Adverse Events in Endoscopy

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CanMeds roles

√	**Medical Expert** (as *Medical Experts*, physicians integrate all of the CanMEDS Roles, applying medical knowledge, clinical skills, and professional values in their provision of high-quality and safe patient-centered care. *Medical Expert* is the central physician Role in the CanMEDS Framework and defines the physician's clinical scope of practice.)
√	**Communicator** (as Communicators, physicians form relationships with patients and their families that facilitate the gathering and sharing of essential information for effective health care.)
√	**Collaborator** (as *Collaborators*, physicians work effectively with other health care professionals to provide safe, high-quality, patient-centred care.)
√	**Leader** (as *Leaders*, physicians engage with others to contribute to a vision of a high-quality health care system and take responsibility for the delivery of excellent patient care through their activities as clinicians, administrators, scholars, or teachers.)
√	**Health Advocate** (as *Health Advocates*, physicians contribute their expertise and influence as they work with communities or patient populations to improve health. They work with those they serve to determine and understand needs, speak on behalf of others when required, and support the mobilization of resources to effect change.)
√	**Scholar** (as *Scholars*, physicians demonstrate a lifelong commitment to excellence in practice through continuous learning and by teaching others, evaluating evidence, and contributing to scholarship.)
√	**Professional** (as *Professionals,* physicians are committed to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, physician-led regulation, and maintenance of personal health.)

Disclosures

- Speaker: Abbvie, Amgen, Janssen, Lilly, Medtronic, Pfizer, Takeda
- Advisory Board: Abbvie, Amgen, AstraZeneca, Biojamp, BMS, Celltrion, Innomar, Lilly, Medtronic, Pendopharm, Pfizer, Organon, Sandoz, Takeda
- Patents, Research funding: None

Objectives

At the end of this session, participants will be able to:

1. Incorporate risk stratification and endoscopic technique to prevent complications.
2. Use techniques to prevent post-polypectomy bleeding and perforation.
3. Understand best practices to manage post-polypectomy bleeding and perforation.
4. Review strategies to prevent polyp recurrence.

First and Foremost - Know Your Patient

1. Why are you doing this procedure?
- Strength of indication
- Reasonable alternatives

2. Is this a higher risk patient?
- Co-morbidity
- Medications that can influence risk (e.g.: anticoagulation)
- Problems with this procedure in the past

3. Is this a higher risk procedure?
- Therapy required that will increase risk

Avoid high risk procedures on high risk patients with little chance of benefit.

Informed consent for endoscopic procedures: European Society of Gastrointestinal Endoscopy (ESGE) Position Statement

Everett Simon M et al. Informed consent for… Endoscopy 2023; 55: 952–966 | © 2023. European Society of Gastrointestinal Endoscopy. All rights reserved.

2.2 Individualization of the consent process

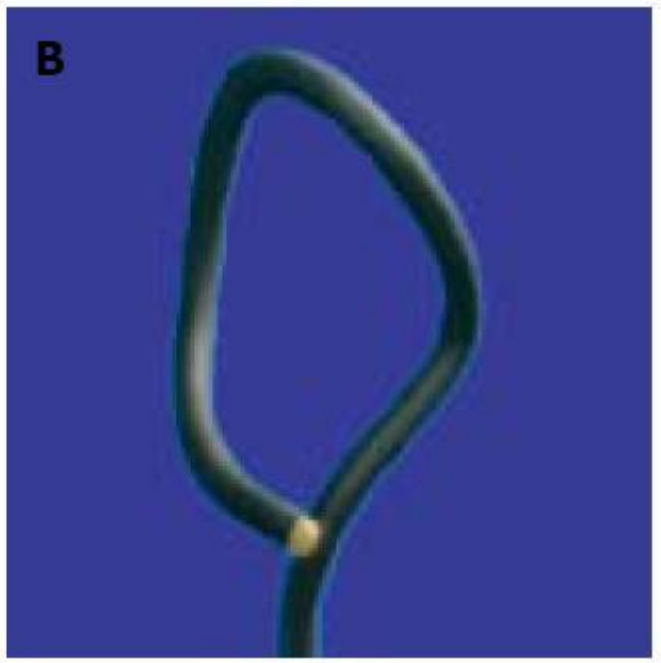
STATEMENT

The information provided on the benefit and harms of an endoscopic procedure should be adapted to the procedure and patient-specific risk factors, and the preferences of the patient should be central to the consent process.

Endoscopic Considerations

General Recommendations

1. Ensure a good bowel preparation (i.e. split dose preparation).
2. Complete the procedure using optimal endoscopic technique with no loops when colonoscope in the cecum.
3. Be familiar with your electrocautery unit and know how to use it.
4. Be familiar with the equipment available to you – snares, injection catheters, clips, etc.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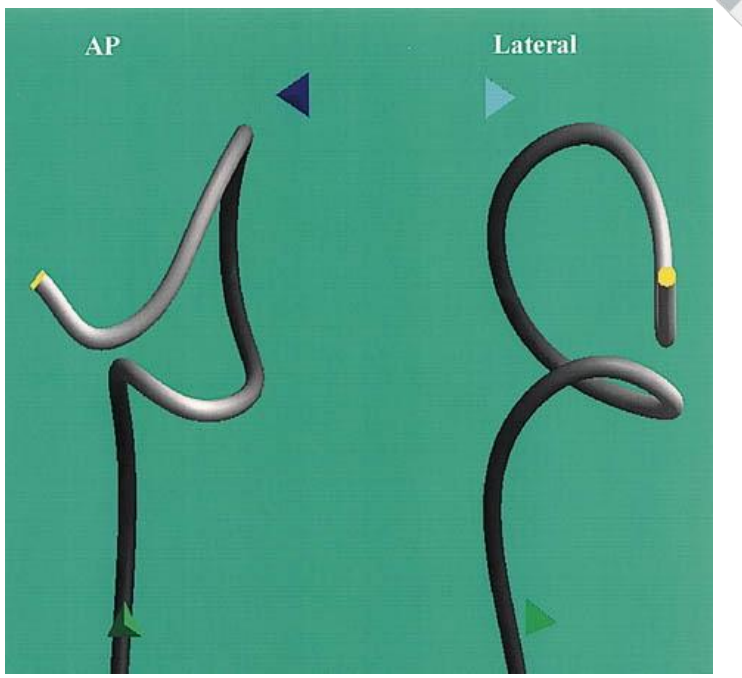
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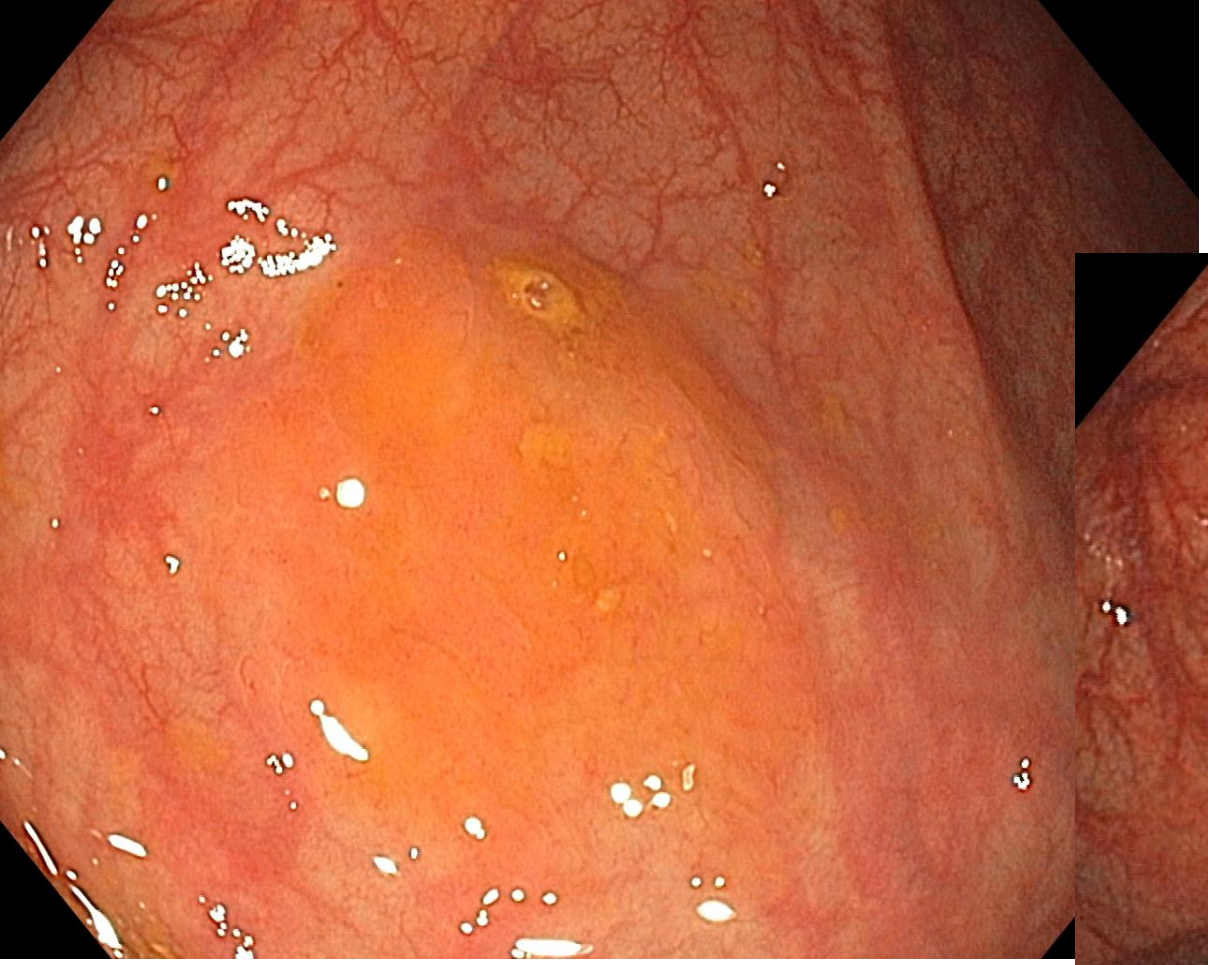
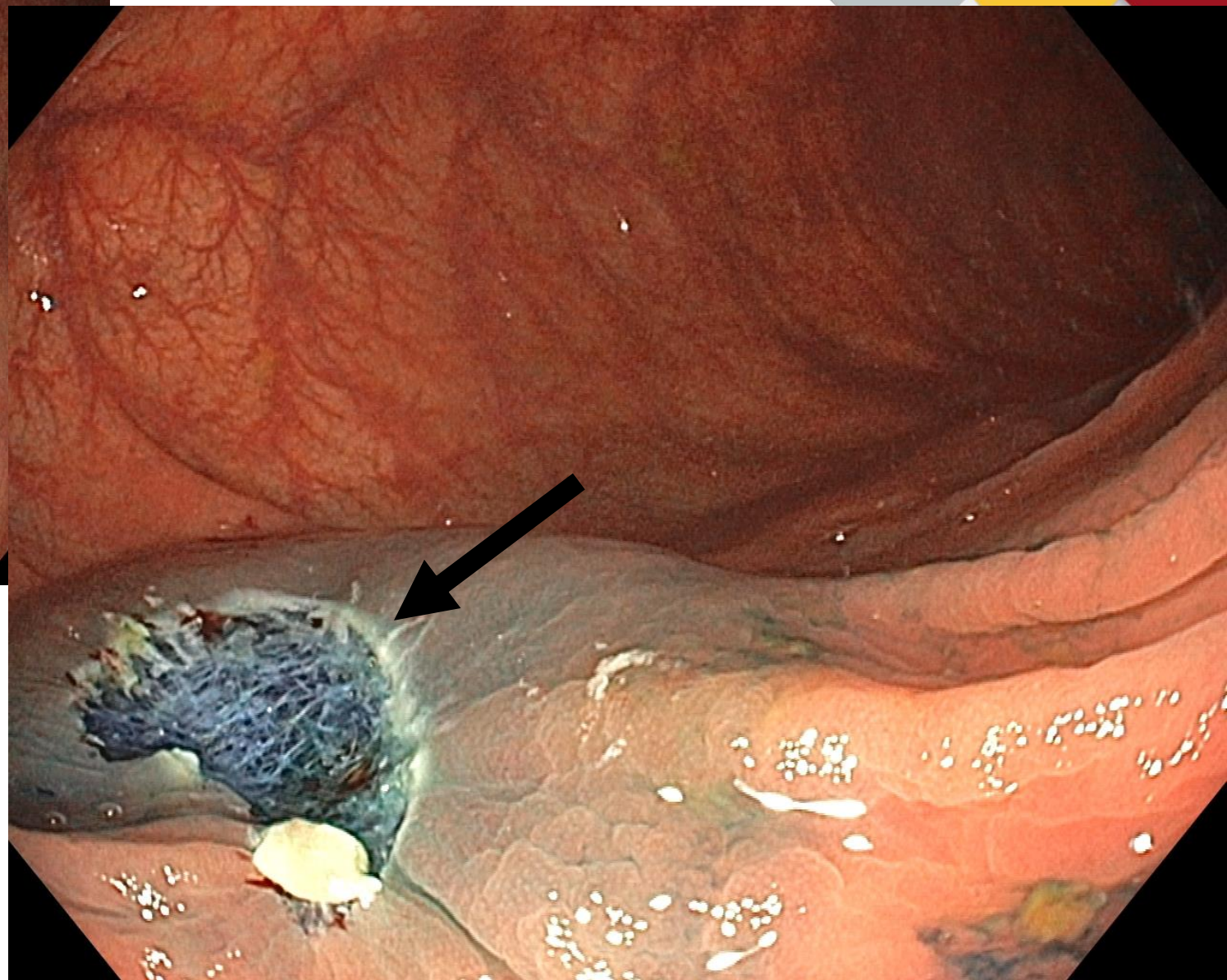
Lateral

Perforation

How to prevent perforation from polypectomy

1. Use cold snare technique when feasible.
2. Lift (i.e. submucosal injection) sessile polyps.
3. Minimize thermal injury when excising sessile polyps.
4. Do not remove polyps > 20-25 mm en bloc in right colon.





Piecemeal cold snare vs. EMR

- Non-randomized, interventional study on sessile serrates lesions > 19 mm.
- 156 lesions treated with piecemeal cold snare from 2016-2020; 406 lesions treated with EMR from 2008-2016.
- Technical success 100% vs 99%.
- Delayed bleeding 0% vs 5.1% (p=0.01)
- Deep mural injury 0% vs. 2.8% (p=0.071).
- Delayed perforation 0% vs. 0.6%
- Recurrence 4.3% vs 4.6%

van Hattem WA, *et al*. *Gut* 2021;**70**:1691–1697. doi:10.1136/gutjnl-2020-321753

How to treat perforation

1. Carefully evaluate site post polypectomy.
2. Apply clips to close defect when signs of deep mural injury (DMI).

ORIGINAL ARTICLE

Deep mural injury and perforation after colonic endoscopic mucosal resection: a new classification and analysis of risk factors

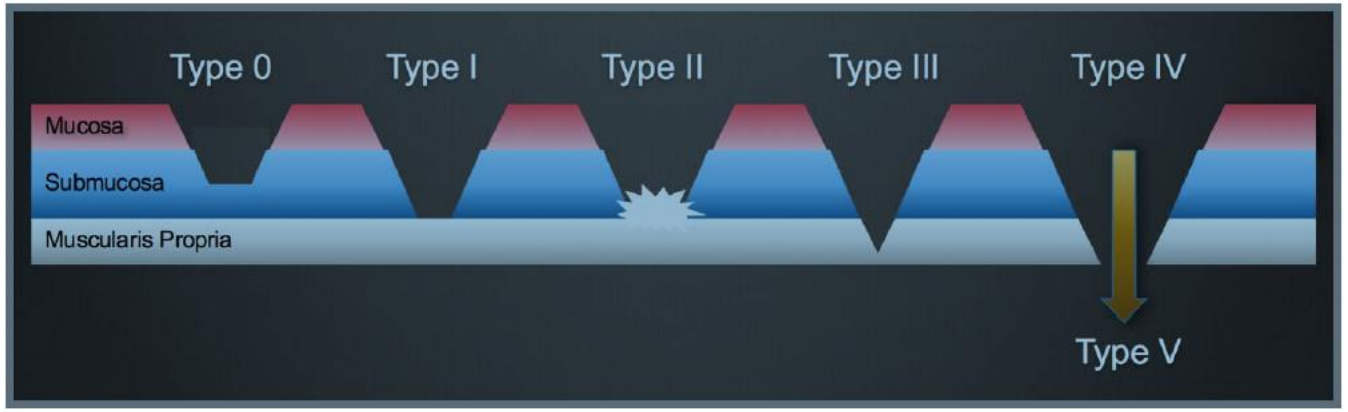
Nicholas G Burgess,[1,2] Milan S Bassan,[1] Duncan McLeod,[3] Stephen J Williams,[1] Karen Byth,[4] Michael J Bourke[1,2]

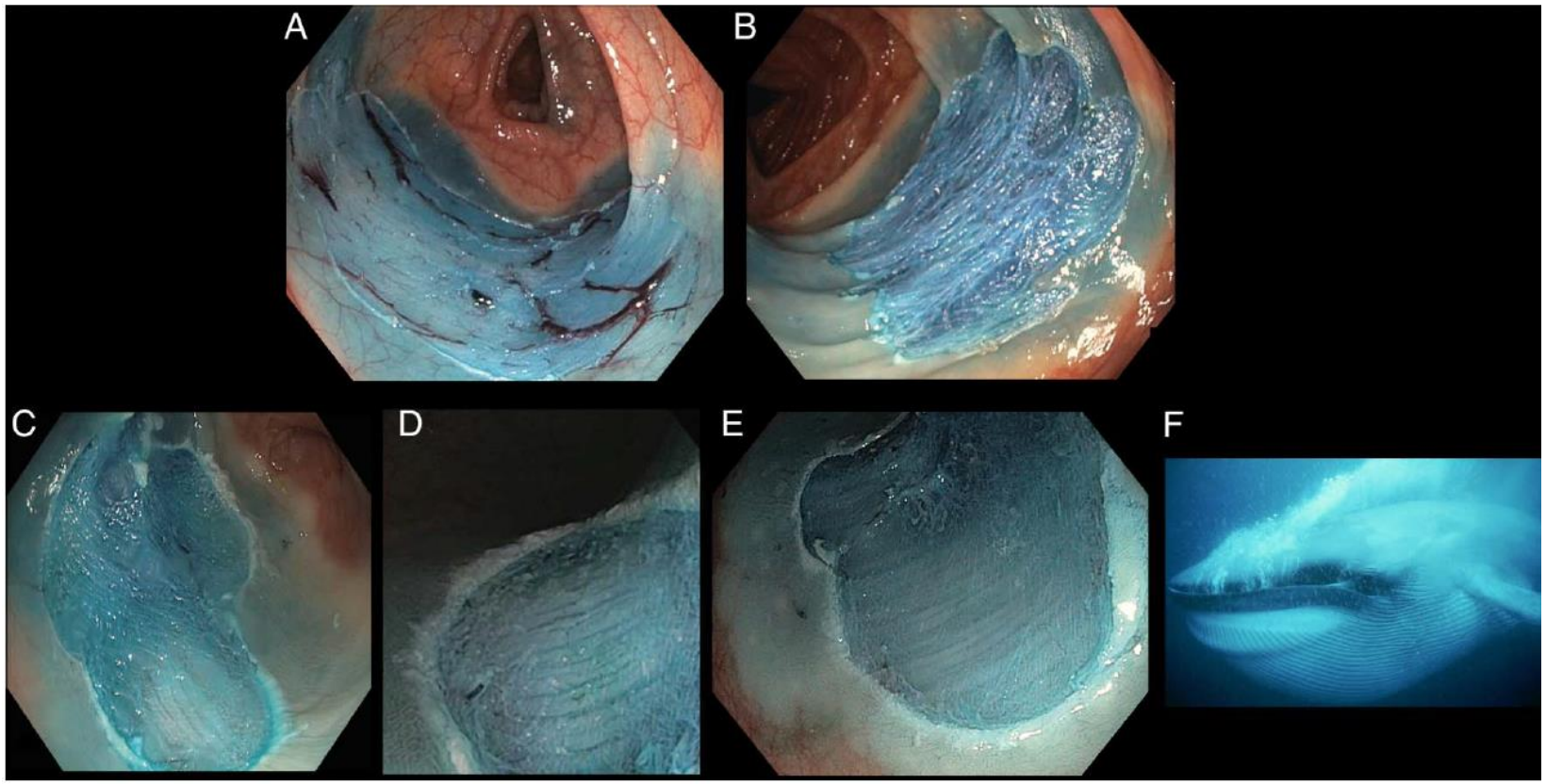
Burgess NG, *et al*. *Gut* 2017;**66**:1779–1789. doi:10.1136/gutjnl-2015-309848

Sydney Classification of Deep Mural Injury (DMI) following EMR

Type 0	Normal defect. Blue mat appearance of obliquely oriented intersecting submucosal connective tissue fibres.
Type I	MP visible, but no mechanical injury.
Type II	Focal loss of the submucosal plane raising concern for MP injury or rendering the MP defect uninterpretable.
Type III	MP injured, specimen target or defect target identified
Type IV	Actual hole within a white cautery ring, no observed contamination
Type V	Actual hole within a white cautery ring, observed contamination

Clip types II-V

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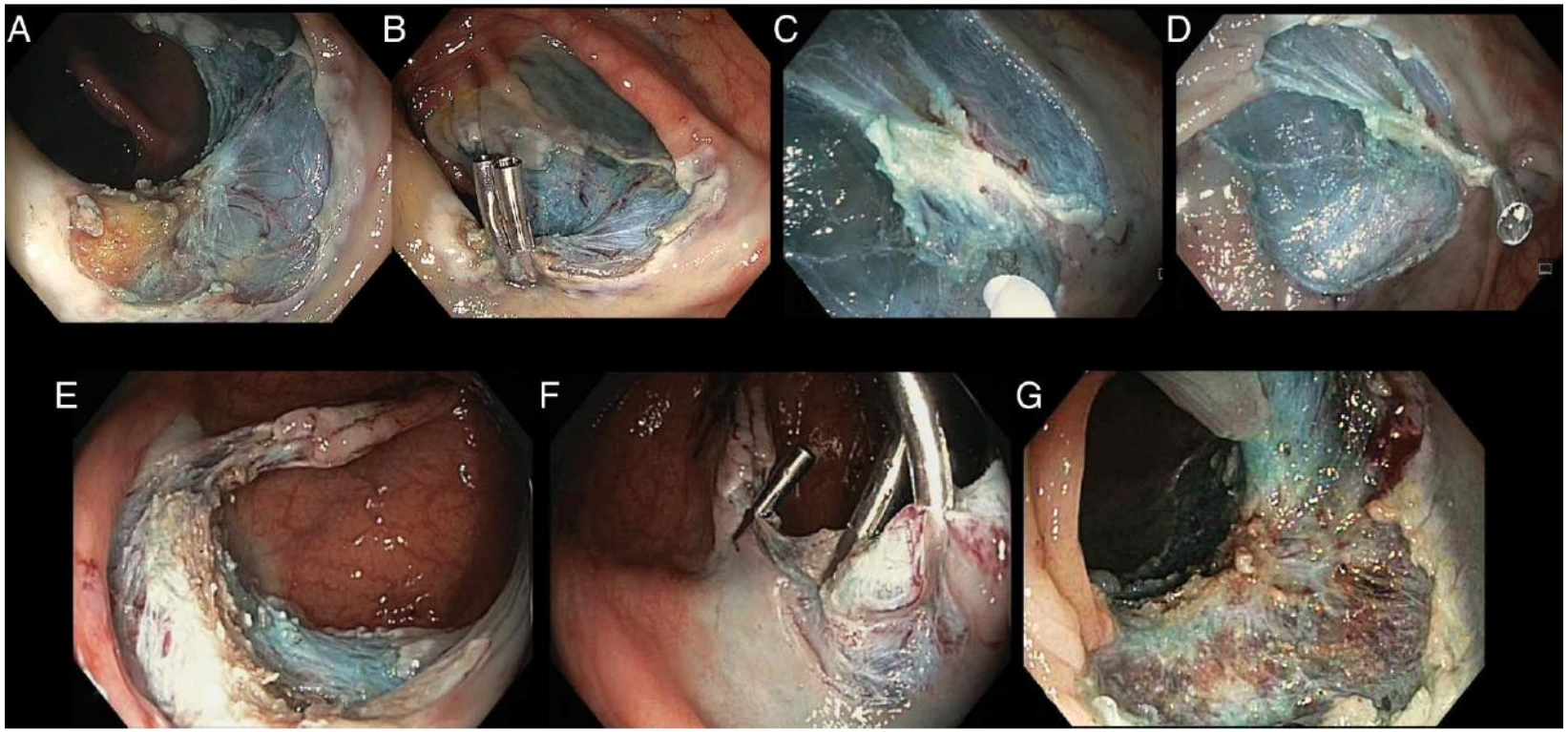
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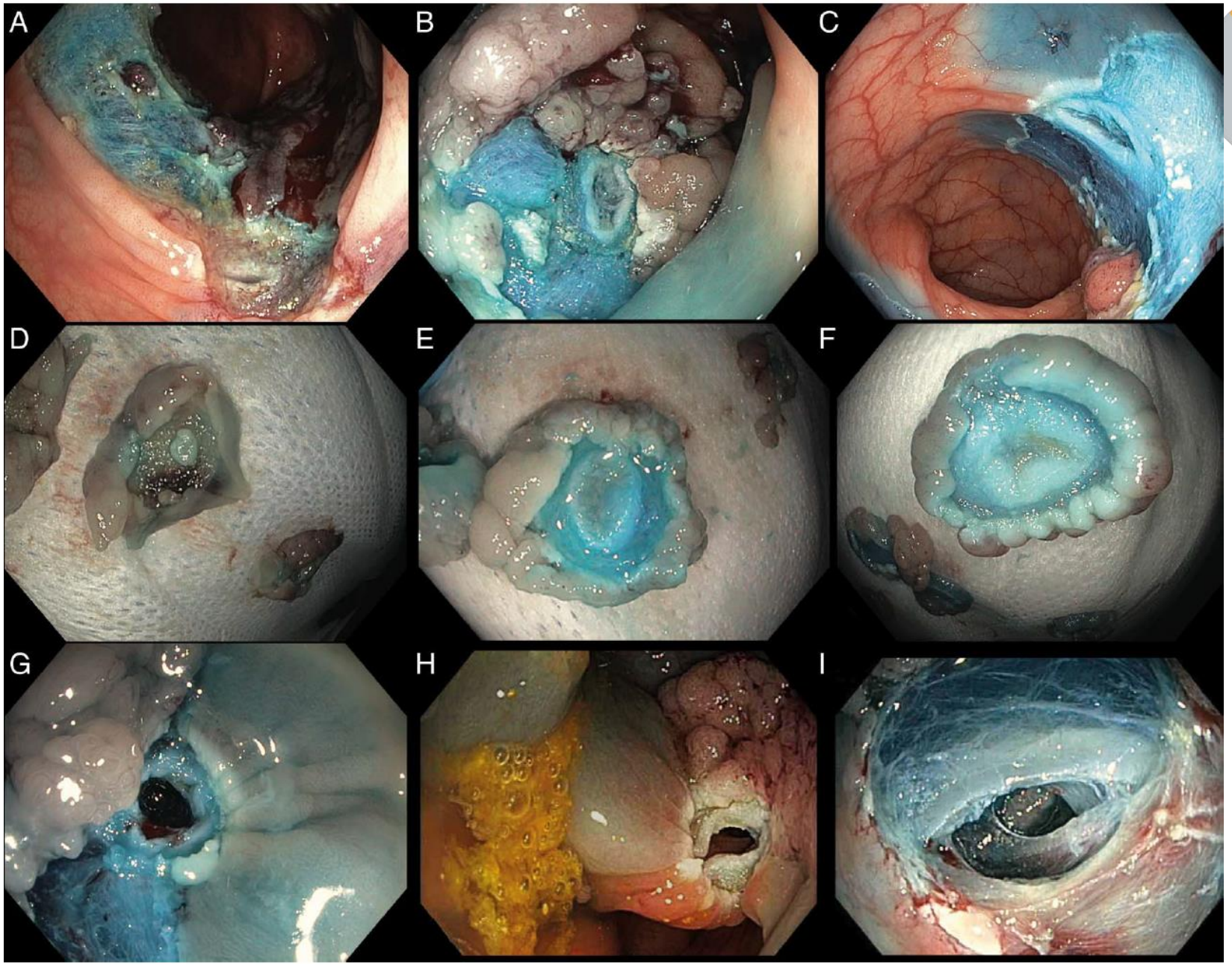
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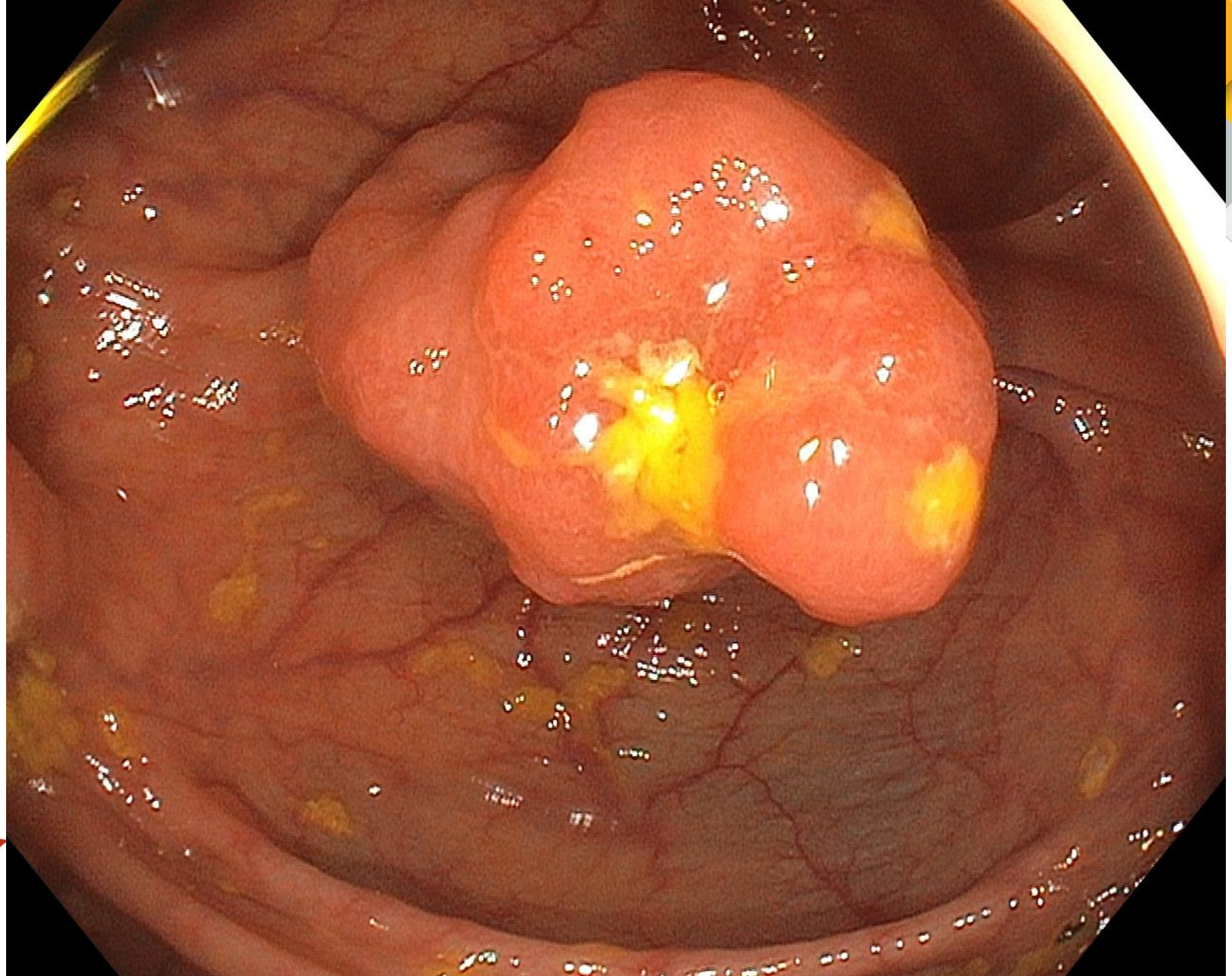
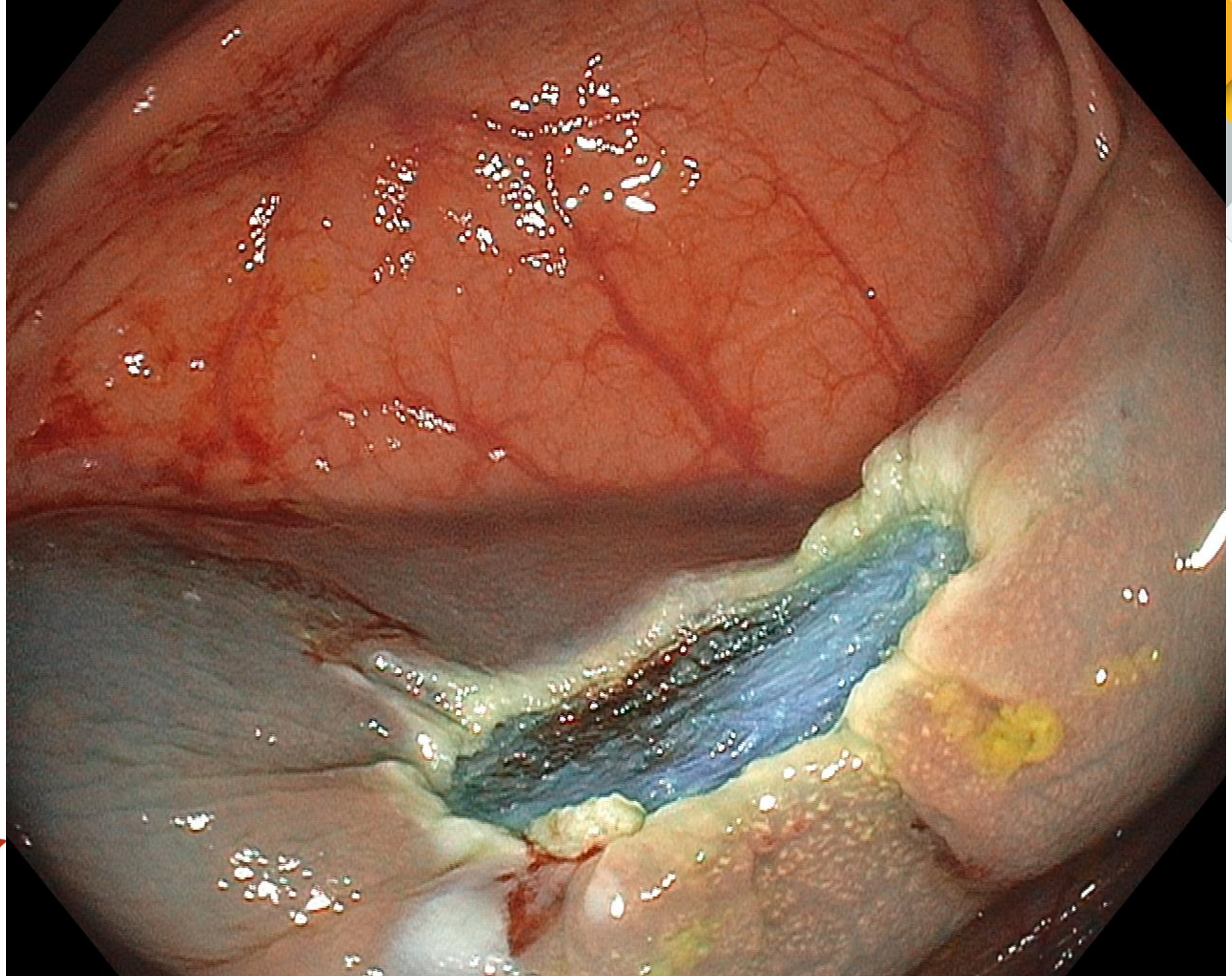
Bleeding

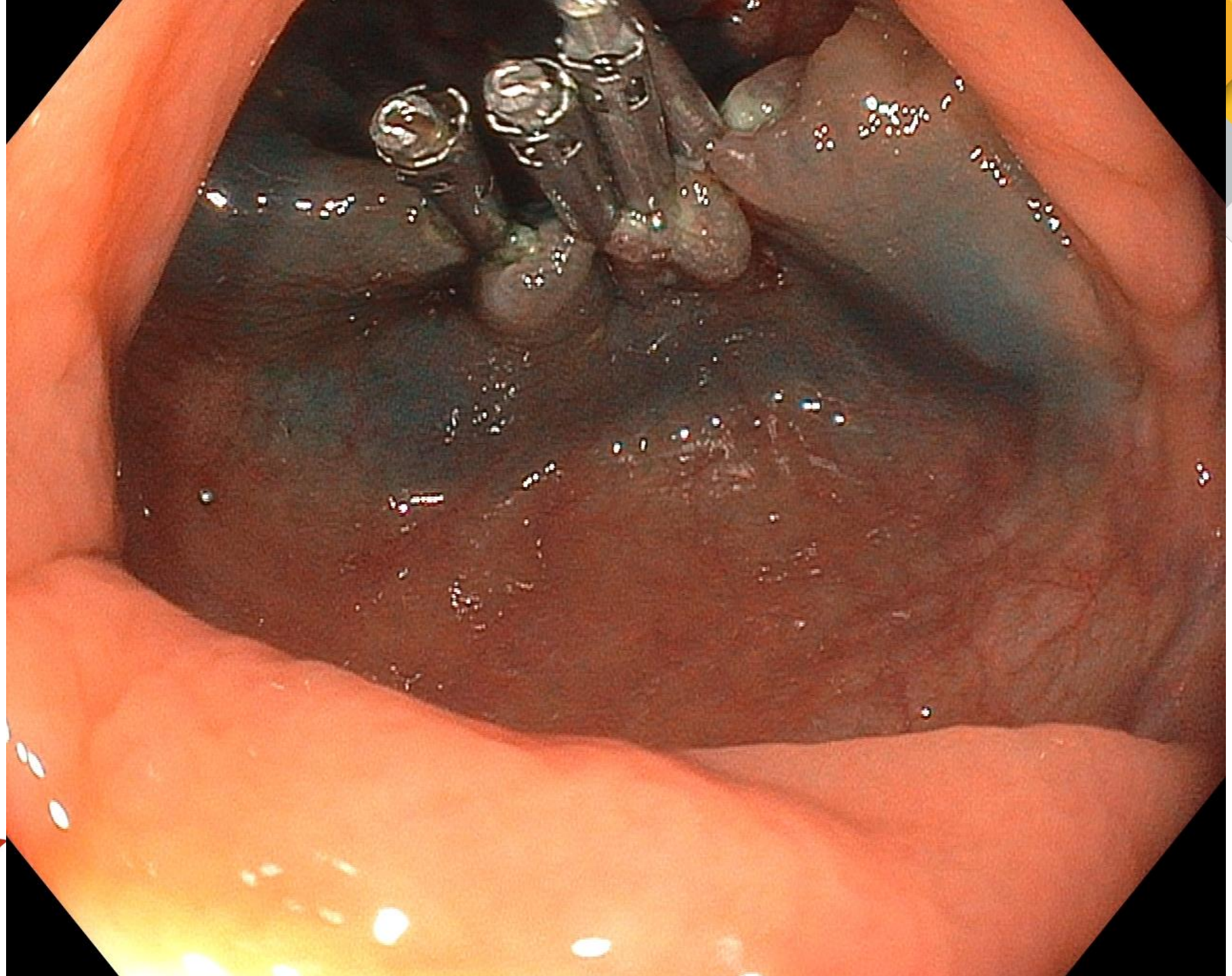
How to prevent immediate and delayed post-polypectomy bleeding

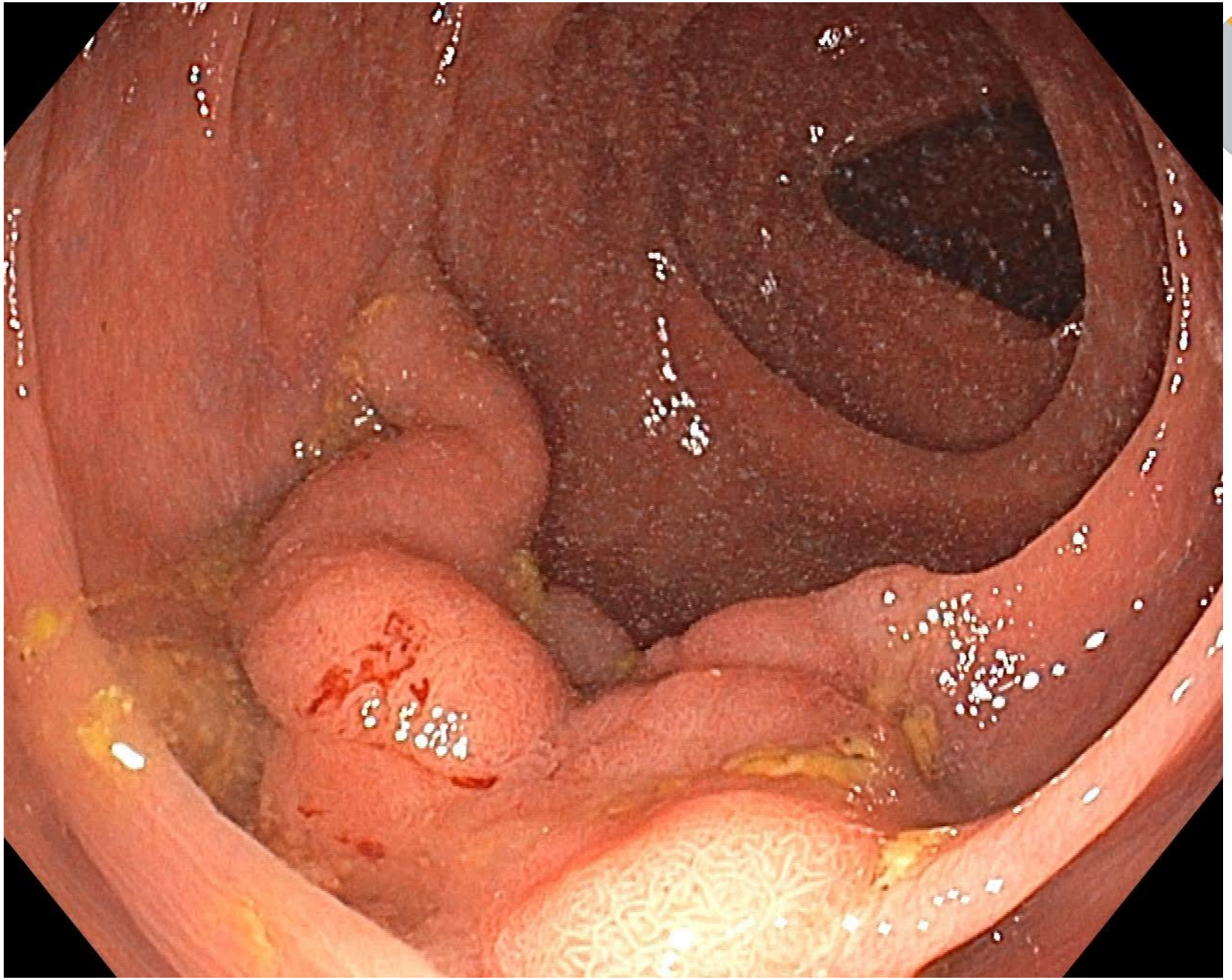
1. Use 1:100,000 epinephrine in lifting agent (immediate).
2. Pretreat pedunculated polyps (> 2 cm head and/or > 1 cm stalk) – epinephrine injection, clips, ligation (immediate).
3. Use cold snare technique when feasible (delayed).
4. Use clips to close defects for higher risk polyps/patients for both sessile (>2 cm, especially proximal colon) and pedunculated polyps (delayed).

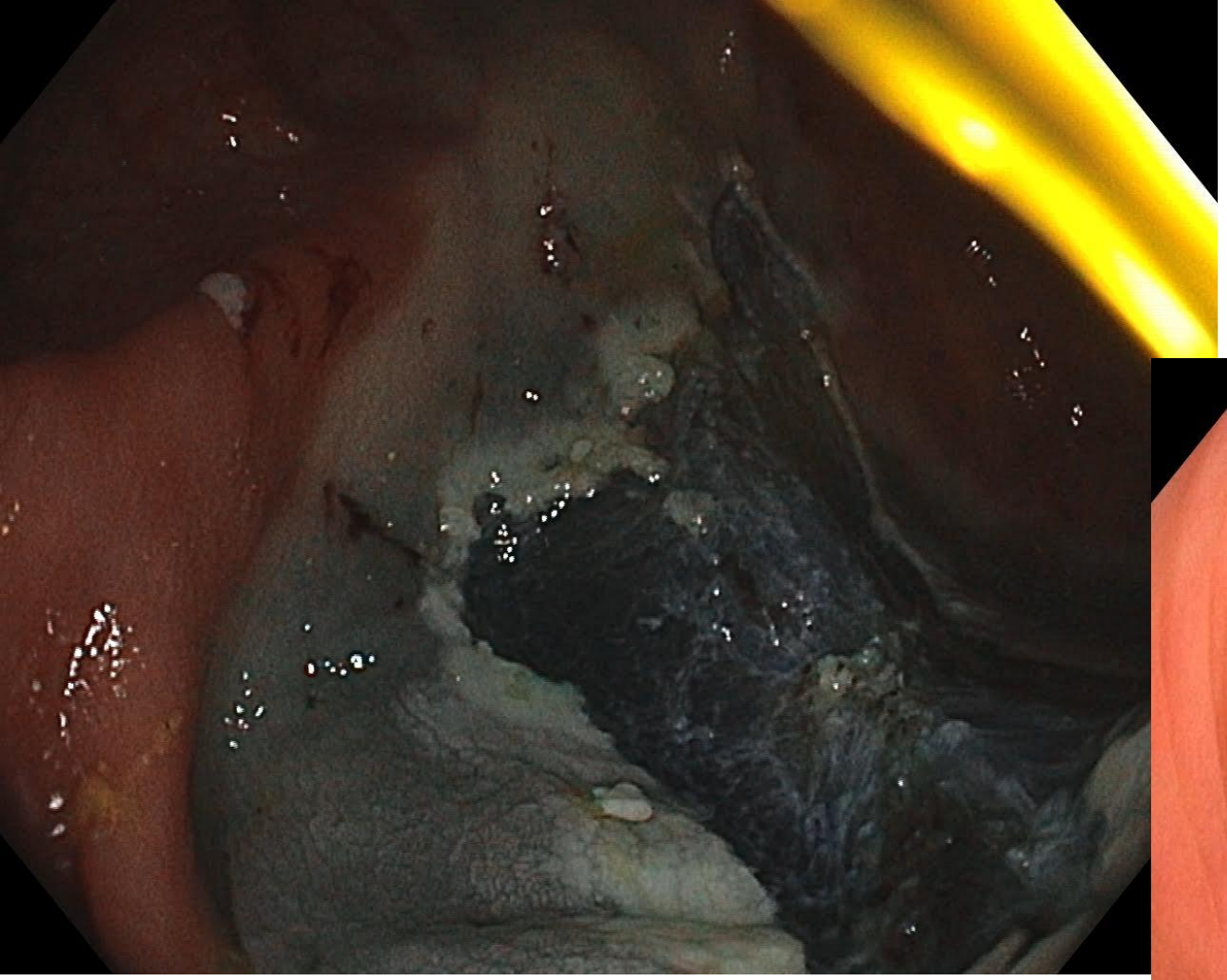
Surg Endosc. 2022 Feb;36(2):1251-1262.

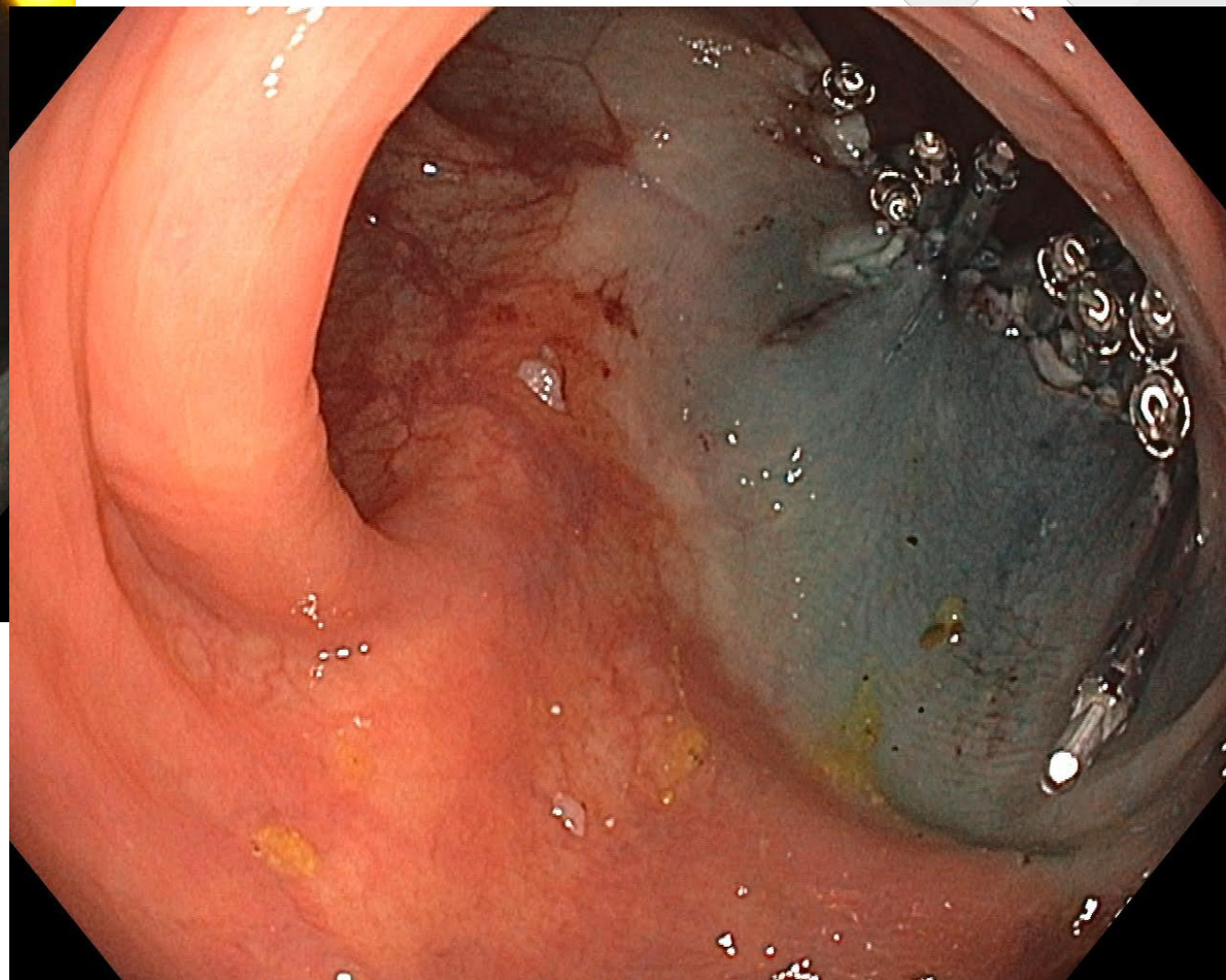


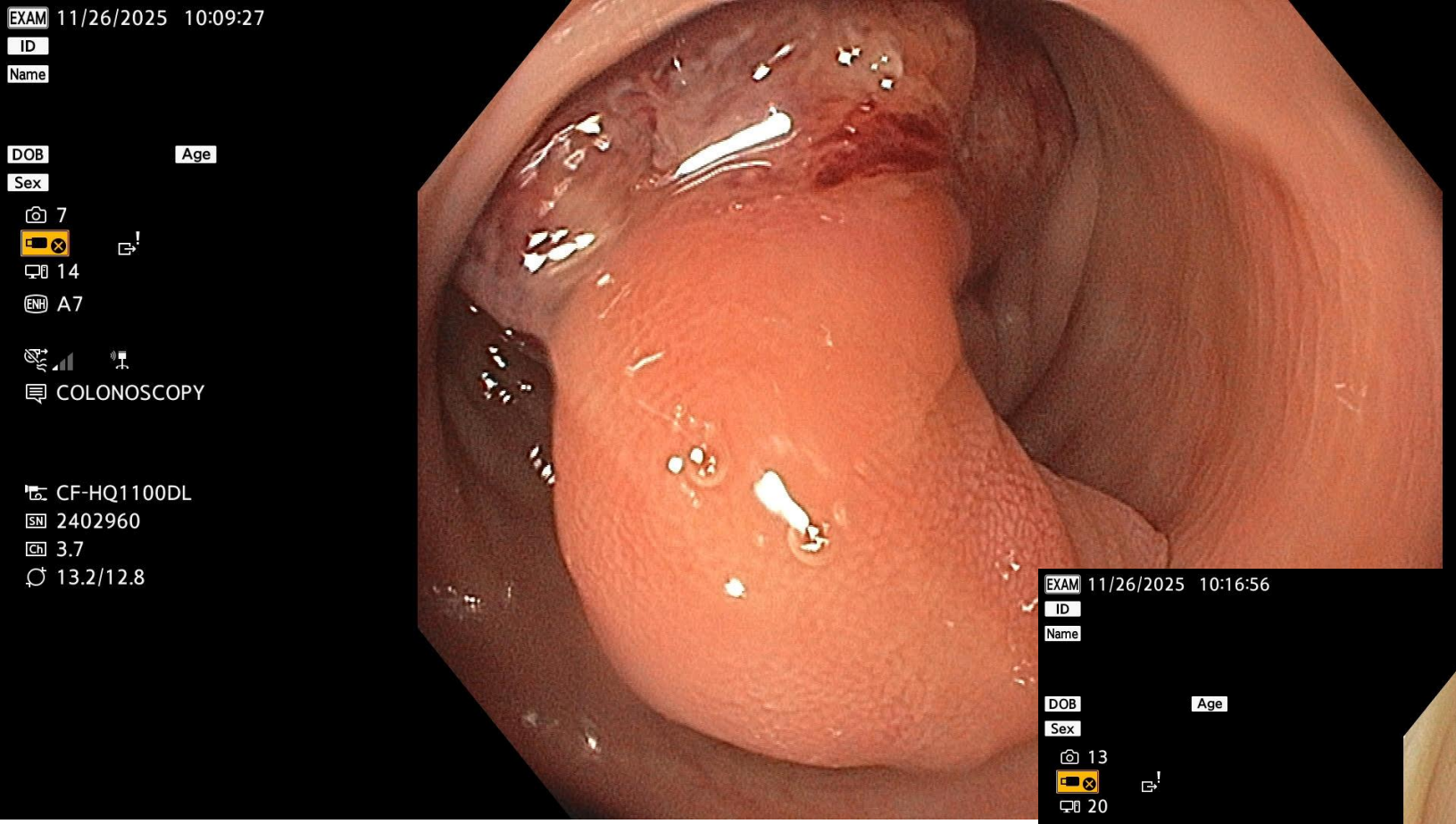








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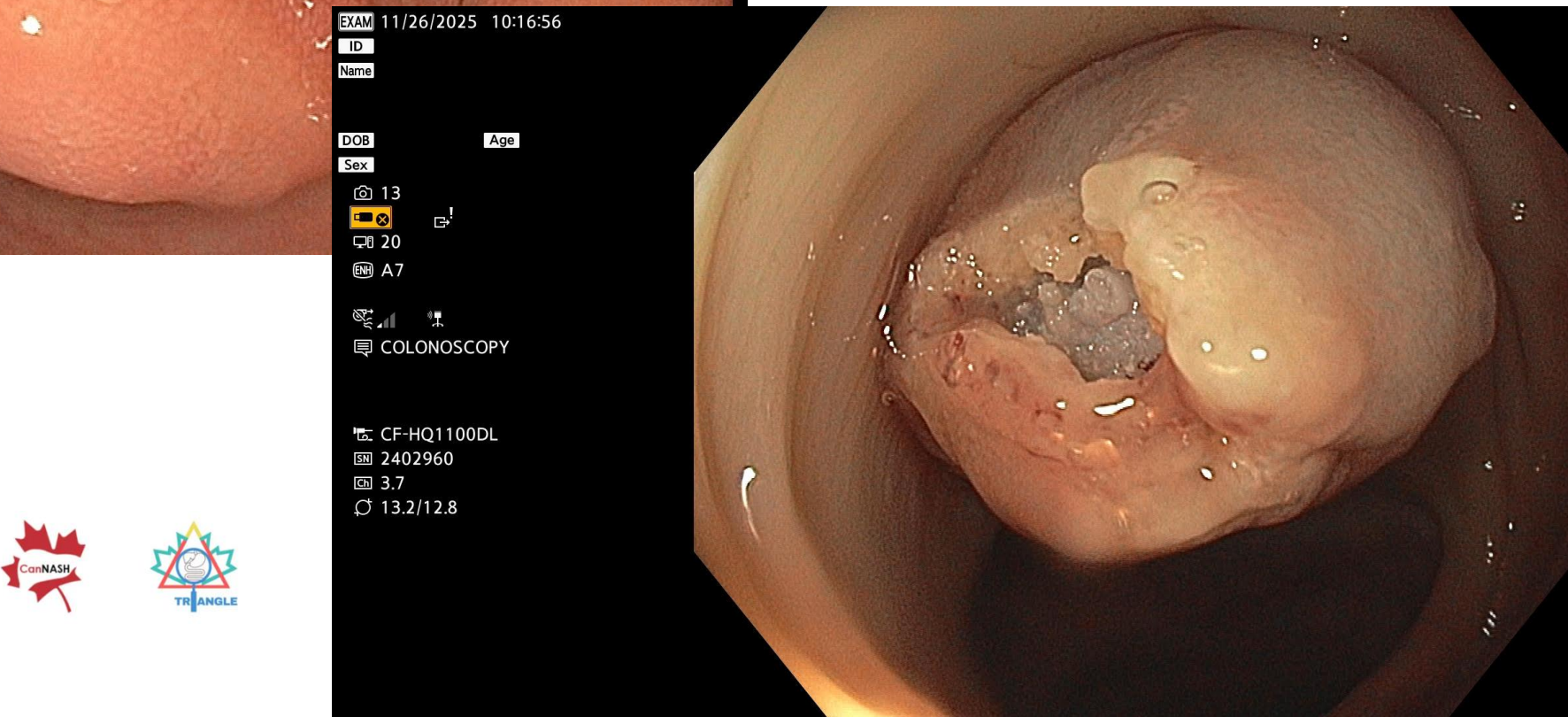
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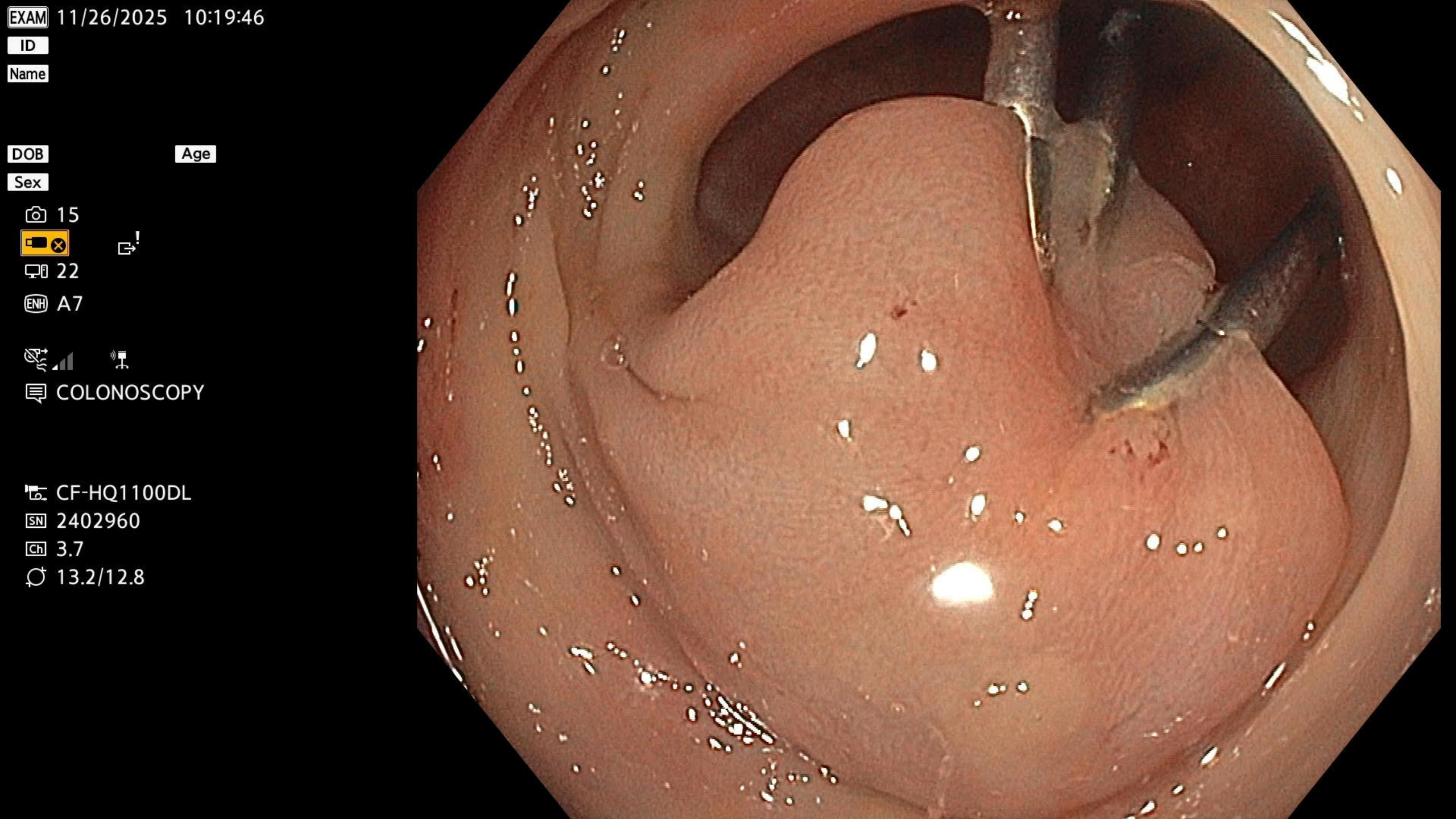
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How to treat post-polypectomy bleeding

1. Soft coagulation using snare tip during EMR for immediate bleeding or exposed vessels.
2. For active post-polypectomy bleeding, use forceps coagulation and/or mechanical techniques with or without epinephrine.
3. Consider topical agents if concerned about bleeding control.

Polyp Recurrence

How to prevent polyp recurrence

1. Perform en bloc resection when possible.
2. Carefully evaluate site post polypectomy.
3. Remove all visible or suspected polyp.
4. Post piecemeal resection, use snare tip soft coagulation (STSC) to treat edges of polypectomy site (meta-analysis shows RR recurrence 0.27 (0.21-0.34). STSC appears superior to APC.
5. Consider STSC post resection of any non-pedunculated polyp > 20 mm.

J. Clin. Med. **2024**, *13*, 1298. https://doi.org/10.3390/jcm13051298

General Tips

1. Do a practice run for complex polypectomies.
2. Identify dependent area – where will blood pool?
3. For EMR, carefully evaluate if snare has captured all of polyp.
4. For EMR, be careful about grasping too much normal tissue.
5. If it takes longer to cut through a sessile polyp than expected, stop, release snare and re-evaluate.

Summary

1. Perform endoscopy using optimal technique on patients expected to benefit.
2. Carefully evaluate polyps and consider options for resection – cold snare if possible.
3. Pretreat pedunculated polyps with higher risk of bleeding.
4. Lift sessile sessile polyps to facilitate resection and reduce perforation risk.
5. Use cold snare when possible.
6. Carefully assess post-polypectomy site for bleeding, residual polyp and signs of deep mural injury.
7. Prophylaxis against delayed bleeding and recurrence where appropriate.

Colorectal polypectomy and endoscopic mucosal resection: European Society of Gastrointestinal Endoscopy (ESGE) Guideline – Update 2024

Authors

Monika Ferlitsch[1,2], Cesare Hassan[3,4], Raf Bisschops[5], Pradeep Bhandari[6], Mário Dinis-Ribeiro[7,8,9], Mauro Risio[10], Gregorios A. Paspatis[11], Alan Moss[12,13], Diogo Libânio[7,8,9], Vincente Lorenzo-Zúñiga[14,15], Andrei M. Voiosu[16,17], Matthew D. Rutter[18,19], Maria Pellisé[20,21], Leon M. G. Moons[22], Andreas Probst[23], Halim Awadie[24], Arnaldo Amato[25], Yoji Takeuchi[26], Alessandro Repici[3,4], Gabriel Rahmi[27,28], Hugo U. Koecklin[29,30], Eduardo Albéniz[31], Lisa-Maria Rockenbauer[1], Elisabeth Waldmann[1], Helmut Messmann[22], Konstantinos Triantafyllou[32], Rodrigo Jover[33], Ian M. Gralnek[24,34], Evelien Dekker[35], Michael J. Bourke[36,37]

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