Mastering TAMIS

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Disclosures

@tamisyoda

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Stryker
Applied Medical
Conmed
Human Extensions
LivsMed
Proximie
Astellas Pharmaceuticals
Distal Motion
Endo Quest

Surg Endosc
DOI 10.1007/s00464-010-0927-z

First Report

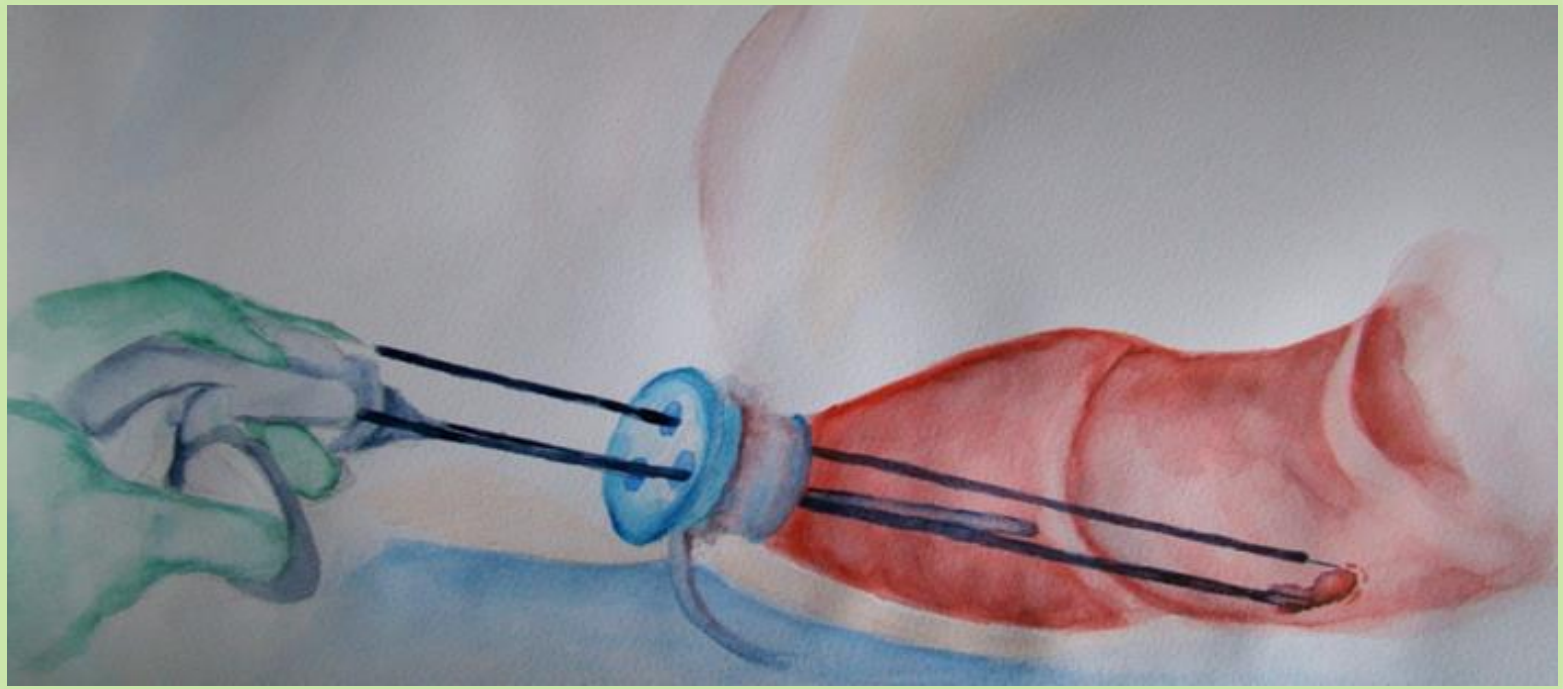
Transanal minimally invasive surgery: a giant leap forward

Sam Atallah · Matthew Albert · Sergio Larach

Published online: 21 February 2010

'TAMIS' is coined

Springer



TEM superior to transanal excision

DISEASES OF THE COLON & RECTUM

ORIGINAL CONTRIBUTION

Transanal Endoscopic Microsurgery is more Effective than Traditional Transanal Excision for Resection of Rectal Masses

Jesse S. Moore, M.D. • Peter A. Cataldo, M.D. • Turner Osler, M.D. • Neil H. Hyman, M.D.

Department of Surgery, Fletcher Allen Health Ca
Vermont

CURRENT STATUS

Transanal Endoscopic Microsurgery Versus Standard Transanal Excision for the Removal of Rectal Neoplasms: A Systematic Review and Meta-analysis

Cillian Clancy, M.B.B.Ch., M.R.C.S.I.[1] • John P. Burke, Ph.D., F.R.C.S.I.[1]
Mathew R. Albert, M.B., B.Ch., M.D.[2] • P. Ronan O'Connell, M.D., F.R.C.S.I.[1,3]
Desmond C. Winter, M.D., F.R.C.S.I.[1,3]

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ORIGINAL CONTRIBUTION

Quality of Local Excision for Rectal Neoplasms Using Transanal Endoscopic Microsurgery Versus Transanal Minimally Invasive Surgery: A Multi-institutional Matched Analysis

Lawrence Lee, M.D., Ph.D.[1] • Kimberly Edwards, M.B.B.S.[2] • Iain A. Hunter, M.D.[2]
John E. Hartley, M.D.[2] • Sam B. Atallah, M.D.[1] • Matthew R. Albert, M.D.[1]
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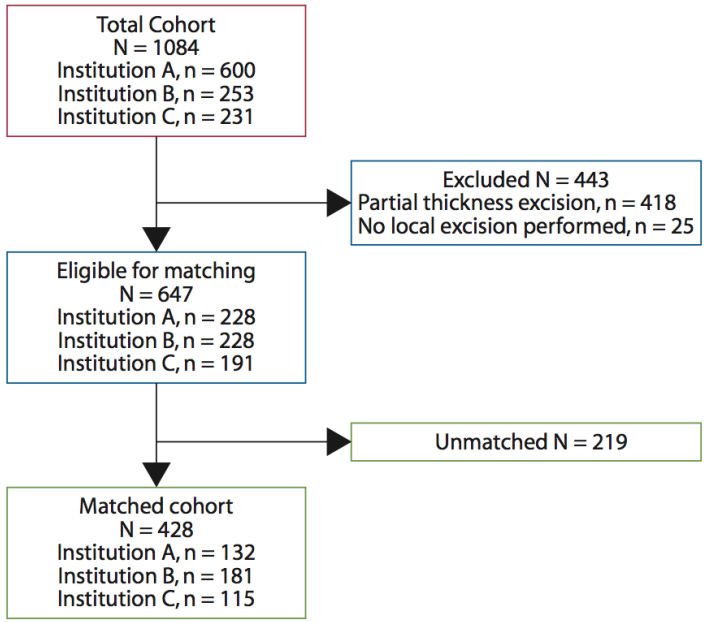

TEM 247 **TAMIS 181**

- No difference in complications 11 vs 9 %
- No difference in peritoneal violation 3%
- No difference in poor quality excision 8 vs 11%

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TAMIS was associated with

- Shorter operative times
- Quicker discharge
- Equivalent cumulative 5 year disease free survival

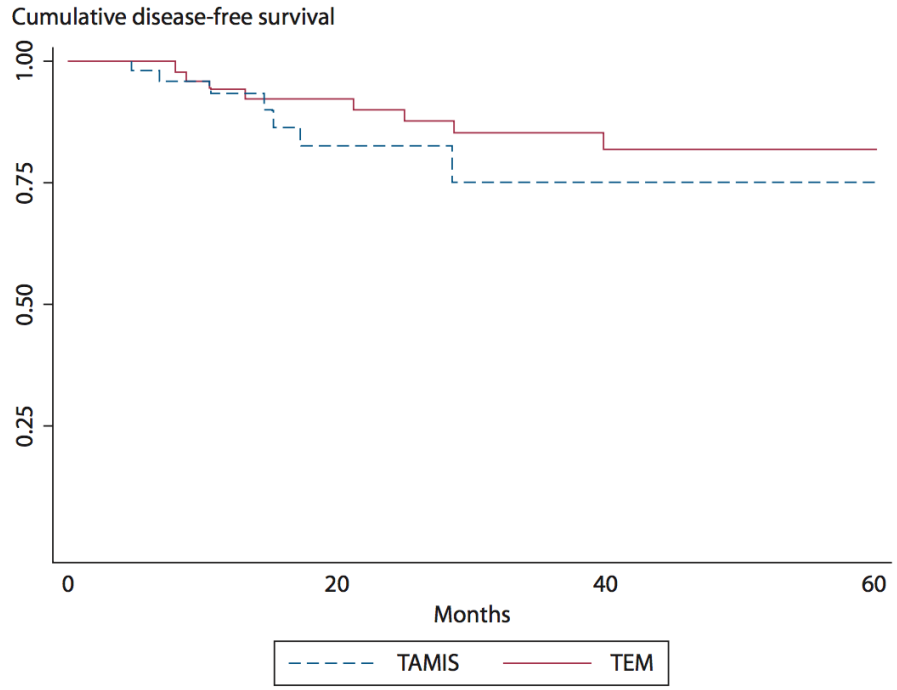

FIGURE 2. Comparative Kaplan–Meier disease-free survival curves for matched patients undergoing transanal endoscopic microsurgery (TEM) and transanal minimally invasive surgery (TAMIS) for malignancy who did not undergo immediate salvage surgery.

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Mastering TAMIS:

1. Practice (rehearse/simulate/perfect)
    - TAMIS course
    - Cadaver/Animal Tissue (cow rectum)/Inanimate models
    - Skills training (Grasping/ergonomics/suturing
    - Didactics

CUSUM Analysis

Main proficiency outcome: resection margin involvement

- Transanal endoscopic microsurgery (TEM)
- Transanal excision (TAE)

Proficiency determined by cumulative summation (CUSUM) analysis

- Acceptable decision limit: TEM 10%
- Unacceptable decision limit: TAE 26%
- Clancy et al. *Dis Colon Rectum* 2015

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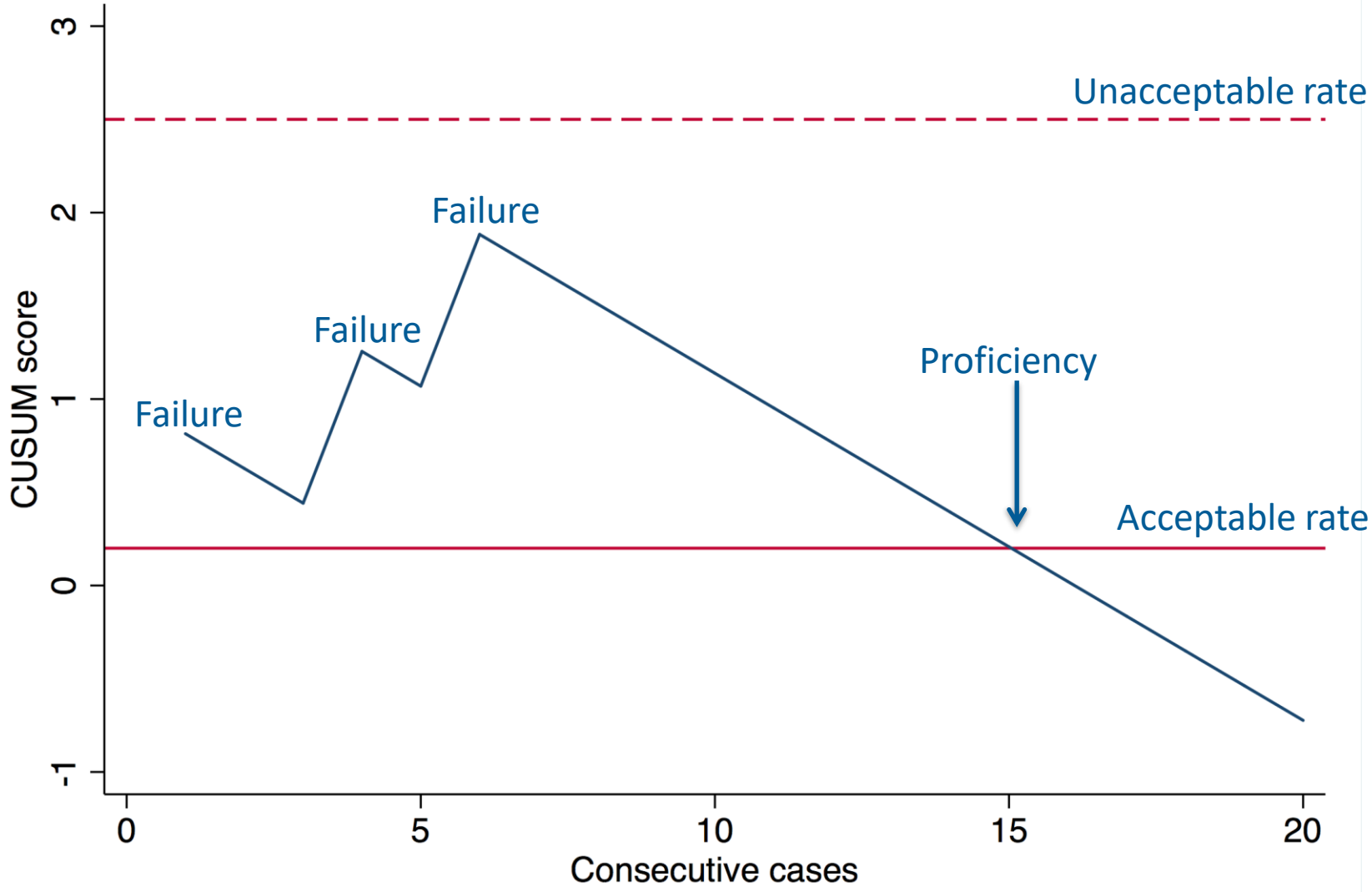
CUSUM Graph Example



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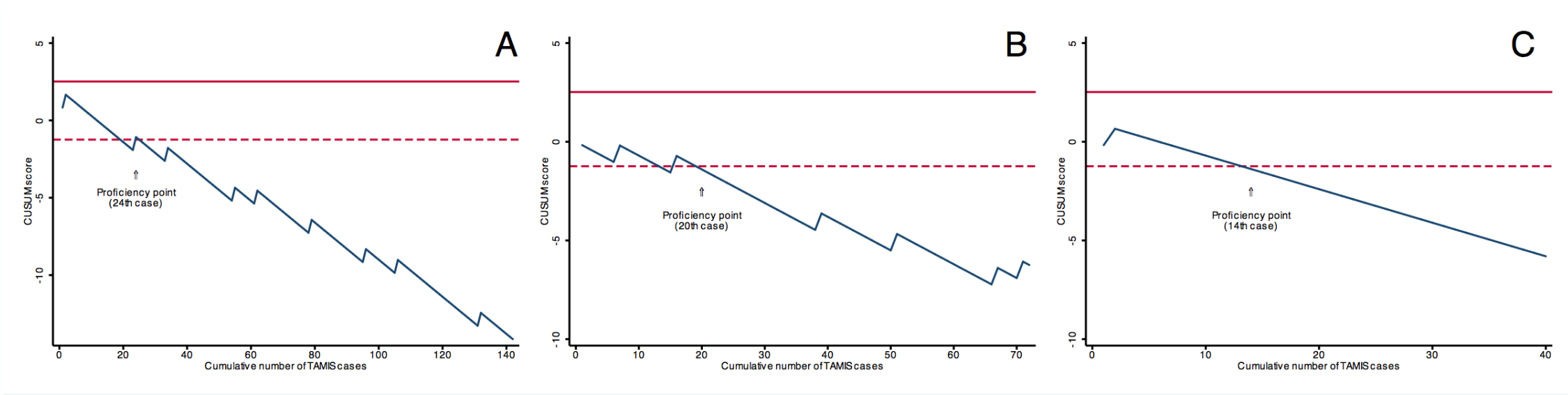

24 cases

20 cases

14 cases

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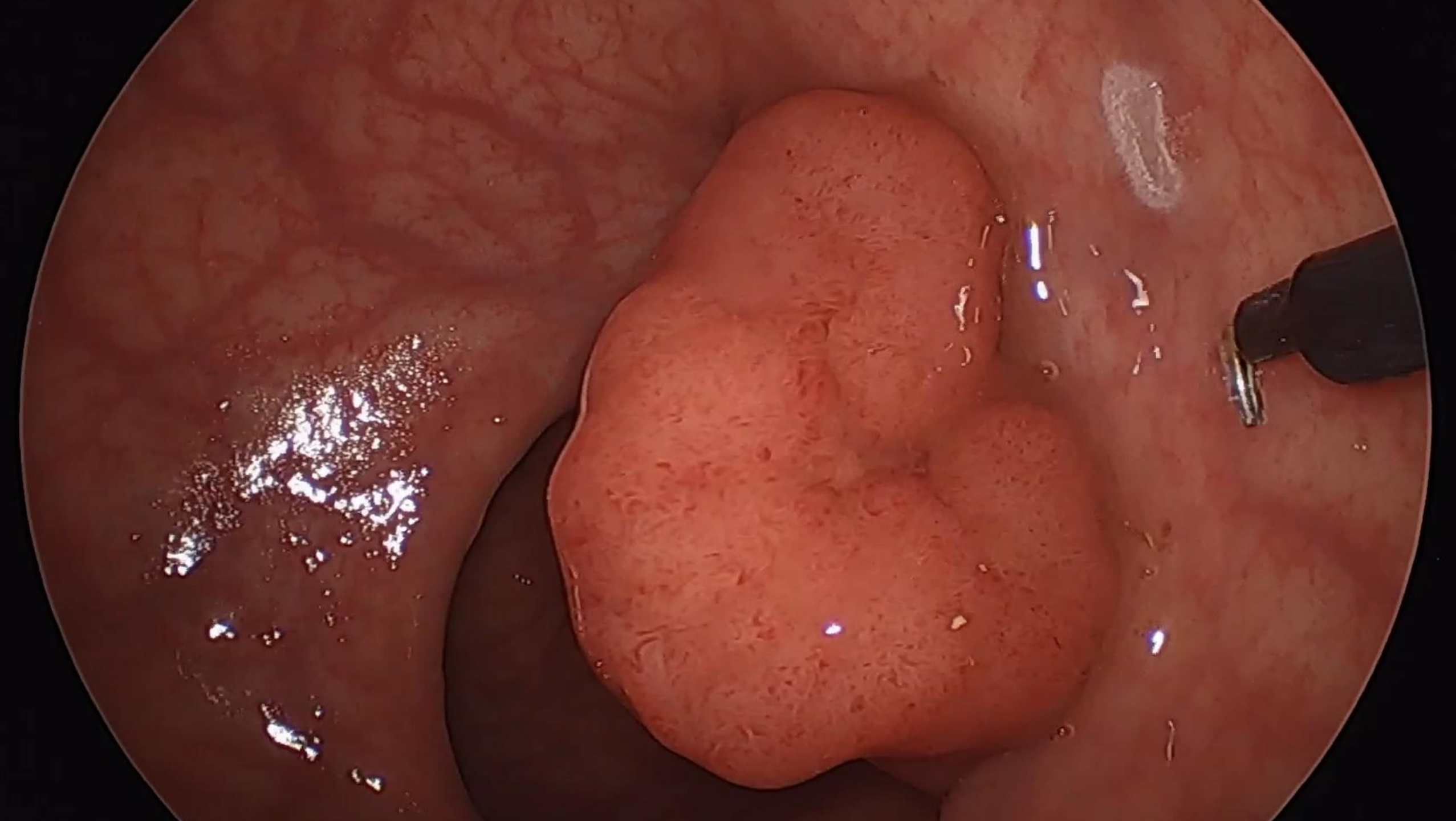
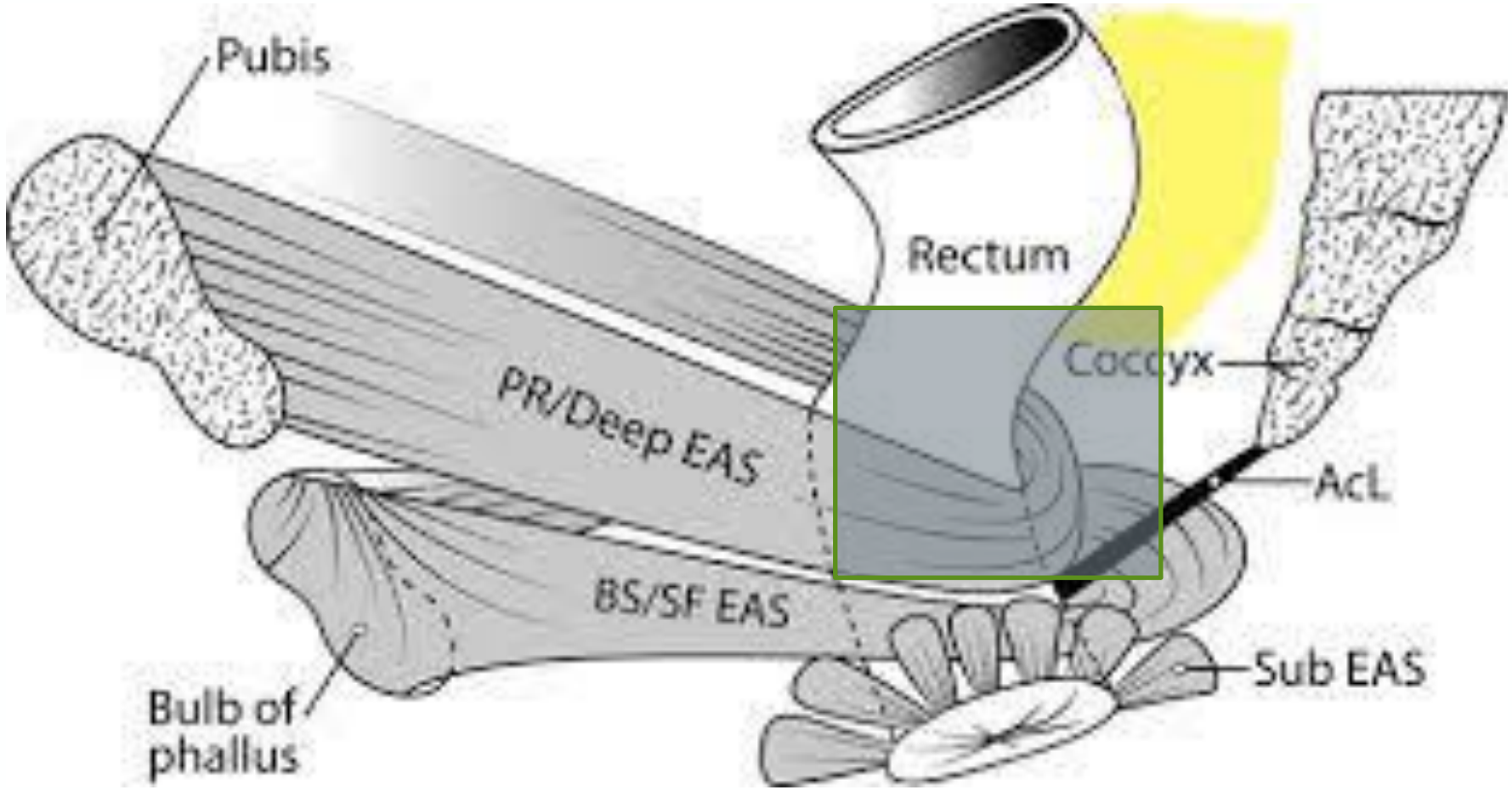


No mans land



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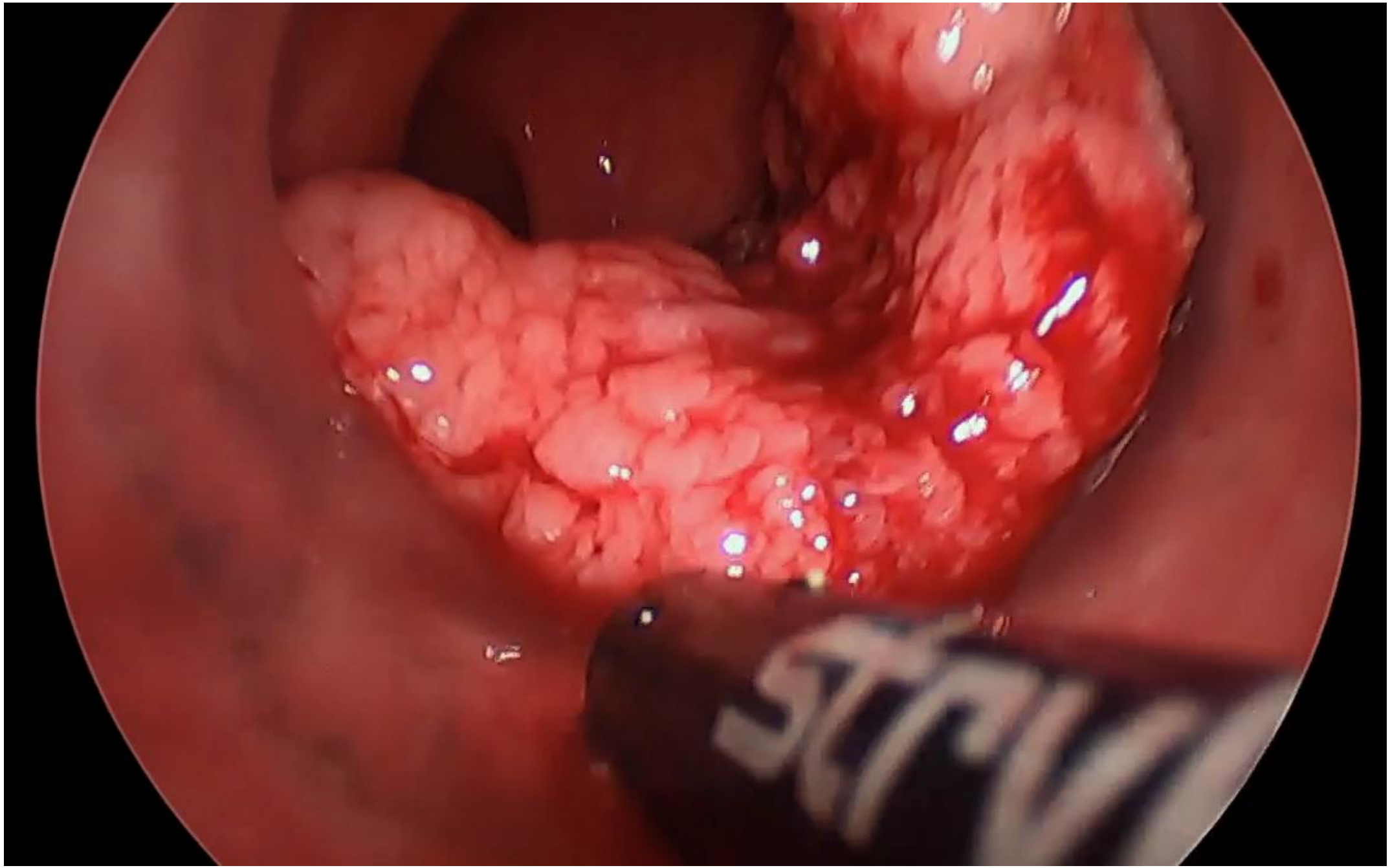

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TAMIS-Early rectal C

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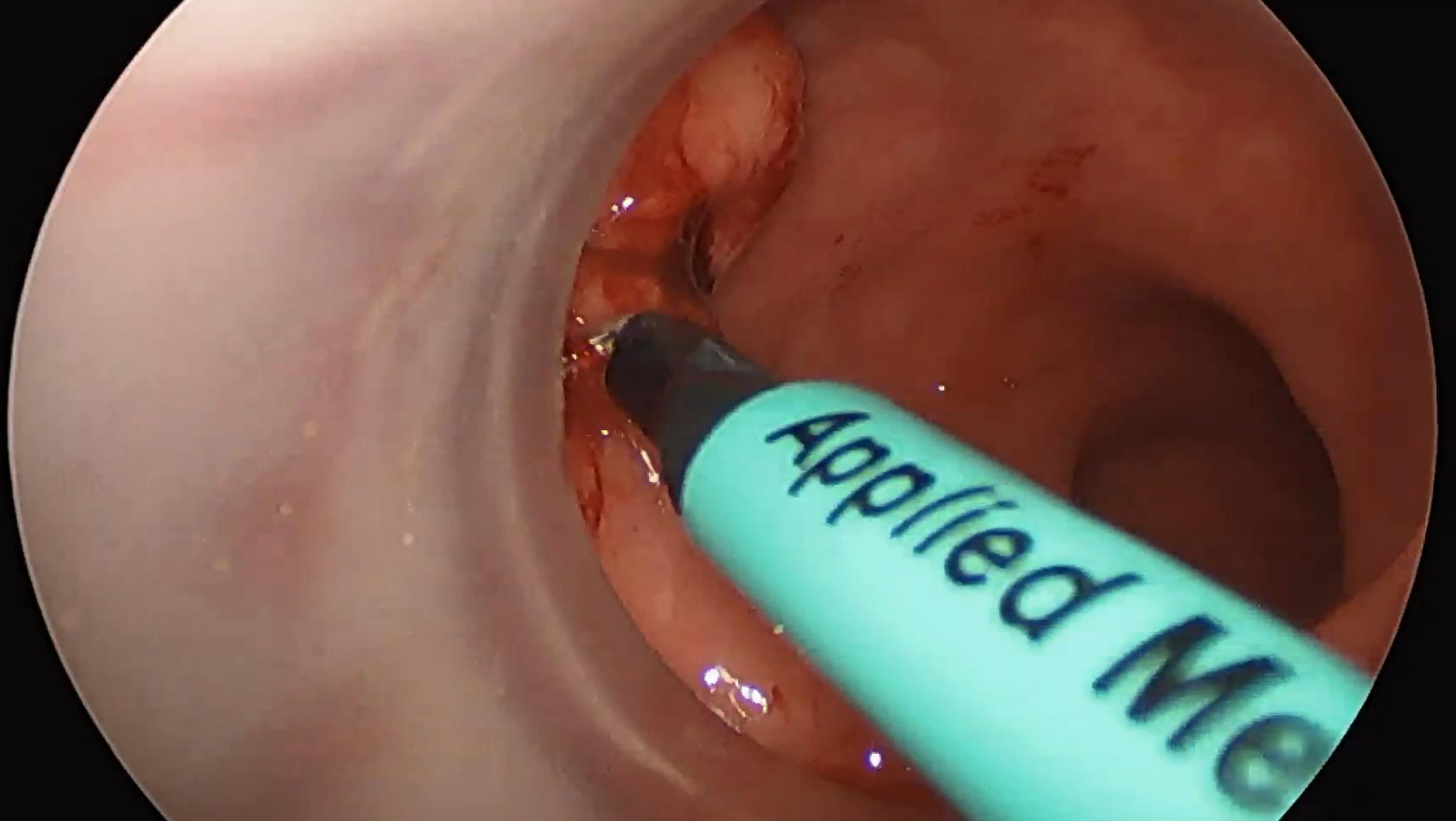
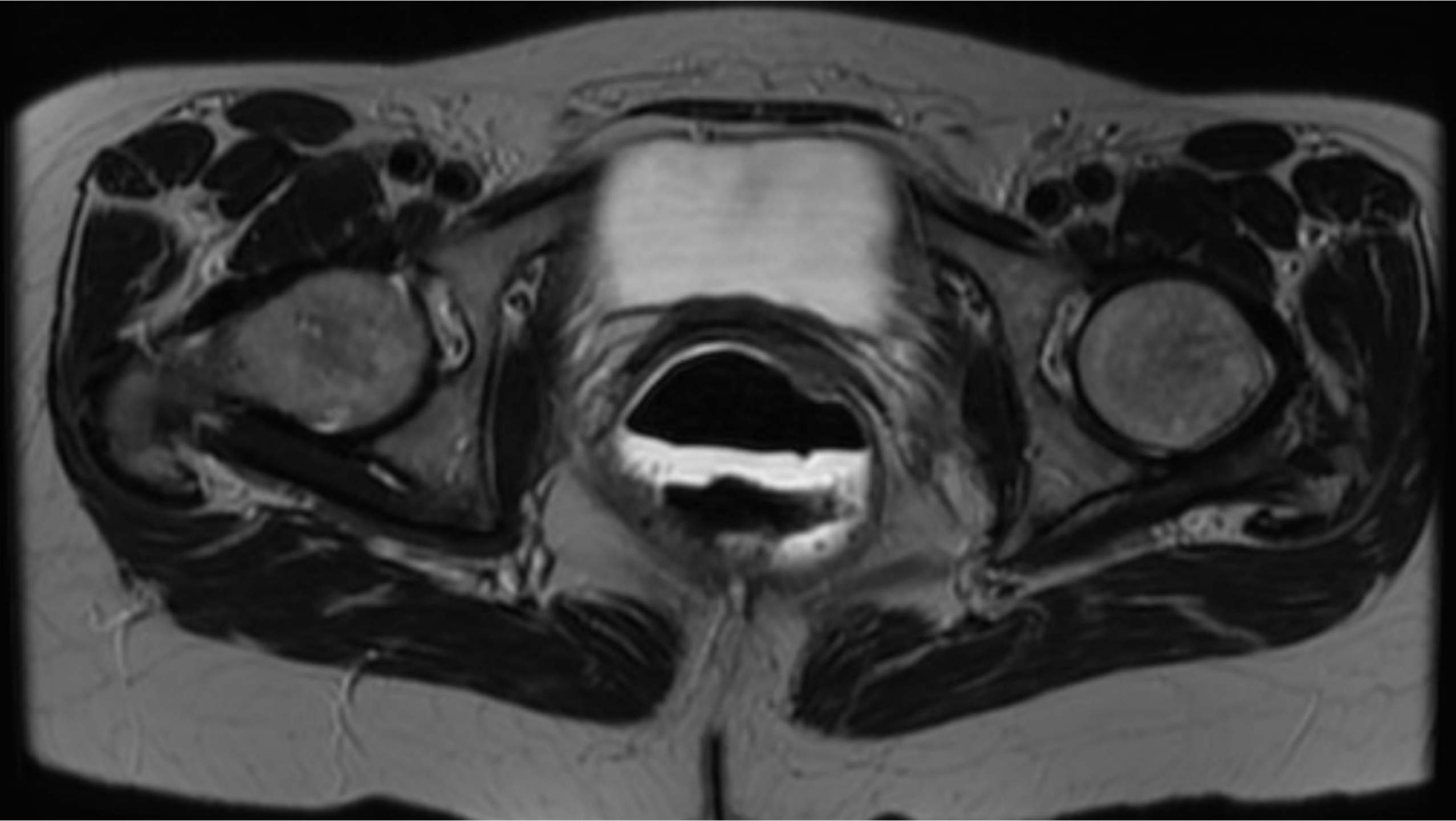
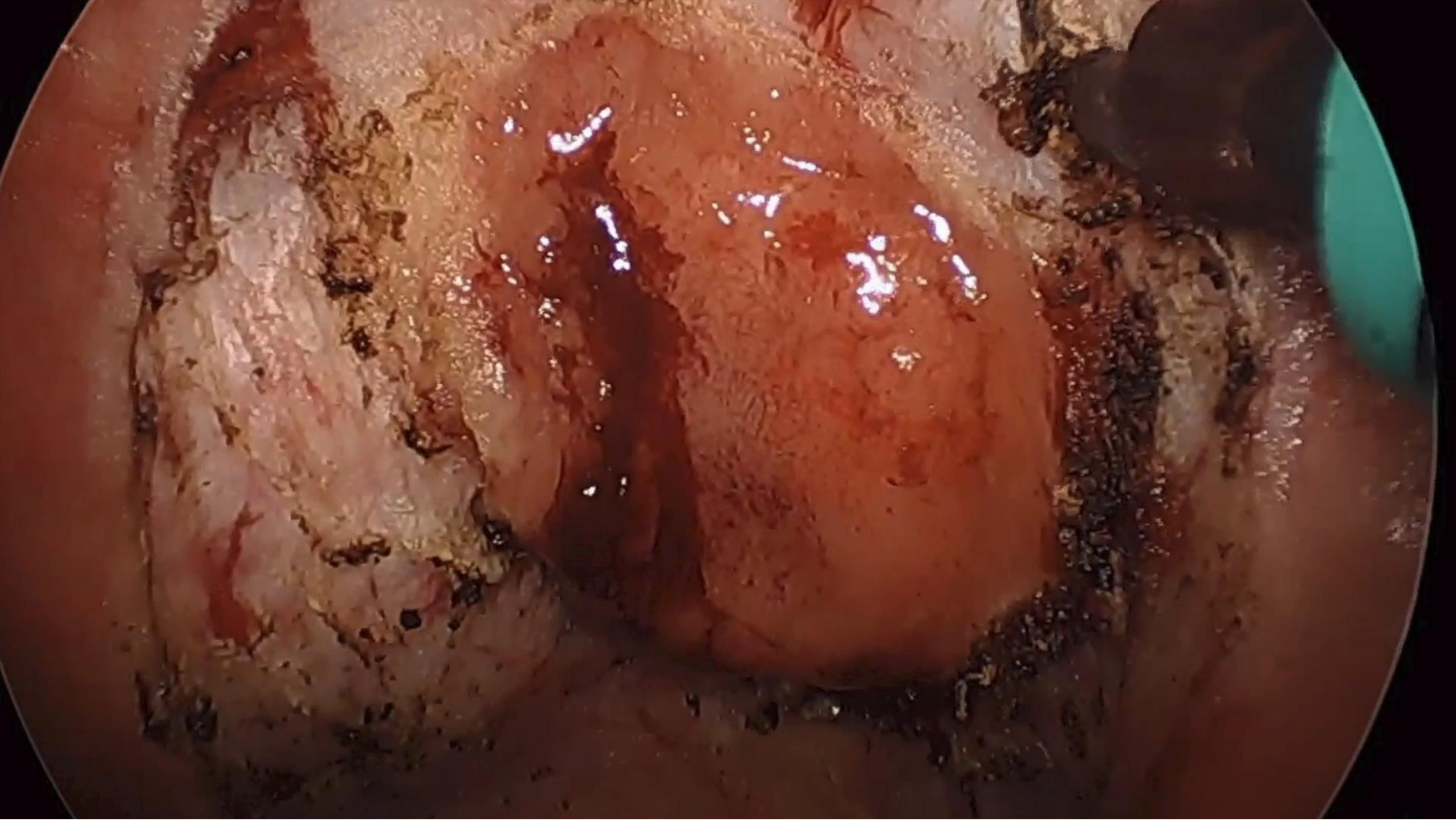

Applied Me





3. Appropriate Indications

ASCRS Guidelines

"Local excision is an appropriate treatment modality for **carefully selected** T1 rectal cancers without **high-risk features"**

- **T2 cancers?**
- **Palliative excision**
- **After neoadjuvant CRT**

Rule of 2's:

- **Too old**
- **Too sick**
- **Too obese**

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Excisional biopsy

ORIGINAL CONTRIBUTION

Radiologic Evaluation of Clinically Benign Rectal Neoplasms May Not Be Necessary Before Local Excision

Lawrence Lee, M.D., Ph.D.[1] • Leor Arbel, B.S.[1] • Matthew R. Albert, M.D.[1]
Sam B. Atallah, M.D.[1] • James Hill, M.D.[2] • John R.T. Monson, M.D.[1]

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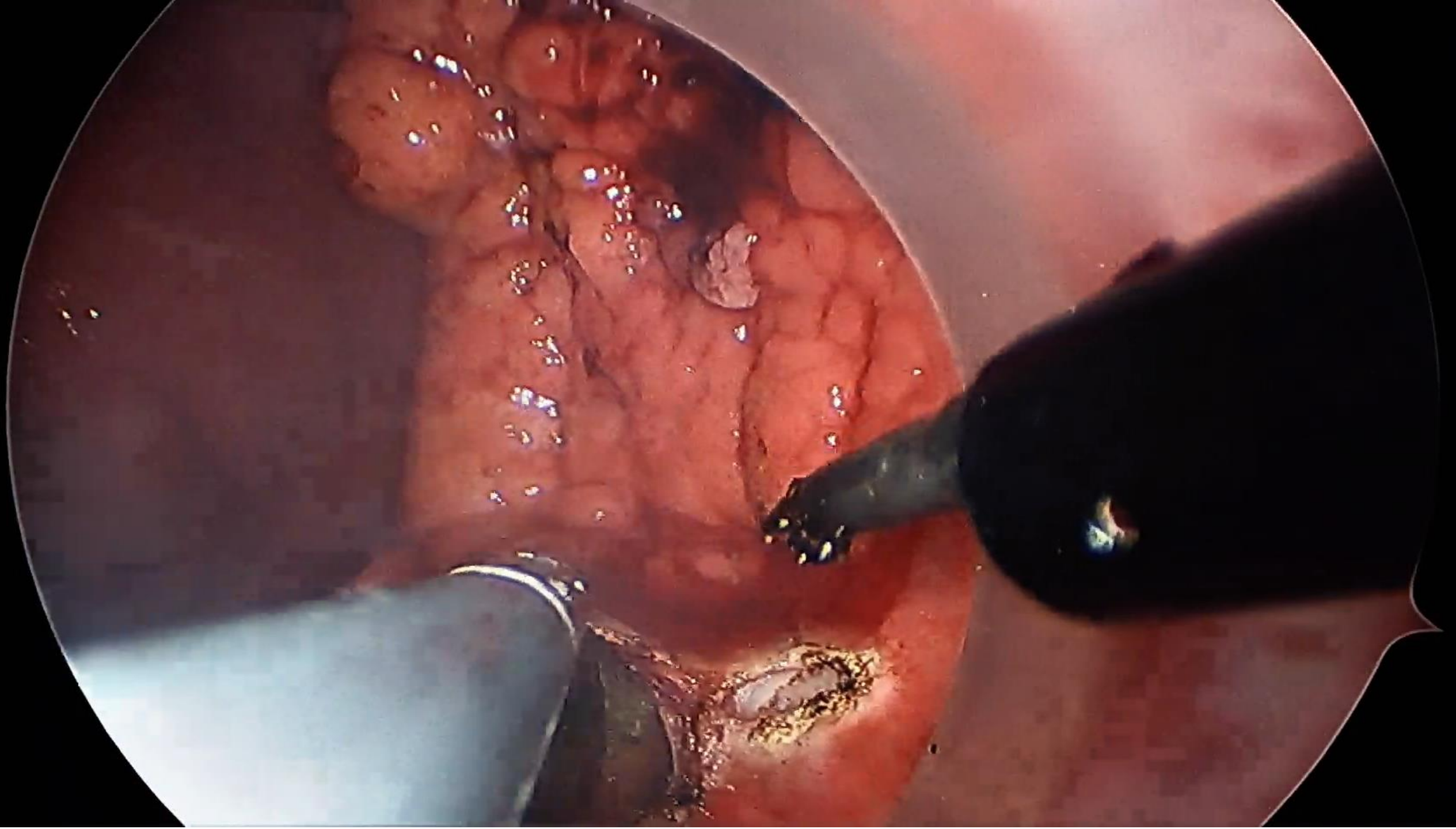
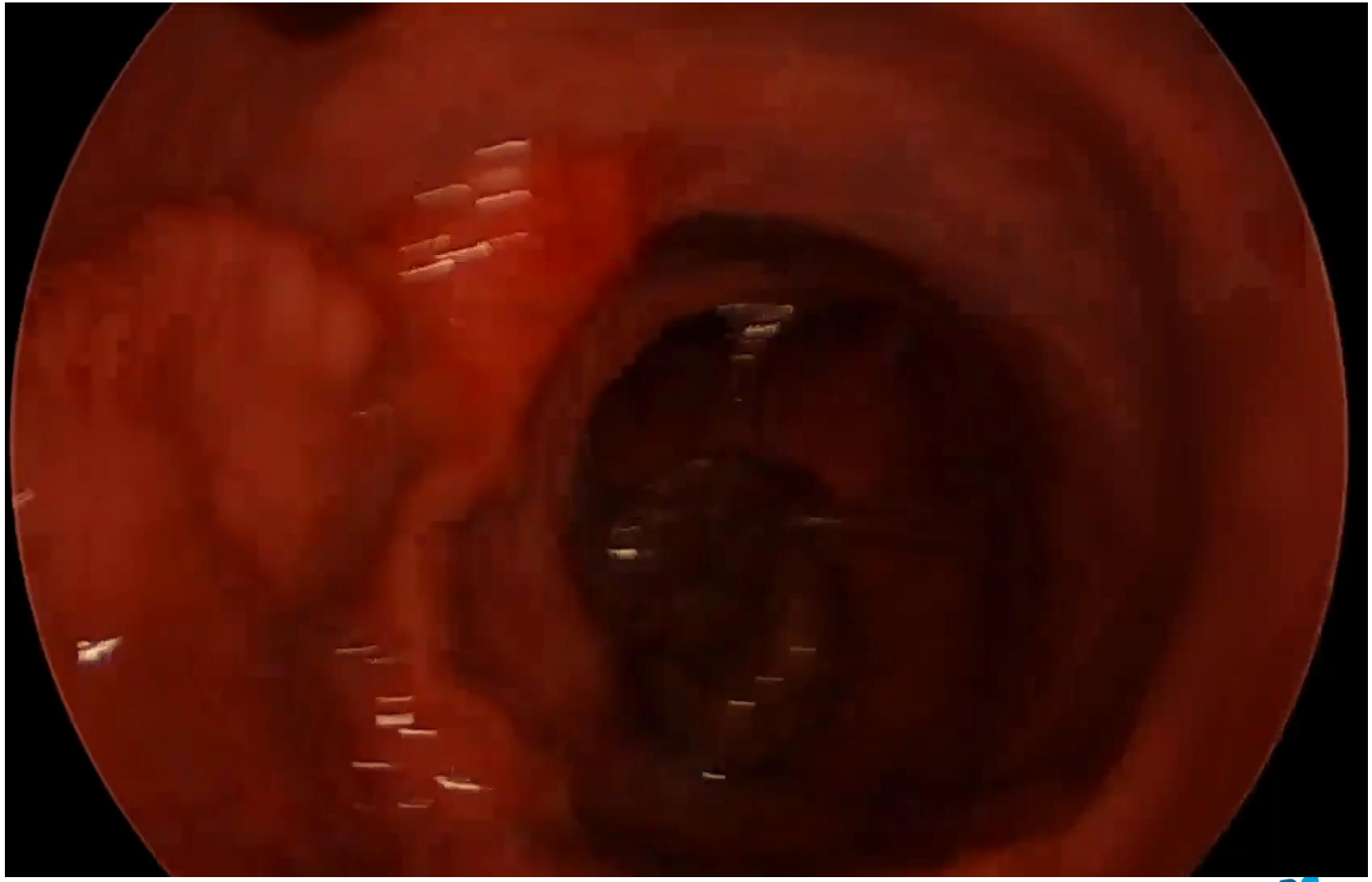


60 year old with synchronous splenic flexure cancer and low rectal lesion with HGD.
MRI T3N1



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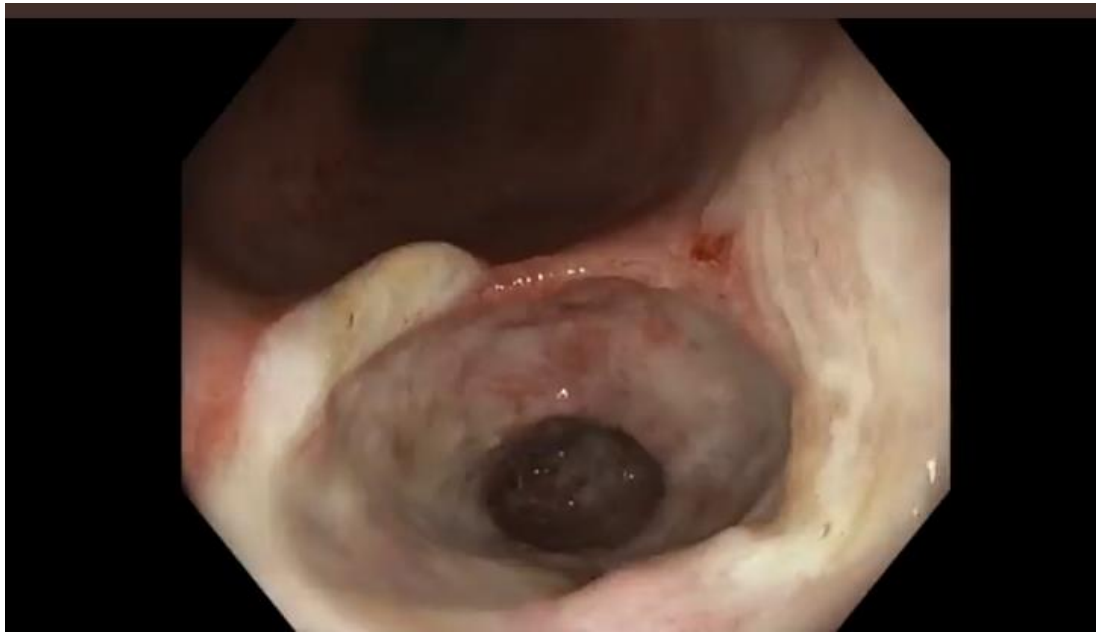
Post Radiotherapy



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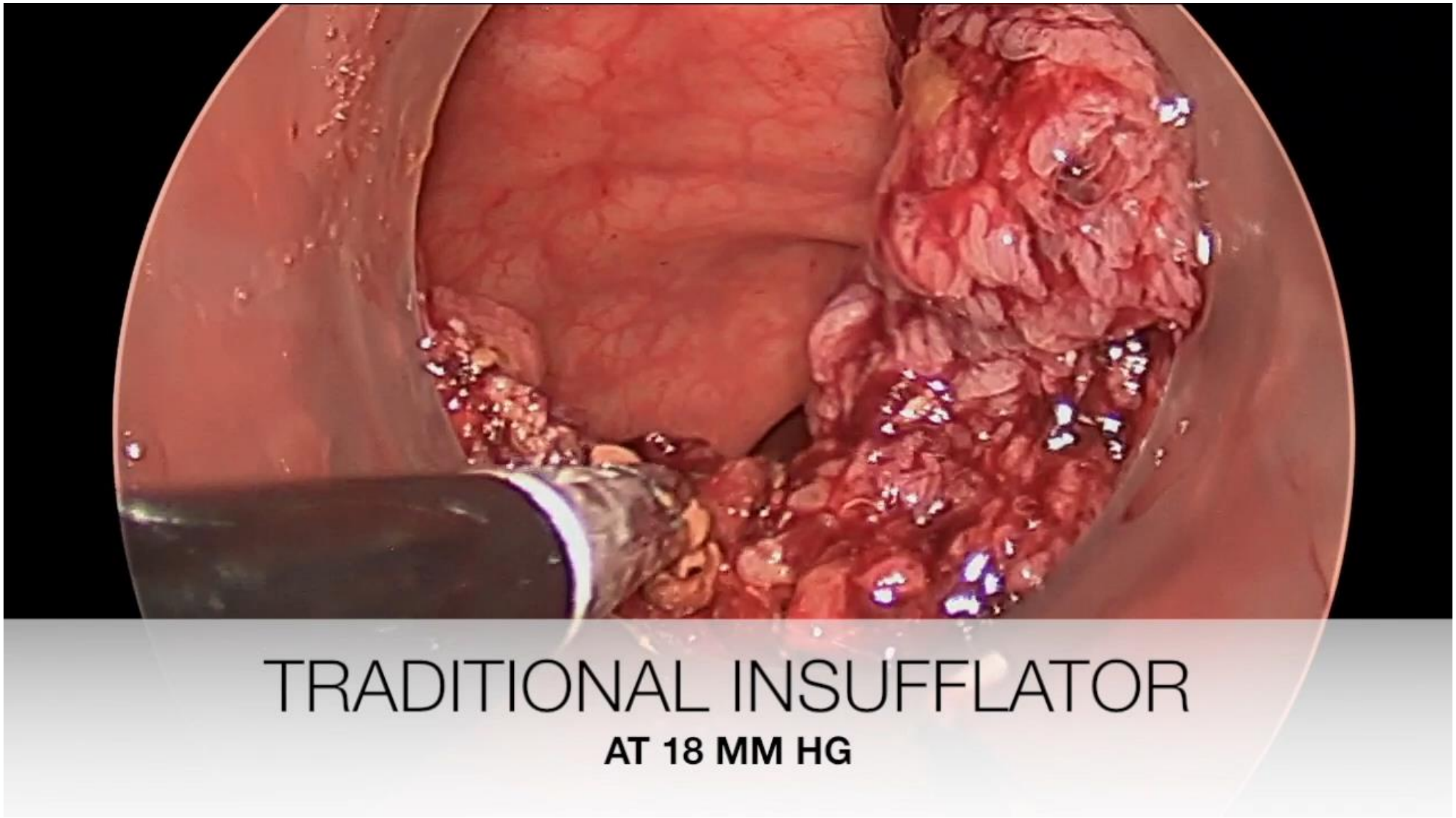
4. Clear operative view



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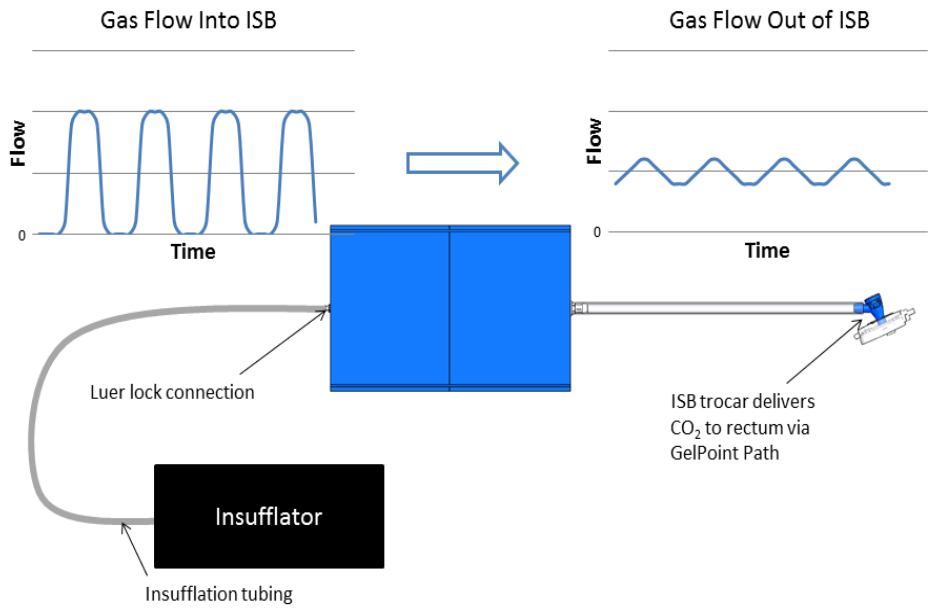
Insuffolation stabilization bag (ISB)



-ISB is an accessory that increases the overall volume creating a reservoir of CO_2

-The bag absorbs the pulsing and allows the surgical space to remain stable

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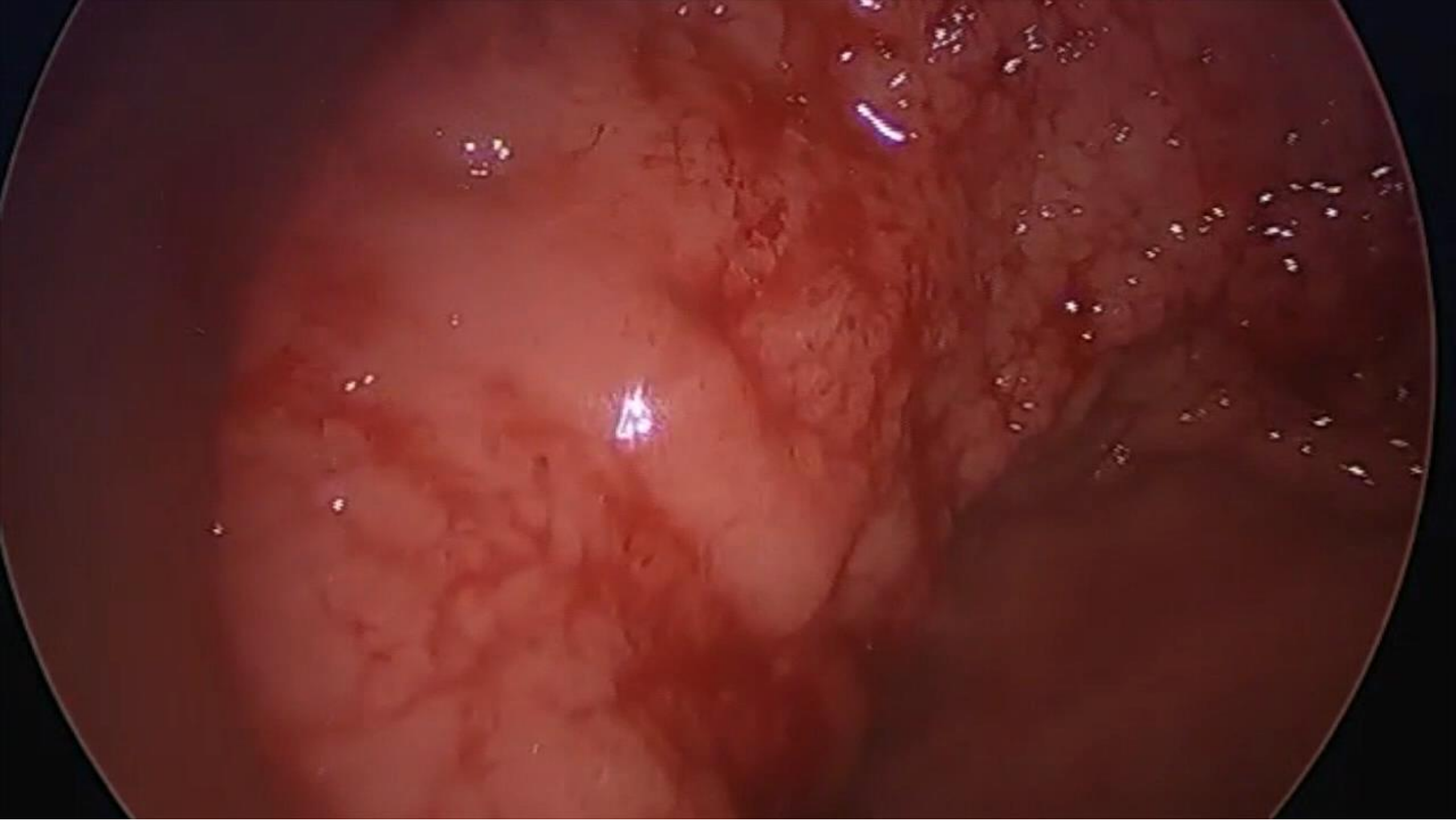
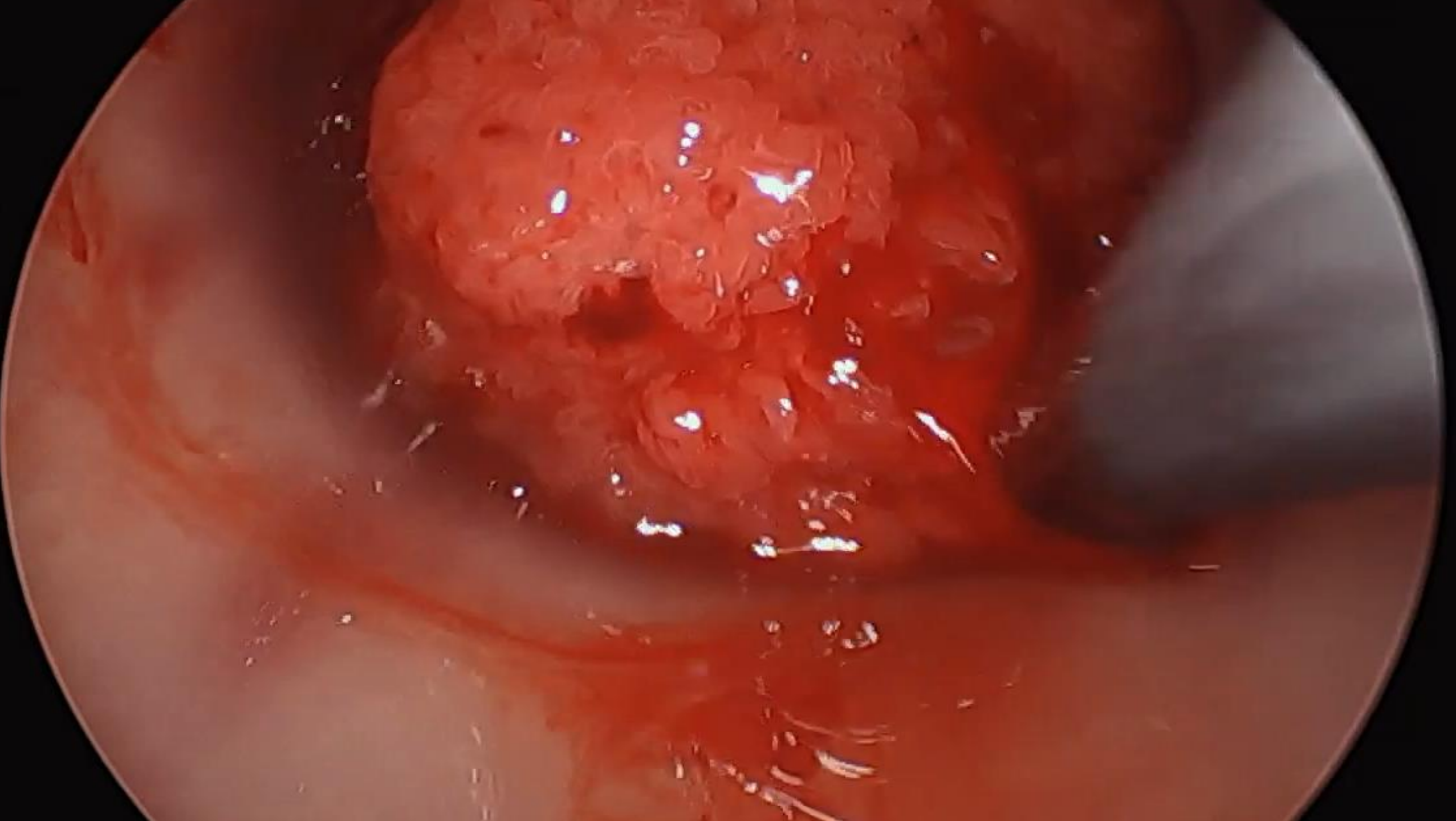




5. The Specimen is Critical

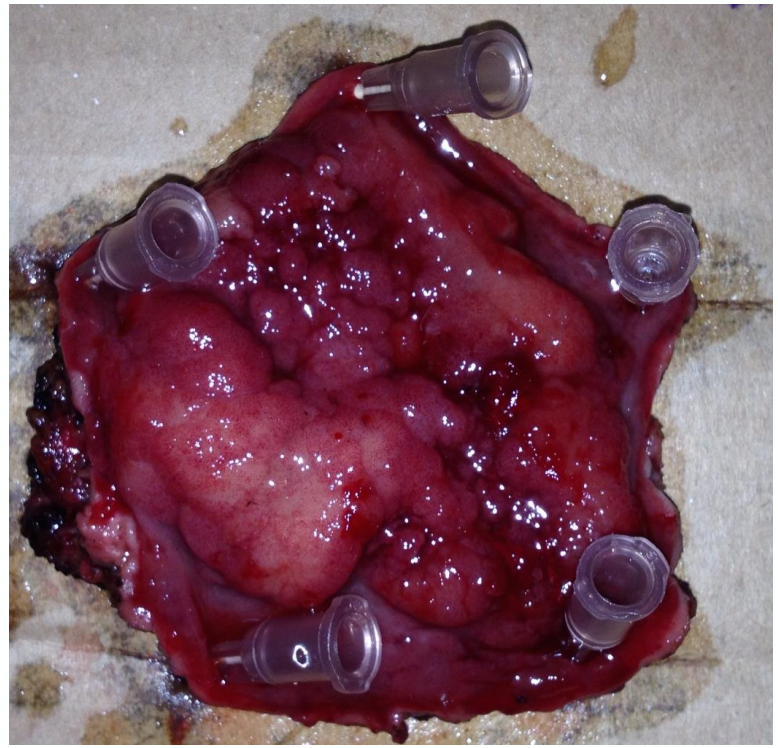
Non Fragmented

Adequate margin (5-10mm)

Full thickness

Oriented

Pathologic evaluation



After piecemeal excision:

Pathologic assessment is difficult

Local recurrence is high

Iishi H, Tatsuta M, Iseki K, et al. Endoscopic piecemeal resection with submucosal saline injection of large sessile colorectal polyps. Gastrointest Endosc 2000;51:697-700.

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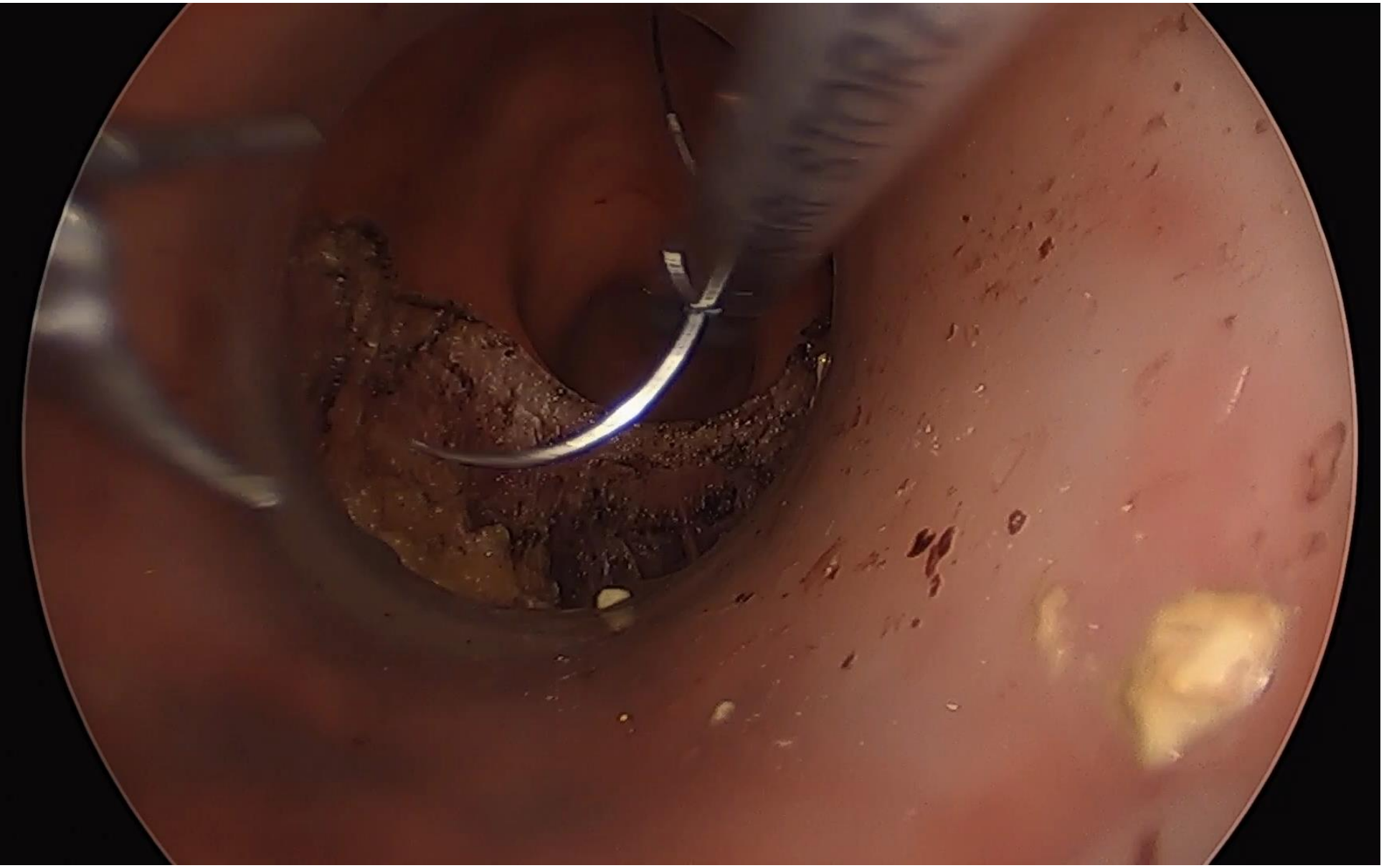
6. Close the defect/Master suturing



- Right to left
- Distal to Proximal
- Rotate the instrument
- Full thickness bites
- Bring tissue to needle

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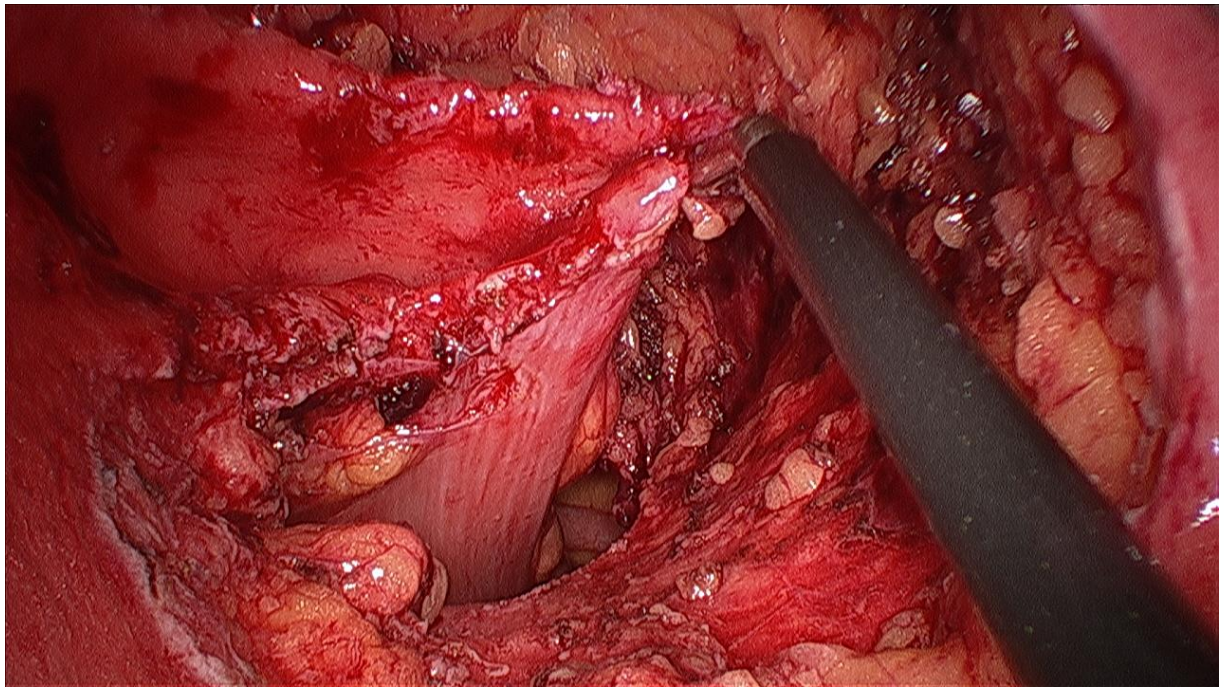

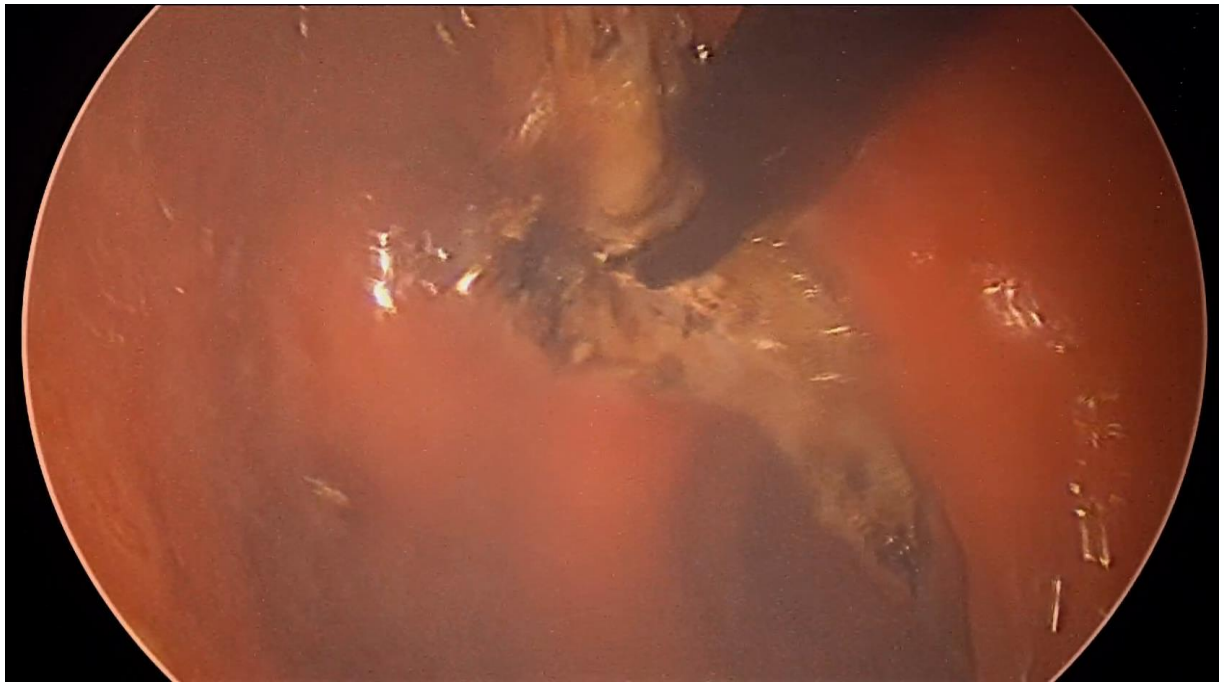

Peritoneal Entry

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7. Pathologic assessment:
Classification of level of invasion of early invasive cancer:
Kikuchi classification

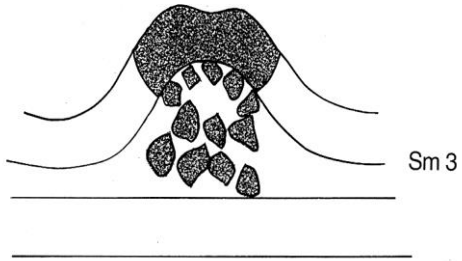
200-300 μm

Review

Management of early rectal cancer

M. G. Tytherleigh[1], B. F. Warren[2] and N. J. McC. Mortensen[1]

Departments of [1]Colorectal Surgery and [2]Cellular Pathology, John Radcliffe Hospital, Oxford, UK
Correspondence to: Mr M. G. Tytherleigh, Department of Colorectal Surgery, John Radcliffe Hospital, Oxford OX3 9DZ, UK
(e-mail: matthew@tytherleigh3.fsnet.co.uk)



sm3: carcinoma invasion near the inner surface of the muscularis propria.

LNM 25%

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Predicted Local Recurrence Rates

Depth of Invasion	LyV	Maximum Tumour Diameter (cm)					
		≤1	1.1 - 2	2.1 - 3	3.1 - 4	4.1 - 5	5.1+
pT1 *sm1*	-	3.0	3.6	4.4	5.4	6.6	8.1
	+	5.2	6.4	7.7	9.4	11.4	13.7
pT1 *sm2/3*	-	10.5	12.7	15.3	18.5	22.1	26.4
	+	17.8	21.4	25.5	30.3	35.7	41.8
pT2	-	9.8	11.9	14.3	17.3	20.7	24.7
	+	16.7	20.0	23.9	28.5	33.7	39.5

* Age < 80 years
* Well or moderately differentiated

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8. Surveillance

Benign lesions

-q 6 months proctoscopy x 2 years

Malignancy

-NCCN guidelines

-Quarterly surveillance CEA, Proctoscopy

-CT scan yearly x 3 years.

-MRI yearly x 3 years

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ANNALS OF SURGERY
A MONTHLY REVIEW OF SURGICAL SCIENCE SINCE 1885

Transanal Minimally Invasive Surgery for Local Excision of Benign and Malignant Rectal Neoplasia

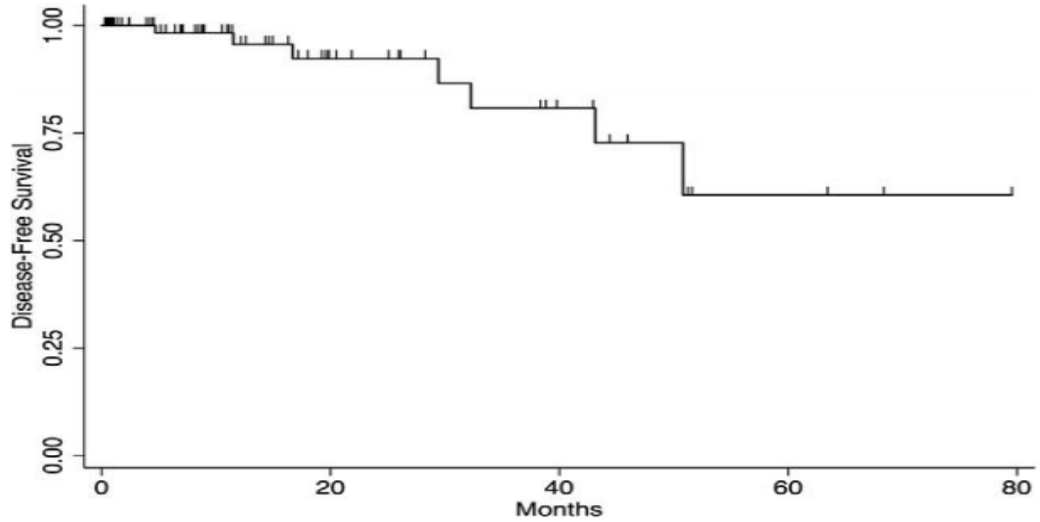
Outcomes From 200 Consecutive Cases With Midterm Follow Up

TABLE 1. Patient, Pathologic, and Operative Characteristics

	All (n = 200)	Benign (n = 90)	Malignant* (n = 110)	P †
Mean age, yrs (SD)	64.6 (13.6)	64.2 (12.4)	64.9 (14.6)	0.692
Male sex	112 (56%)	48 (53%)	64 (60%)	0.492
Mean body mass index, kg/m^2 (SD)	27.4 (5.6)	27.0 (4.6)	27.8 (6.8)	0.329
ASA score				0.183
I	25 (13%)	15 (17%)	9 (8%)	
II	113 (56%)	49 (54%)	65 (59%)	
III+	61 (31%)	26 (29%)	36 (33%)	
Pre-TAMIS endoscopic excision	38 (19%)	14 (16%)	24 (22%)	0.261
Mean lesion size, cm (SD)	2.9 (1.5)	3.1 (1.5)	2.6 (1.5)	0.024
Mean distance from anal verge‡, cm (SD)	7.2 (3.3)	7.5 (3.5)	6.9 (3.1)	0.200
Final pathology				
Benign	90 (45%)			
Adenoma	85 (42.5%)			
Other	5 (2.5%)			
Malignant	110 (55%)			
Adenocarcinoma	100 (50%)			
T0 (no residual tumor)	11 (5.5%)			
Tis	25 (12.5%)			
T1	39 (19.5%)			
T2	8 (4%)			
T3	6 (3%)			
ypT0	3 (1.5%)			
ypT1	2 (1%)			
ypT2	2 (1%)			
ypT3	4 (2%)			
Carcinoid	10 (5%)			
Positive margin	14 (7%)	5 (6%)	9 (8%)	0.469
Tumor fragmentation	9 (5%)	3 (3%)	6 (5%)	0.472
Robotic TAMIS	15 (8%)	6 (7%)	9 (8%)	0.686
Defect closure	188 (94%)	82 (92%)	106 (96%)	0.120
Mean duration of surgery, min (SD)	70 (38)	67 (41)	72 (34)	0.400
Mean blood loss, mL (SD)	24 (29)	20 (25)	28 (31)	0.059

ASA indicates American Society of Anesthesiologists.
*Includes in situ and invasive adenocarcinoma and neuroendocrine tumors.
†*P* value comparing benign and malignant lesions.
‡Measured from the distal margin of the lesion.

30d cx: 11%
9 patients with bleeding



LE for rectal adenocarcinoma

- Mean FU 14.4 mos (SD 17.4)
- Local recurrence 6%
- Distant metastasis 2%
- 3-year DFS 94%

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Conclusions

1. Preoperative skills lab/practicum
2. Know the anatomy
   - DRE, Proctoscopy, MRI
3. Proper indication (preop CRT?)
4. Good insufflation
5. Good specimen
   - Negative margins (5-10 mm), non-fragmented, full thickness, pinned out
6. Close the defect/master suturing
7. Pathologic assessment
8. Long term observation

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