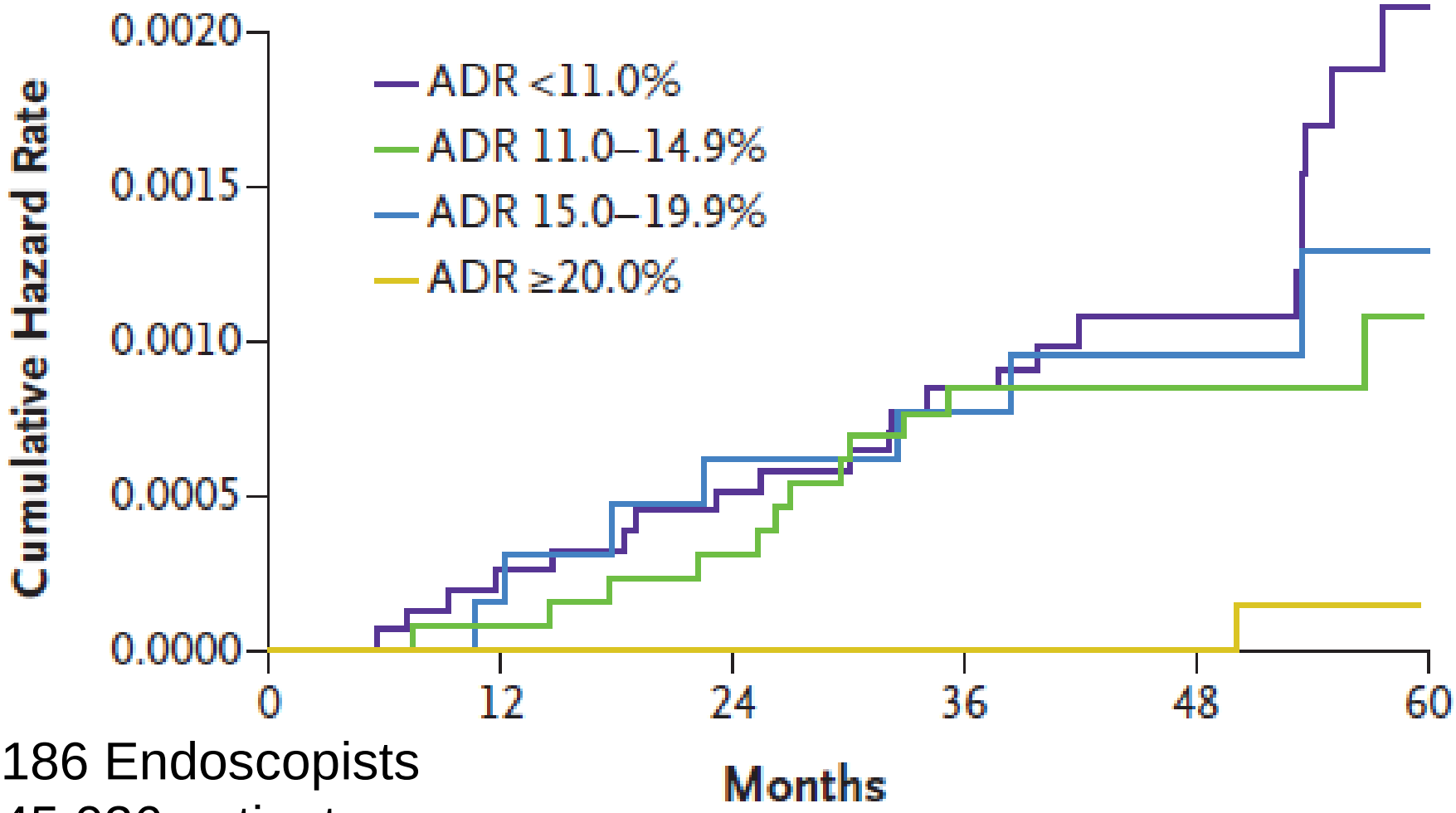
1. Maximize CIR (≥ 95%)
2. Optimize pts compliance
3. Improve ADR
4. Make better decisions and actions for identified CR neoplastic lesions

Importance of ADR

- Large adenoma miss rates: 1%-20%
- Inter-endoscopist variation: 4-10 fold
- Endoscopist's ADR/PDR and interval CRC risk

Van Rijn et al. Am J Gastroenterol, 2006
Rex DK, et al. Am J Gastroenterol, 2010
Kaminski MF, Regula J, et al. NEJM, 2010

Cumulative hazard rates for interval CRC according to endoscopist's ADR



186 Endoscopists
45,026 patients

Kaminski MF, Regula J, et al. NEJM, 2010

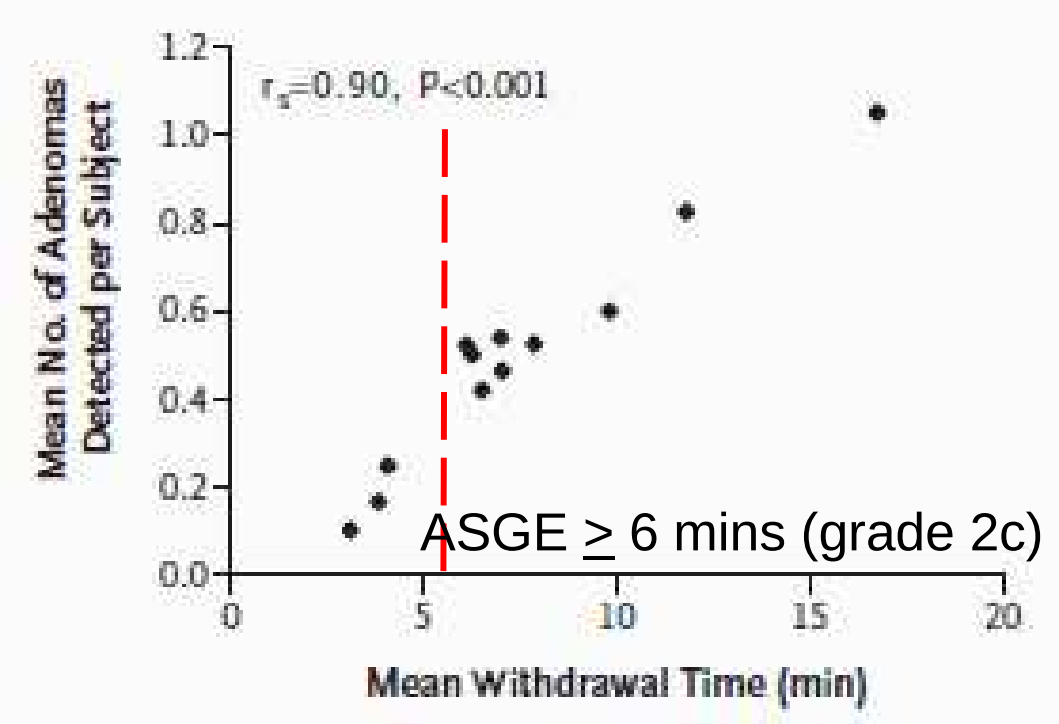
ADR and Withdrawal Times

The NEW ENGLAND JOURNAL of MEDICINE

Colonoscopic Withdrawal Times and Adenoma Detection during Screening Colonoscopy

Robert L. Barclay, M.D., Joseph J. Vicari, M.D., Andrea S. Doughty, Ph.D., John F. Johanson, M.D., and Roger L. Greenlaw, M.D.

- 12 Expert Endoscopists
- 2053 Screening cspy
- Mean WT: 3-16 min
- 11.8% vs 28.3% p <0.001



Barclay RL, et al. NEJM, 2006

Interventions and Techniques to Improve ADR

Weak or No effect on ADR	Significative effect on ADR

- Withdrawal time rec
- Water aided cspy
- Cap assisted cspy
- NBI vs WL
- Spasmodics use
- Routine Sedation
- Pt position change

EQuIPE Study
Adenoma Detection Rate (ADR)

- **ADR: 13.5% - 75%**
- ADR associated with:
  - **Gastroenterology specialty** (OR: 0.87 for others)
  - **Endoscopy centre level**
  - **Routine use of sedation** (OR: 0.80 if occasional)
  - **Availability of screening-dedicated sessions** (OR: 1.35)

Zorzi M. Gut 2014

Why we fail to improve ADR?

What drives ADR?

1. Knowledge
2. Cspy skills
3. Motivation
4. Environmental constraints
5. Social influences

Multilevel change in endoscopist's behaviour

Michie S, et al. Qual Saf Health Care, 2005

The role of (re)training in ADR improvement

- Data from NorCAPP trial:
  - ADR of trainee depends on **ADR of the trainer**
  - Trainees trained for the purpose of the screening program achieved higher ADR
- Data from the UK:
  - **Accreditation for bowel screening** was independent predictor of ADR

Bretthauer M, et al. Scand J Gastro, 2003
Banghu A, et al. Br J Surg, 2012
Thomas-Gibson S, et al. GIE Clin NA, 2005

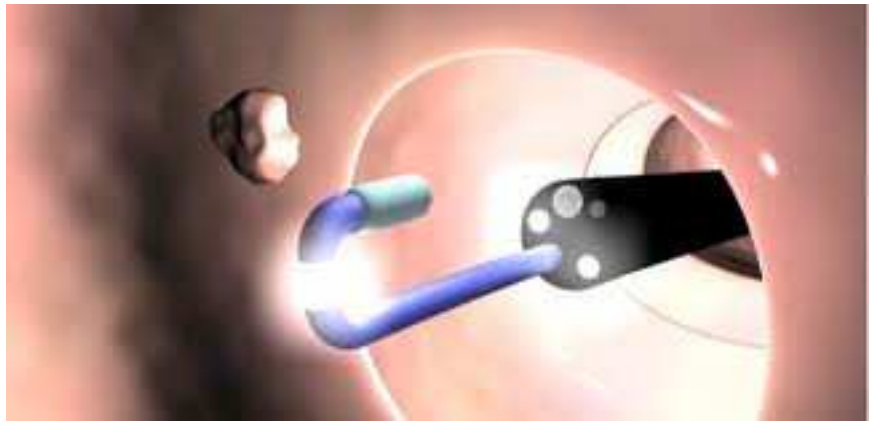
Optimizing Colonoscopy Efficacy

What about New Technologies?

- Third Eye Retroscope
- Endocuff
- FUll Spectrum Endoscopy (FUSE)
- G-Eye
- Extra Wide Angle View Endoscope (EWAVE)
- Third Eye Panoramic

Third Eye Retrograde Viewing Device

- Group A
  - SC then TER
  - 35.2 % increased ADR
- Group B
  - TER then SC
  - 30.8 %
  - Net additional detection with TER 4.4%



Siersema PD. World J Gastroenterol 2012

Endocuff

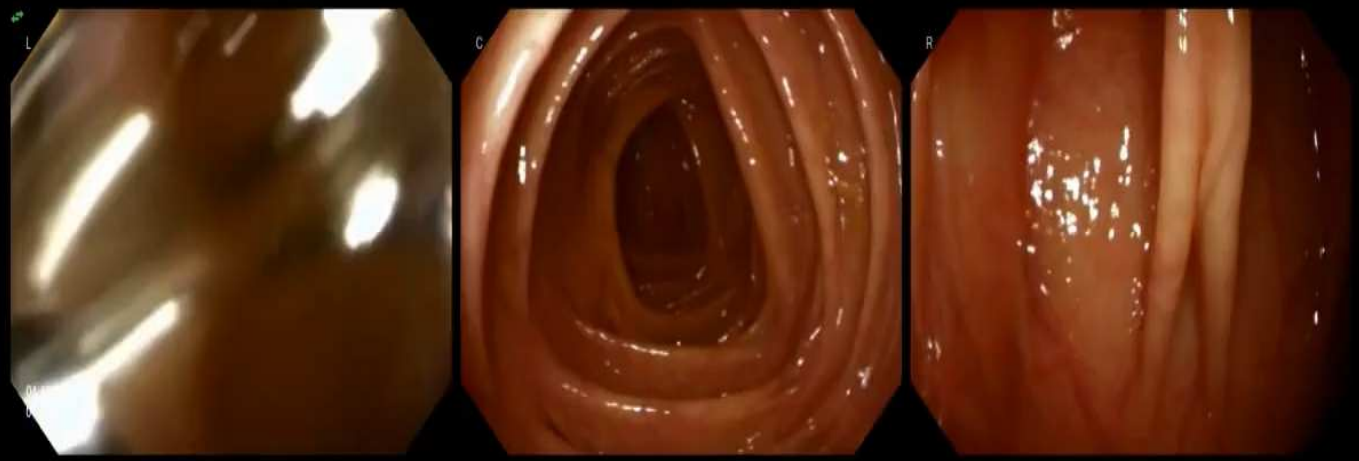
- Randomized Prospective 2-center Trial
- 498 pts for CRC screening
- **Number of polyps detected per patient** in the EC group: **63% higher** [2.00 (IQR, 1.00-4.00) vs. 1.00 (IQR, 1.00-2.25), P<0.0001]
- The **polyp detection rate increased by 14%** with the use of EC (56% vs. 42%, P=0.001).

Biecker E. J Clin Gastroenterol 2014

Full Spectrum Endoscopy (Fuse™)

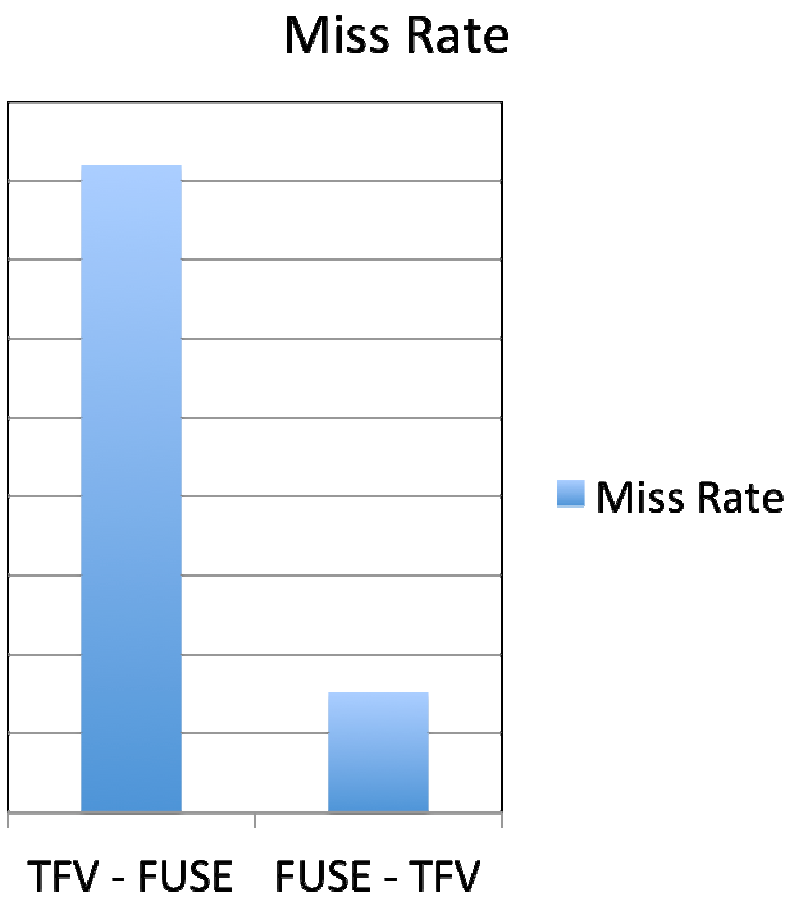
Full Spectrum Endoscopy (Fuse™)


a


L
C
R

Forward Viewing vs Full Spectrum Endoscopy

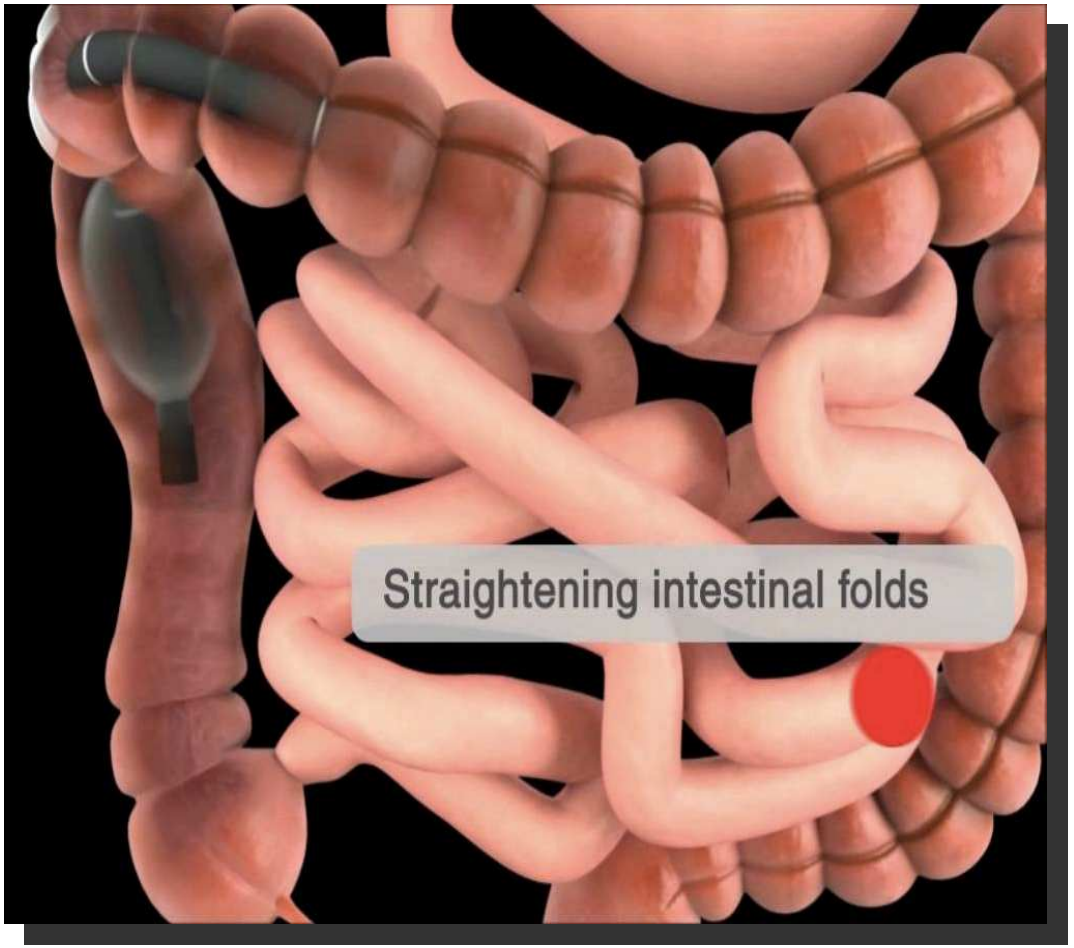
- Multicenter study
- Randomized prospective
- Same day back to back colonoscopy
- 185 subjects
- Primary endpoint: Adenoma miss rate
  - TFV followed by FUSE = 41.7%
  - FUSE followed by TFV = 7.6%

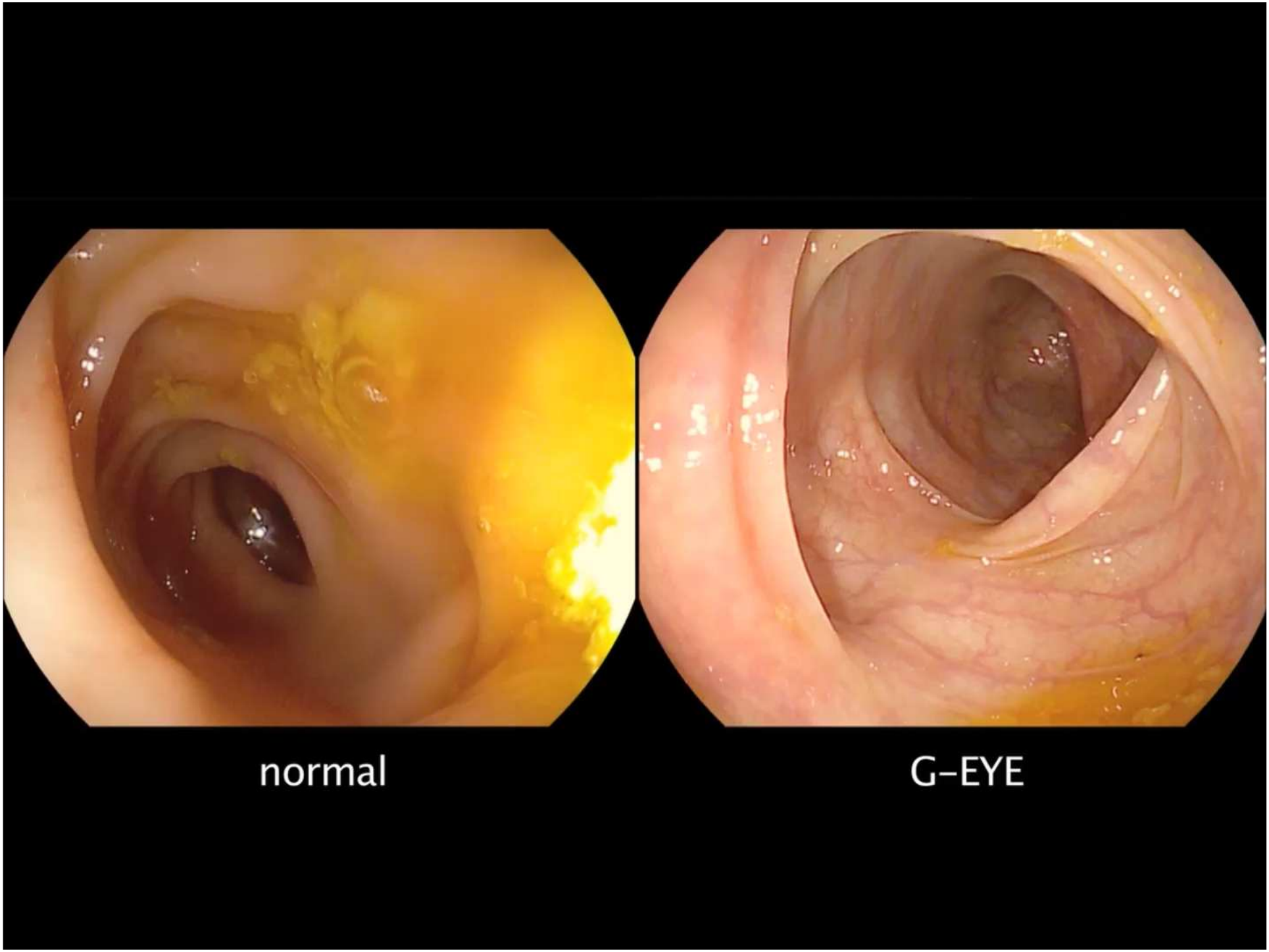


Gralnek IM. Lancet Oncol 2014

G-Eye

G-EYE™




normal
G-EYE

Pilot Study
G-EYE™ colonoscopy

Tandem; Randomized; Multi-center (Israel & Europe); 126 pts

Results:

- Miss Rate: 8% vs 81%
- Adenoma Detection Rate: 40% vs 26%

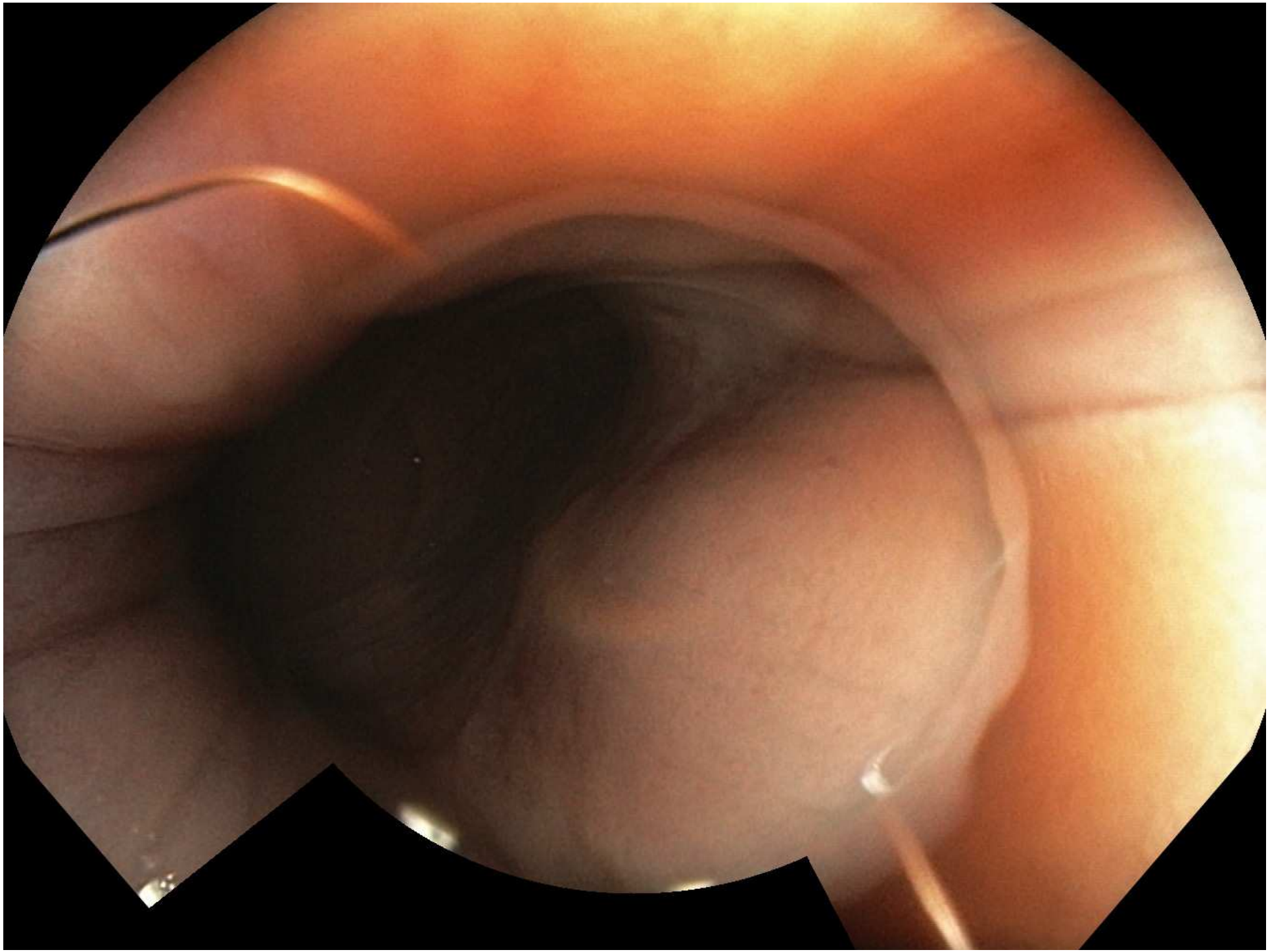
Adenomas	Group A (Standard 1st)	Group B (G-EYE™ 1st)
First pass	21	37
Second pass	17	3
Additional detection (%)	81%	8.1%

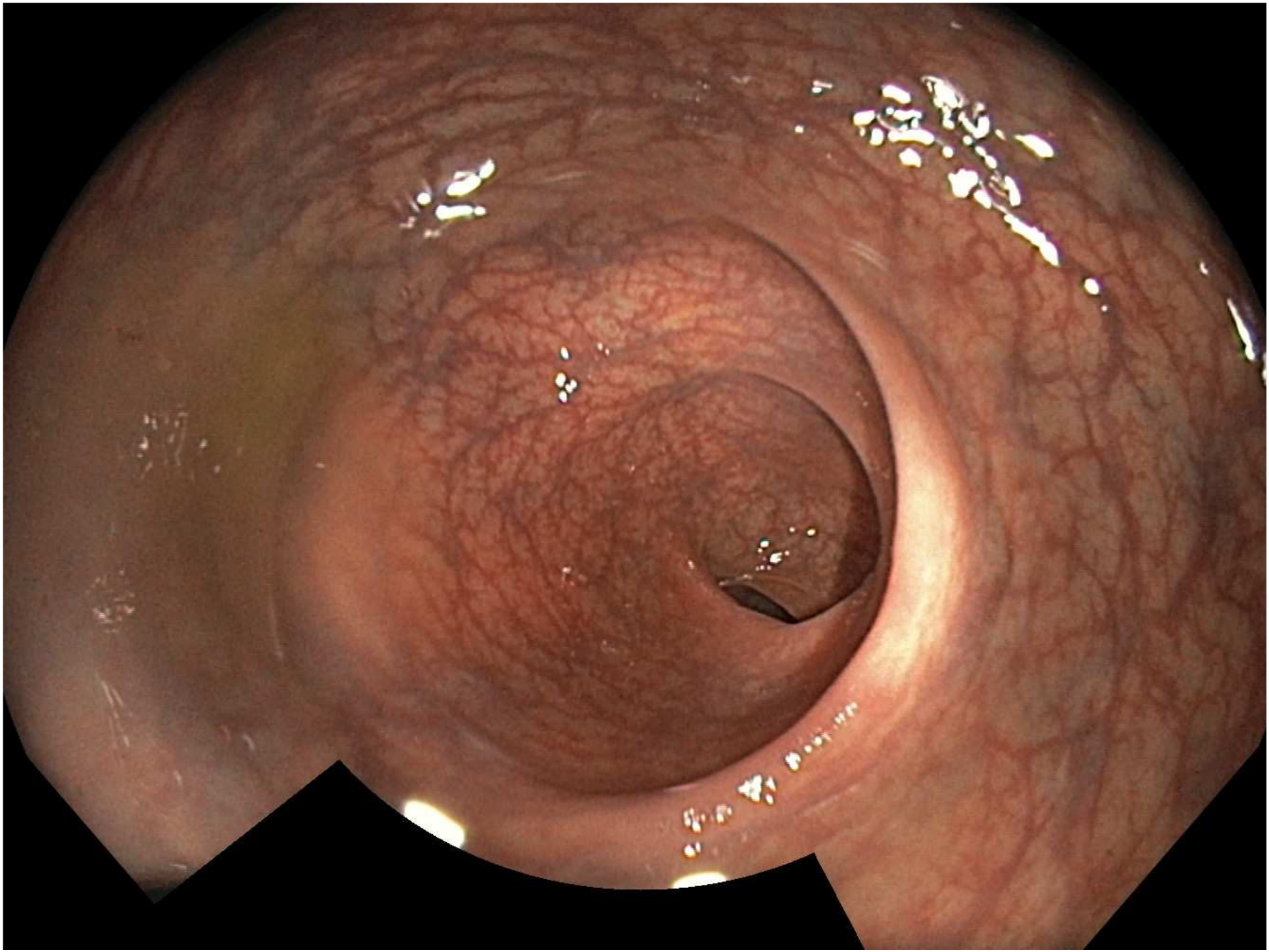
Adenoma Detection rate	Group A (Standard 1st)	Group B (G-EYE™ 1st)
ADR (%)	25.9%	40.4%

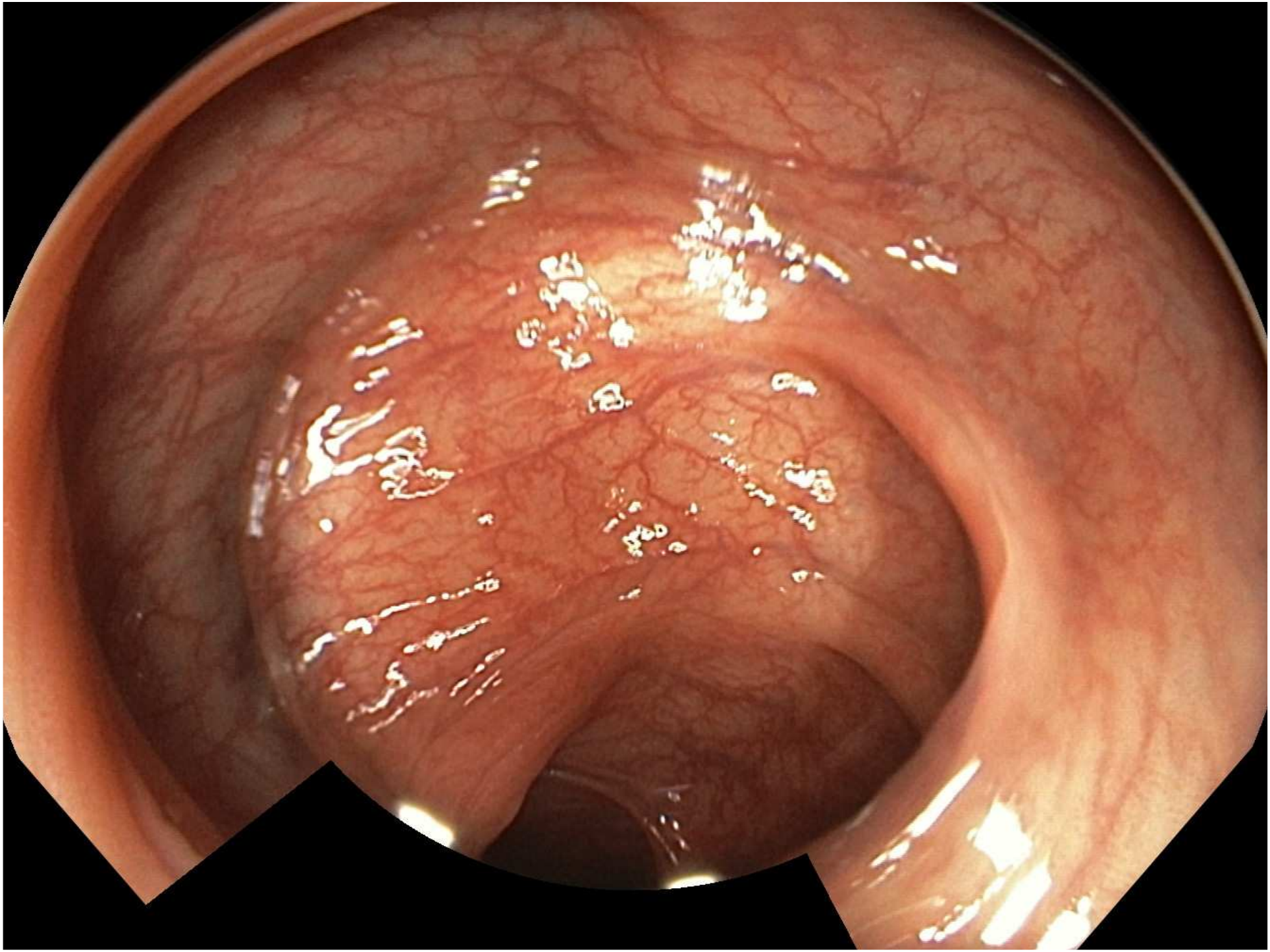
Shpak B. UEGW 2013

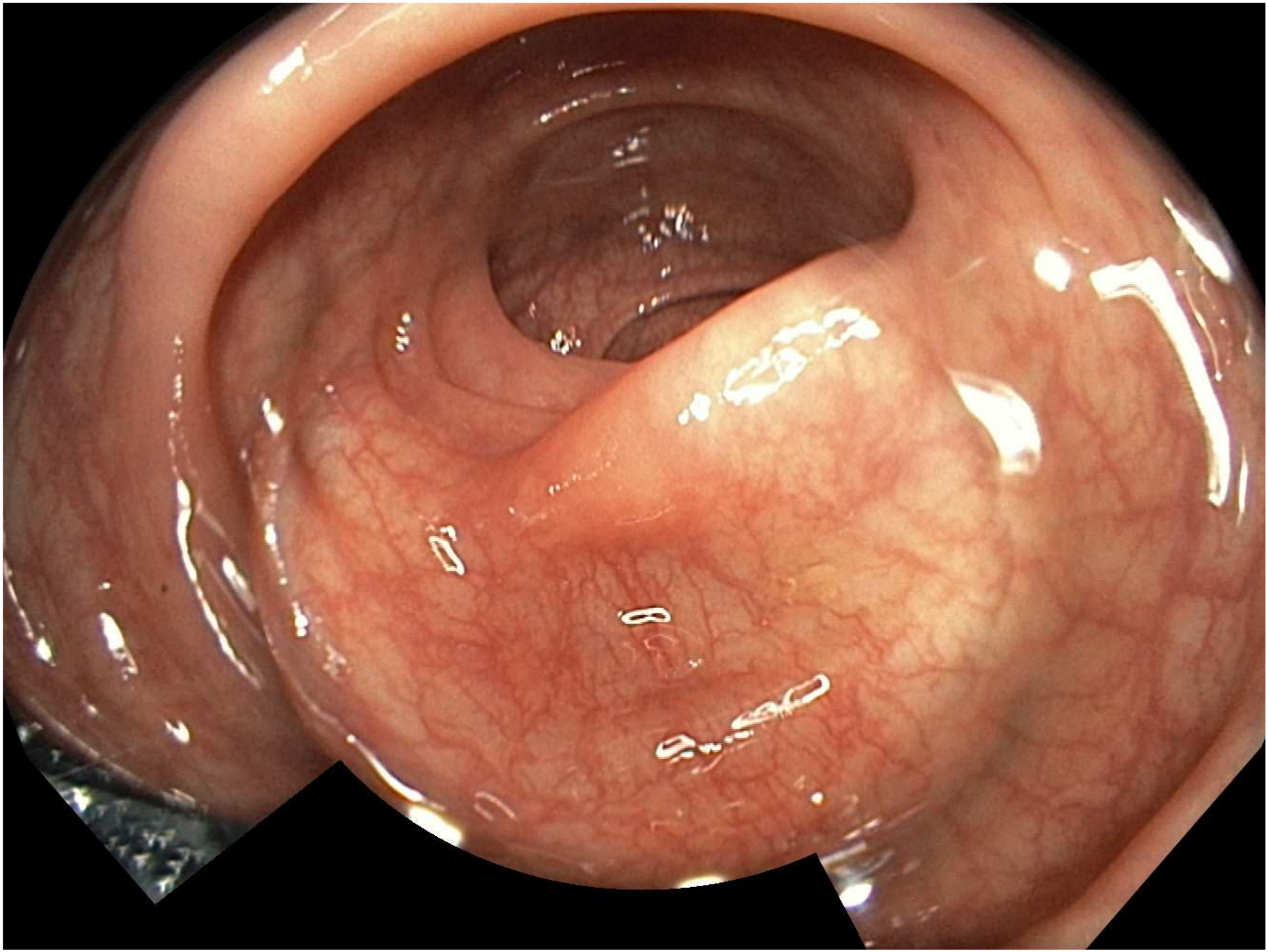
Extra Wide Angle View Endoscope (EWAVE)

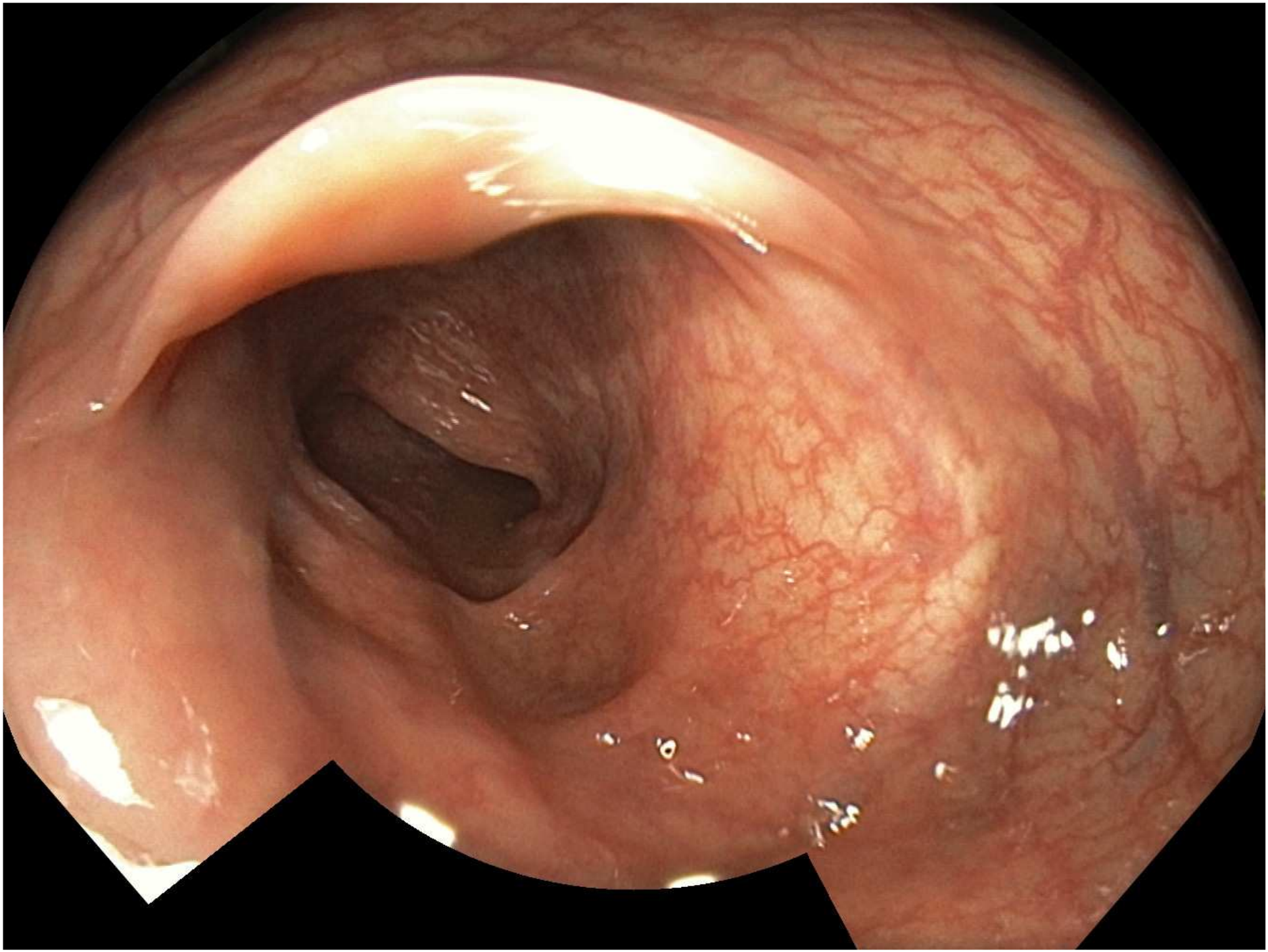
Extra Wide Angle View Endoscope (EWAVE)

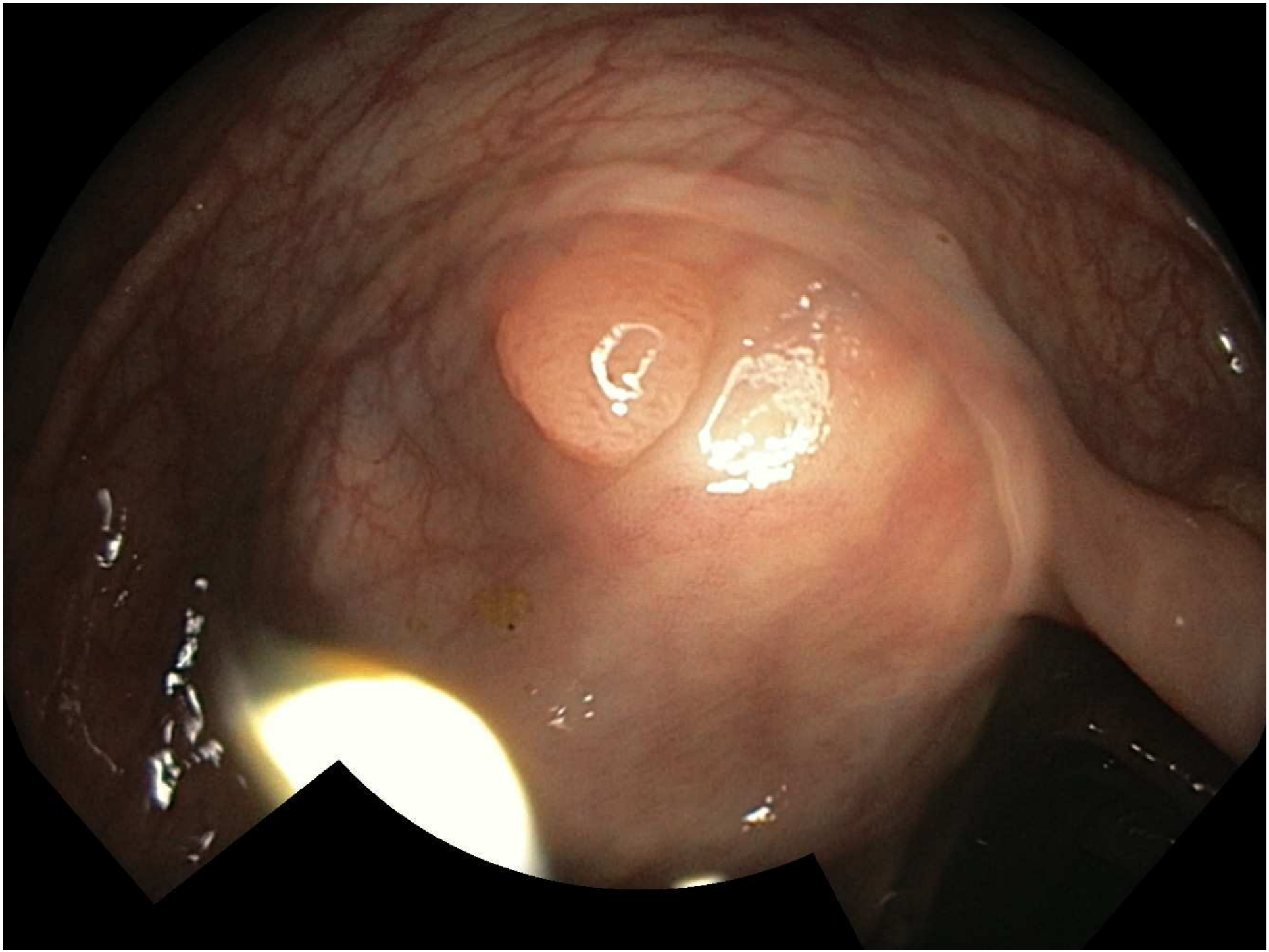


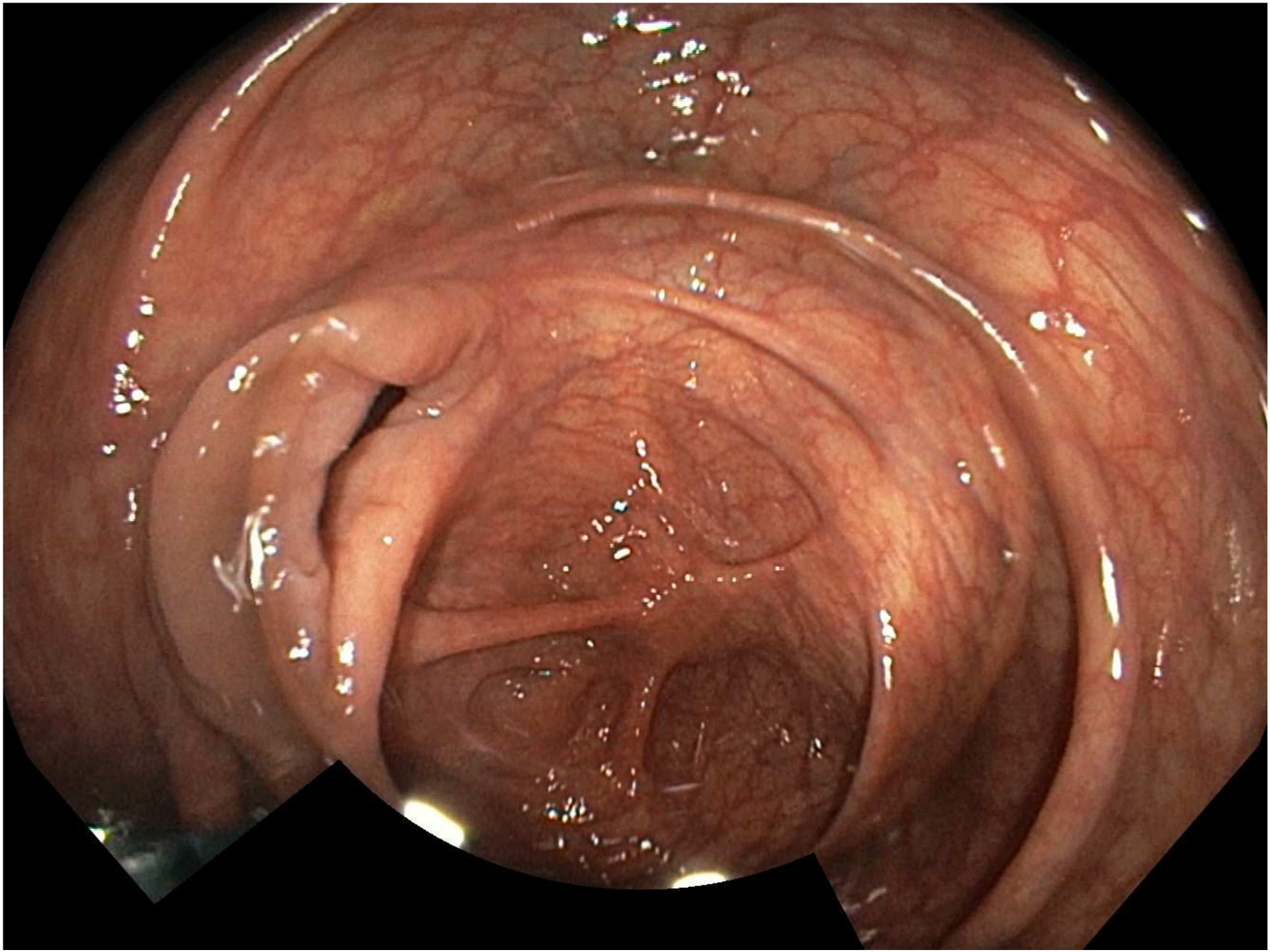


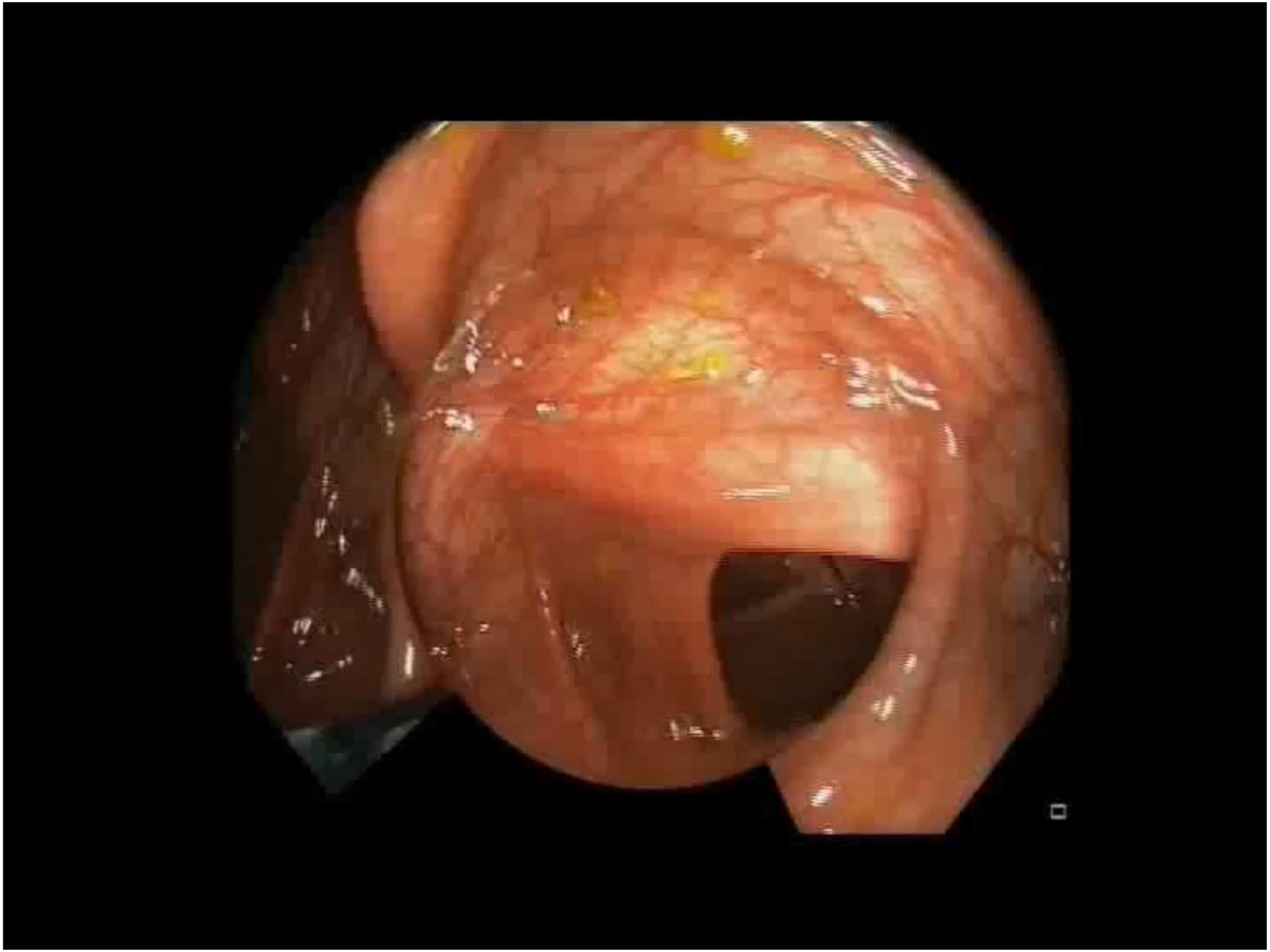






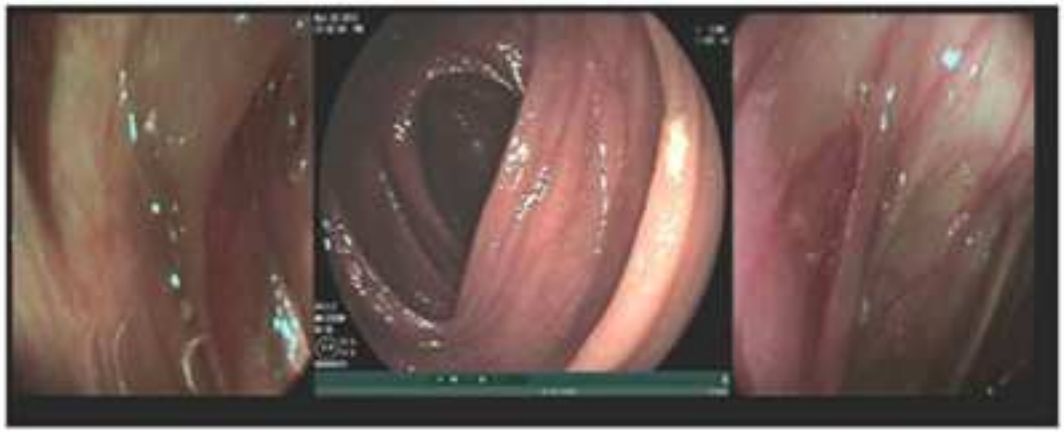






Third Eye® Panoramic™

Side Viewing Video Cap
fitted on a Standard Colonoscope



Optimizing Screening Colonoscopy

1. Maximize CIR (≥ 95%)
2. Optimize pts compliance
3. Improve ADR
4. Make better decisions and actions for identified CR neoplastic lesions

Adenoma detection rate (ADR)

- Case mix: adjusted for sex, age & indication
- Primary cspy screening: 25% (M), 15% (F)
- **FIT+: 30-35%** (GISCoR)

Rex DK, et al. Am J Gastroenterol, 2002
Rex DK, et al. Gastrointest Endosc 2006

Polypectomy / EMR

- Adequate skill to remove polyps or NPL (flat lesions) up to 2 cm (ESD skills not required)
- Knowledge of Guidelines on Anticoagulation and Antiplatelet Therapy management
- Exhaustive knowledge of management of adenomas with invasive carcinoma (pathologic criteria)

ER: Key performance indicators

- Appropriate removal technique
- Completeness of excision
- Hospitalization rate
- Proper use of tattoo
- Complication rate
- Appropriate surveillance intervals
- Cancer rates in patients under surveillance
- Correct selection of procedures/techniques
- Non-technical skills

Lesions sent to surgery - Lazio

anni	Invio ad Intervento	Neoplasie	Adeno-Carcinoma	Adenoma Avanzato	Adenoma Iniziale	Benigni	Negativi	No Istologia
2005	9	0	8	1	0	0	0	0
2006	12	1	8	3	0	0	0	0
2007	4	0	3	1	0	0	0	0
2008	46	4	33	4	0	0	1	4
2009	88	4	69	5	3	1	2	4
2010	77	5	51	15	1	0	4	1
2011	153	17	107	23	1	1	3	1
2012	122	22	64	28	5	0	2	1
Totale	511	53	343	80	10	2	12	11

“T” of lesions sent to surgery - Lazio

anni	N.D.	TX	T0	TIS	T1	T2	T3	T4
2005	7	0	2	0	0	0	0	0
2006	8	0	1	1	0	0	2	0
2007	4	0	0	0	0	0	0	0
2008	8	0	0	3	3	3	4	0
2009	5	0	3	7	2	11	10	0
2010	12	0	5	8	4	10	7	0
2011	19	0	11	15	6	15	35	9
2012	33	1	4	4	7	10	27	1
Totale	96	1	26	38	22	49	85	10

Direct Observation of Polypectomy Skills

Validation of a novel method for assessing competency in polypectomy

Sachin Gupta, MBBS, MRCP,[1] Paul Bassett, MSc,[2] Ripple Man, BSc,[1] Noriko Suzuki, PhD,[1] Margaret E. Vance, MSc,[1] Siwan Thomas-Gibson, MD[1]

London, Amersham, United Kingdom

- 59 videos scored
- Majority of the assessors agreed for the global assessment scale in 98% of polyps
- Analysis suggested that DOPyS is a reliable assessment tool, provided that it is used:
  - by 2 assessors
  - to score 5 polypectomy videos all performed by 1 endoscopist.
- DOPyS scores reflect the endoscopist's competence

GIE 2011

Direct Observation of Polypectomy Skills (DOPyS)

Colonoscopist: …… Case ID:……. Date ……/…../…… Assessor……

Polyp site: C / AC / HF / TC / SF / DC / SC / R

Scale: **4** **- Highly skilled performance**
3 **- Competent & safe throughout procedure, no uncorrected errors**
2 **- Some standards not yet met, aspects to be improved, some errors uncorrected**
1 **- Accepted standards not yet met, frequent errors uncorrected**
N/A **- Not applicable/Not assessable**

The underlined parameters can only be assessed during 'live' polypectomy

Generic	Score	Comments
Optimising view of / access to the polyp:		
1. Optimises polyp position		
2. Optimises view by aspiration/insufflation/wash		
3. Optimises visualization of full extent of polyp		
4. Determines full extent of lesion (+/- use of adjunctive techniques e.g. bubble breaker, NBI, dye spray etc) if appropriate		
5. Adjusts/stabilizes scope position		
6. Uses appropriate polypectomy technique (e.g. taking into account site in colon)		
7. Checks all polypectomy equipment (forceps,snare,clips,loops) available		
8. Checks (or asks assistant to) snare closure prior to introduction into the scope		
9. Clear instructions to, and utilisation of endoscopy staff		
10. Checks diathermy settings are appropriate		
11. Photo-documents pre and post polypectomy		
Stalked polyps: Generic, then		
12. Pre-injects stalk/applies endo-loop/clips prophylactically if appropriate		
13. Selects appropriate snare size		
14. Directs snare accurately over polyp head		
15. Correctly selects en-bloc or piecemeal removal depending on size		
16. Advances snare sheath towards stalk as snare closed		
17. Places snare at appropriate position on the stalk		
18. Mobilises polyp to ensure appropriate amount of tissue is trapped within snare		
19. Applies appropriate degree of diathermy		
Small sessile lesions / Endoscopic mucosal resection: Generic, then		
20. Adequate submucosal injection using appropriate injection technique, maintaining views		
21. Only proceeds if the lesion lifts adequately		
22. Directs snare accurately over the lesion head		
23. Correctly selects en-bloc or piecemeal removal depending on size		
24. Appropriate positioning of snare over lesion as snare closed		
25. Ensures appropriate amount of tissue is trapped within snare		
26. Tents lesion gently away from the mucosa		
27. Uses cold snare technique or applies appropriate diathermy, as applicable		
28. Ensures adequate haemostasis prior to further resection		
Post polypectomy		
29. Examines remnant stalk/polyp base		
30. Identifies and appropriately treats residual polyp		
31. Identifies bleeding and performs adequate endoscopic hemostasis if appropriate		
32. Retrieves, or attempts retrieval of polyp		
33. Checks for retrieval of polyp		
34. Places tattoo if appropriate		

Overall Competency at polypectomy:	4	3	2	1
Polyp Level	4	3	2	1
Was it appropriate to remove this polyp at index colonoscopy (i.e. on standard BCS consent)	YES	NO	**Polyp size**	……mm

Future perspectives - Principles

- Create a culture in which individuals are willing to improve their skills
- Provide opportunities for better training
- Recognize and reward those who perform well

Future Perspectives - Actions

- Not all endoscopists should be involved in a Screening Program
- A voluntary-based selection should be made by self-certification
- The selected trainees should attend a Retraining Course, followed by annual assessment of skills and performances
- Specific Retraining will then be appropriate for those not complying

L'endoscopia di screening: una diversa operatività ?

SI

Luci[illegible]zzielli MD

Digestive E[illegible]opy

A. Ger[illegible] Hospital - [illegible]holi[illegible]iversity

European [illegible]ing C[illegible]re (EETC)

[illegible]a - Italy

Optimizing Colonoscopy Performance
Key Messages

- Need for upskilling colonoscopy courses
- Train the colonoscopy trainers courses
- Use of validated competence assessment tools
- **Waiting for technical improvements …**

JAG webpage: http://www.thejag.org.uk/
Sedlack RE, et al. Gastrointest Endosc, 2010
Thomas-Gibson S, et al. GIE Clin NA, 2005

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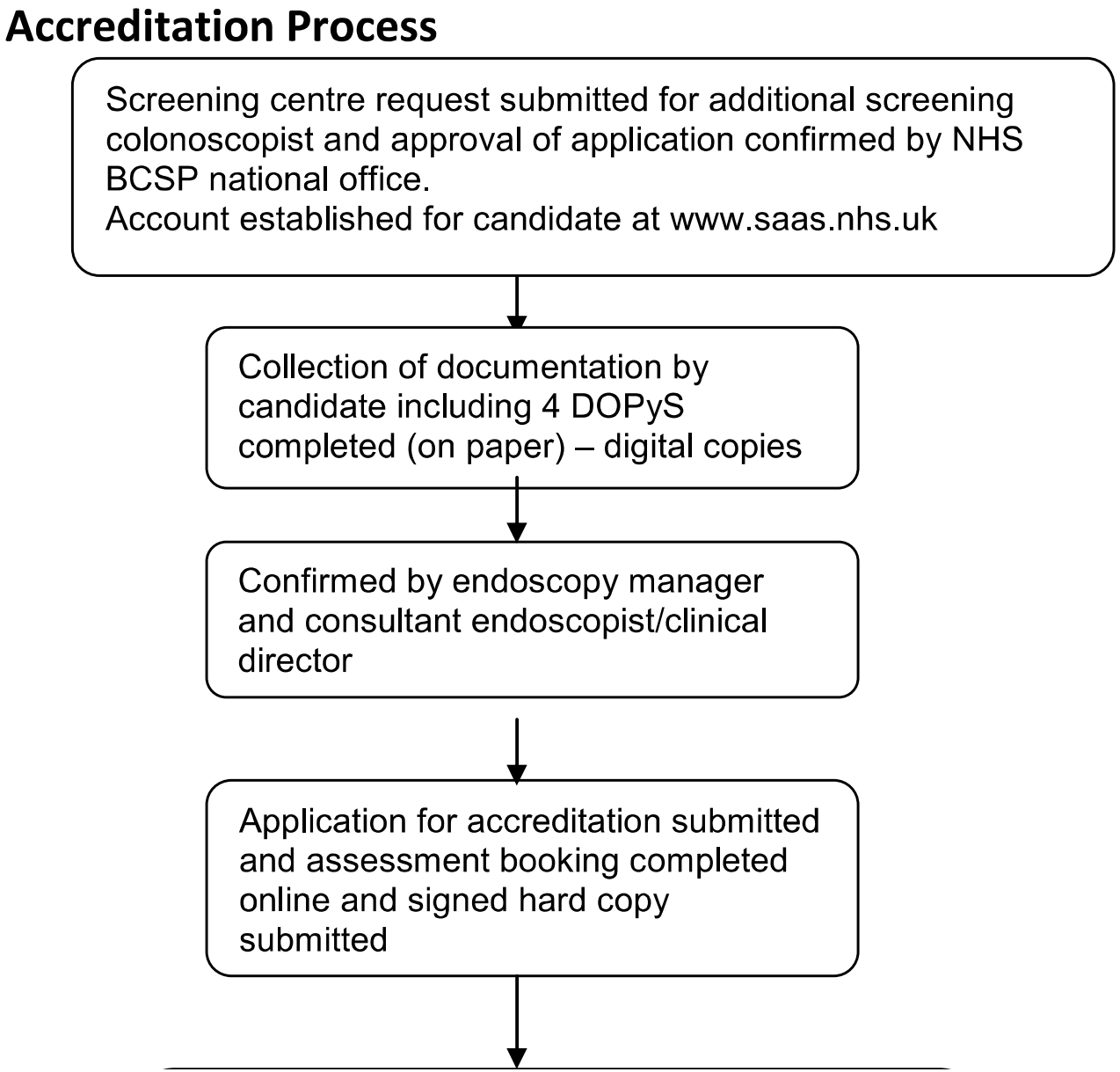
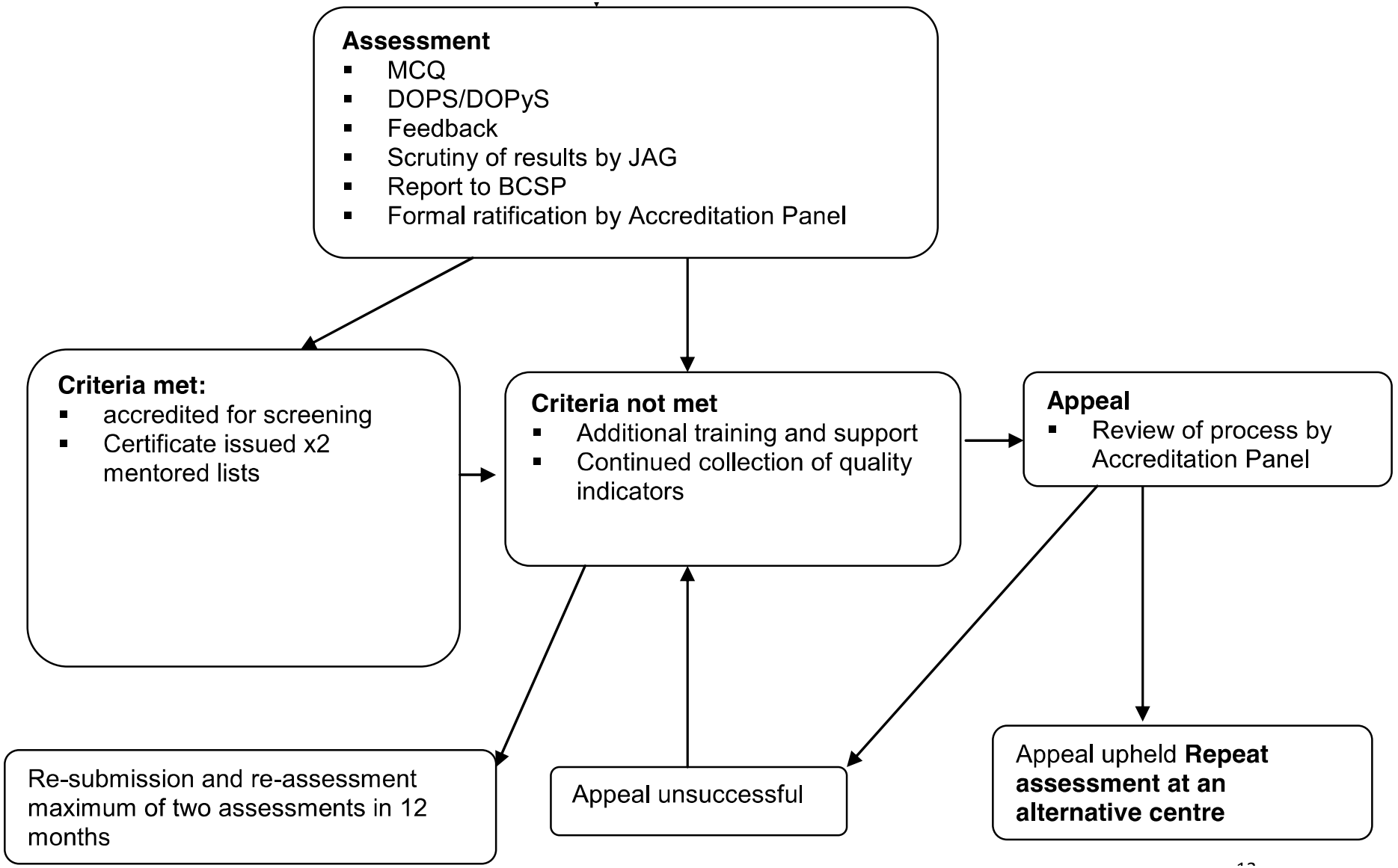
thank you !

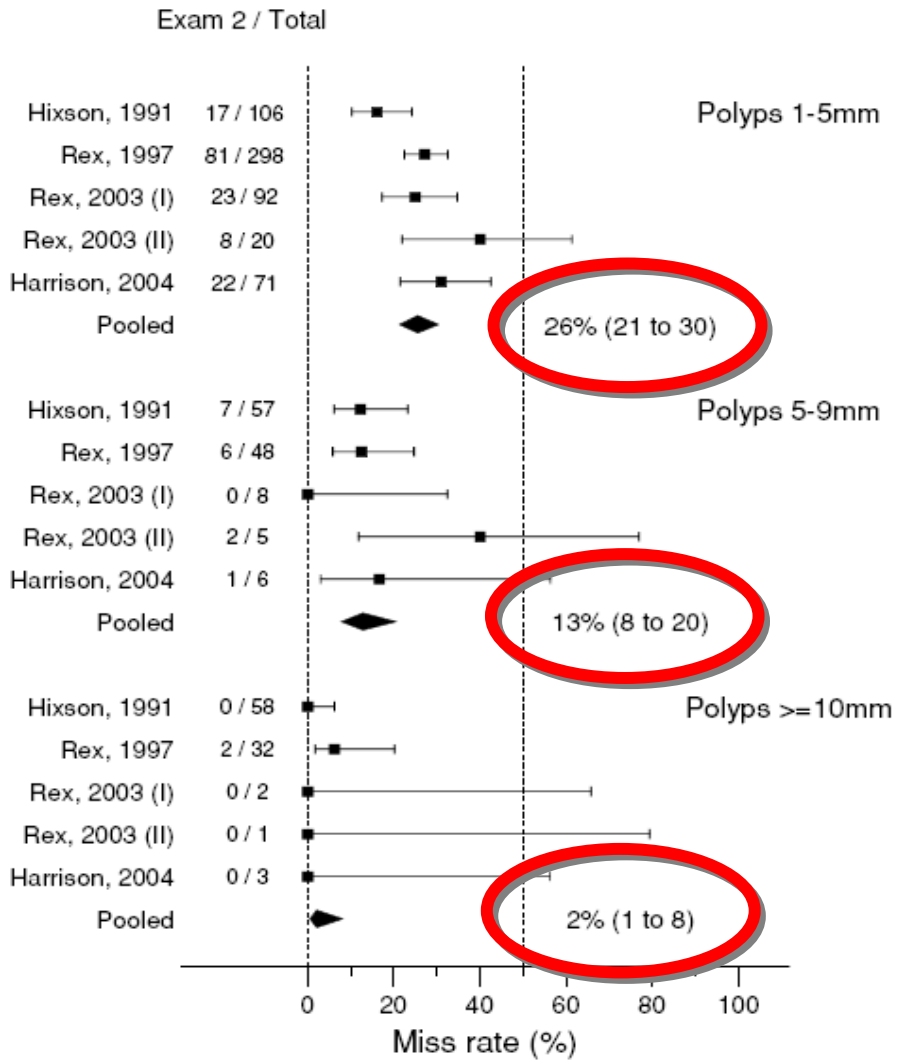
Accreditation of Screening Colonoscopists - 1



Accreditation of Screening Colonoscopists - 2



Polyp miss rate determined by tandem colonoscopy: a Review



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