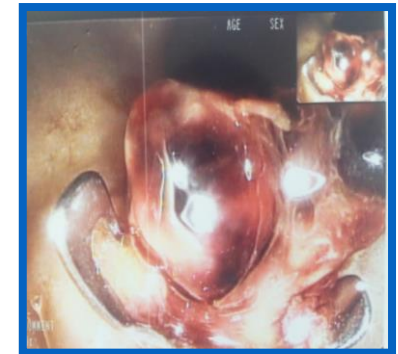




# L'emorragia digestiva



**Raffaele Manta**



**Direttore U.O.C. Endoscopia Digestiva**  
Azienda Area vasta Toscana Nord Ovest (A.T.N.O.)  
Presidi ospedalieri di Livorno, Pontedera, Lucca, Versilia, Massa-Carrara.

## DICHIARAZIONE DI ASSENZA DI CONFLITTO DI INTERESSI

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Ai sensi e per gli effetti dell'art.53, comma 14, del d.Lgs. 165/2001,

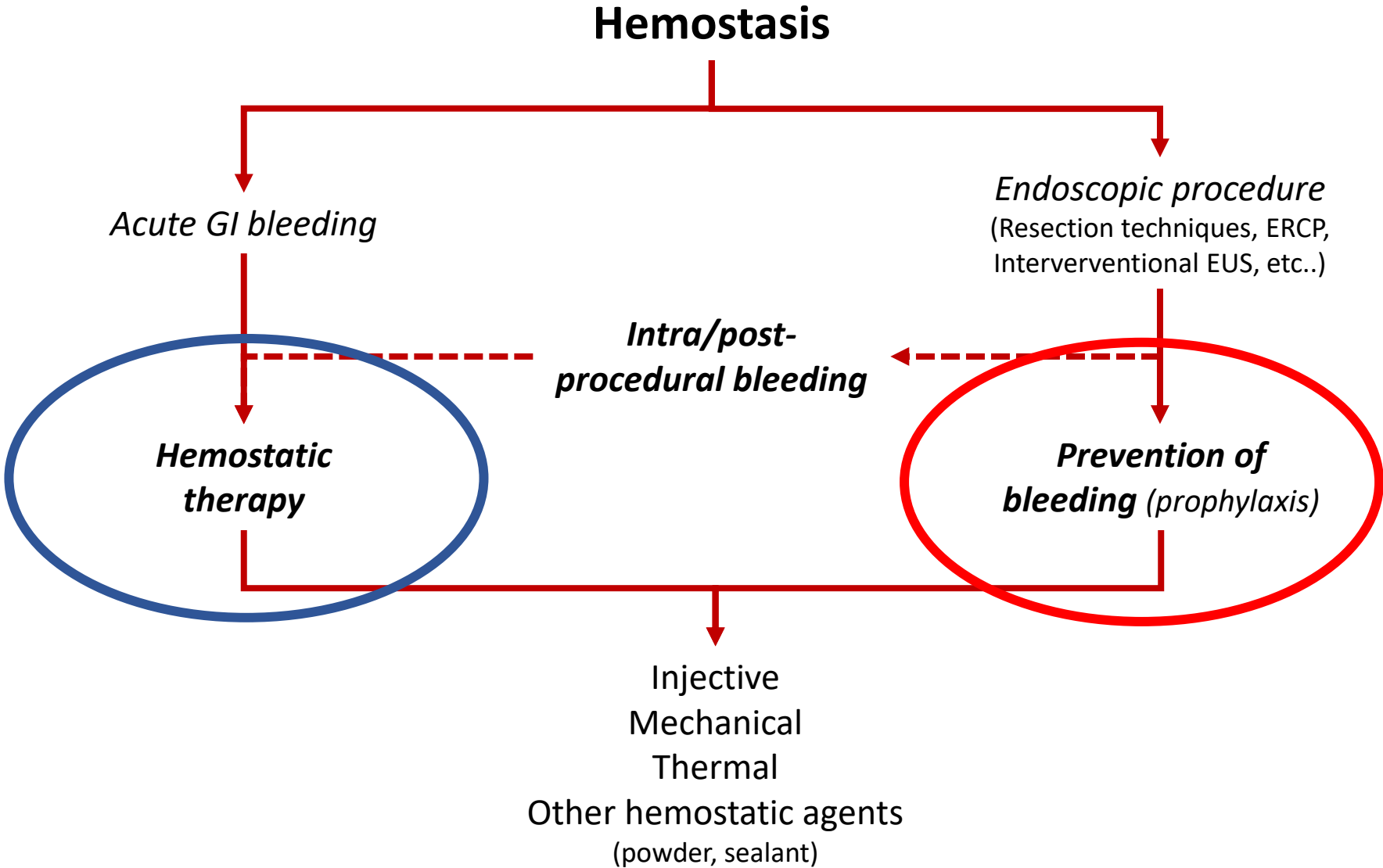
il sottoscritto MANTA RAFFAELE nato a Potenza (PZ) il 16-07-72 e residente in Perugia (PG), Codice Fiscale MNTRFL72L16G942F  
DICHARA

sotto la propria responsabilità ed in piena conoscenza della responsabilità penale prevista per le dichiarazioni false dall'art. 76 del D.P.R. 445/2000 e dalle disposizioni del codice penale e dalle leggi speciali in materia ai sensi degli articoli 46 e 47 del D.P.R. 445/2000:

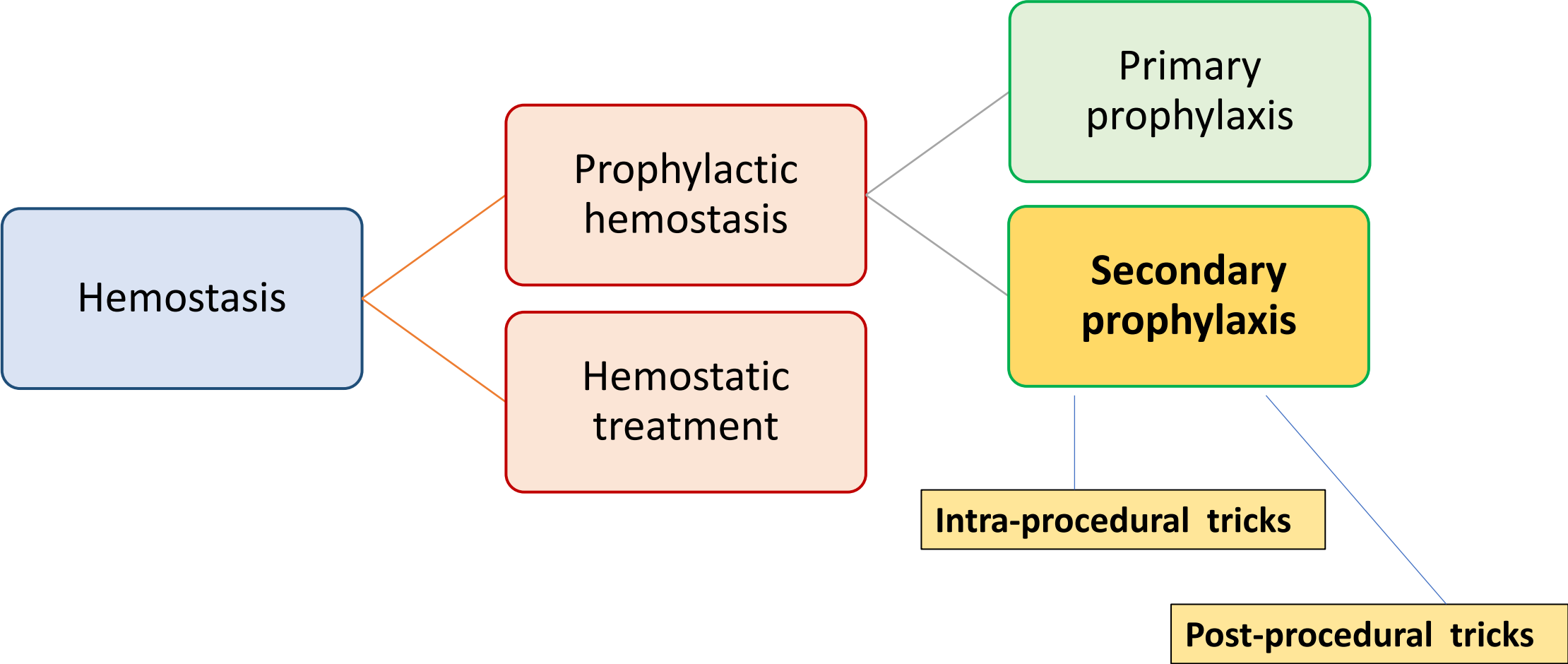
- **L'insussistenza di situazioni, anche potenziali, di conflitto di interesse, ai sensi della normativa vigente**
- di aver preso piena cognizione del DPR 16 aprile 2013, n. 62 (Regolamento recante codice di comportamento dei dipendenti pubblici) e delle norme in esso contenute.

Belluno, 16/06/2023

# Different type of hemostasis



# Endoscopic Hemostasis



# New approaches to endoscopic hemostasis

---

**It's new if.....**

- *We have **new devices***
- *We have **new data** supporting standard therapies*

# New approaches to endoscopic hemostasis

---

**It's new if.....**

- *We have **new devices***
- *We have new data supporting standard therapies*

## RED DUAL MIMAGIN RED DICHROMATIC IMAGING



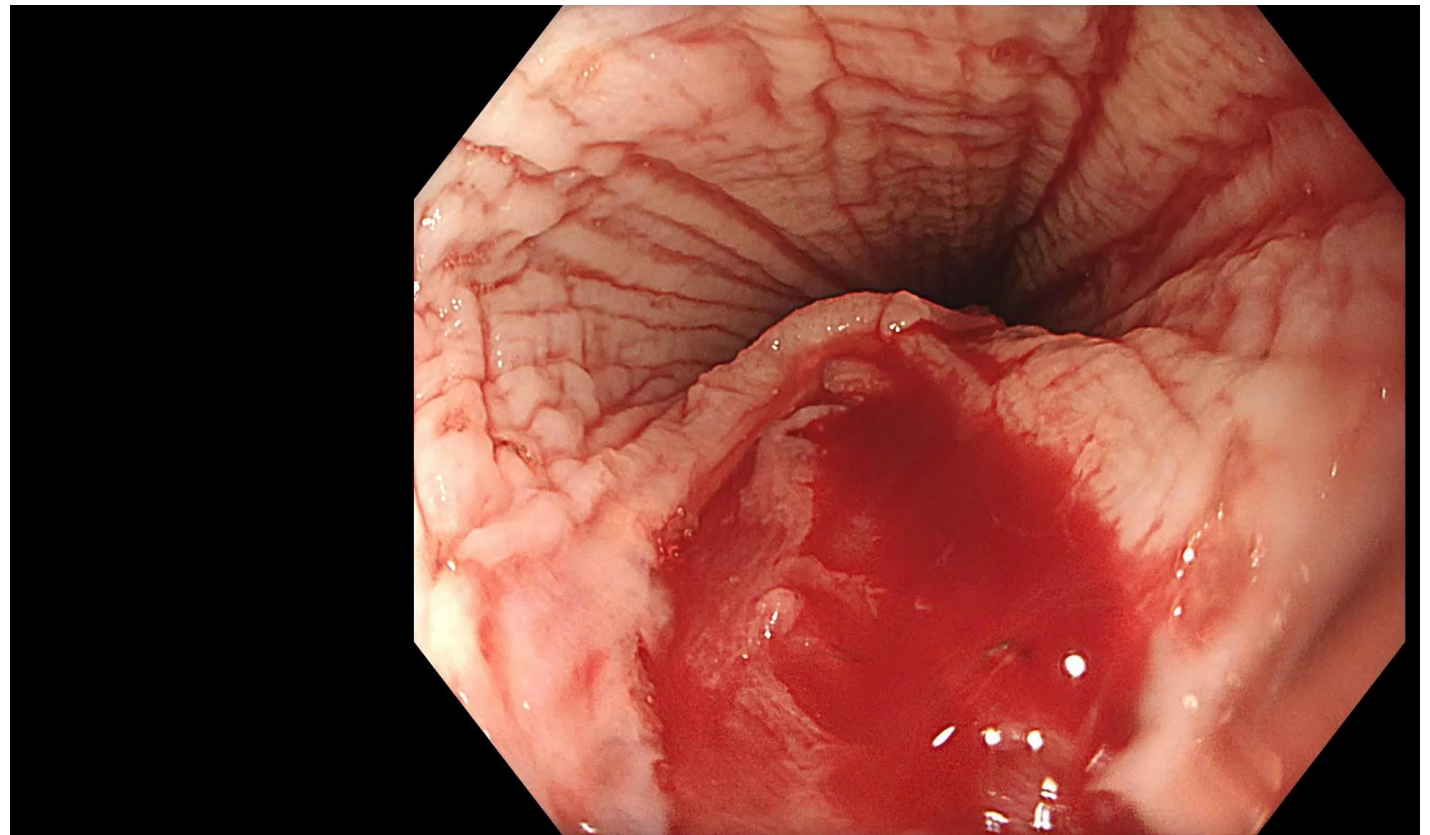
Identifica efficacemente le fonti di sanguinamento durante gli interventi terapeutici



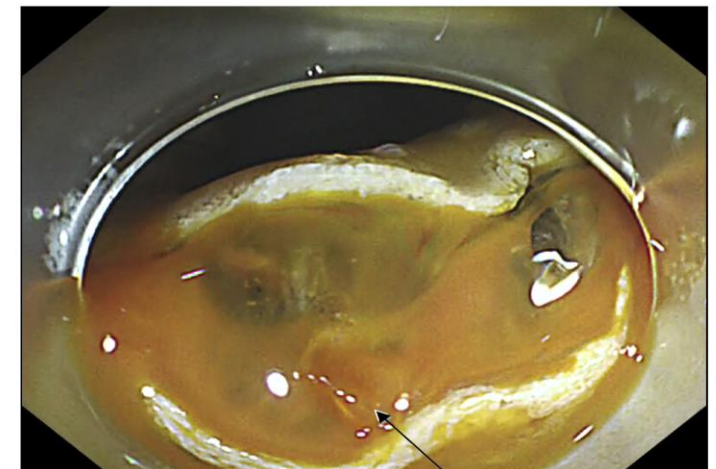
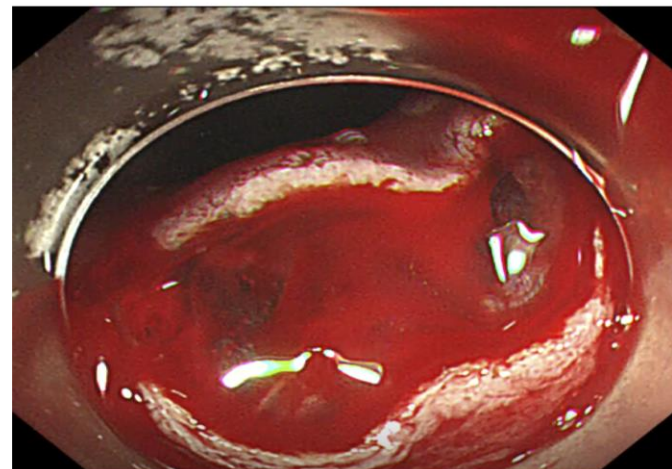
Riduzione dei tempi di trattamento e riduzione dello stress



Aiuta ad evitare il sanguinamento post terapia endoscopica ed i costi associati



WLI



DRI

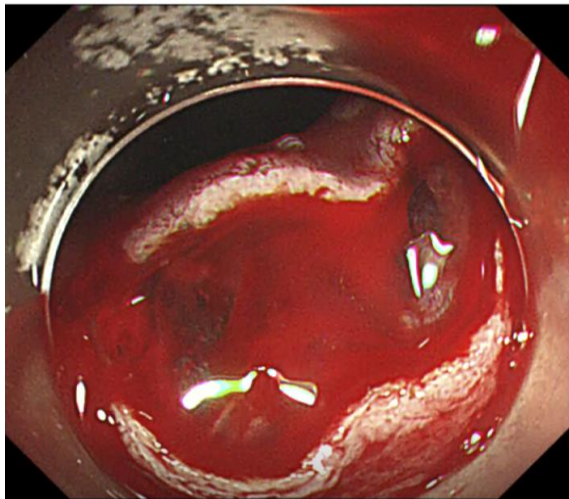
Bleeding point

# Dual red imaging (DRI) vs white light (WLI)

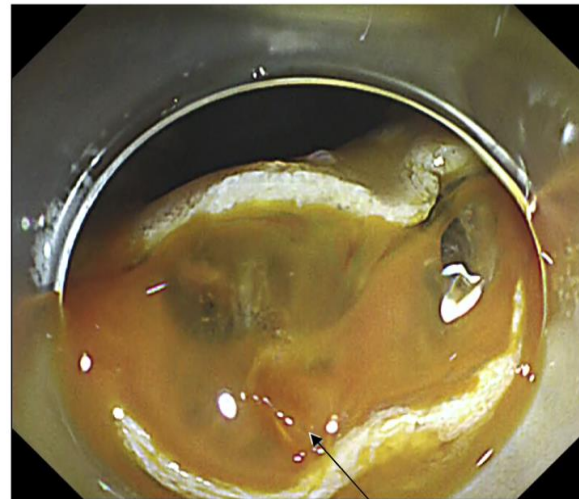
## EFFICACY DURING ENDOSCOPIC SUBMUCOSAL DISSECTION

Average hemostasis time, seconds (mean $\pm$ SD)	WLI (n=215)	DRI (n=163)	P value
Esophagus	52.1 $\pm$ 46.6	25.8 $\pm$ 28.1	0.01
Stomach	76.0 $\pm$ 82.4	72.5 $\pm$ 84.7	0.5
Colon/rectum	39.0 $\pm$ 41.5	26.8 $\pm$ 34.3	0.01
Total	61.0 $\pm$ 69.6	51.0 $\pm$ 70.6	0.001

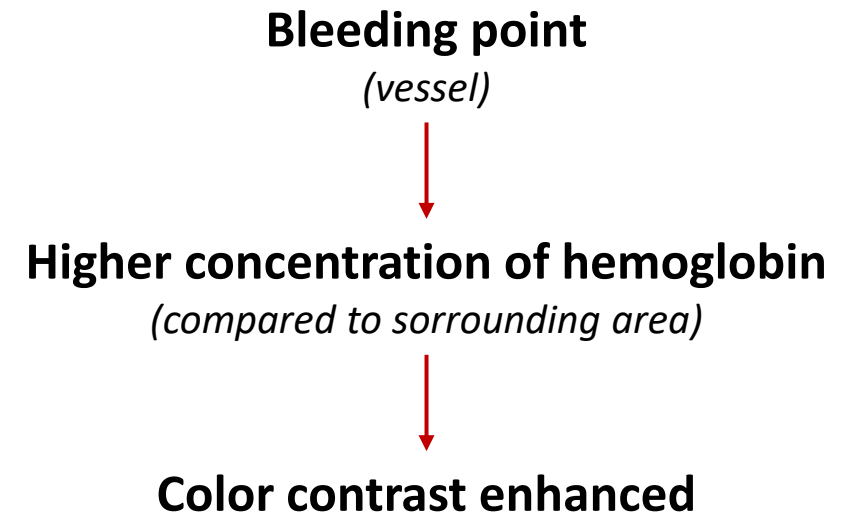
WLI



DRI



Bleeding point





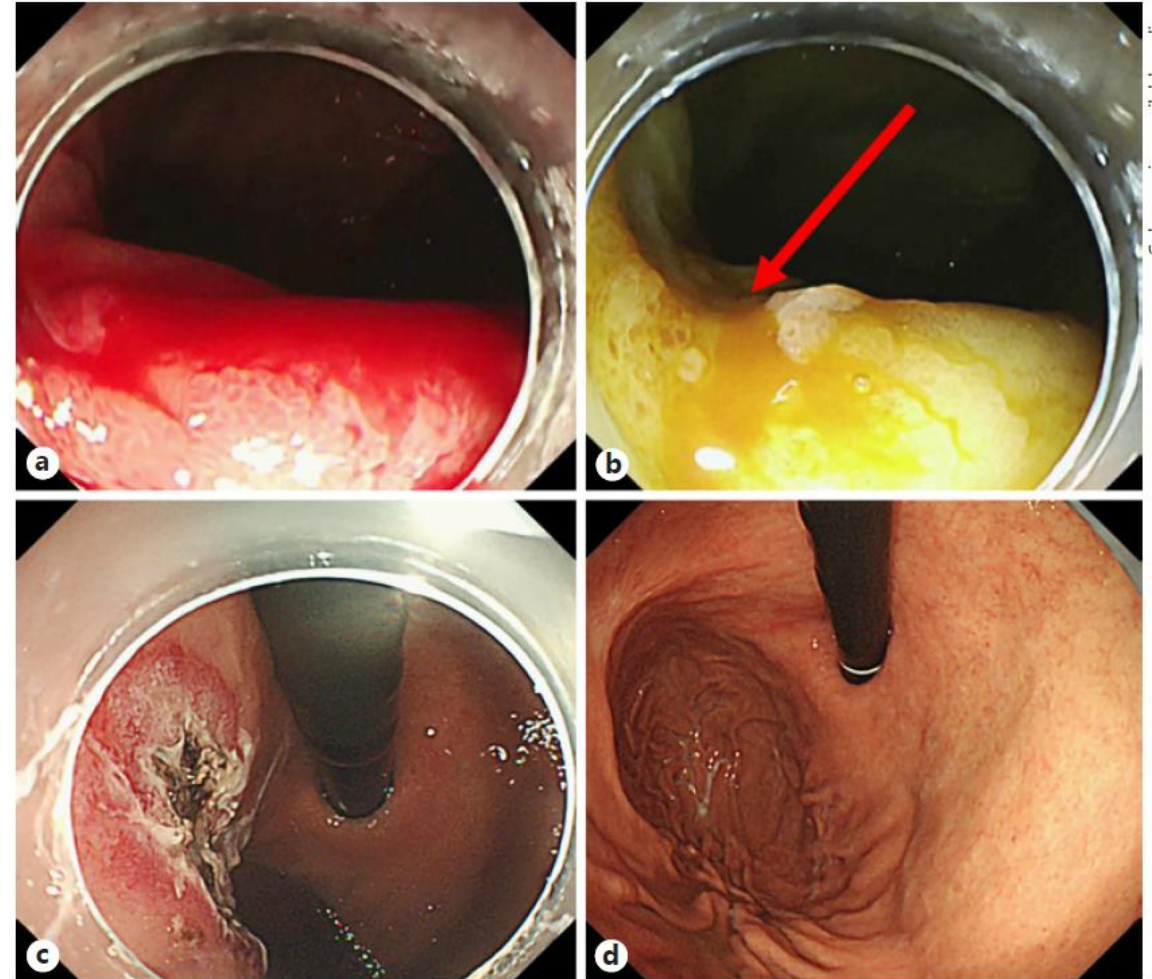
# Dual red imaging (DRI) vs white light (WLI)

## Utility of Dual Red Imaging for Endoscopic Hemostasis of Gastric Ulcer Bleeding

Yoko Kubosawa Hideki Mori Ai Fujimoto

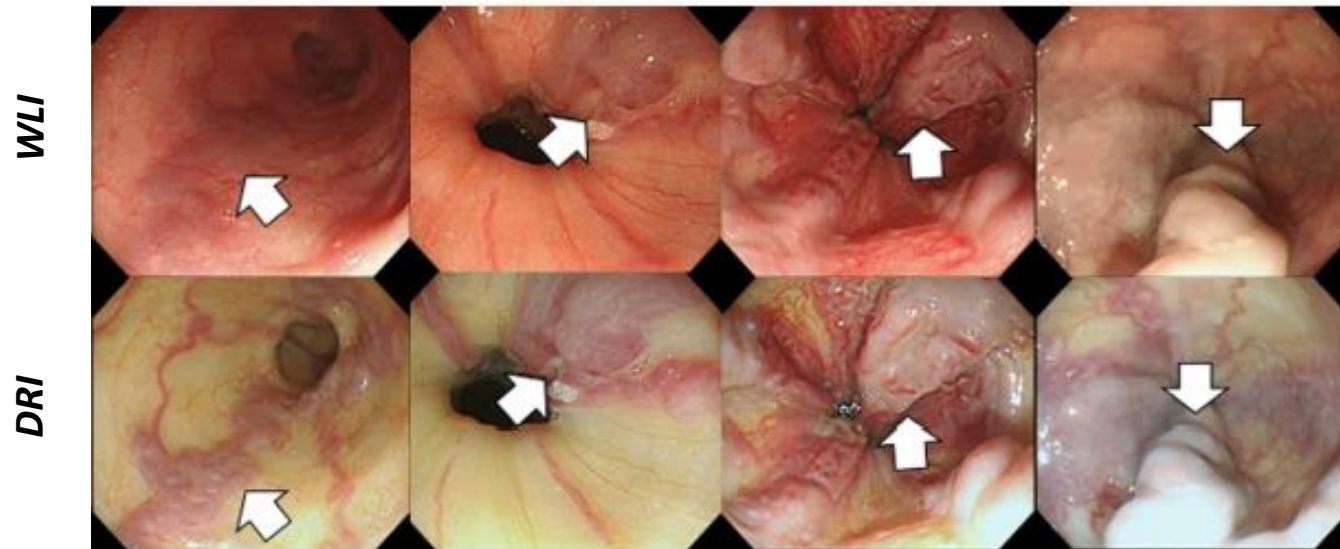
Department of Gastroenterology and Hepatology, National Hospital Organization Tokyo Medical Center, Tokyo, Japan

*First case of DRI utility in bleeding ulcers*



# Dual red imaging (DRI) vs white light (WLI)

	RDI (n=40)	WLI (n=39)	P value
Intravariceal injection on first puncture (%)	80 (32/40)	46.2 (18/39)	< 0.01
Intravariceal injection on total puncture (%)	67.6 (75/111)	46.0 (58/126)	< 0.01
Intravariceal injection at least once (%)	95.0 (38/40)	84.6 (33/39)	Ns
Number of puncture per session (n ± SD)	2.8 ± 1.4	3.2 ± 1.5	Ns



**DRI group exhibited lower recurrence rate at 7.5 ± 6.8 months of follow up**

*HR 3.84 (CI, 1.1 – 12.8)*

# ENDOSCOPIC APPLICATION OF MUCOADHESIVE POWDER (NEXPOWDER®) FOR HEMOSTASIS IN PATIENTS WITH GASTROINTESTINAL BLEEDING

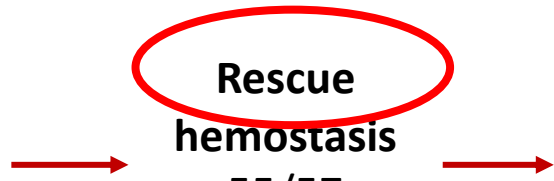
Byoung Wook Bang<sup>1</sup> Kye Sook Kwon<sup>1</sup> Hyung kil Kim<sup>2</sup> Yong Woon Shin Su Jin Hong Jin-Seok Park Jong Ho Moon Jae Jin Hwang

## Nexpowder®

- Mechanism of action: creates a mucoadesive hydrogel after contacting with blood or water
- Ongoing RCT for GI bleeding



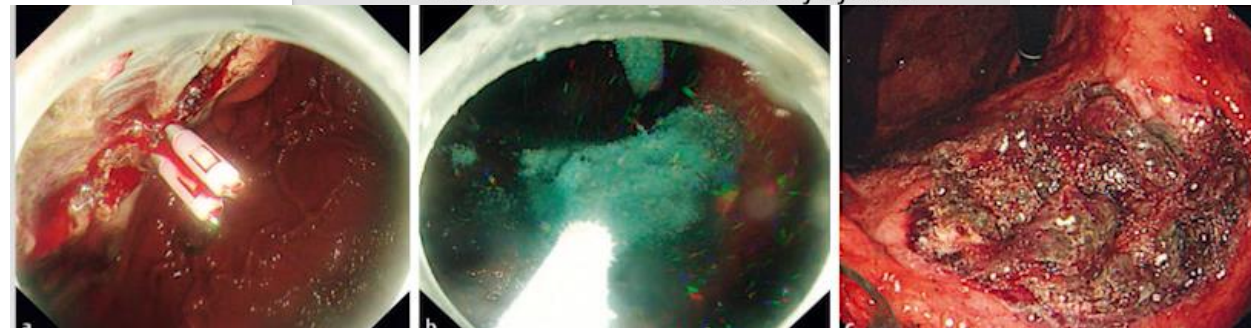
**57 bleeding lesions**  
(46 post-ER,  
8 bleeding ulcers,  
3 other)



**Rescue hemostasis**  
55/57  
(96.5%)



**Rebleeding rate**  
3/57  
(5.3%)

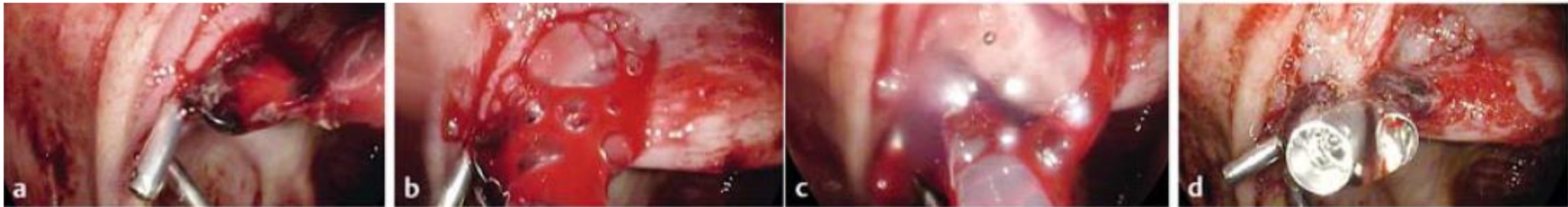


# Haemostasis and prevention of bleeding related to ER: The role of a novel self-assembling peptide



## Purastat®

- Fully synthetic matrix
- Peptide solution activate at physiological pH → self-assembling → creation of a net of nanofibers

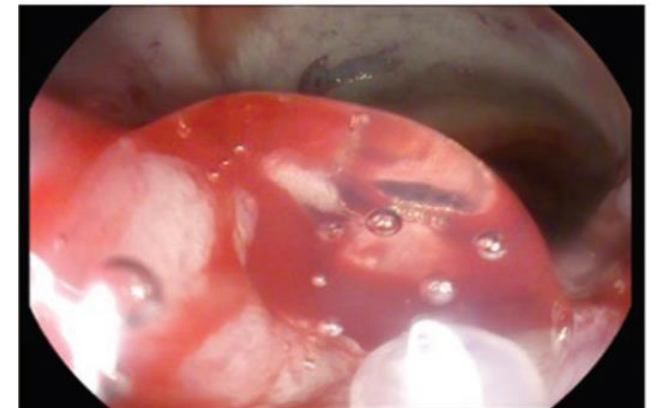
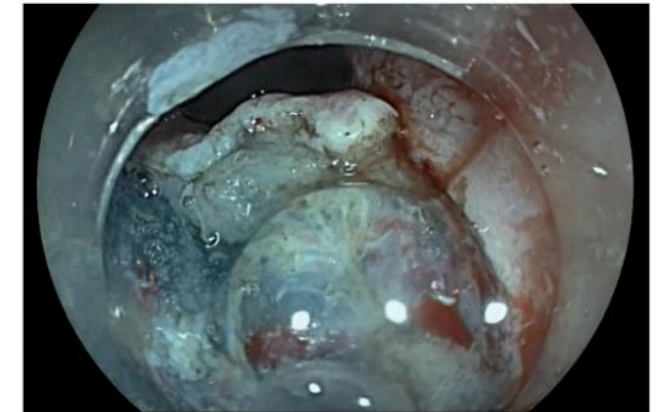


# Haemostasis and prevention of bleeding related to ER: The role of a novel self-assembling peptide

Study population: 100 pts: 69 ESD, 31 EMR

	Esophagus/stomach	Duodenum	Colon/rectum
Patients, n	59	10	31
Primary hemostasis, n(%)	38 (64%)	6 (60)	20 (64)
Purastat® successfully hemostasis	30/38 (79%)	6/6 (100)	12/20 (60)

**75% of primary successful hemostasis**  
**3% of delayed bleeding**



24/07/2018  
11:28:03

NOOOOF

\*1/100  
AUTO

S1: F/T  
S2: LM  
S3: IRIS

3.2 11.7  
11.8

EC-760ZP-V/M  
1C730K083

02  
HT NR  
SE  
フ

IMAGE 2018

BL-7000

0

# Microwave coagulation of blood vessels during advanced colonoscopic polypectomy: first results in humans

Tsiamoulos, Zacharias P<sup>1</sup>; Rajaratnam, Rameshshanker<sup>2</sup>; Wall, Pete<sup>3</sup>; Cocks, Kim<sup>5</sup>; Hancock, Christopher<sup>4</sup>; Saunders, Brian P.<sup>2</sup>



## Microwave energy hemostasis

- *No thermal damage to muscle layer*
- *Minor risk of perforation and bleeding*



Abstract DDW 2021)

# New approaches to endoscopic hemostasis

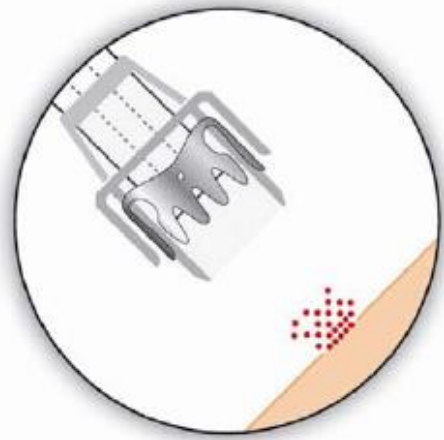
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## It's new if.....

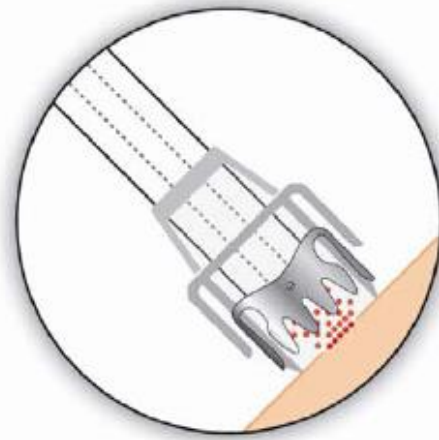
- *We have new devices*
- *We have **new data** supporting standard therapies*



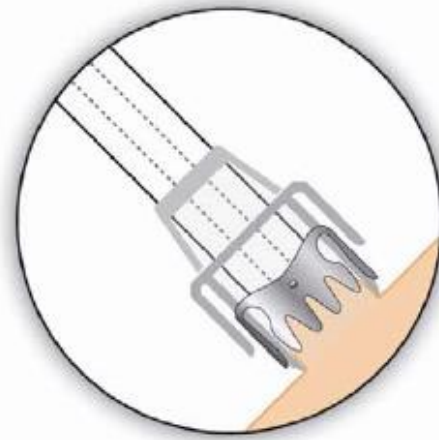
## Over The scope Clip (OTSC)



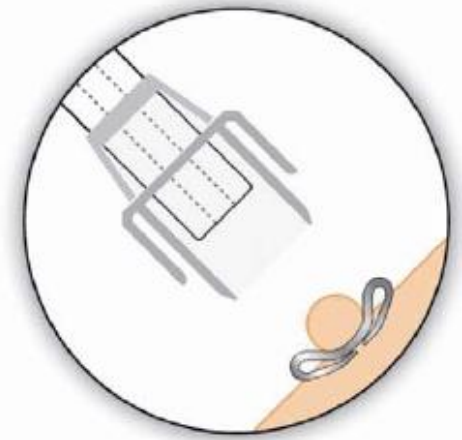
Targeting the lesion



Bring OTSC<sup>®</sup> cap in connection to tissue



Target tissue is suctioned into the cap and OTSC<sup>®</sup> Clip is released by turning the hand wheel



Clip is applied



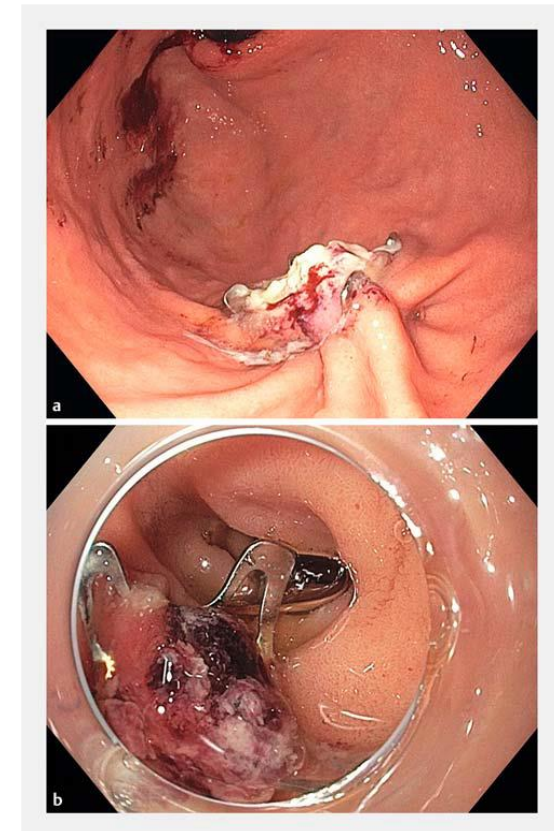
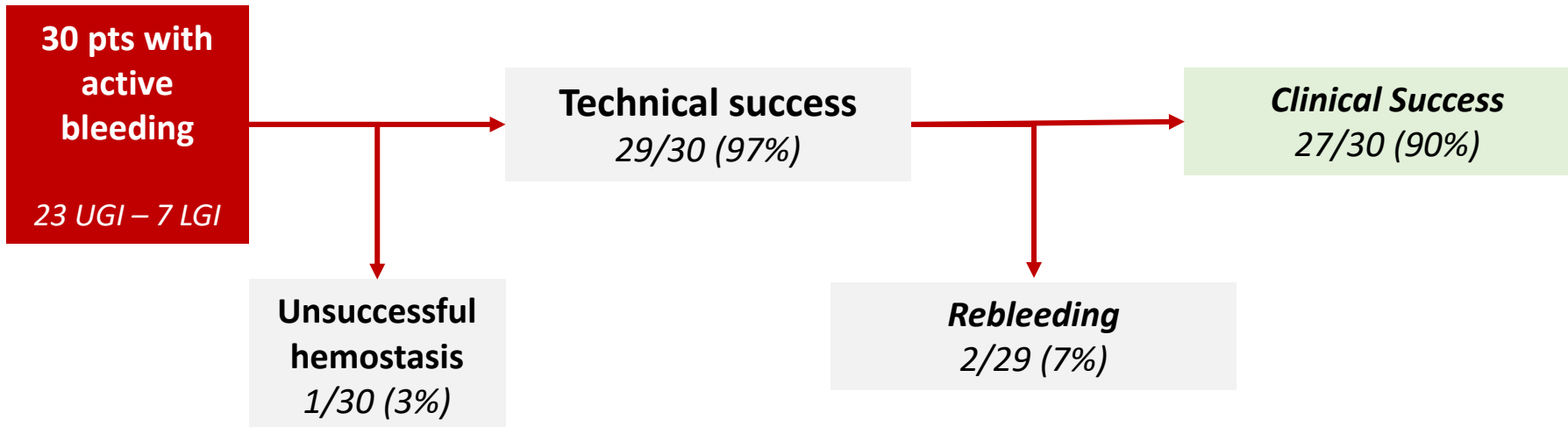
↓↓ risk of rebleeding  
↓ need for blood trasfusion  
↓ hospital stay  
↓↓ morbidity/mortality



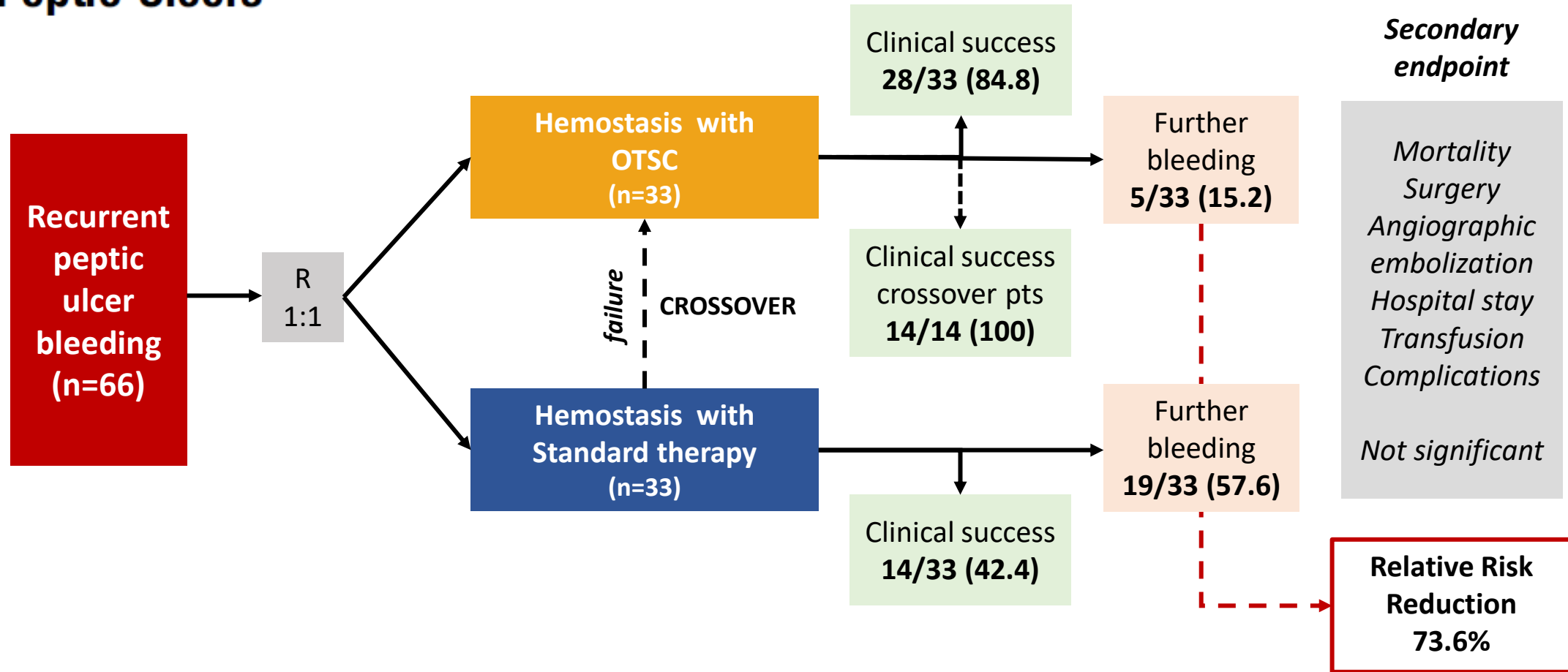
↑ ↑ device cost  
need for endoscopist/nurse training

# Over-the-scope clip (OTSC) represents an effective endoscopic treatment for acute GI bleeding after failure of conventional techniques

Raffaele Manta • Giuseppe Galloro • Benedetto Mangiavillano •  
Rita Conigliaro • Luigi Pasquale • Alberto Arezzo •  
Enzo Masci • Gabrio Bassotti • Marzio Frazzoni



# Over-the-Scope Clips Are More Effective Than Standard Endoscopic Therapy for Patients With Recurrent Bleeding of Peptic Ulcers





**Over the scope clip  
(OTSC)**

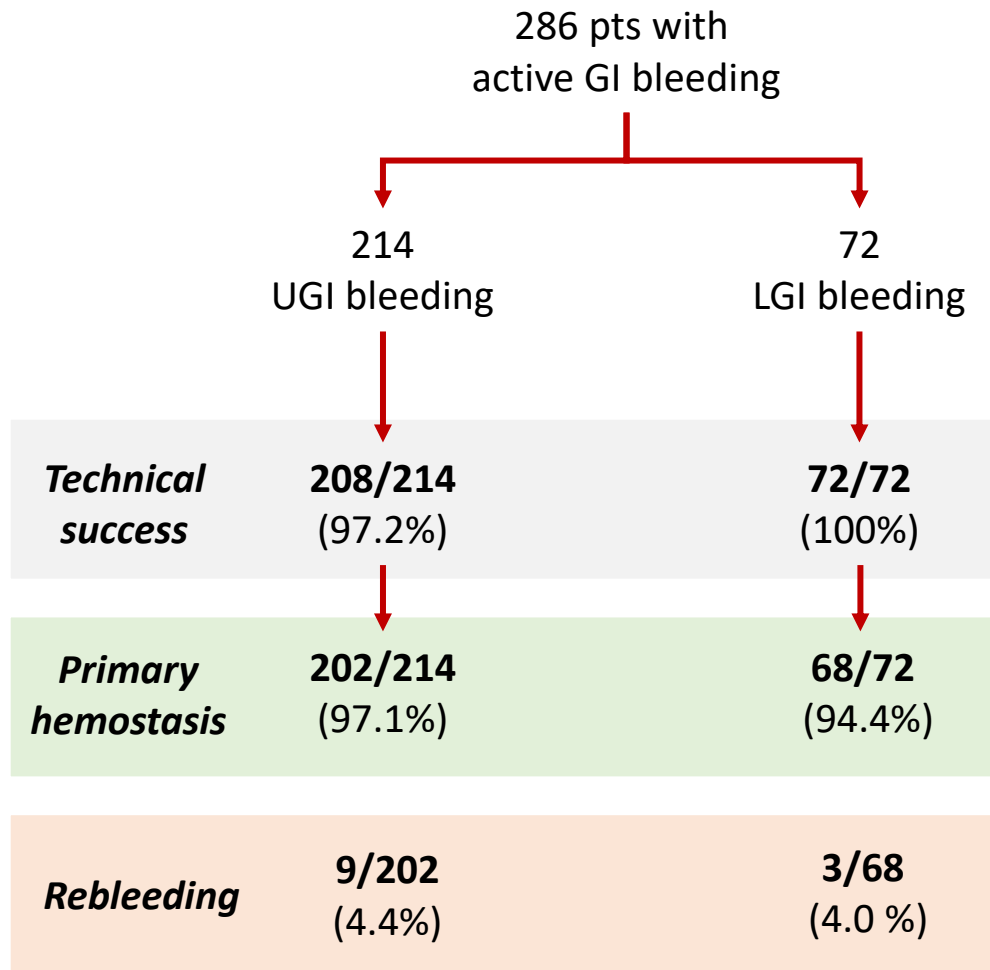


**High efficacy when  
used as rescue therapy**

**...But....**

**What if we use OTSC as «First line» therapy ??**

# First-line endoscopic treatment with over-the-scope clips in patients with either upper or lower gastrointestinal bleeding: a multicenter study

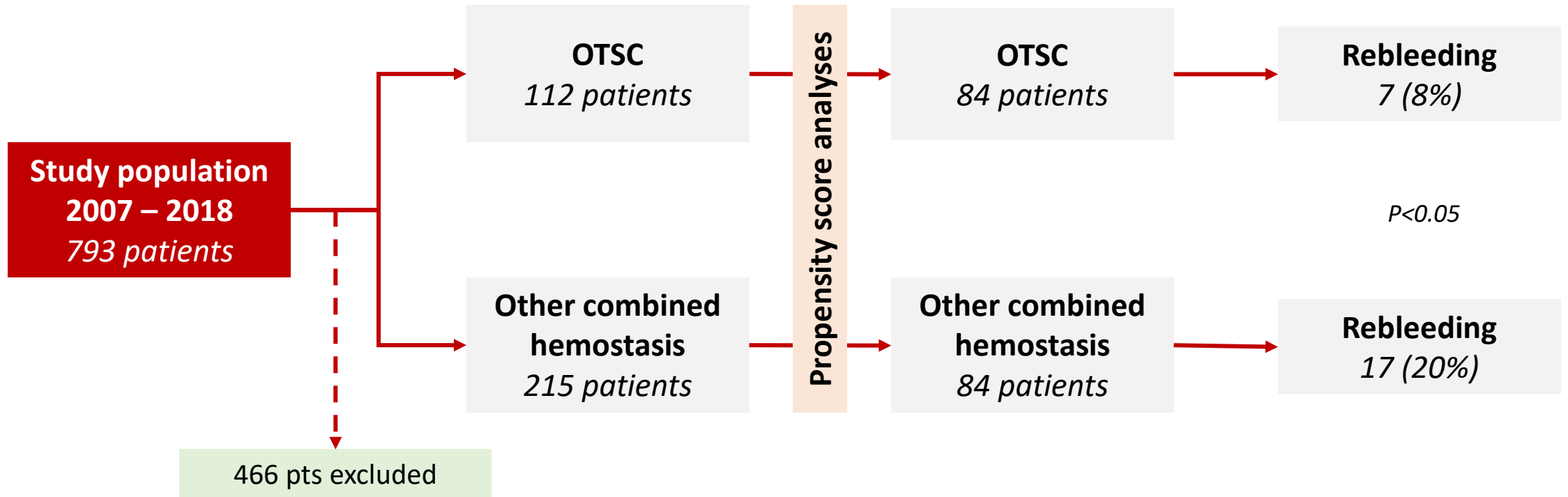


**Long-term clinical hemostasis: 258/286 (90.2)**

**Hemostatic failure 22/286 (9.8%)**

- 15 technical failure
- 7 rebleeding

# Over-the-scope clip vs epinephrine with clip for first-line hemostasis in non-variceal upper gastrointestinal bleeding: a propensity score match analysis



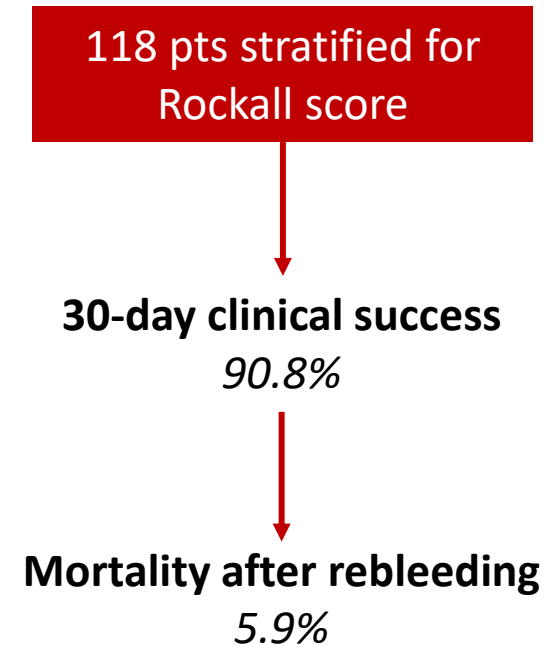
## Multicenter evaluation of first-line endoscopic treatment with the OTSC in acute non-variceal upper gastrointestinal bleeding and comparison with the Rockall cohort: the FLETRock study

	Predicted probability of rebleeding (Rockall) %	Observed rebleeding		<i>p</i> value
		% (95% CI)	n/N	
Risk group ≤3	7.0	33 (0–71.0)	1/3	n.a.
Risk group 4–7	24.0	4.9 (1.0–13.7)	3/61	<0.001
Risk group 8+	53.2	21.4 (11.6–34.4)	12/56	<0.001

	Predicted probability of mortality after rebleeding (Rockall) %	Observed mortality after rebleeding		<i>p</i> value
		% (95% CI)	n/N	
Risk group ≤3	0.4	0 (0–70.8)	0/3	n.a.
Risk group 4–7	7.3	1.7 (0.1–9.0)	1/60	0.121
Risk group 8+	27.9	10.9 (4.1–22.2)	6/55	0.011

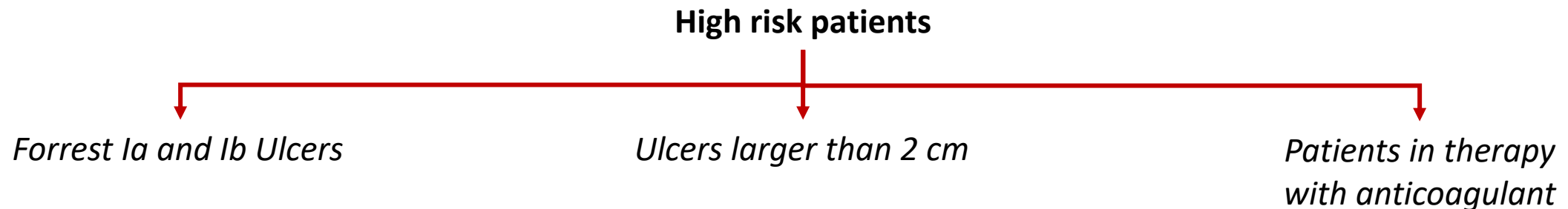
*N* number of patients per risk group, *n* events per risk group



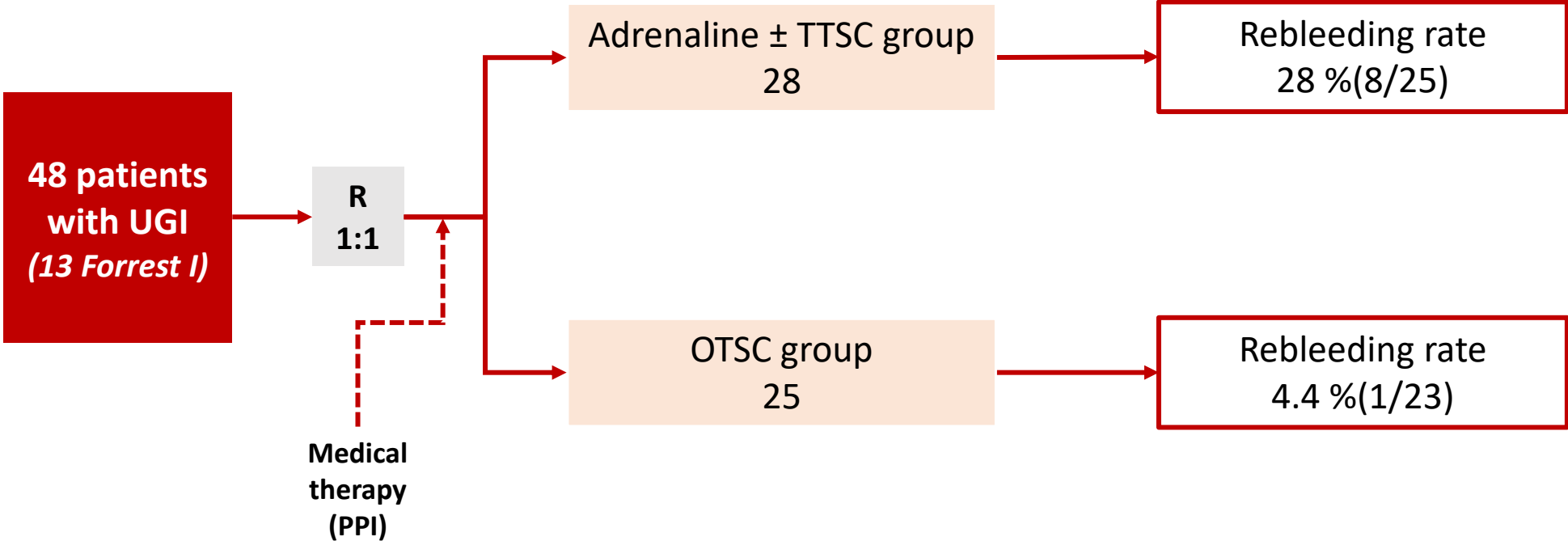


# Efficacy and safety of over-the-scope clips for gastrointestinal bleeding: a systematic review and meta-analysis

	All GI bleeding (n=851)	UGI bleeding (n=687)	LGI bleeding (n=164)
Definitive Hemostasis	734/851 (87.8%)	86.6%	89.5%
Rebleeding	90/812 (10.3%)	11.0%	10.1%
Failure			
• I line therapy	9%	6.2%	5.6%
• II line therapy	26%	16.9%	24.6%



# Randomized Controlled Trial of Over-the-Scope Clip as Initial Treatment of Severe Non-Variceal Upper Gastrointestinal Bleeding



## Diagnosis and management of nonvariceal upper gastrointestinal hemorrhage: European Society of Gastrointestinal Endoscopy (ESGE) Guideline

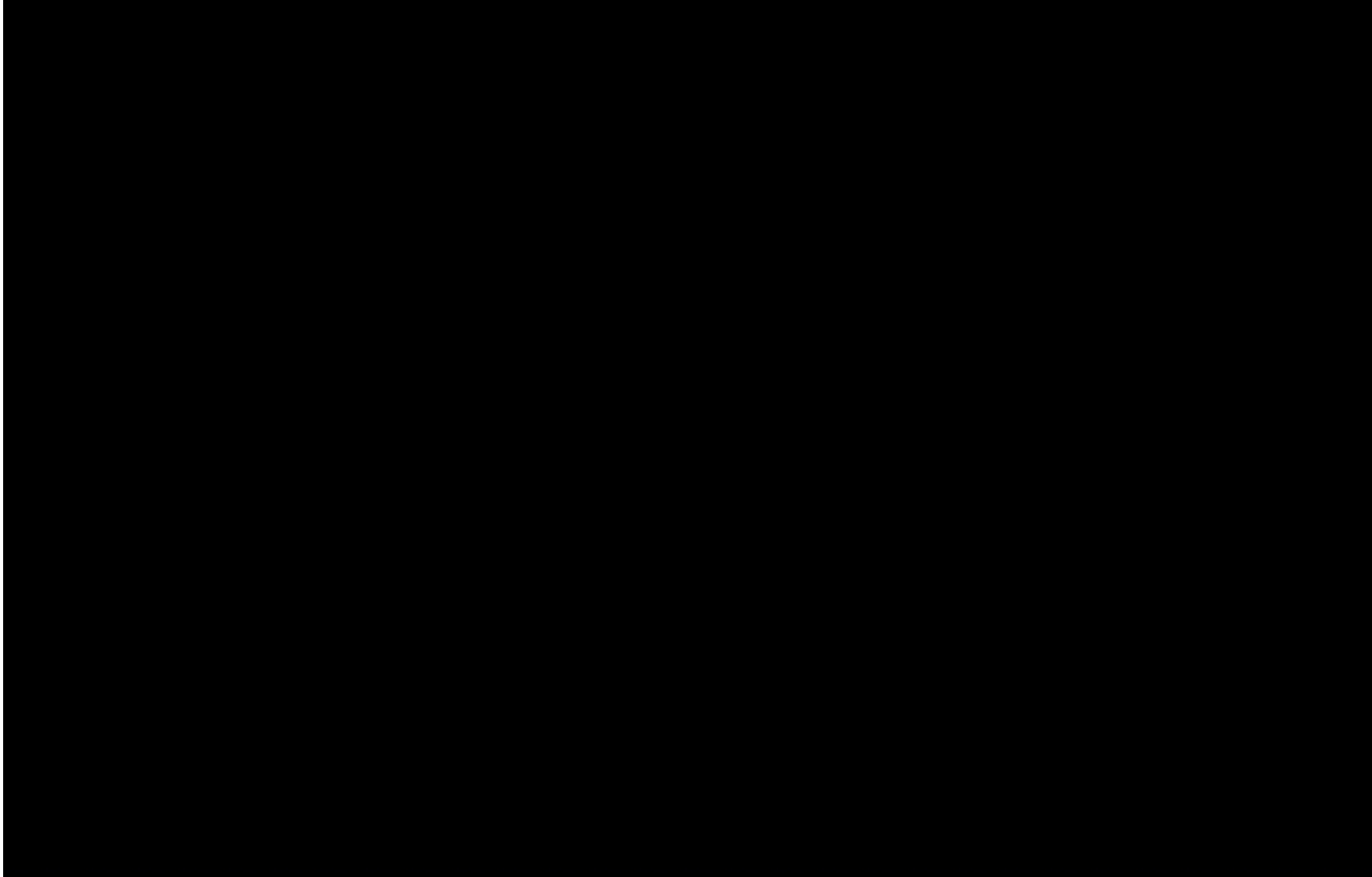


**UPDATE 2020**

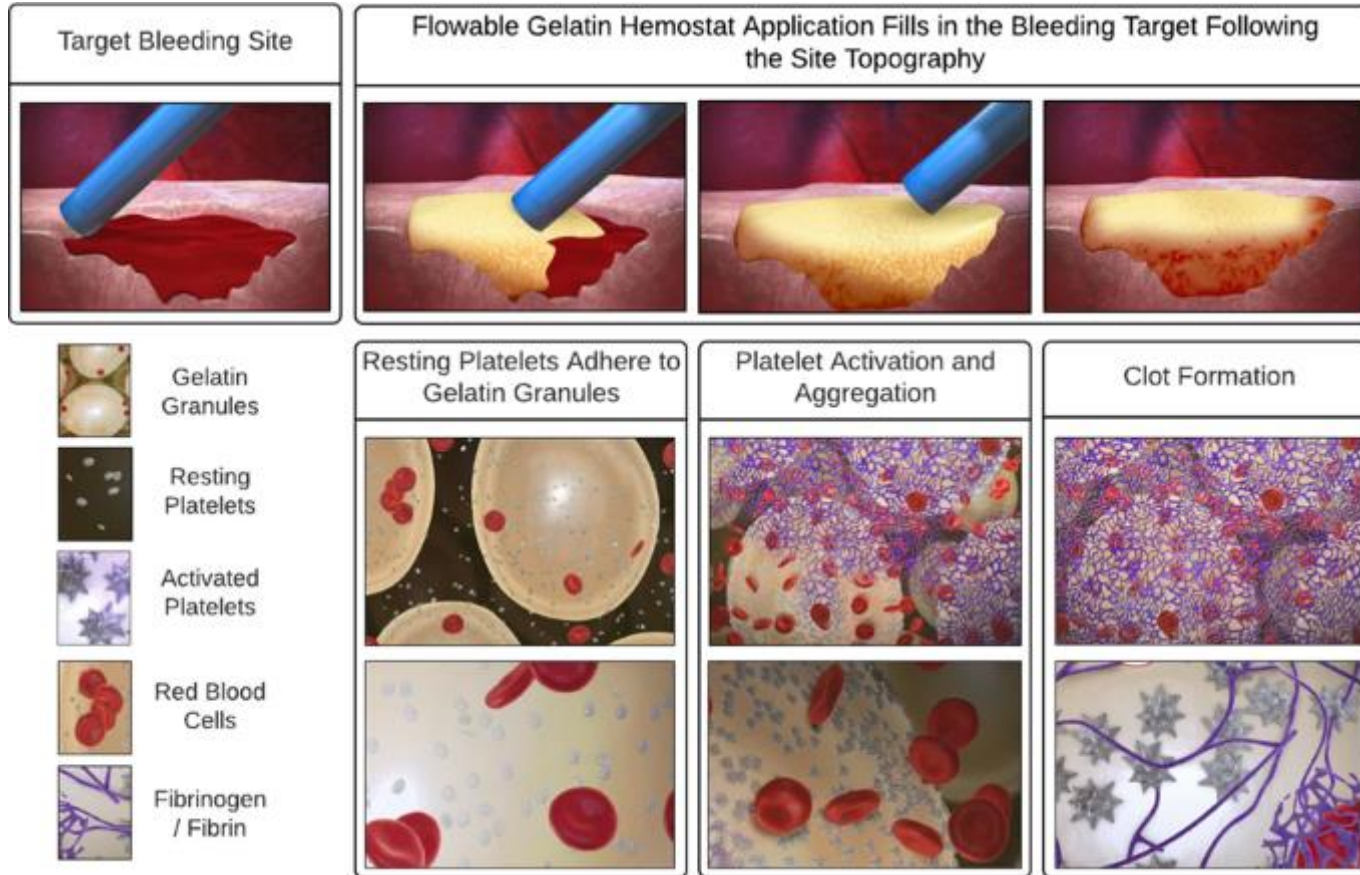
### **OTSC as first line therapy in:**

- selected actively bleeding ulcers (Fla,Flb) (*specifically those >2cm in size, with a large visible vessel >2mm*)
- ulcers located in a high-risk vascular territory (*e.g., gastroduodenal, left gastric arteries*)
- excavated / fibrotic ulcer

# OTSC CASES



# HEMOSTATIC POWDERS



# HEMOSTATIC POWDERS

Meta-Analysis

Efficacy of hemostatic powders in upper gastrointestinal bleeding: A systematic review and meta-analysis

**24 studies included (only 3 RCT)**

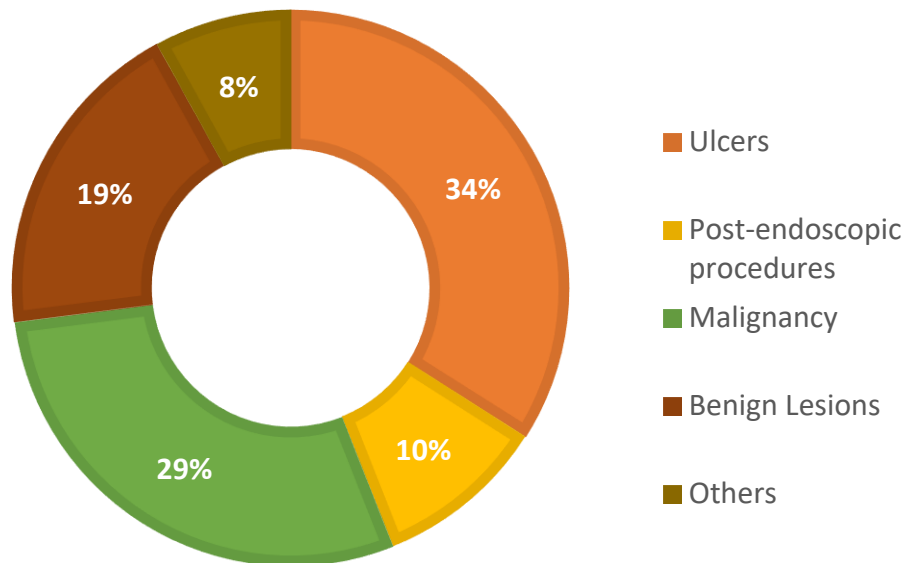
**1063 pts treated**

<b>All hemostatic powders included</b> (Hemospray, EndoClot)	
Immediate hemostasis (%)	
• Total	95.3 (93.3 – 97.3)
• Forrest Ia ulcers	91.1
• Forrest Ib ulcers	96.8
7-day rebleeding rate (%)	17.9 (10.3 – 25.5)
30-day rebleeding rate (%)	16.9 (9.8 – 24.0)



## Use of hemostatic powder in treatment of upper gastrointestinal bleeding: a systematic review and meta-analysis

Cases (1445 pts – 50 studies)



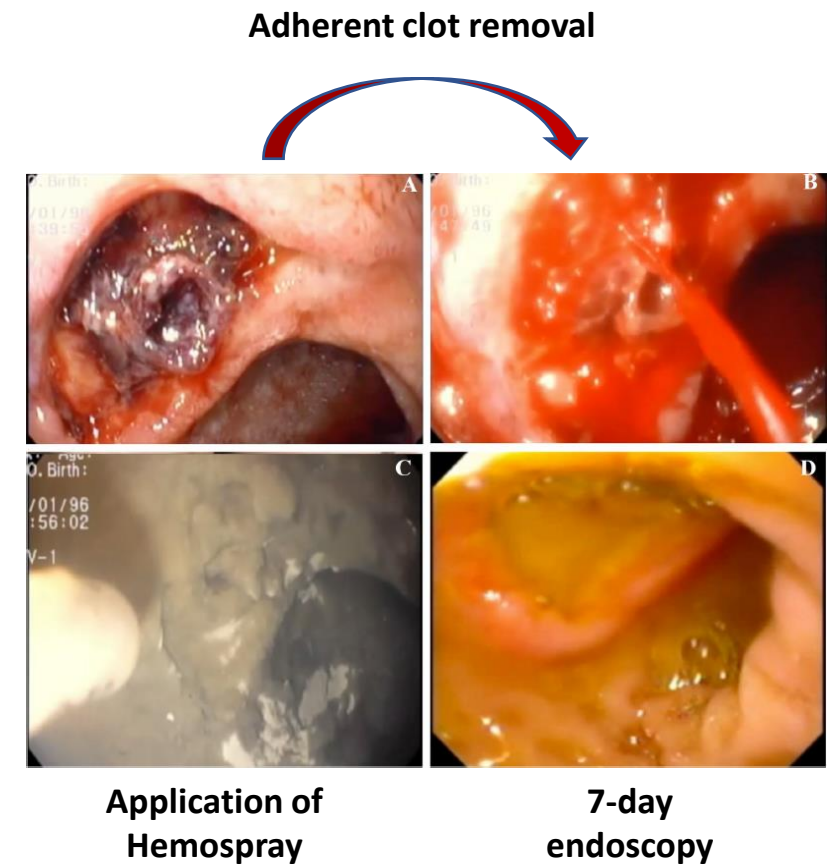
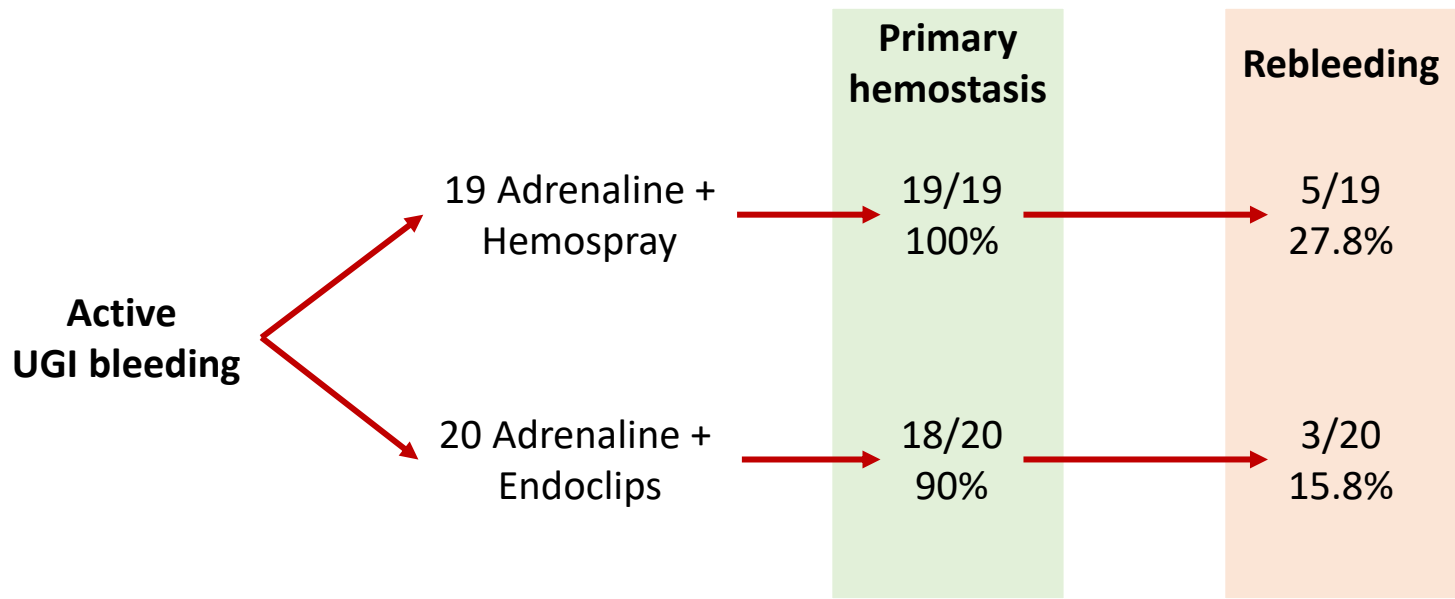
	Hemostasis	Rebleeding rate
Overall	90.7 (88.7 – 92.3)	26.1 (23.7 – 29.0)
Peptic Ulcers	91.5	33.0
Neoplasm	94.9	30.3
Primary therapy	89.6	24.9
Rescue therapy	93.2	43.6

### Compared to:

- *APC ± adrenaline: efficacy 94.5%, rebleeding 13.3%*
- *Endoclips ± adrenaline: efficacy 98.5%, rebleeding 9.5%*

# Randomized controlled trial of hemostatic powder versus endoscopic clipping for non-variceal upper gastrointestinal bleeding

*1:1 randomization of consecutive 39 patients*





Retrospective Cohort Study

# Comparison of Hemospray® and Endoclot™ for the treatment of gastrointestinal bleeding

	Total (n=137)	Hemospray (n=102)	EndoClot (n=25)
Short-Term (ST) Success rate (%)	82.5	84.7	80.0
Long-Term (LT) Success rate (%)	66	67.9	68.2
Rebleeding rate (%)	25	23.5	16

*Primary therapy in UGI active bleeding lesions*

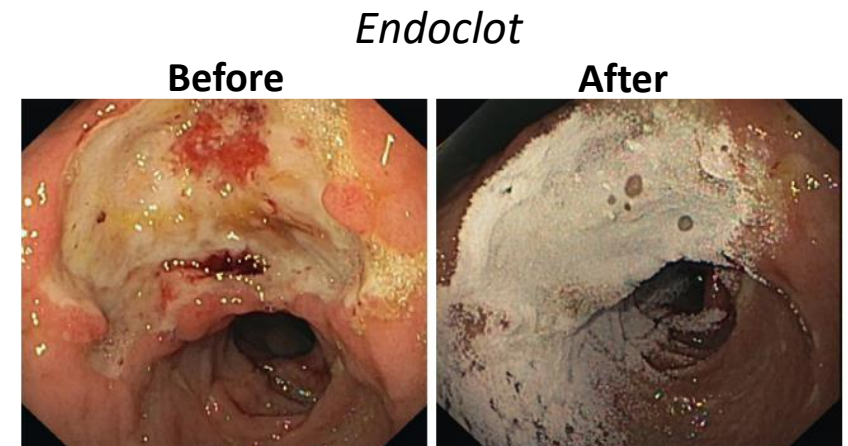
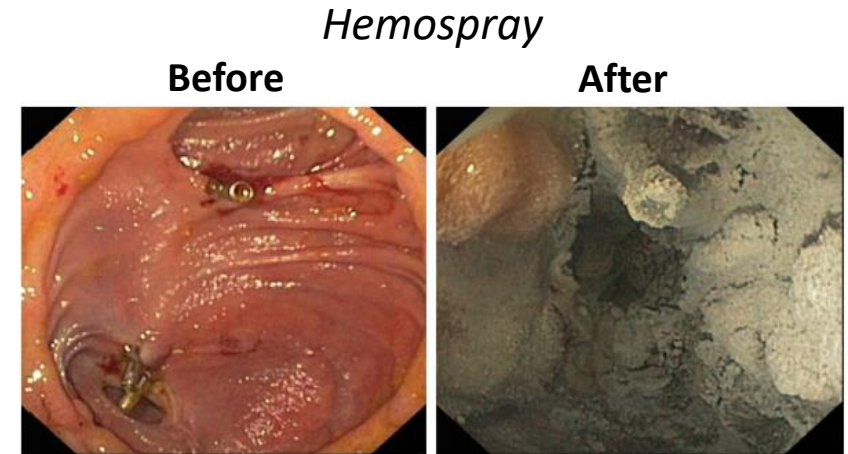
## Efficacy according to the type of lesion

*Neoplastic lesions:*

- ST efficacy: 81%
- LT efficacy: 85%
- Rebleeding: 8%

*Ulcers:*

- ST efficacy: 79%
- LT efficacy: 67%
- Rebleeding: 21%



# SYSTEMATIC REVIEW AND META-ANALYSIS

## Efficacy of topical hemostatic agents in malignancy-related GI bleeding: a systematic review and meta-analysis



530 patients

Gastric cancers (60.5%)  
 Esophageal cancers (21.7%)  
 Oozing hemorrhage (85.9%)

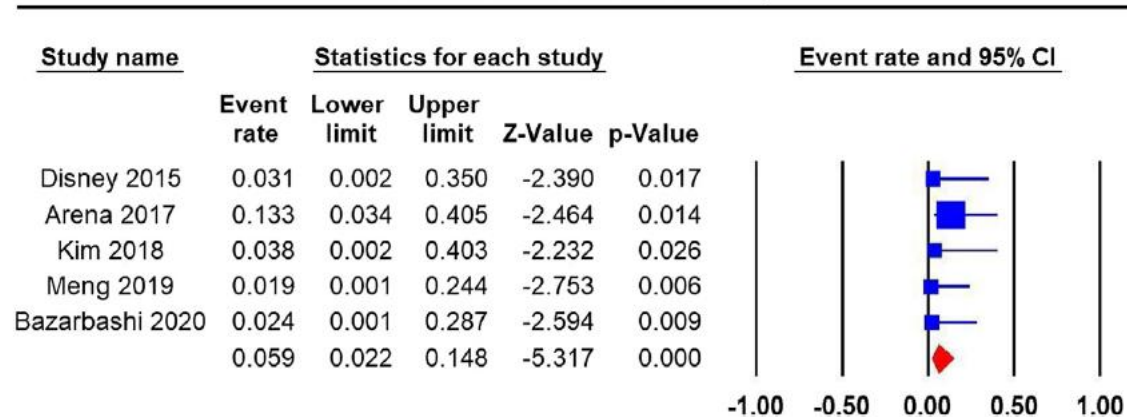
Primary hemostasis

94.1%

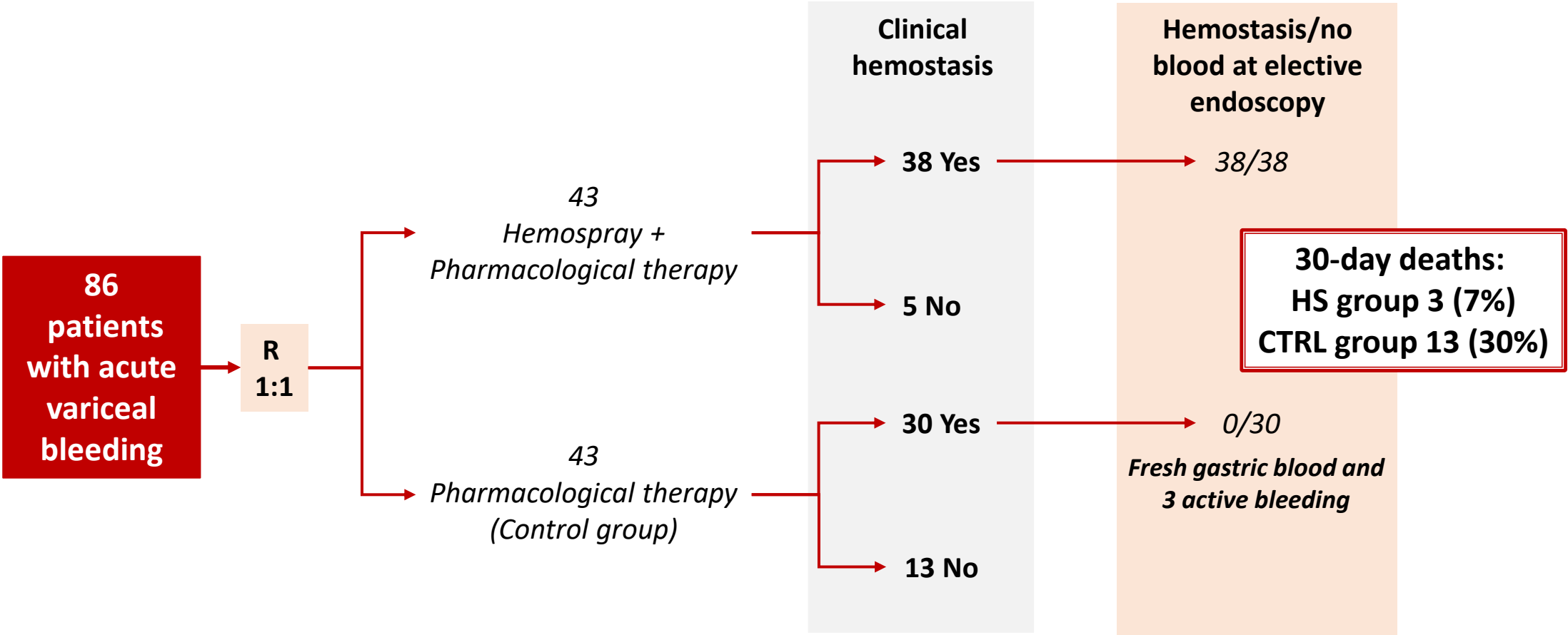
Early rebleeding

13.9%

### GI bleed related mortality



# Early application of haemostatic powder added to standard management for oesophagogastric variceal bleeding: a randomised trial



Diagnosis and management of nonvariceal upper gastrointestinal hemorrhage: European Society of Gastrointestinal Endoscopy (ESGE) Guideline



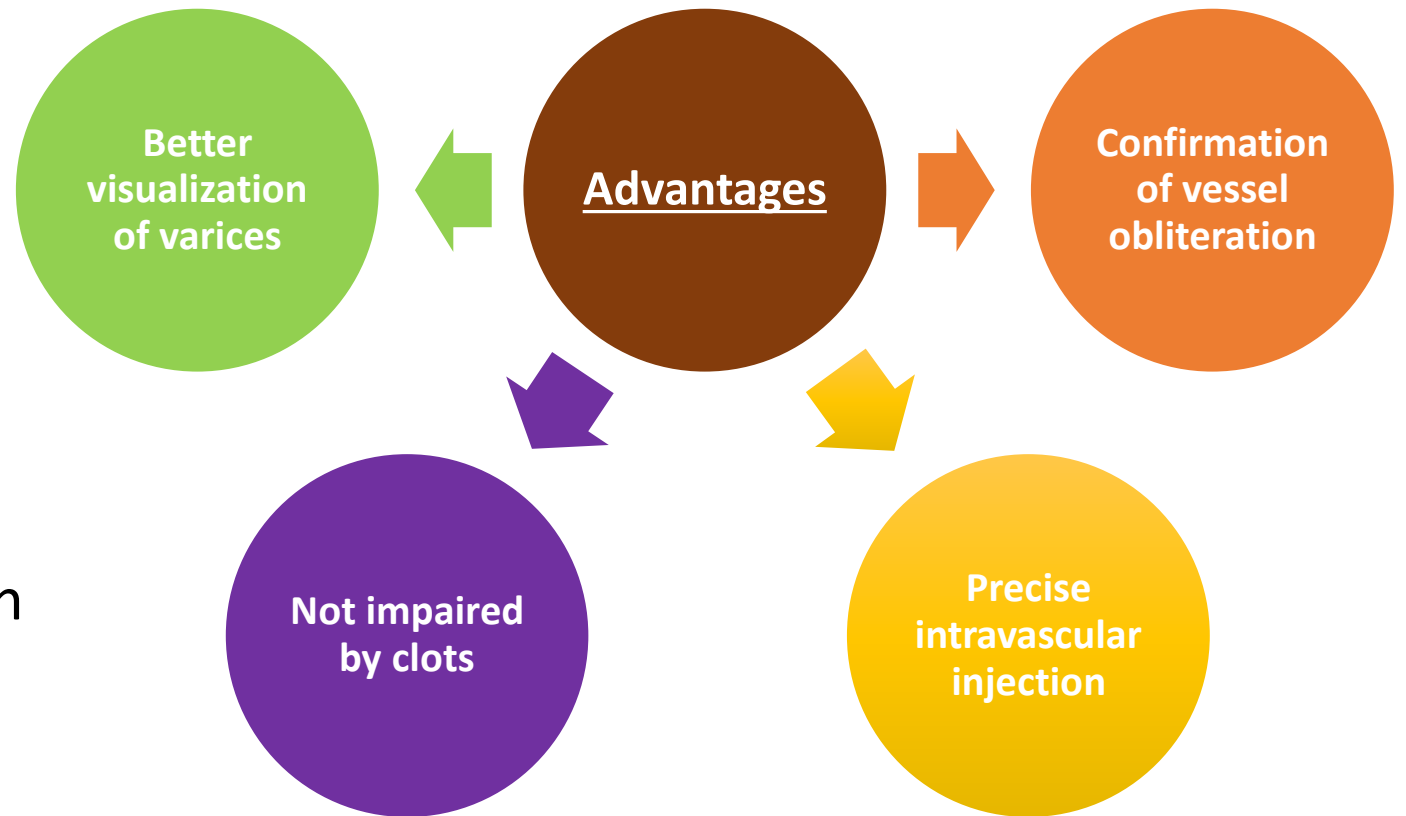
**UPDATE 2020**

**Hemostatic agents as rescue line therapy in:**

- Refractory bleeding lesions to standard hemostatic therapy

# *Variceal EUS-guided angiotherapy*

- EUS-guided glue (CYA) injection
- EUS-guided coil embolization
- EUS-guided glue and coil combination



# ***Variceal EUS-guided angiotherapy***

## ***First cases***

- EUS guided CYA injection


**EUS-guided injection of cyanoacrylate in perforating feeding veins in gastric varices: results in 5 cases**

**Rafael Romero-Castro, MD, PhD, Francisco J. Pellicer-Bautista, MD, PhD, Manuel Jimenez-Saenz, MD, PhD, Francisco Marcos-Sanchez, MD, PhD, Angel Caunedo-Alvarez, MD, Carlos Ortiz-Moyano, MD, PhD, Manuel Gomez-Parra, MD, PhD, Juan M. Herrerias-Gutierrez, MD, PhD**

Seville, Spain

***Gastrointestinal endoscopy, 2007***

- EUS-guided coil embolization

**EUS-guided coil embolization for refractory ectopic variceal bleeding (with videos) **

**Michael J. Levy, MD, Louis M. Wong Kee Song, MD, Michael L. Kendrick, MD, Sanjay Misra, MD, Christopher J. Gostout, MD**

Rochester, Minnesota, USA

***Gastrointestinal endoscopy, 2008***

## EUS-guided transesophageal treatment of gastric fundal varices with combined coiling and cyanoacrylate glue injection (with videos)

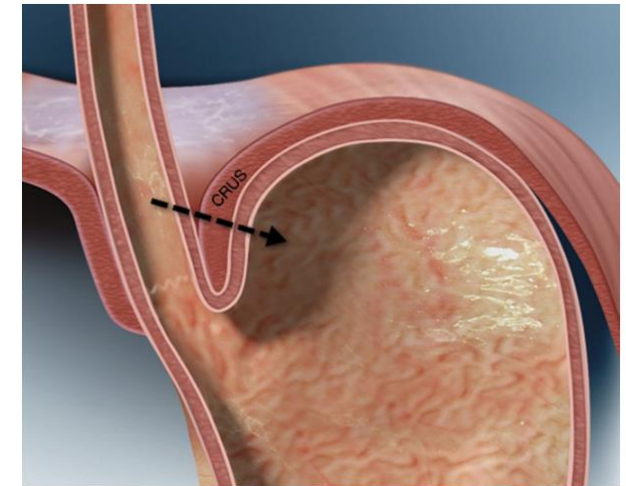
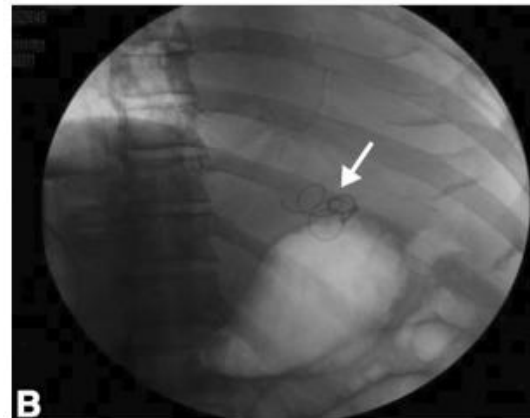
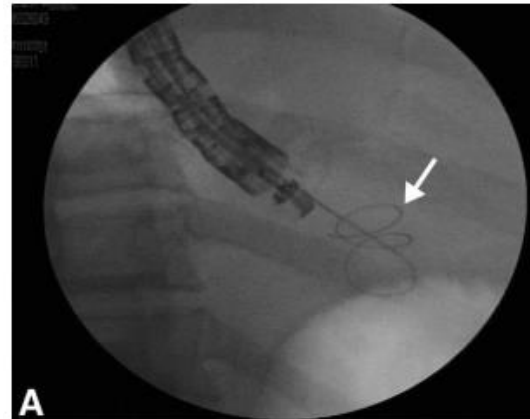
Kenneth F. Binmoeller, MD, Frank Weilert, MD, Janak N. Shah, MD, Jin Kim, MD

San Francisco, California, USA

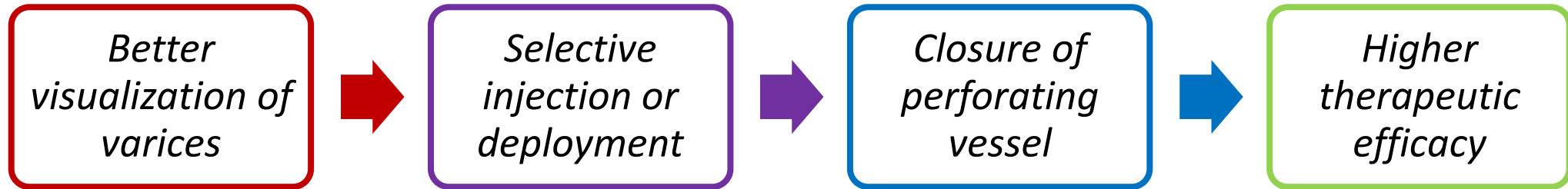
**TABLE 2. Procedure data and outcomes in 30 patients**

Echoendoscope used, no. (%)	
Forward-view curved linear array	28 (93.3)
Oblique-view curved linear array	2 (6.7)
Mean no. of GFV treated per patient (range)	1.3 (1-3)
Successful coil placement, no. (%)	30/30 (100)
Successful CYA glue injection, no. (%)	30/30 (100)
Rebleeding, no. (%)	4/24 (16.6)
Nonvariceal	4/24 (16.6)
Gastric variceal	0/24 (0)
Obliteration of GFV at follow-up, no. (%)	23/24 (95.8)

GFV, Gastric fundal varices; CYA, cyanoacrylate.



## EUS guided CYA injection VS EUS guided coil embolization

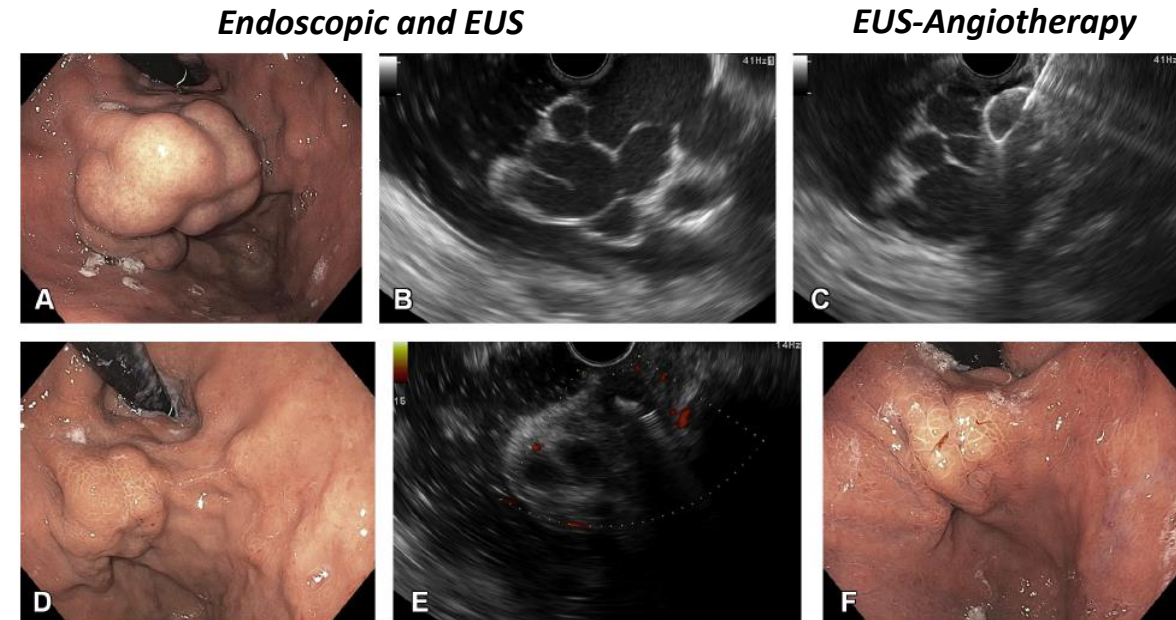
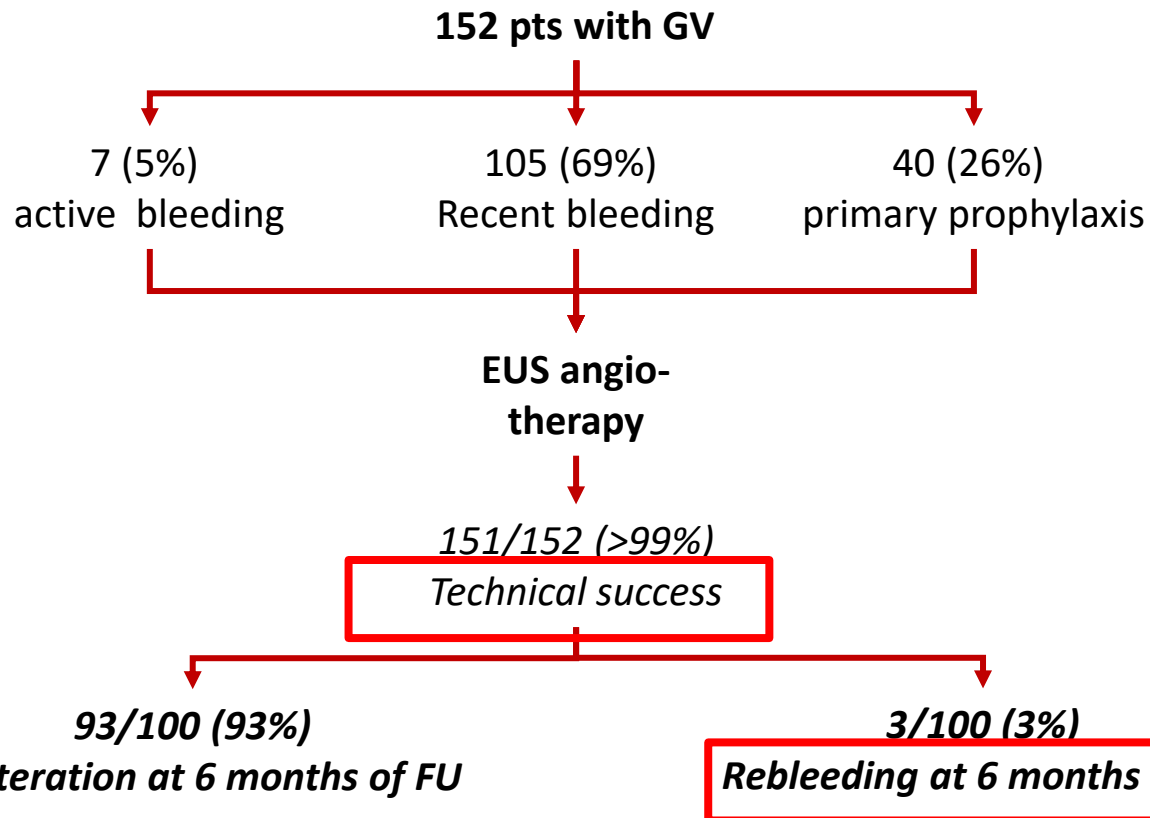


	Total patients (n=30)	CYA group (n=19)	Coil group (n=11)
Variceal Obliteration rate	29/30 (96.7)	19/19 (100)	10/11 (90.9)
Variceal Obliteration after 1 session	17/30 (56.7)	8/19 (52.6)	9/11 (81.8)
Adverse Events	12/30 (40.0)	11/19 (57.9) Only 3 symptomatic	1/11 (9.0)

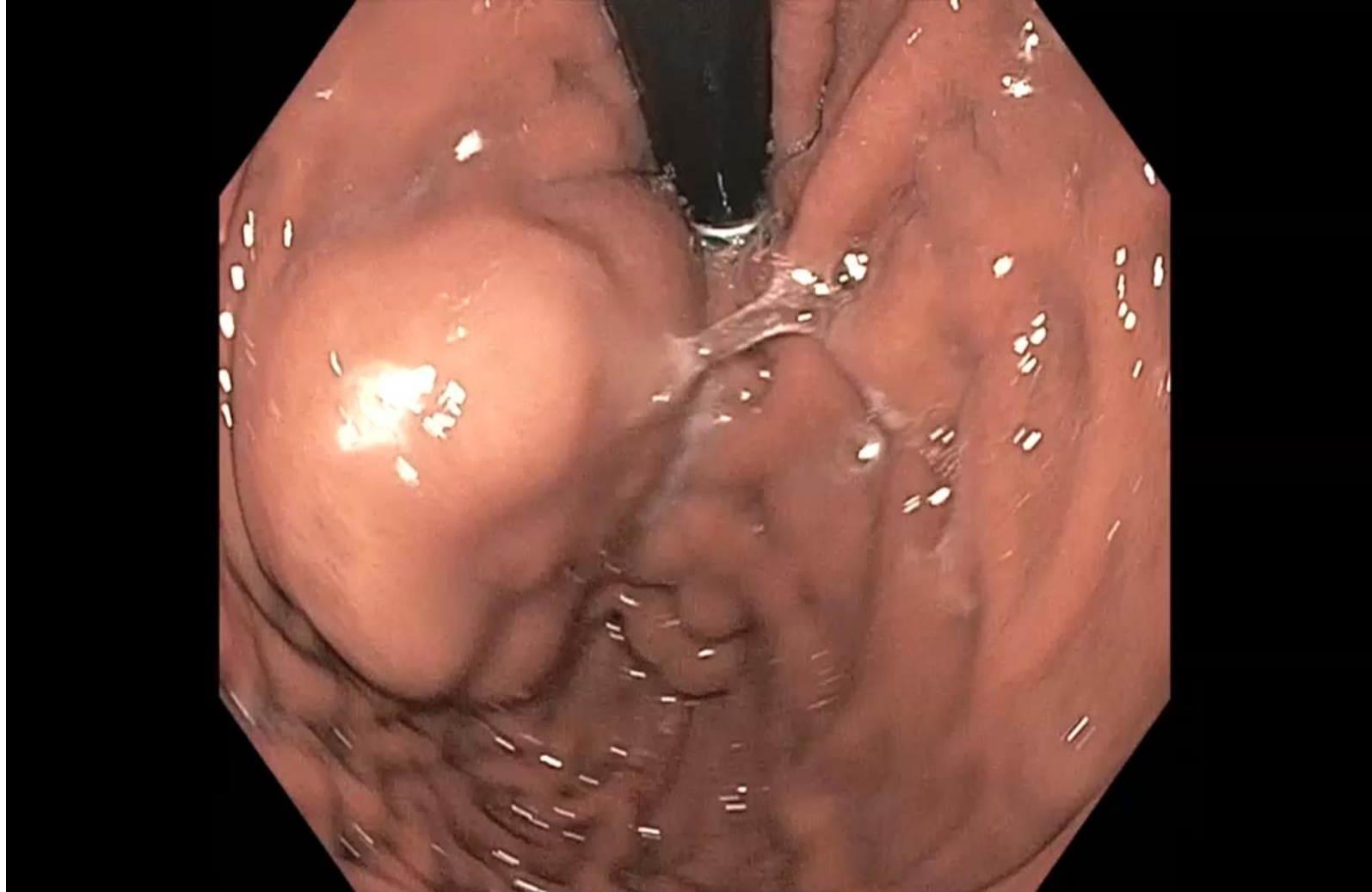


# EUS-guided treatment of gastric fundal varices with combined injection of coils and cyanoacrylate glue: a large U.S. experience over 6 years (with video)

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# EUS guided treatment of gastric fundal varices



# Diagnosis and management of nonvariceal upper gastrointestinal hemorrhage: European Society of Gastrointestinal Endoscopy (ESGE) Guideline



**UPDATE 2020**

## **Hemostasis in gastric varices**

EUS-guided management of bleeding gastric varices combining injection of coils and cyanoacrylate may be used in centers with expertise and familiarity with this technique

*Grazie per  
l'attenzione*

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