
بسم الله الرحمن الرحيم


الحمد لله والصلاة والسلام على رسول الله صلى الله عليه وسلم

قال الله تعالى:

” يرفع الله الذين آمنوا منكم
والذين أوتوا العلم درجات
و الله بما تعملون خبير“

صدق الله العظيم

المجادلة: آية ١١

Upper Gastrointestinal Bleeding

By

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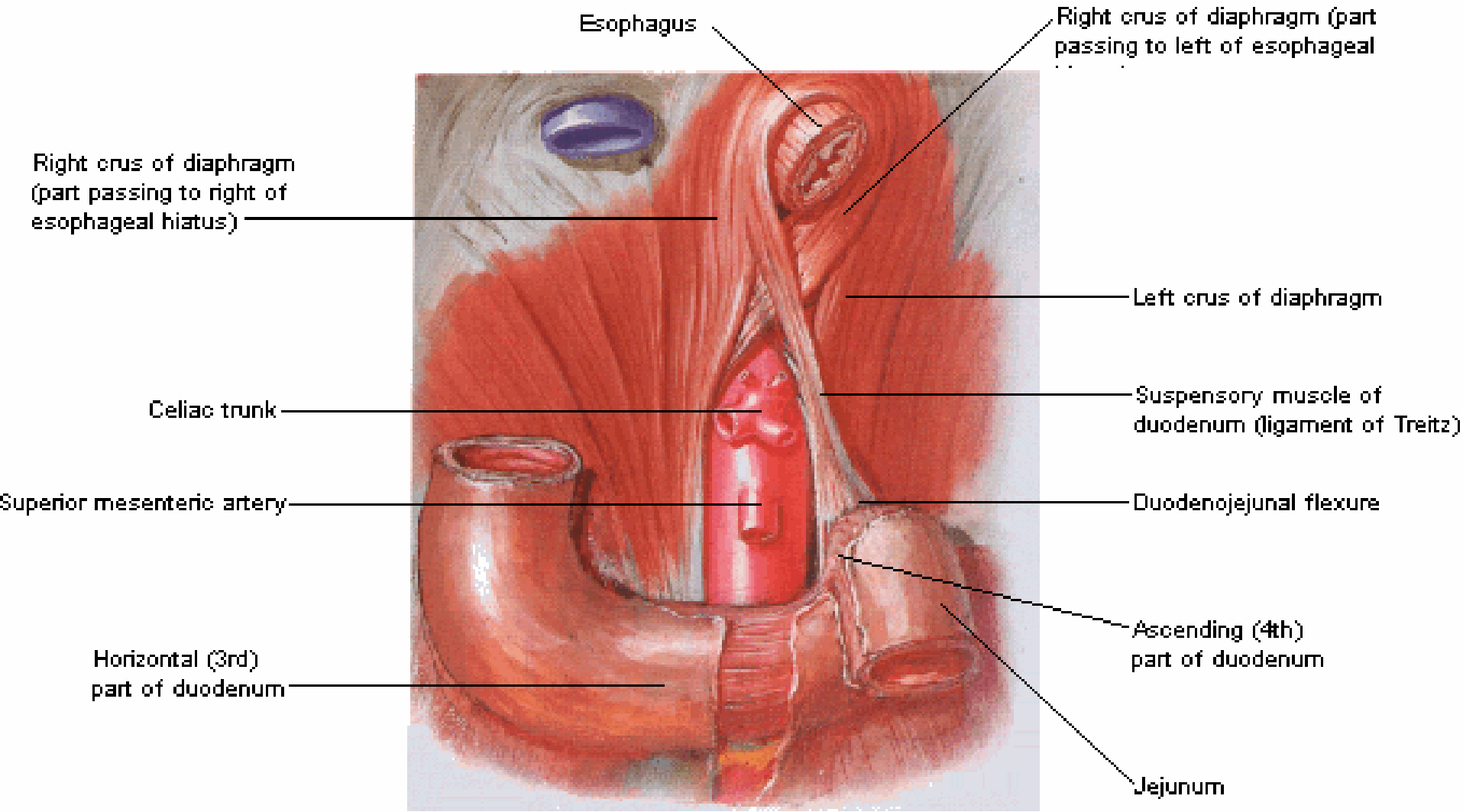
Lecturer of internal medicine

Definition

Upper -GI (UGI) bleeding is generally defined as bleeding that occurs in the digestive tract proximal to the ligament of Treitz.



INTRODUCTION

Epidemiology of UGI bleeding

- Accounts for 350,000 hospitalizations in U.S. yearly
- It is a significant cause of morbidity and mortality.
- **Mortality rates** range from 3.5% to 7%.
- **In Egypt**, our data are still deficient.
- **Mansoura University Emergency Hospital experience *(prof. Dr.Said Salem)***
- Approximately 80% of all acute episodes of UGI hemorrhage' resolve without intervenion and require supportive care only.
- **Esophagogastroduodenal endoscopy (EGD)** has diagnostic, prognostic and therapeutic advantages.

Causes

- Esophageal Varices/PHG/ Gastric Varices
- Gastritis or Duodenitis
- Esophagitis or esophageal ulcer
- Duodenal Ulcer
- Gastric Ulcer
- Mallory-Weiss tear
- Gastrointestinal malignancy
- Dieulafoy's Lesion

Cont.

- **Dieulafoy's Lesion**
  - Artery at gastric fundus may bleed heavily
  - Difficult to identify on endoscopy
- **Gastric antral vascular ectasia (GAVE)**
  - Longitudinal erythematous stripes on gastric mucosa
  - Known as Watermelon stomach
- **Arteriovenous malformation**
- **Angiodysplasia of stomach or duodenum, associated with**
  - Chronic Renal Failure
  - Aortic Stenosis
  - Cirrhosis
  - Von Willebrand's Disease

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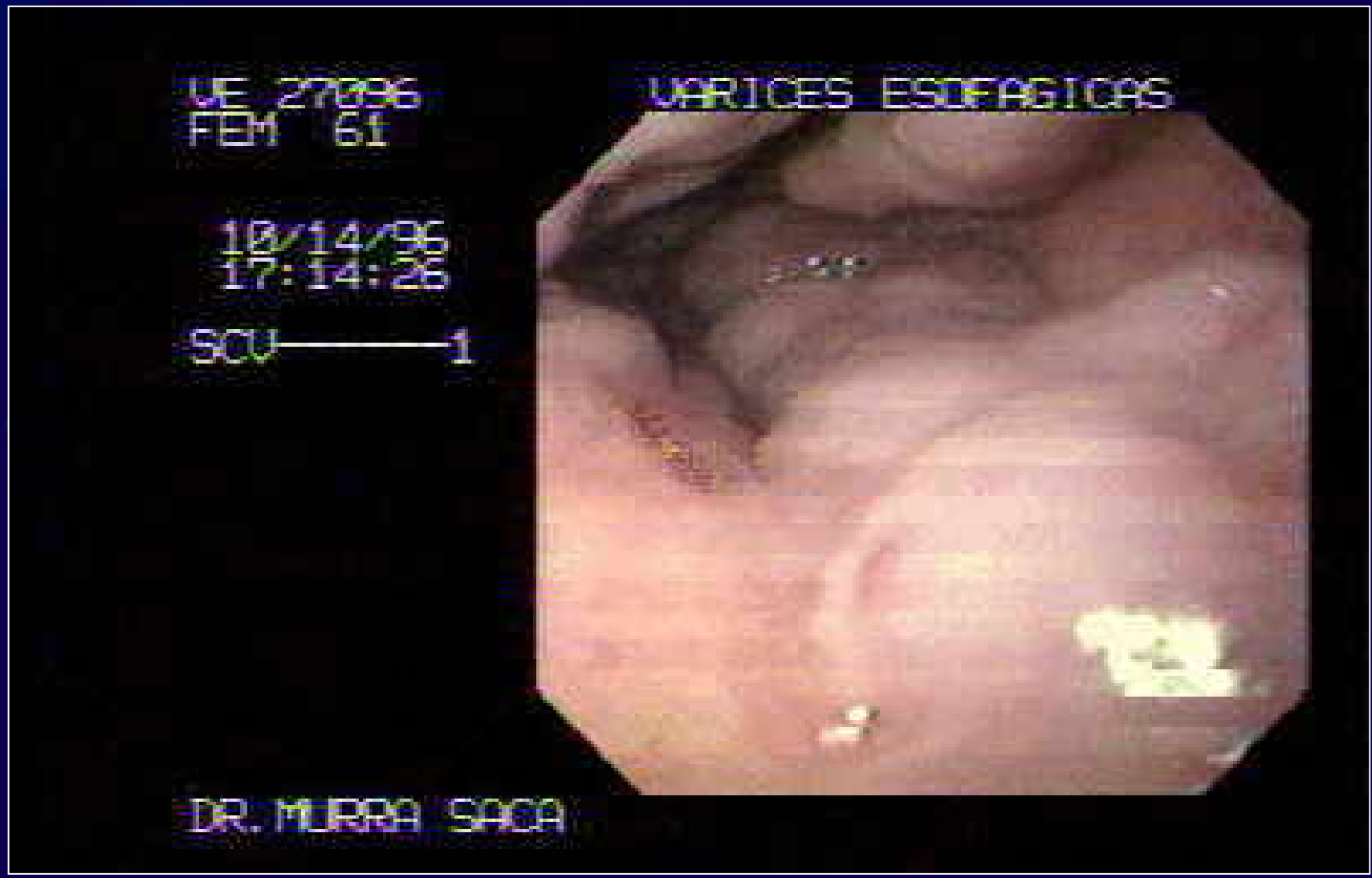

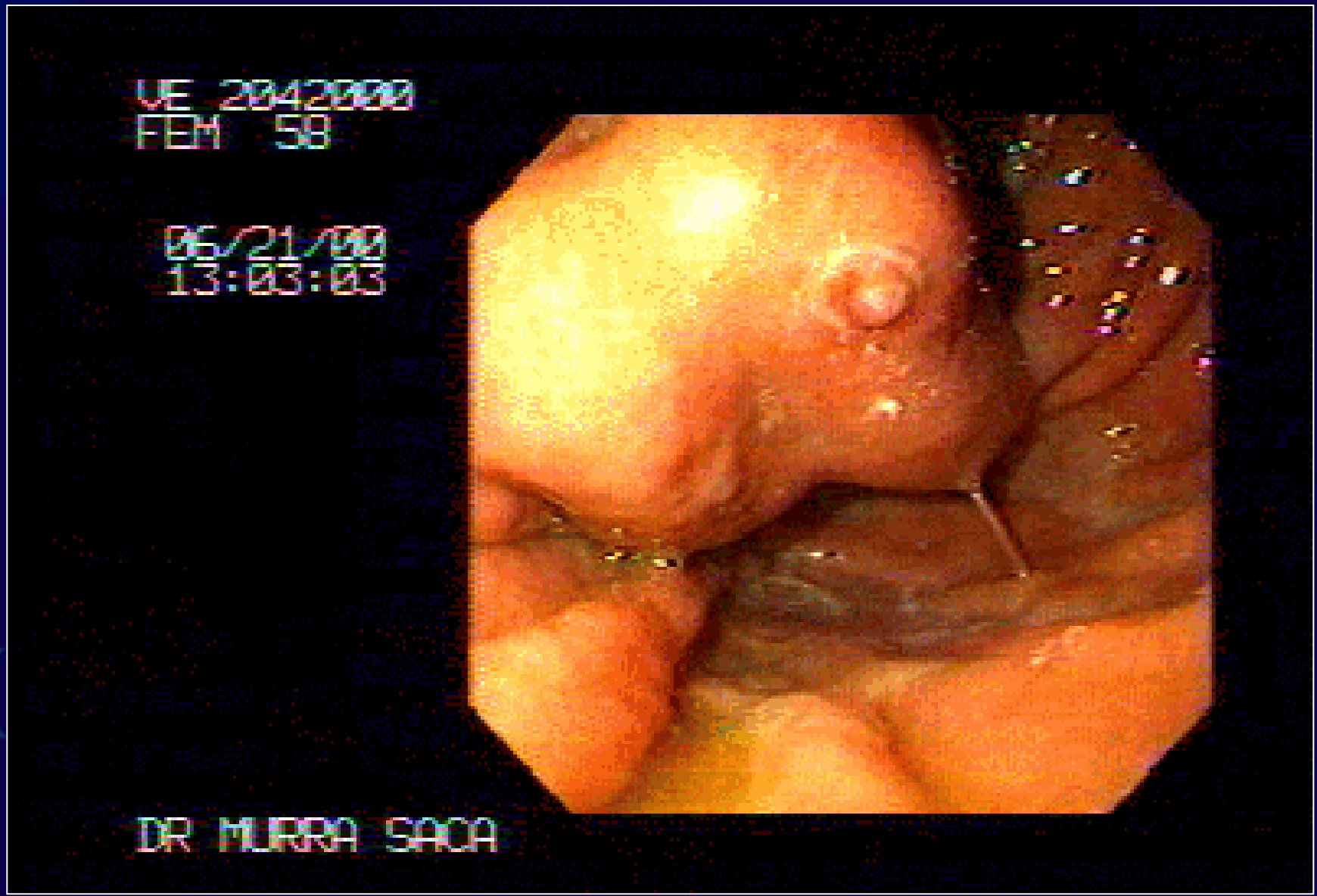
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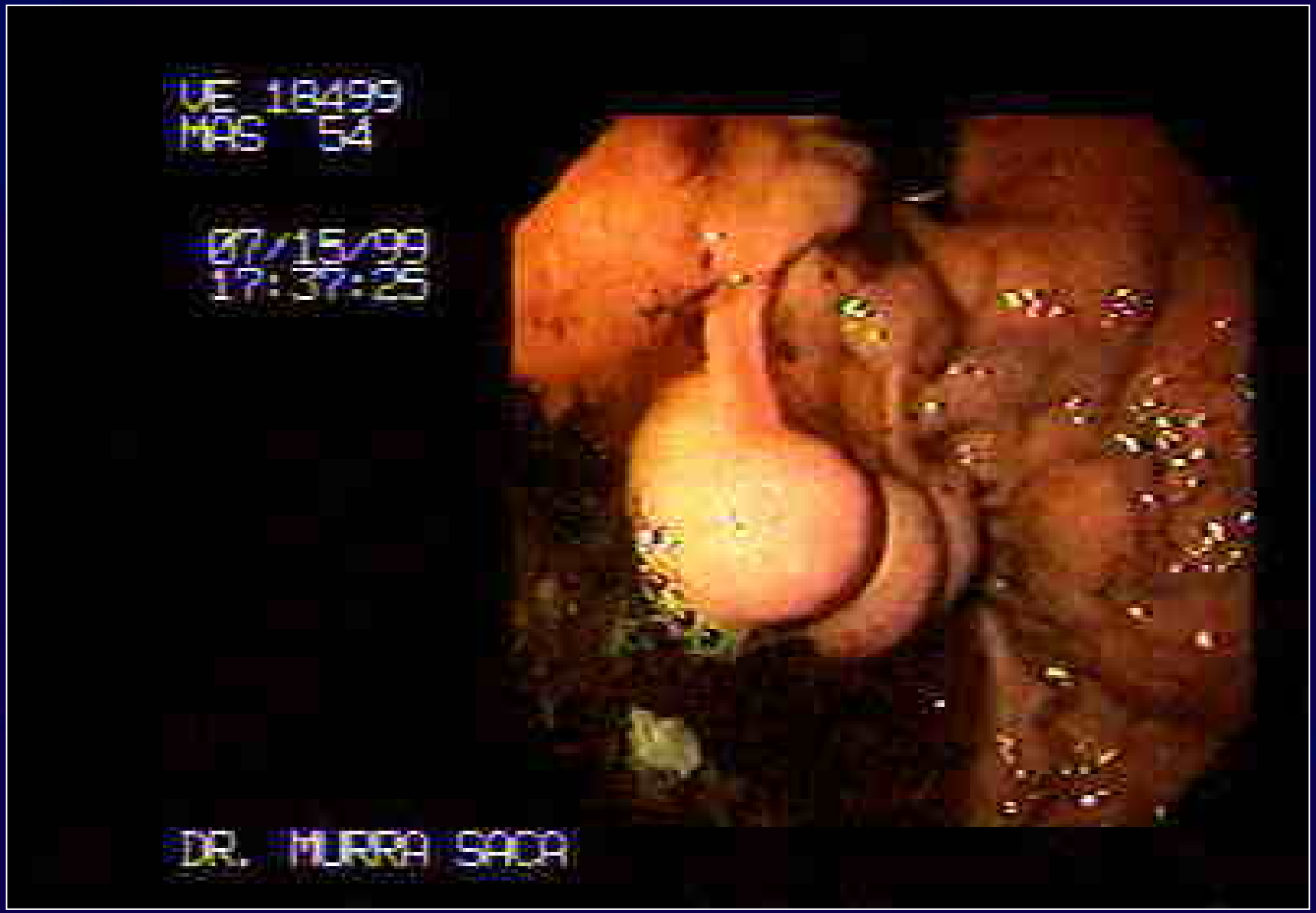
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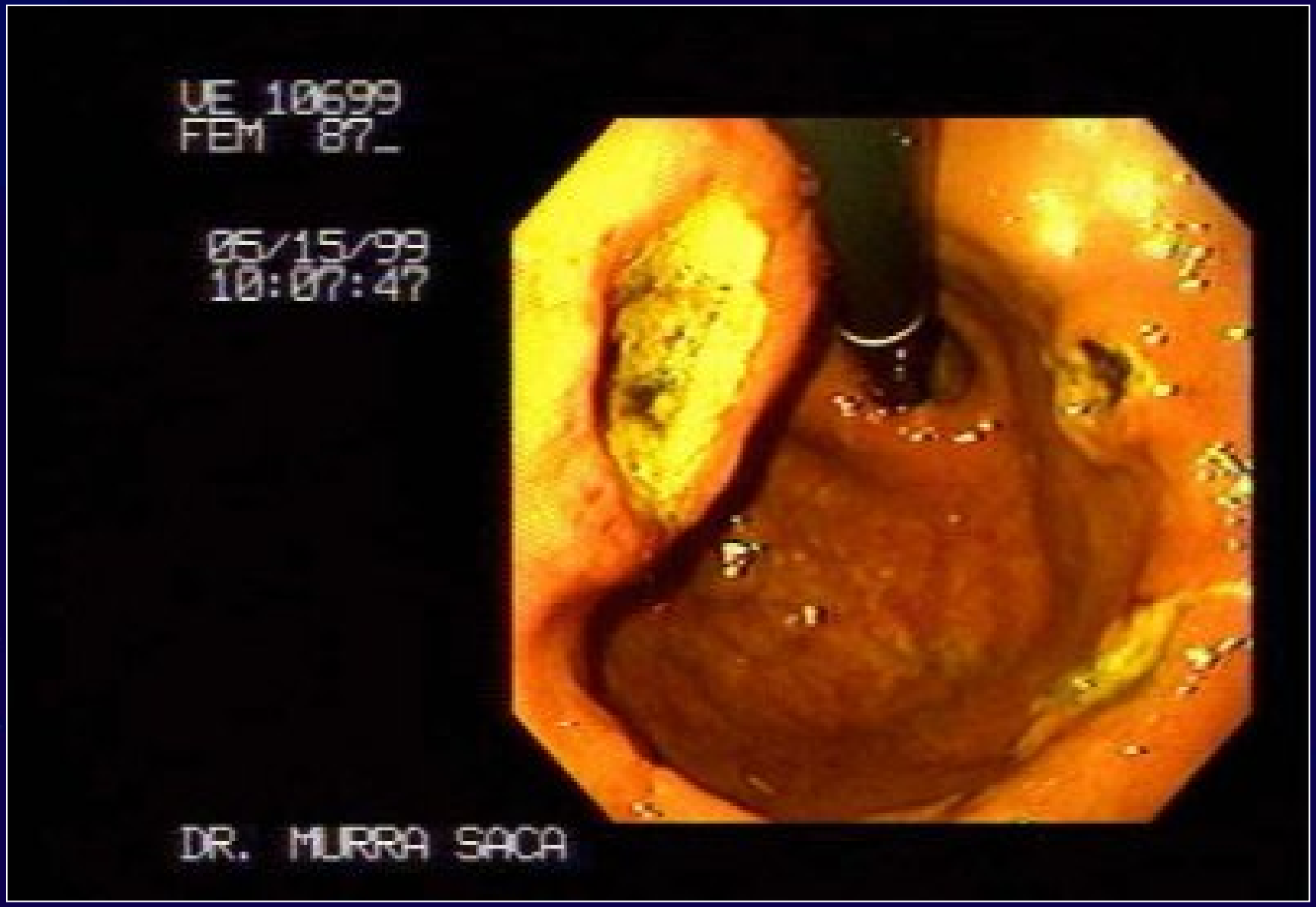
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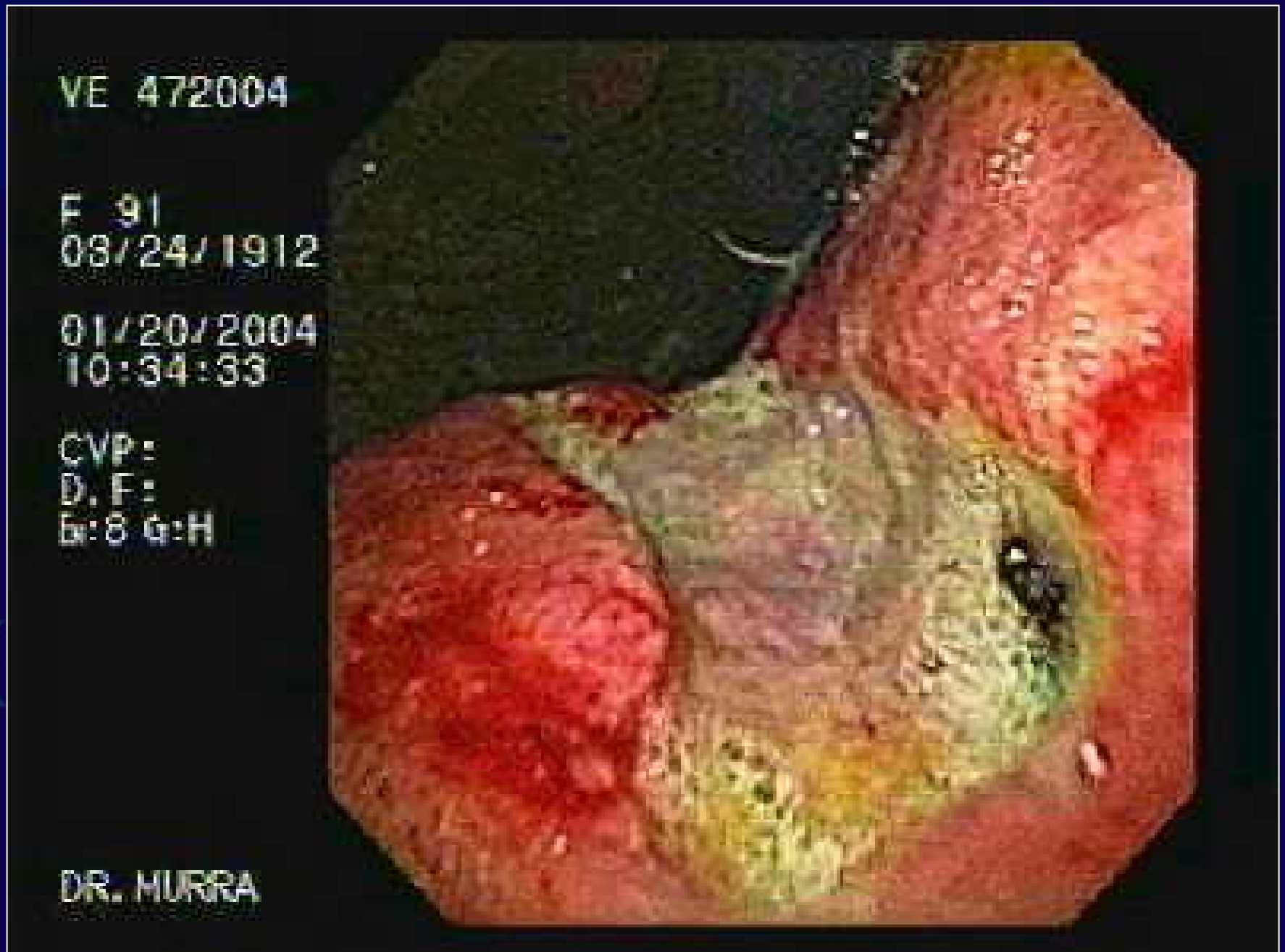
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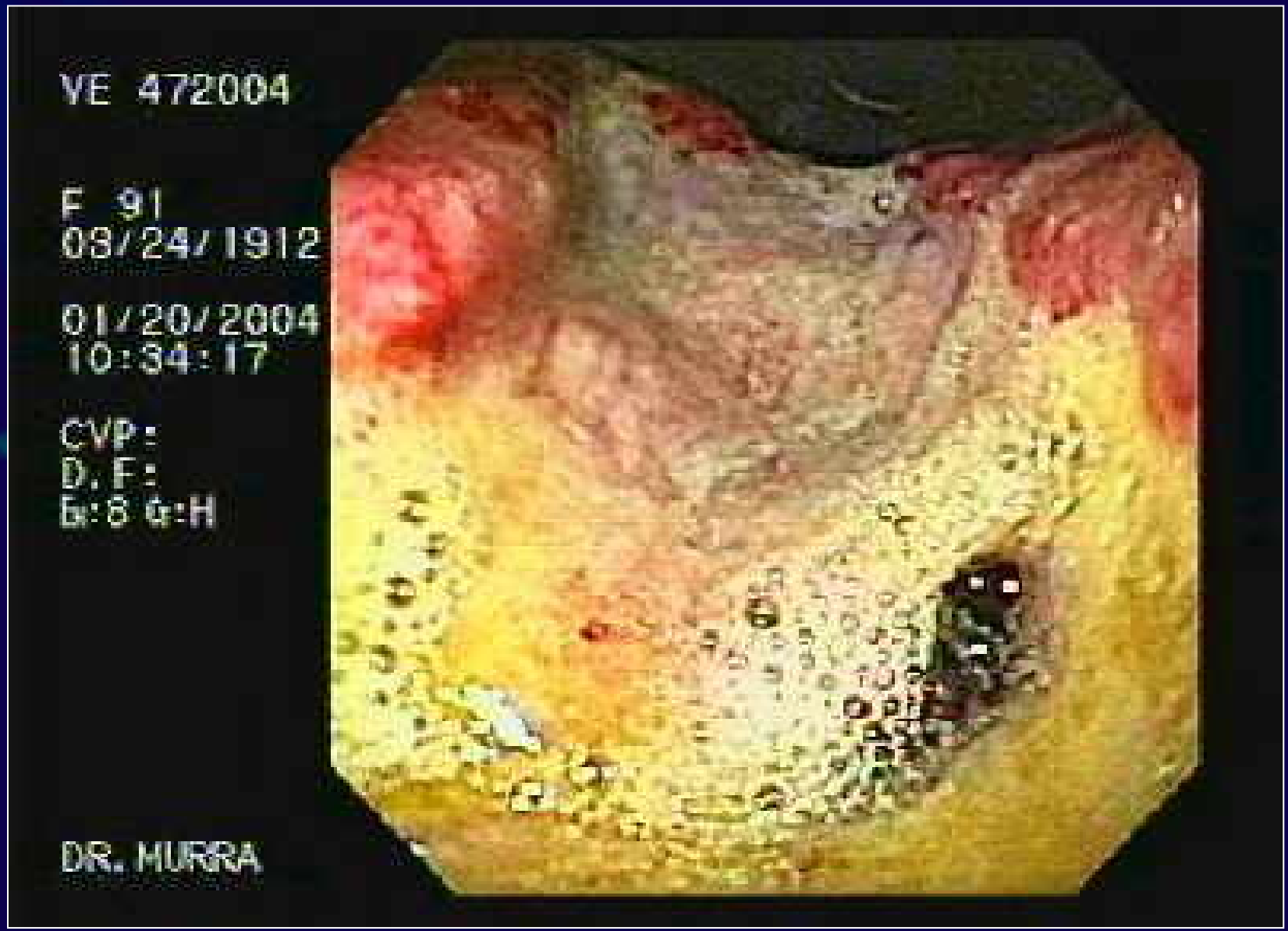
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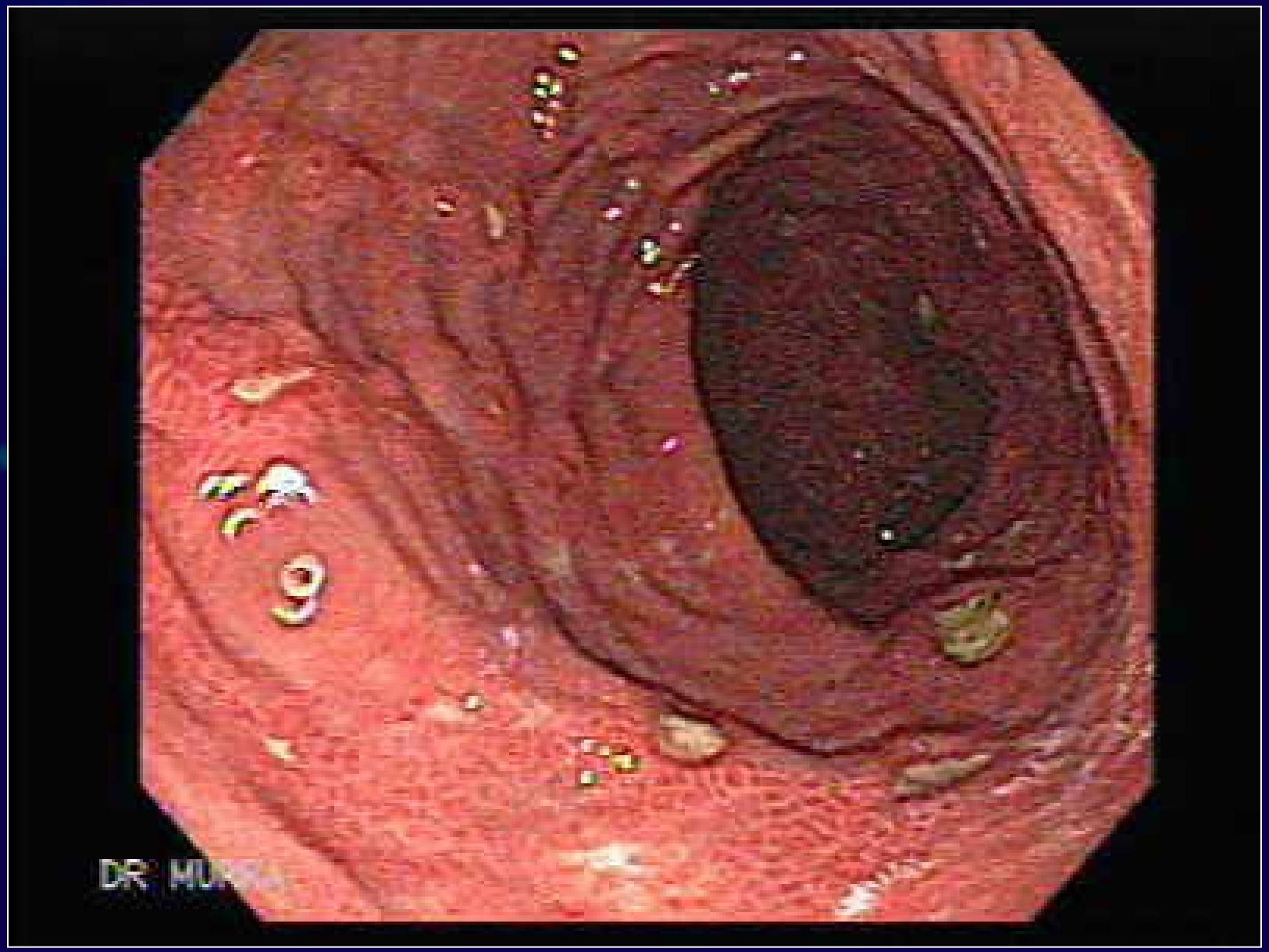

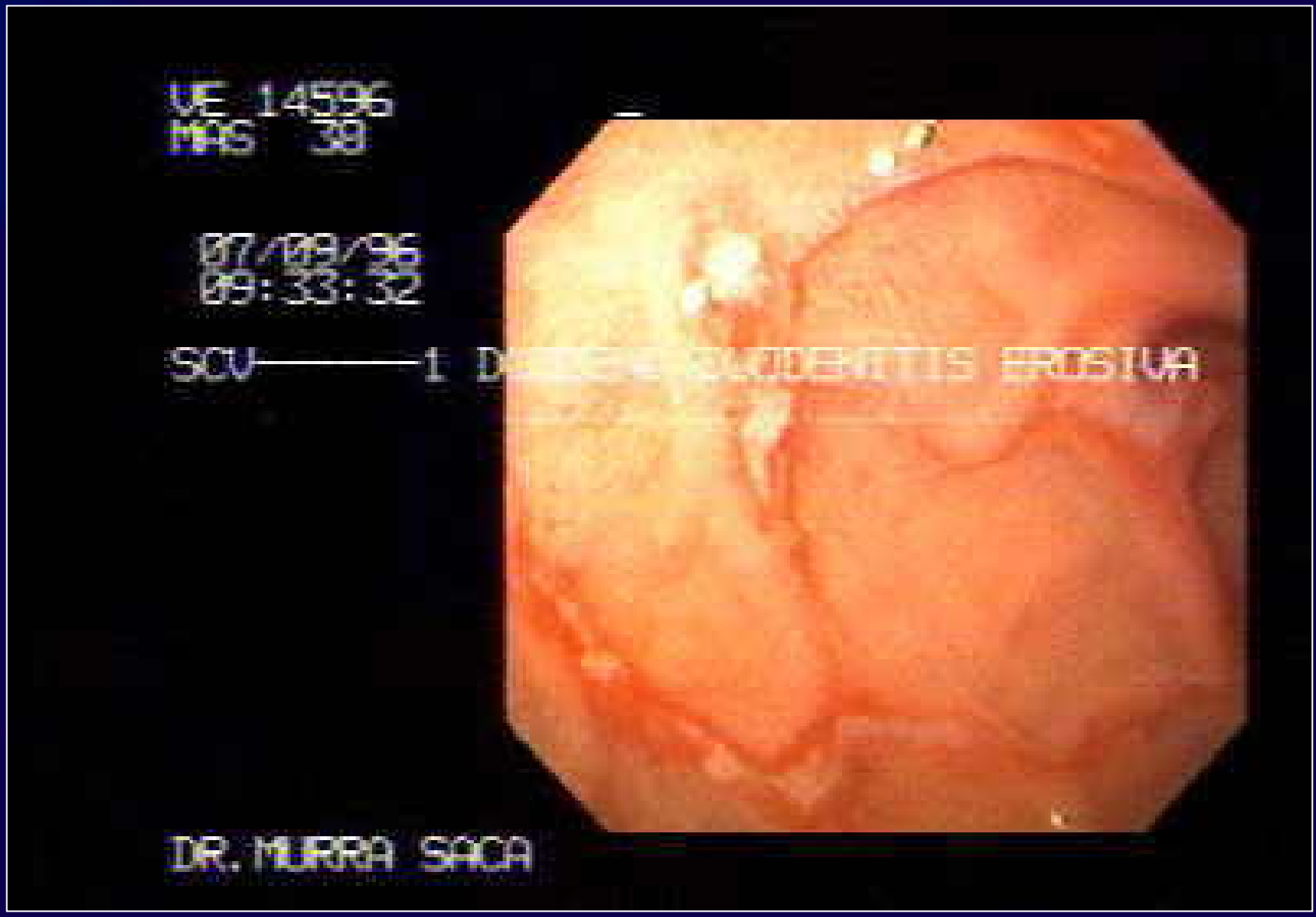
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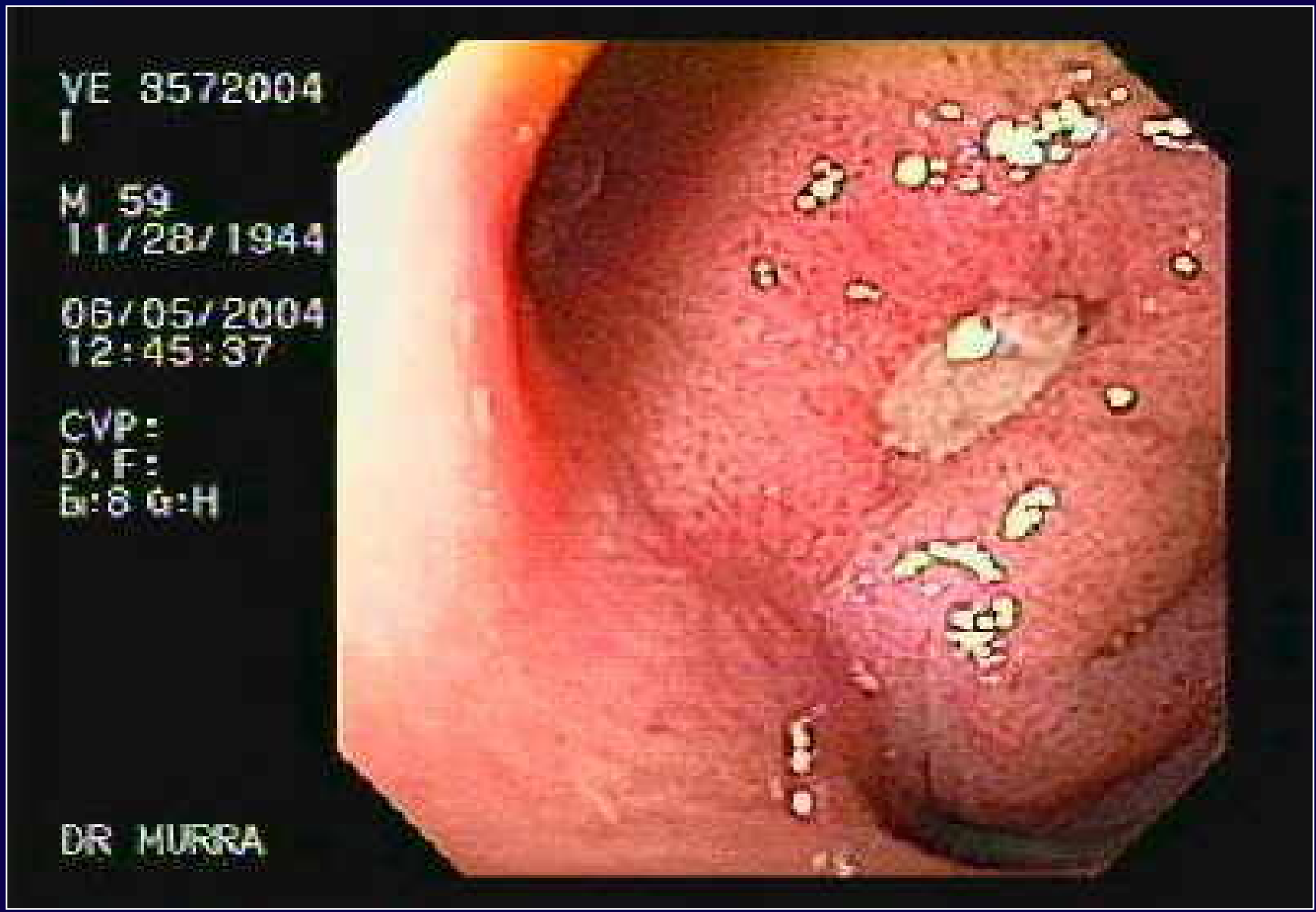
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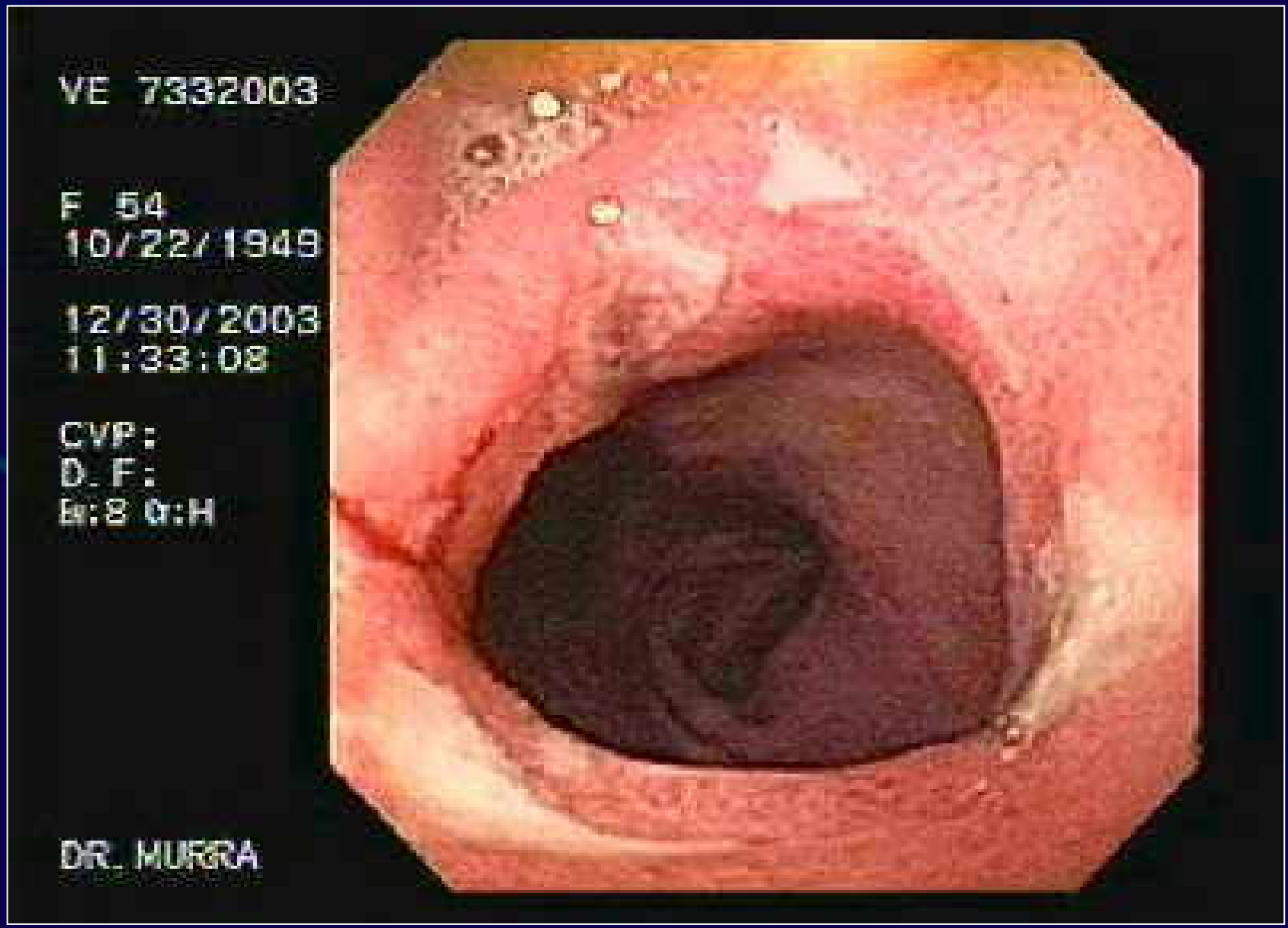
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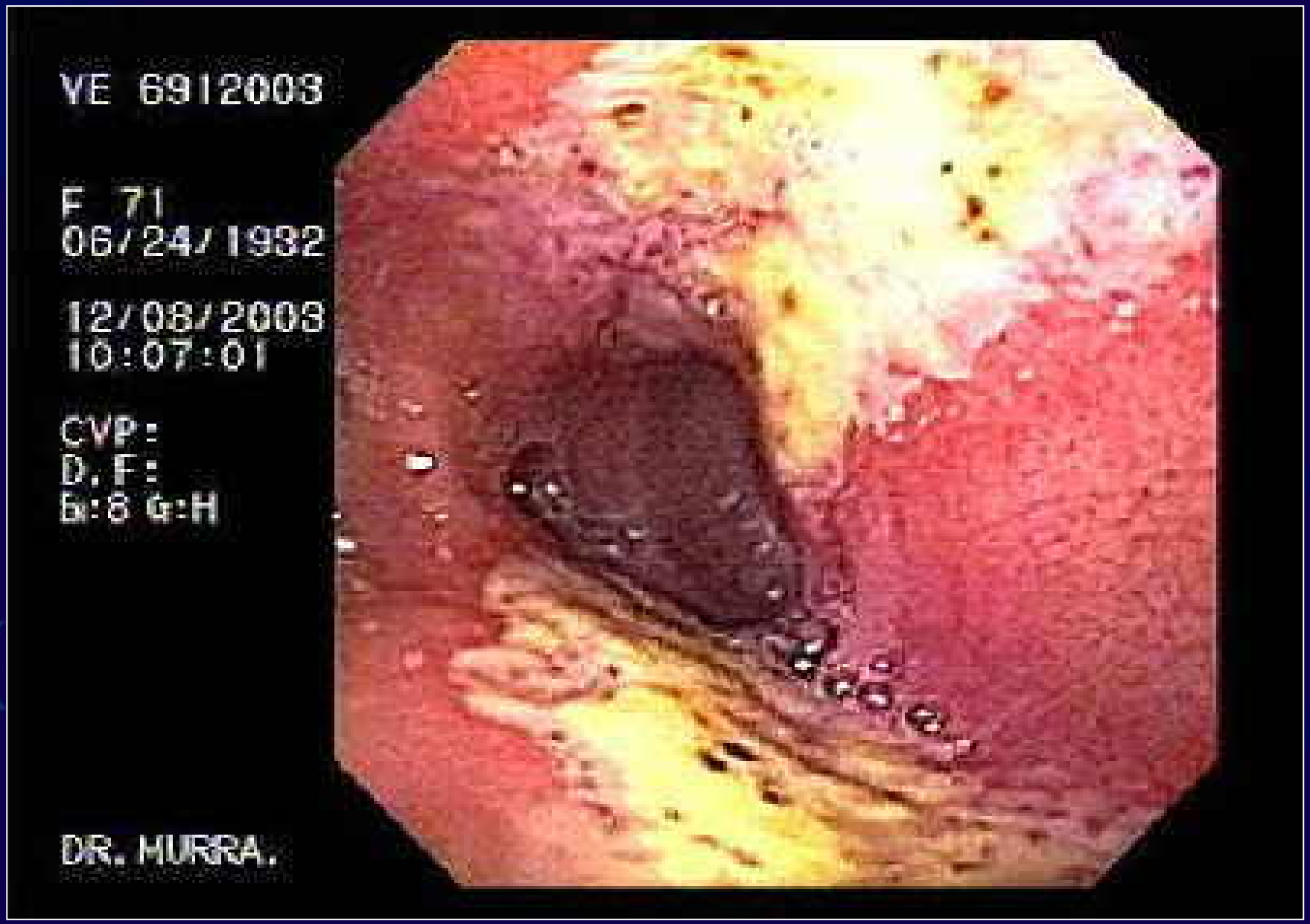
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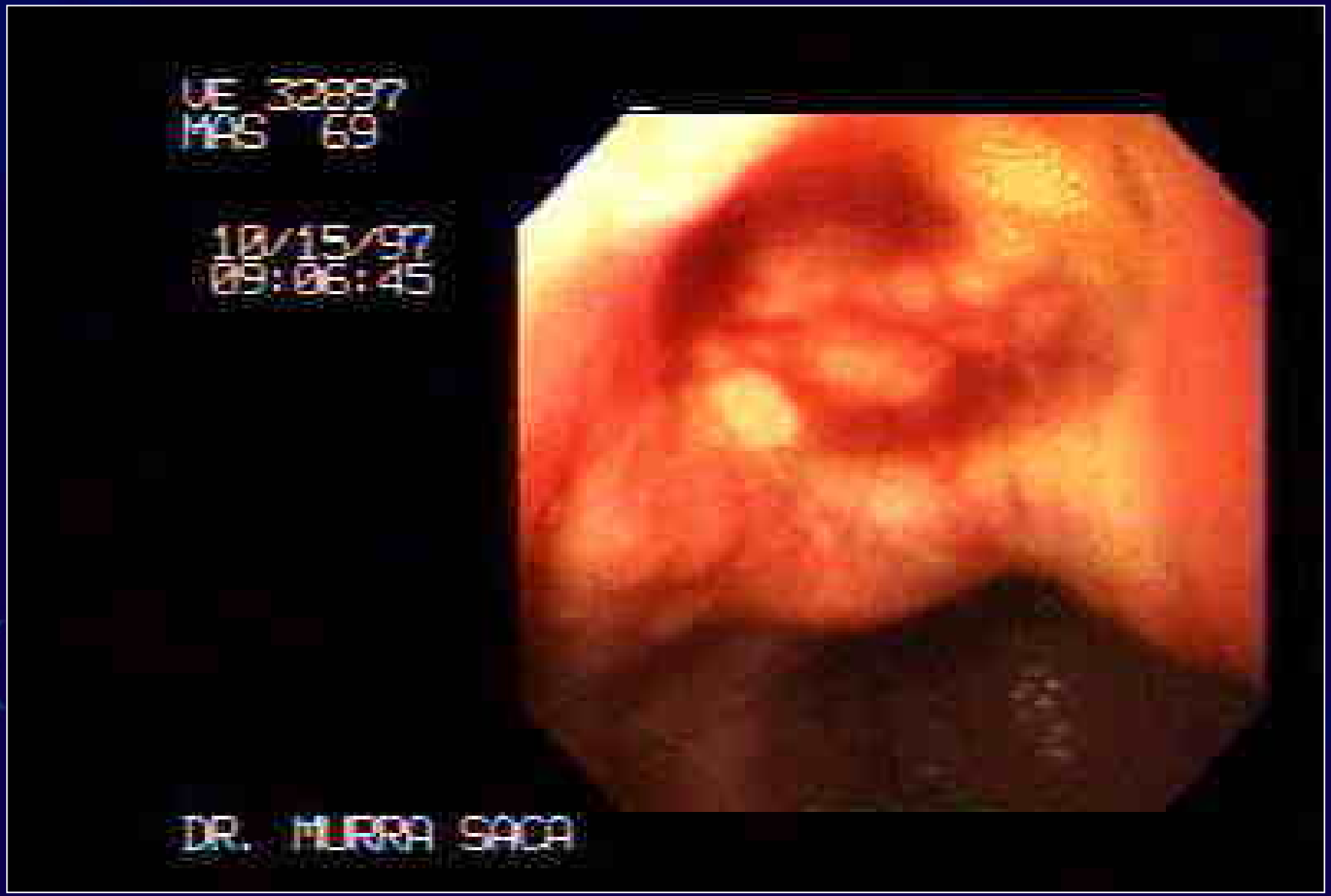
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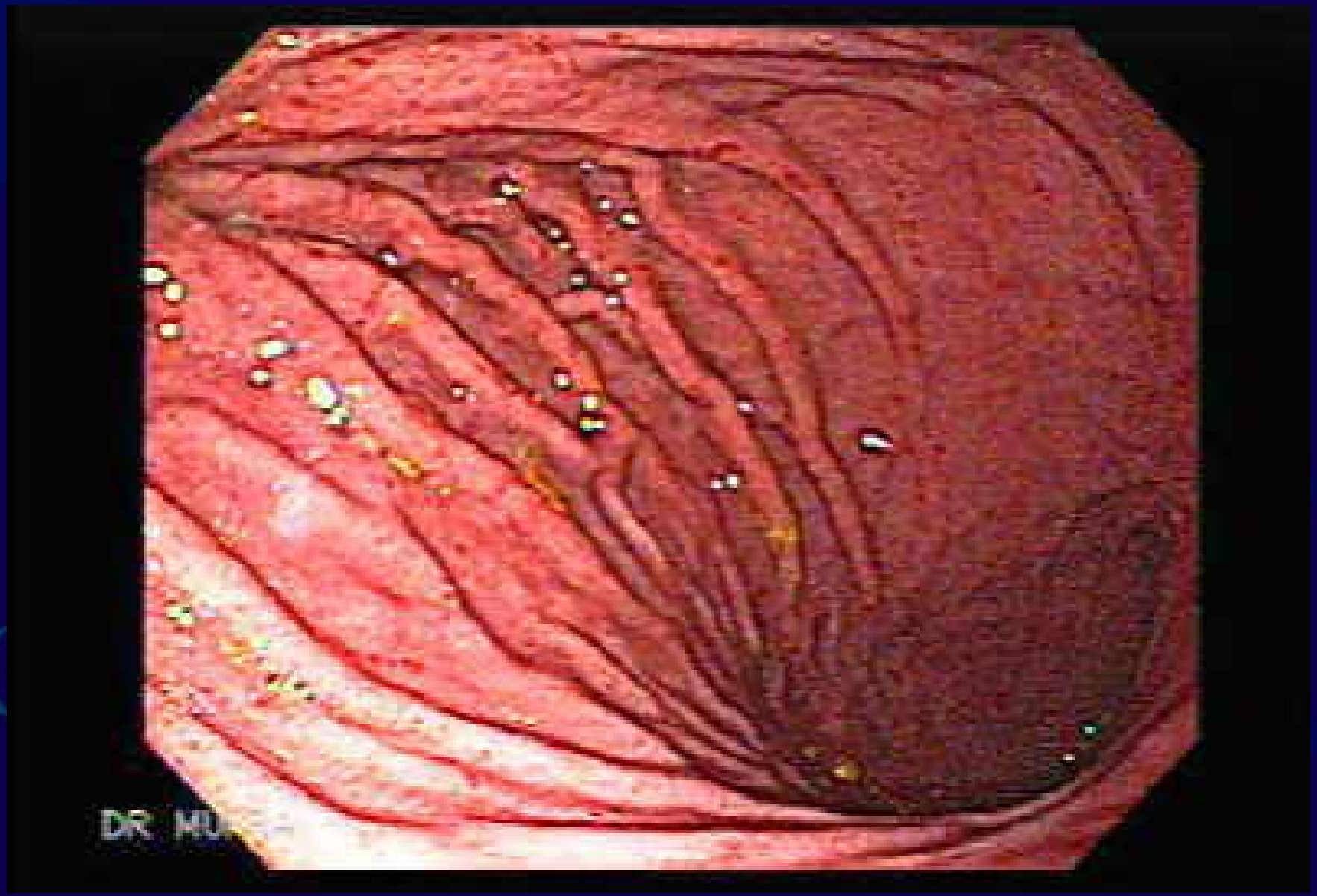
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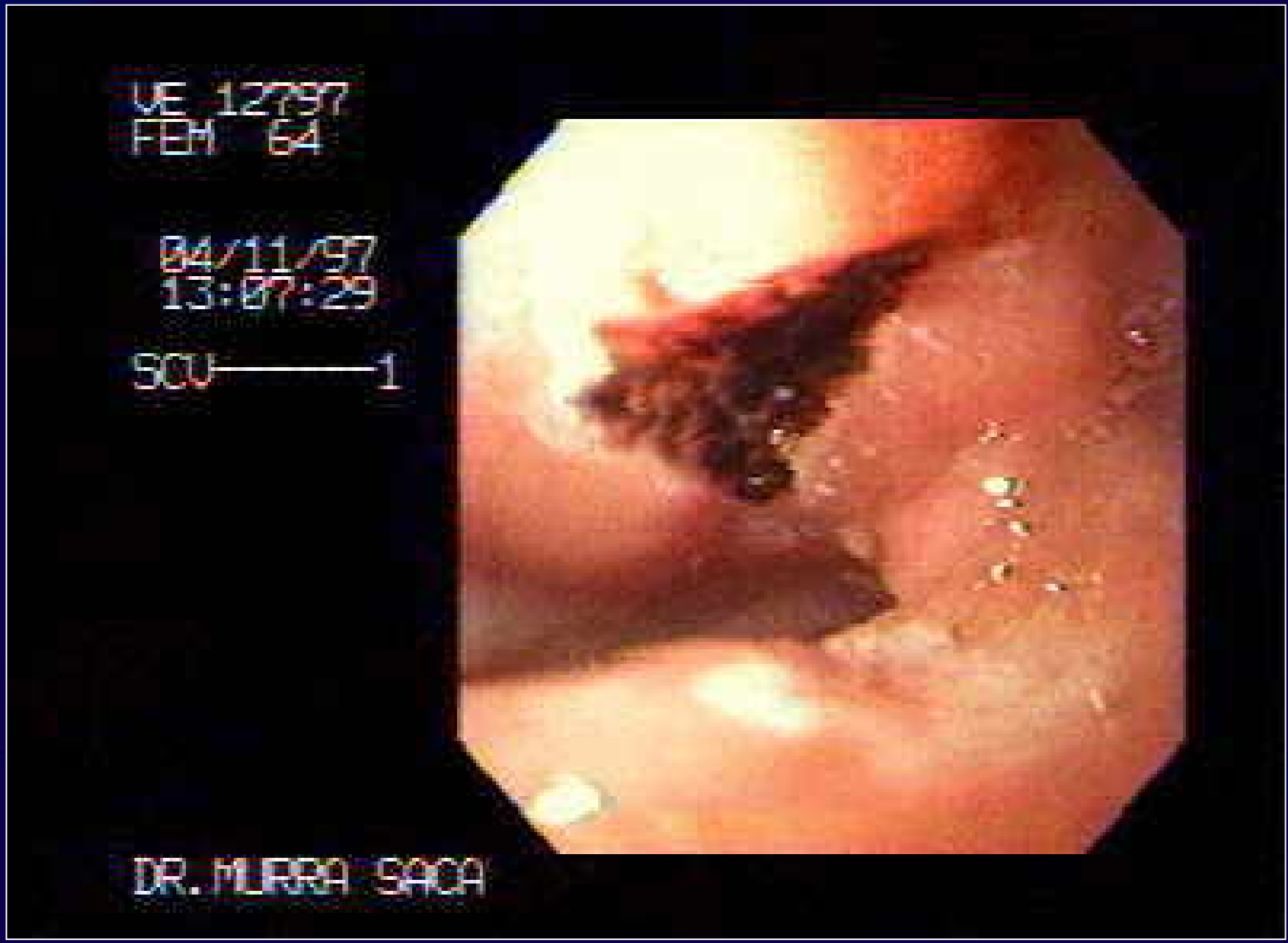
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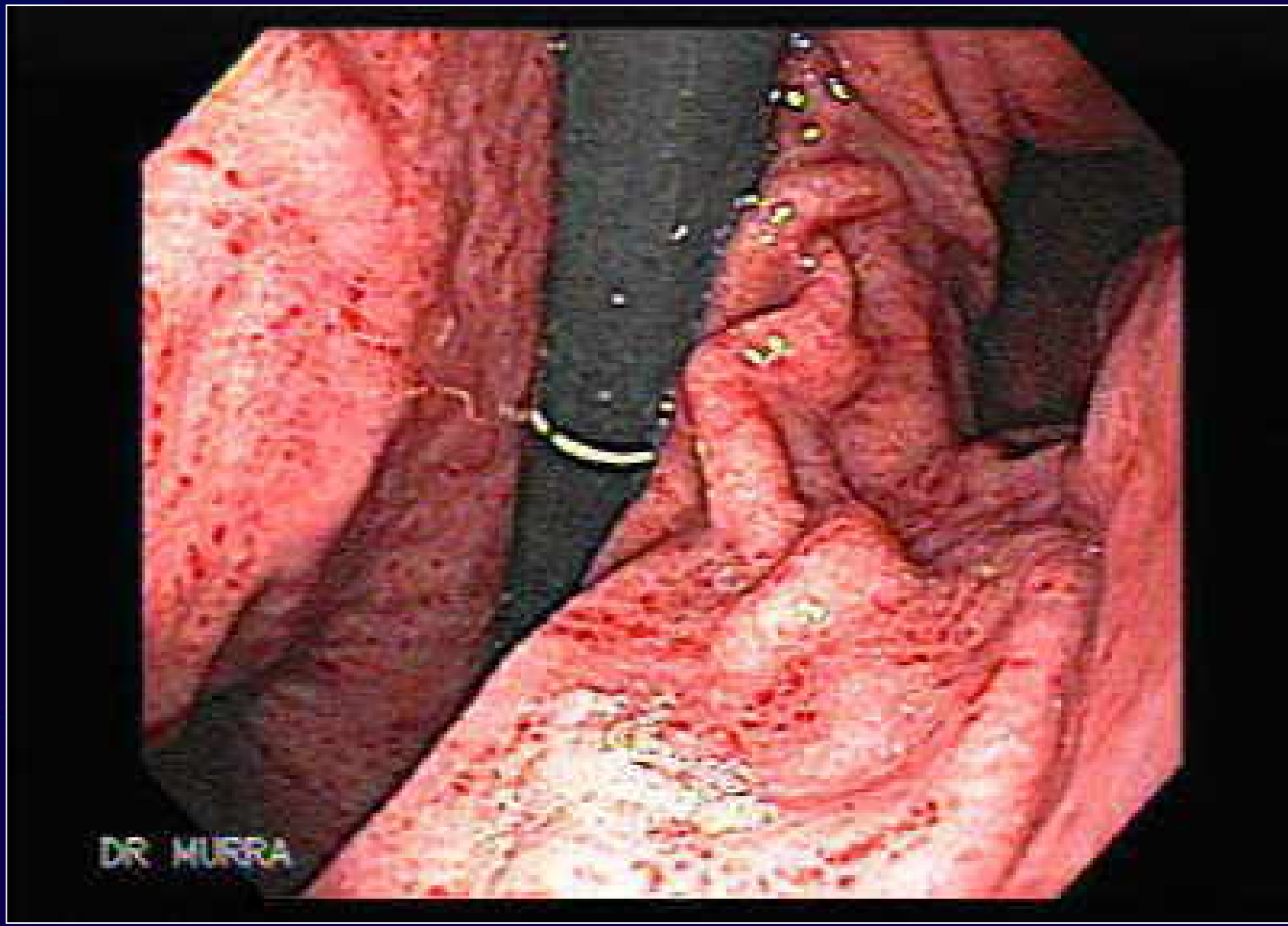
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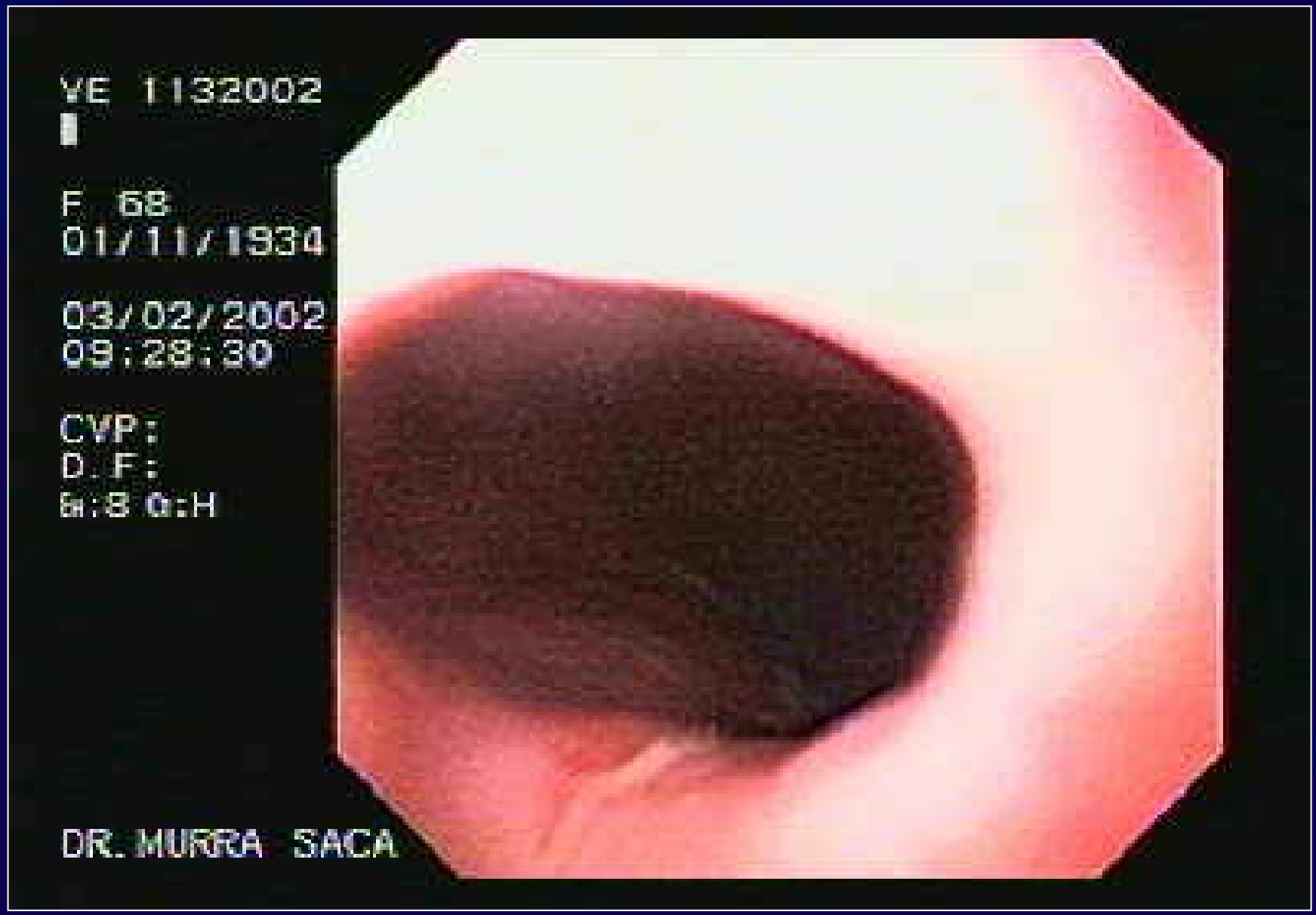
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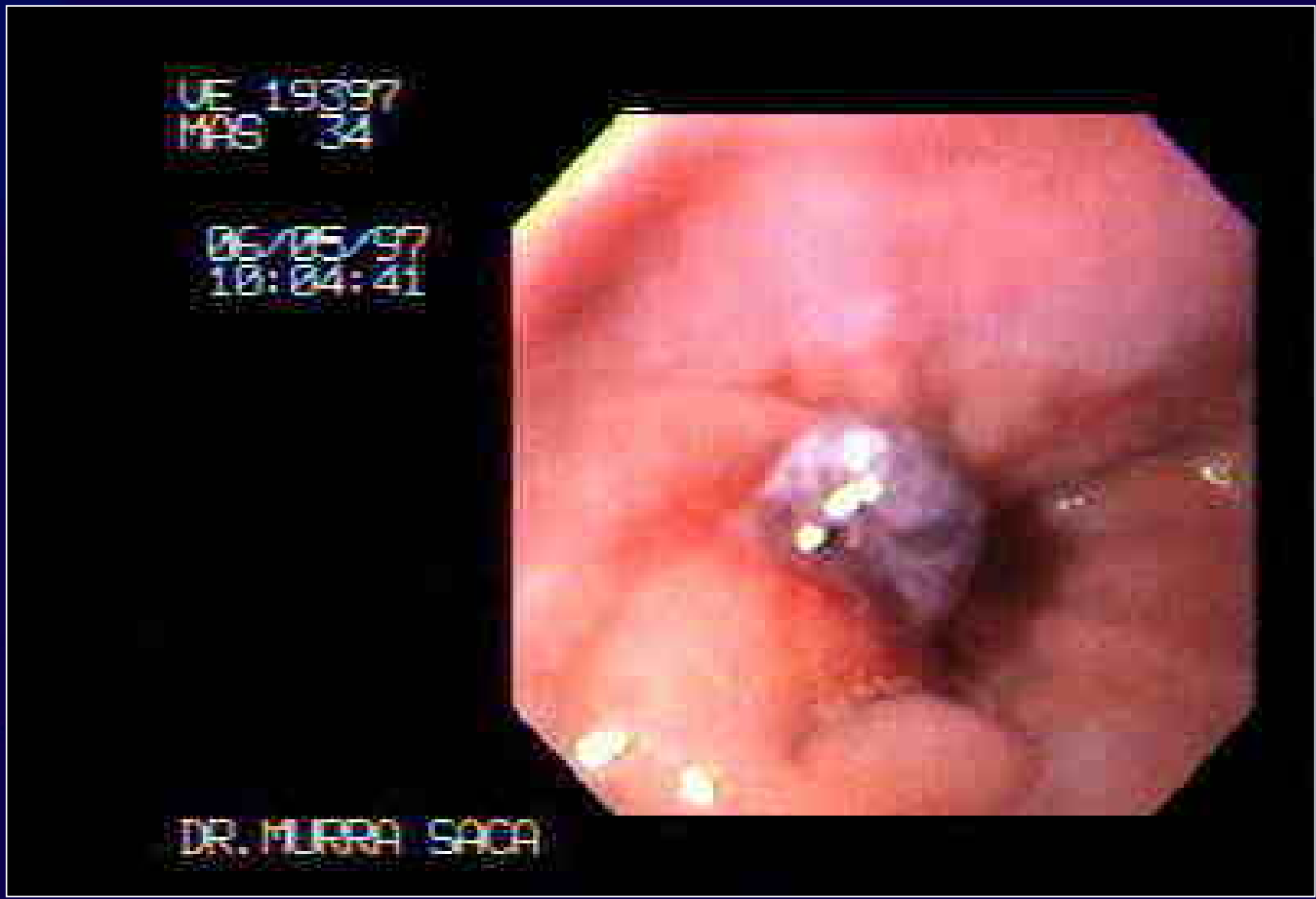
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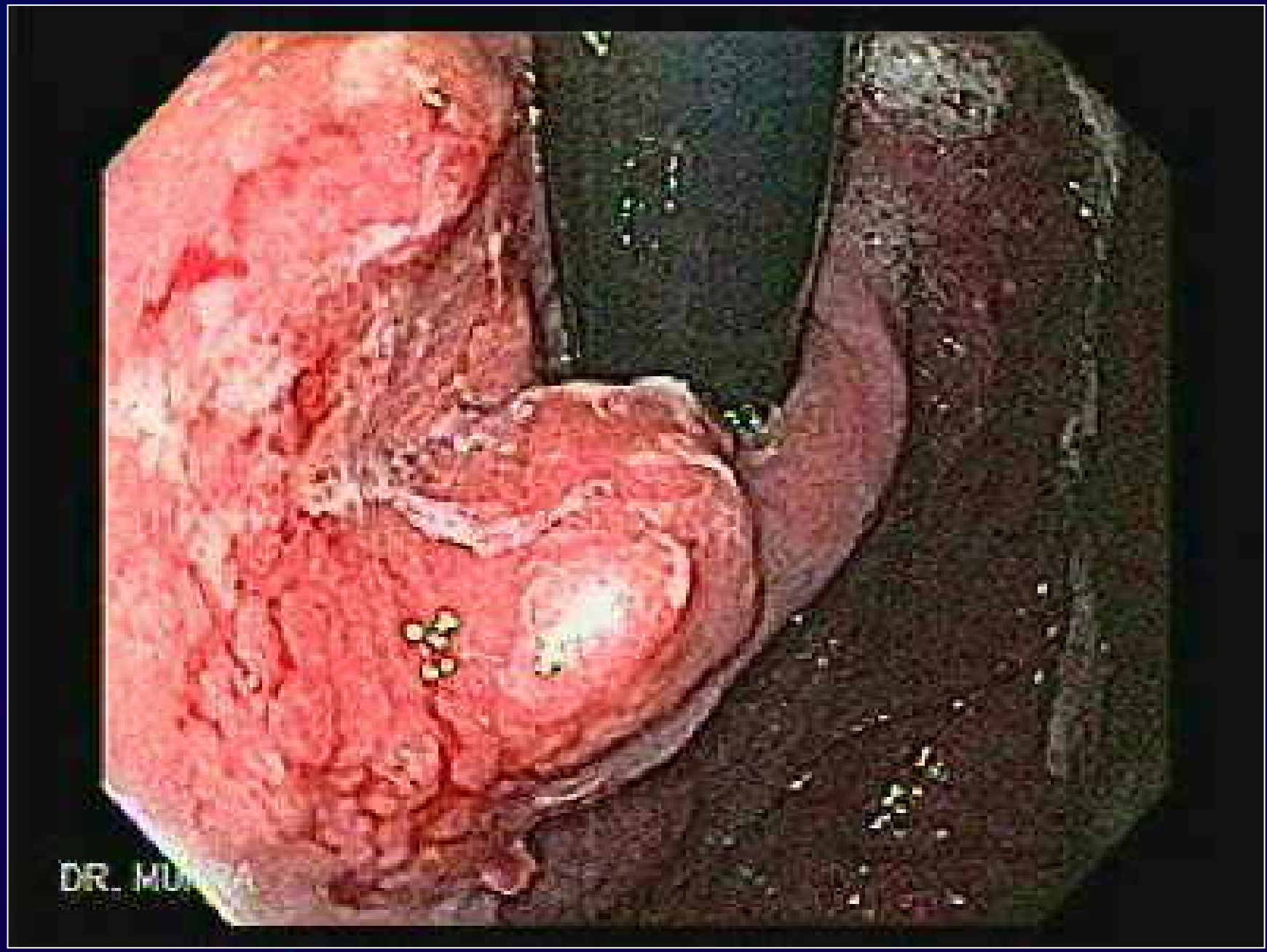
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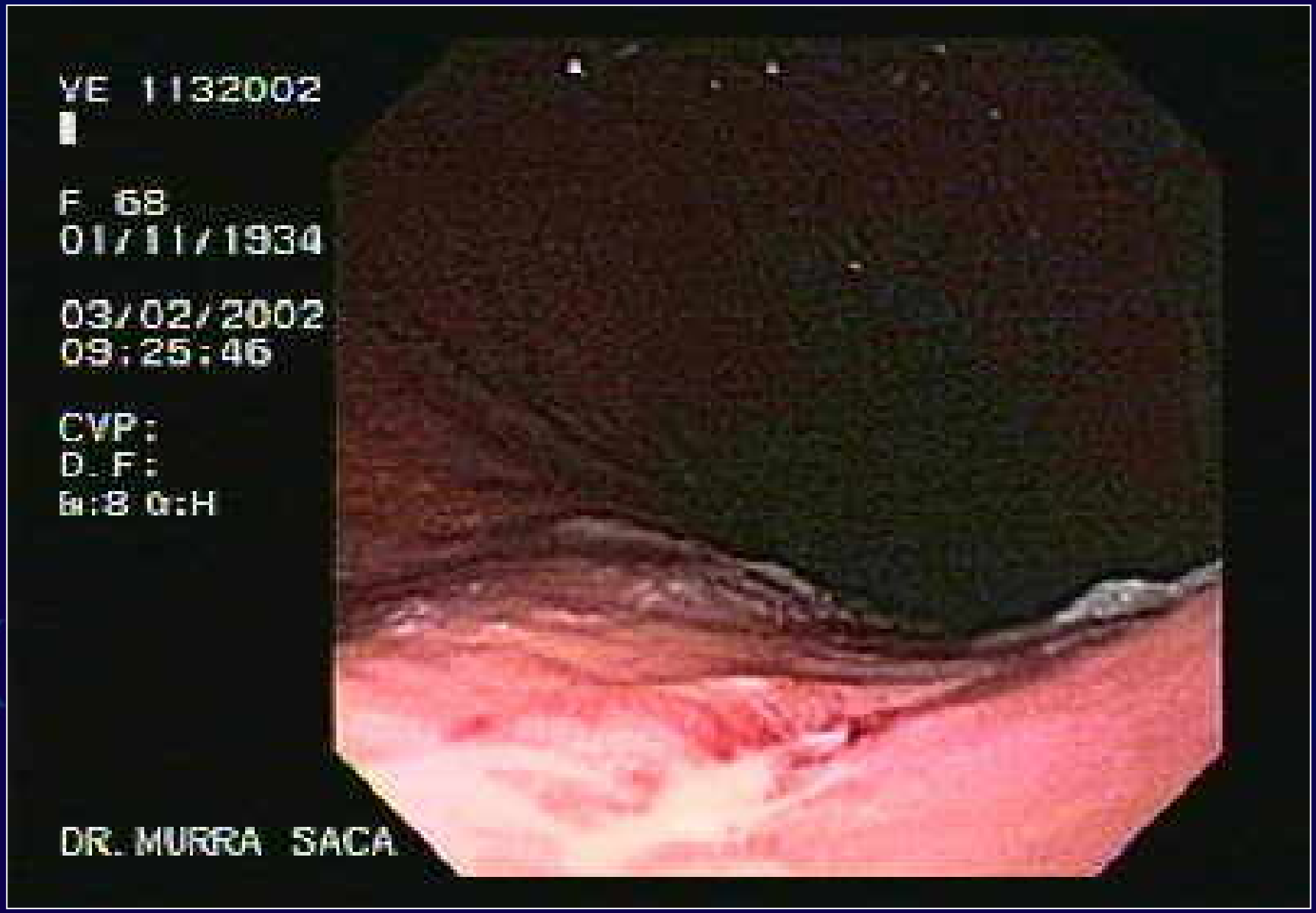
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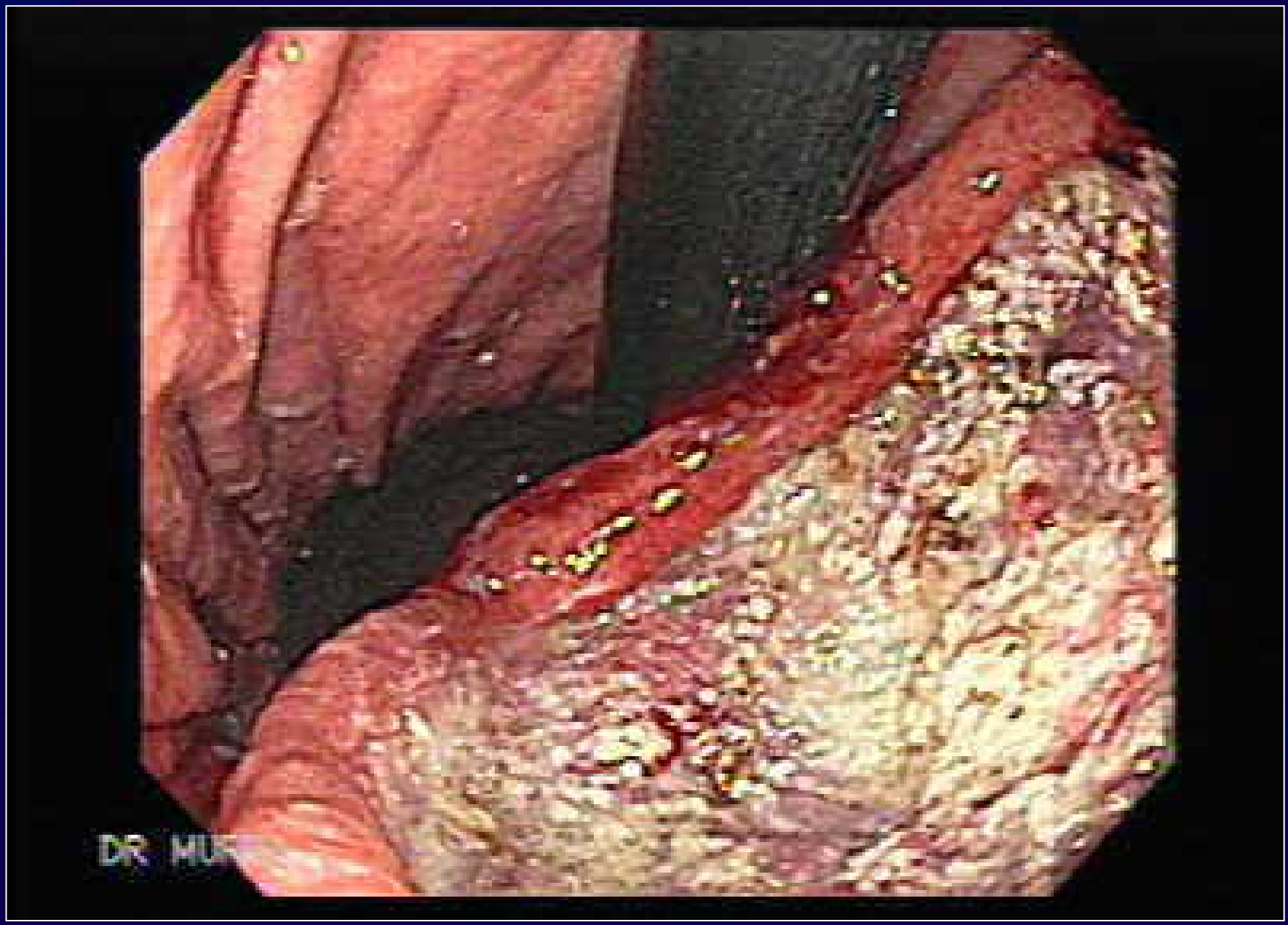
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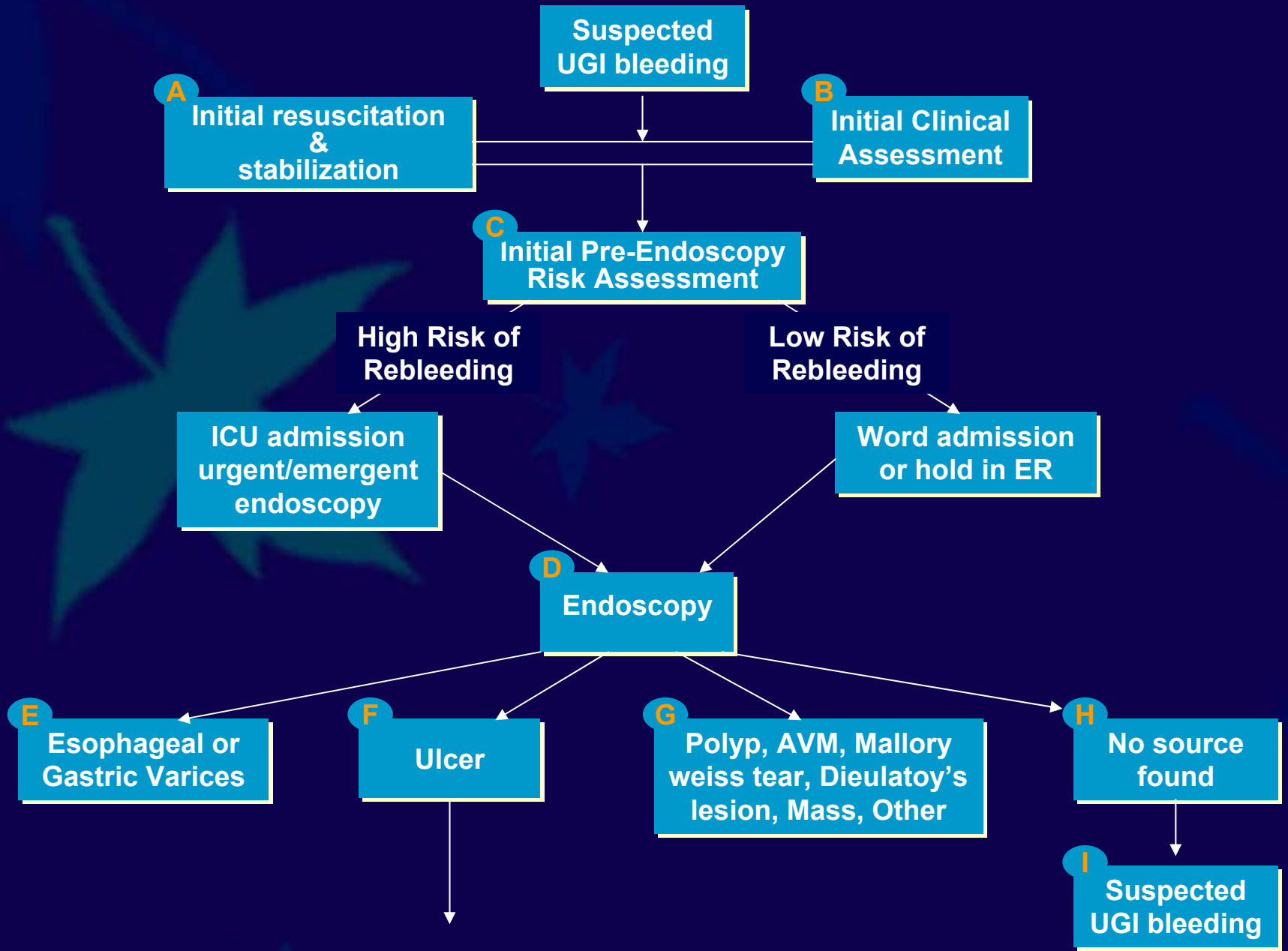
Clinical Forms

- Hematemesis
- Coffee-Ground Emesis
- Melena
- Hematochezia (if bleeding is brisk)

Management of Acute UGI Bleeding



Evaluation

Stabilization of the patient with transfusions and other treatment is essential before or during diagnostic evaluation. All patients require a complete hist (and physical examination; blood studies, including coagulation studies (platelet count, prothrombin time, partial thromboplastin time); and liver function tests (bilirubin, alkaline phosphatase, albumin, AST, ALT), BUN and serum creatinine, with repeated monitoring of Hb and Hct.

Evaluation

- Complicating factors such as age, comorbid conditions, the use of anticoagulants and clotting disorders, the use of NSAIDs are important to identify.
- The extent of blood loss should be assessed as early resuscitation may be required simultaneously e.g documenting orthostatic hypotension impales significant volume depletion (about 20% loss of I.V. volume). Severe bleeding may produce shock (about 40% loss of I.V. volume).
- Ischemic organ damage can be precipitated by ongoing blood loss. The clinician must be mindful of cardiac ischemia induced by severe anemia.

Acute Gastrointestinal Bleeding Management: Resuscitation

- ABC Management
  - Oxygen
  - Intravenous Access
    - Two large bore IV (18 gauge)
    - Start with isotonic saline (NS or LR)
  - Intravenous fluid Resuscitation
    - Crystalloid 10 cc/kg boluses until stable
    - Reassess after 3 boluses (30 cc/kg)
    - Consider transfusion for unstable after 3 boluses
  - Endotracheal Intubation indications (aspiration risk)
    - Altered mental status
    - Massive Upper GI Bleeding

Cont.

- Intensive Care Unit admission Indications
  - Significant bleeding
  - Hemodynamically unstable
- Transfusion packed Red Blood Cells
  - Indications
    - Hemoglobin 8 g/dl or Hematocrit 25%
    - Brisk active bleeding
    - Cardiopulmonary symptoms
    - Cardiopulmonary comorbidity

Cont.

- Do not base transfusion in acute bleeding on labs
  - Hemoglobin and Hematocrit lag bleeding by 24 hours
  - Active unstable bleeding requires Blood Products
  - Base transfusion on Hemodynamic status
  - Base on response to crystalloid (after 30 cc/kg)
- Once stabilized blood count may direct transfusion
  - Transfuse for Hemoglobin 8 g/dl (Hematocrit 25%)
  - Expect 1g/dl Hemoglobin increase/unit transfused
  - Expect 3% Hematocrit increase/unit transfused

Cont.

- Transfusion fresh frozen plasma indications
  - INR (Prothrombin Time) prolonged 1.5 times normal
- Transfusion platelet indications
  - Platelet Count <50,000/mm3
  - Aspirin or NSAID related GI Bleeding (no evidence)
  - Cirrhosis (No evidence)

Management: General measures

- **Nasogastric Tube with aspirate**
  - Fresh blood suggests persistant bleeding
  - Avoid lavage due to aspiration risk
- **If severe bleeding and suspected varic-eal source**
  - Octreotide 50 ug bolus, then 50 ug/hour

Management: General Measures

- **If peptic ulcer disease is suspected** Empiric acid reduction (Proton Pump Inhibitor)
  - Not proven in-vivo to aid clotting
  - No proven benefit in mortality and other outcomes
  - Does not lower overall Incidence of re-bleeding
  - Omeprazole may heal ulcer if near-achlorhydria

Initial pre - endoscopy risk assessment

UPPER GASTROINTESTINAL BLEEDING EDUCATIONAL GUIDELINE RISK STRATIFICATION FOR REBLEEDING AND MORTALITY

CLINICAL RISK SCORE (Determined at time of admission or presentation)				
	1			
Clinical Variable	Point Score			
	0	1	2	3
Age (years)	< 60	60-79	>/= 80	
Shock	None	Tachycardic	Hypotensive	
	SBP >/= 100	SBP >/= 100	SBP < 100	
	HR < 100	HR >/=100	HR >/=100	
Co-Morbidity	No major		CHF*, CAD*,	renal failure, liver failure,
	co-morbidity		any other major	disseminated malignancy
			co-morbidity	
* Requiring active treatment				
I				
Clinical Risk Score = sum of scores for all three clinical variables				

Cont.

ENDOSCOPIC RISK SCORE			
Endoscopic Variable		Point Score	
	0	1	2
Endoscopic Diagnosis	None or Mallory-	Peptic ulcer,	Upper GI tract
	Weiss tear	varices, erosive	malignancy
		disease, other	
Stigmata of recent	None or dark		Active bleeding,
hemorrhage (SRH)	spot only		adherent clot, or
			non-bleeding visible vessel
Endoscopic Risk Score = sum of scores for both endoscopic variables			

Rockall, TA et al., Gut 1996 Mar; 38(3):316-21

Upper GI Bleeding Score

- **Indication**
  - Upper Gastrointestinal Bleeding
  - Replaces Rockall scoring system
- **Criteria**
  - Blood Urea Nitrogen (BUN)
    - BUN 18.2 to 22.4 mg/dl: Score 2
    - BUN 22.4 to 28 mg/dl: Score 3
    - BUN 28 to 70 mg/dl: Score 4
    - BUN >70 mg/dl: Score 6

Cont.

- **Hemoglobin**
  - **Men**
    - Hemoglobin 12 to 13 g/dl: Score 1
    - Hemoglobin 10 to 12 g/dl: Score 3
    - Hemoglobin <10 g/dl: Score 6
  - **Women**
    - Hemoglobin 10 to 12 g/dl: Score 1
    - Hemoglobin <10 g/dl: Score 6
- **Systolic Blood Pressure (SBP)**
  - SBP 100 to 109 mmHg: Score 1
  - SBP 90 to 99 mmHg: Score 2
  - SBP <90 mmHg: Score 3
- **Miscellaneous Markers**
  - Pulse >100 per minute: 1
  - Presentation with Melena: 1
  - Presentation with Syncope: 2
  - Hepatic disease: 2
  - Cardiac function: 2

Cont.

- **Interpretation**
- Assesses probability for intervention
  - Endoscopy
  - Surgery
- Score predicting resolution without intervention: <4
- Score predicting intervention: >5

Management: Low risk patients

- Indications
  - Hemodynamically stable within 1 hour of Resuscitation
  - Minimal Blood Products required (2 PRBC or less)
  - No evidence of active bleeding
  - Nasogastric Tube aspirate without blood
  - No active comorbid medical conditions
- Protocol
  - Consider for rapid protocol
    - Immediate Upper Endoscopy Evaluation of GI Bleeding
    - Discharge to home if low-risk endoscopy results
  - Admit if rapid protocol not available
    - Follow moderate risk patient protocol below
  - General measures as above

Management: Moderate risk patients

- **Indications**
  - Tachycardia persists despite Resuscitation
  - Blood Products required >2 PRBC
  - Active comorbid condition
- **Protocol**
  - General measures as above
  - Admit to regular medical bed
  - Upper endoscopy when patient stabilized (<24 hours)
    - Disposition based on Upper Endoscopy results
      - Low risk endoscopy: Observe for 24 hours
      - Moderate risk endoscopy: Observe for 48-72 hours
      - High risk endoscopy
        - Initially observe in ICU for at least 24 hours
        - Observe in hospital for 72 hours total or more

Management: High risk patients

- Indications
  - Active ongoing bleeding
  - Hypotension persists despite Resuscitation
  - Severe active comorbid condition exascerbation
  - Liver disease exascerbation
  - Endotracheal Intubation for airway protection
- Protocol
  - General measures as above
  - Admit to intensive care unit for first 24 hours
  - Observe in hospital for 48 to 72 hours or more
  - Urgent upper endoscopy when stabilized
  - Consider arteriography if source not evident

Upper Endoscopy Evaluation of GI Bleeding

- **Indications**
  - EGD is the preferred method for evaluating UGI bleeding, it is of diagnostic/ therapeutic and prognostic value.
  - **Early endoscopy** (within 24hours of admission) has not been demonstrated to decrease mortality. However total cost, length of hospitalization and need for emergent surgery have all been reduced largely due to therapeutic options available to the endoscopist.
  - It is important that the hemodaynamically unstable patient be adequately volume resuscitated and any coagulopathy be corrected before performing upper endoscopy.
  - Morbidity and mortality from upper endoscopy have been reported at 1% and 0.1% respectively.
- **Contraindications**
  - An agitated patient, perforated viscus and sever cardiopulmonary disease.
- **24%** of patients with Melena have no diagnosis by upper endoscopy

Cont.

- **Low Risk Findings**
  - Ulcer with clean base under 2 cm (5% rebleeding risk)
  - Nonbleeding Mallory-Weiss Tear
  - Esophagitis
  - Gastritis
  - Duodnitis
  - Endoscopy negative for any lesion or fresh blood
    - Failure to find source only adverse in over age 80
    - Otherwise not related to adverse risk

Cont.

- **Moderate risk findings**
  - Ulcer with clean base over 2 cm in diameter
  - Ulcer with clot or pigmented spot (10% risk of rebleed)
  - Bleeding Mallory-Weiss tear with effective treatment
  - Arteriovenous malformation with successful treatment
  - Portal gastropathy without Esophageal Varices
  - Tumor identified on endoscopy
  - Higher risk ulcer location
    - Ulcer on lesser curvature of the stomach
    - Ulcer on posterior duodenal bulb

Cont.

- **High risk findings**
  - Actively bleeding ulcer or other bleeding lesion
  - Vessel visible on endoscopy
  - Esophageal Varices with active bleeding
- **Post-procedure**
  - Rebleeding occurs in 20% of cases despite treatment
  - Second-look endoscopy in 24 hours may be recommended

Specific therapy

Acute variceal bleeding

Conservative treatment:

- **Octreotide** (sandostatin) 100 ug IV bolus, then 50 ug/hour
  - Long-acting somatostatin analog.
  - Preferred vasoactive agent in Upper GI Bleed.
- **Intravenous Vasopressin** 20 units over 20 minutes.
  - Used with Nitroglycerin (Risk of coronary ischemia)
- **Terlipressin** (Glypressin) 1-2 mg IV bolus q 4-6 h (maximum 120 ug/kg)

Cont.

Endoscopic therapy

- Endoscopic sclerotherapy
- Endoscopic variceal ligation (EVL): banding
- Endoscopic clips

Endoscopic sclerotherapy

- Sclerosants: sodium tetradecyl sulfate, E.O., polidocanol and alcohol.
- Tissue adhesive agents:
  - Cyanoacrylate (histoacryl).
  - Fibrin glue.
  - Thrombin.

Cont.

- Esophageal sclerotherapy
  - **Timing:** immediate with stabilization (emergency) decreases rebleeding and mortality compared with delayed (elective sclerotherapy)
  - **Site:** started at GE junction then circumfere-ntially.
  - **Amount:** 1-5 ml sclerosant intra-or para variceal Large volume E.O. (up to 30 ml) are superior to small volumes (up to 15 ml).
  - **Efficacy:**
    - Control bleeding (up to 90%).
    - Short term survival

Cont.

- **Complications of injection sclerotherapy.**
  - **Immediate:** substernal chest pain, low-grade fever, transite dysphagit, pleural effusion. These don't require any treatment and subside few days.

    esophageal ulcerations (superficial and deep)

    esophageal perforation (2-5%).
  - **Delayed**: esophageal perforation (1-4 weeks), esophageal structures.
  - **Uncommon complications:** ARDS, fistula, chylothorax, mediastinitis and pericarditis.

    systemic complications due to acute dissemination of injected sclerosant as spinal cord paralysis, MV thrombosis.

Endoscopic band ligation

Endoscopic band ligation of esophageal varices has proved to be a useful tool in the control of acute variceal bleeding and the prevention of recurrent bleeding. This endoscopic technique is faster than sclerotherapy in obliterating esophageal varices, and is associated with significantly fewer complications.

Cont.

Band ligation also appears superior to sclerotherapy in control of bleeding, decreasing rebleeding, and increasing survival. On this basis ligation should be considered the endoscopic treatment of choice for patients with esophageal variceal bleeding. The addition of sclerothera to banding does not appear to offer any advantage to banding alone.

Cont. Acute variceal bleeding mangment

- **Balloon tamponade**
  - **Tamponade varices in refractory cases (80% effective)**
    - Esophageal varices
    - Gastric fundus varices
  - Rebleeding occurs in up to 50% of cases
    - More definitive therapy needed after bleeding stops
  - **High complication rate (15%)**
    - Perforation
    - Aspiration
    - Pressure-induced Ulceration
  - **Balloon types**
    - Sengstaken-Blakemore tube
    - Linton-Nachlas tube
    - Minnesota tube

Cont.

- **Transjugular intrahepatic Portosystemic Shunt (TIPS)**
  - Shunt from hepatic vein to intrahepatic portal vein
  - Commonly effective measure in variceal bleeding
  - Preventive of future rebleeding events
- **Emergency Surgical portacaval shunts**
  - Rarely effective and high mortality rate.

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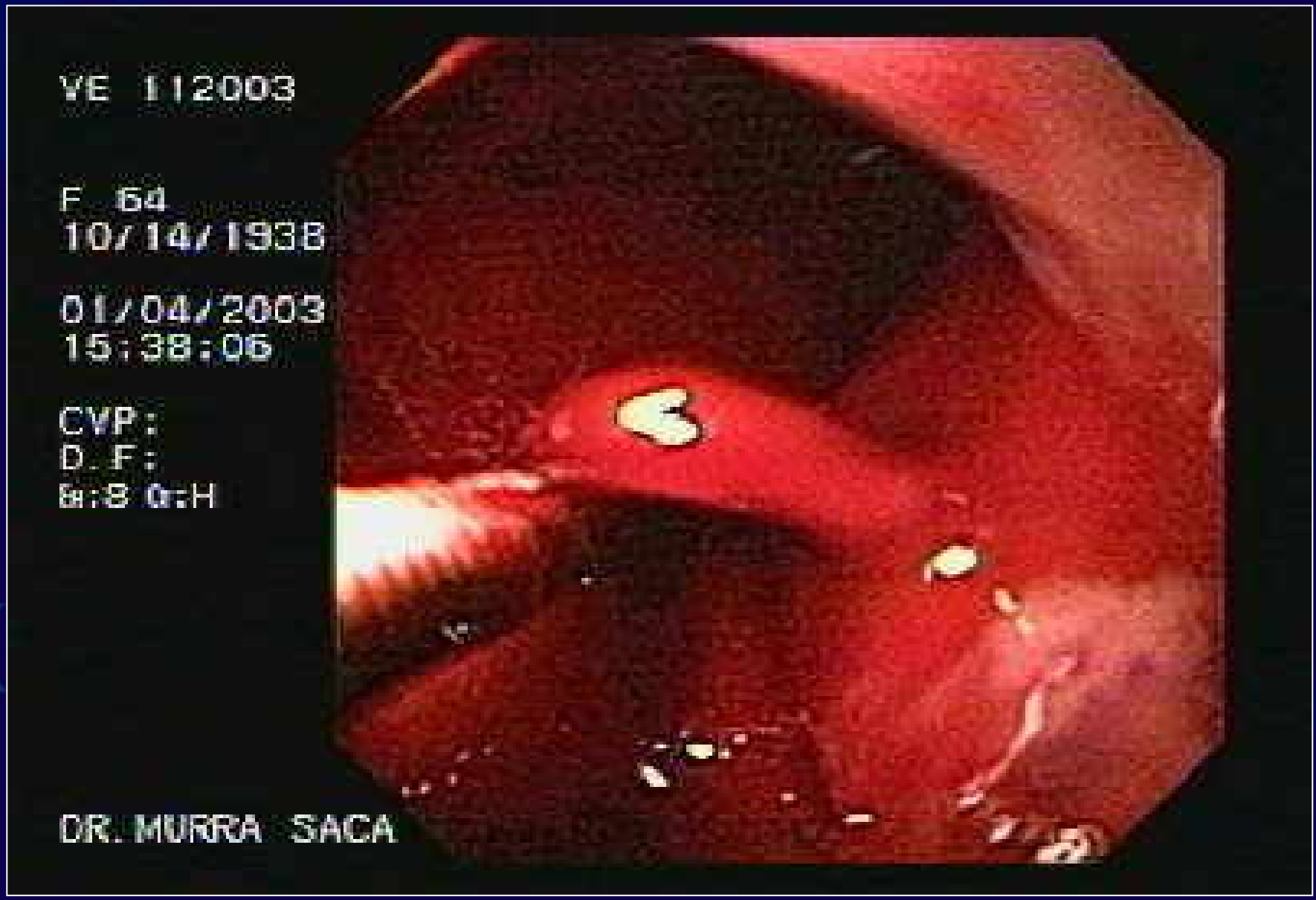
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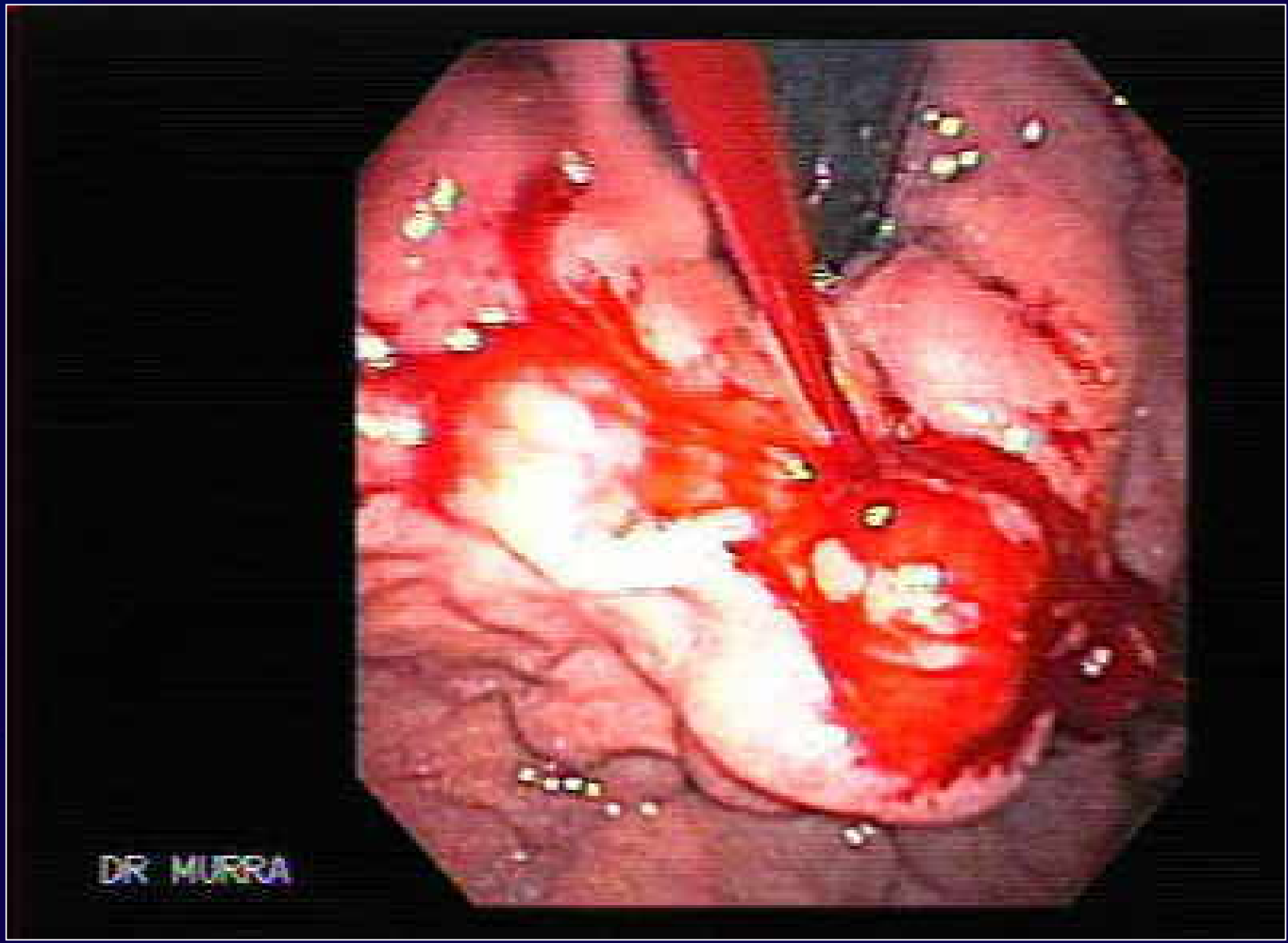
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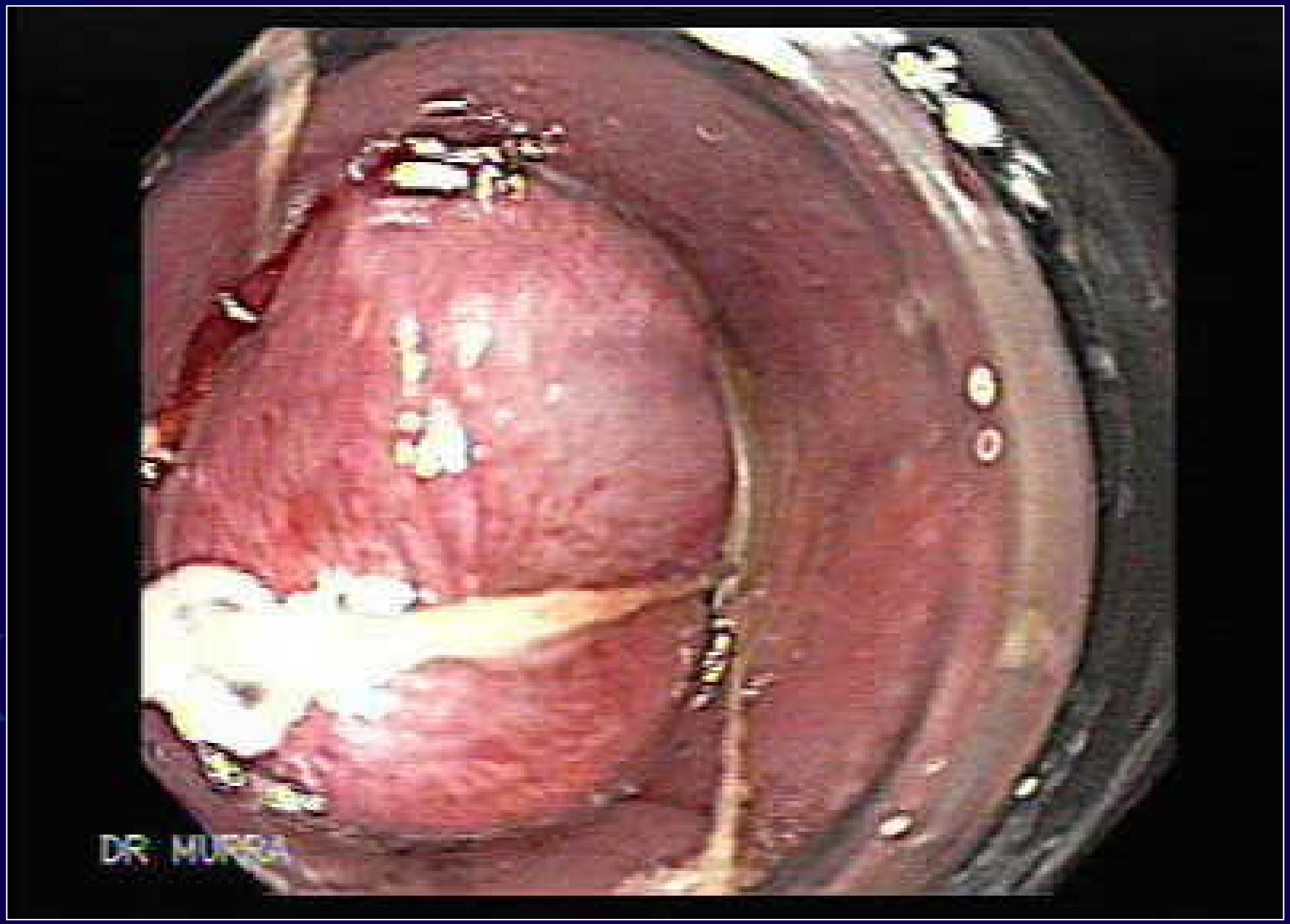
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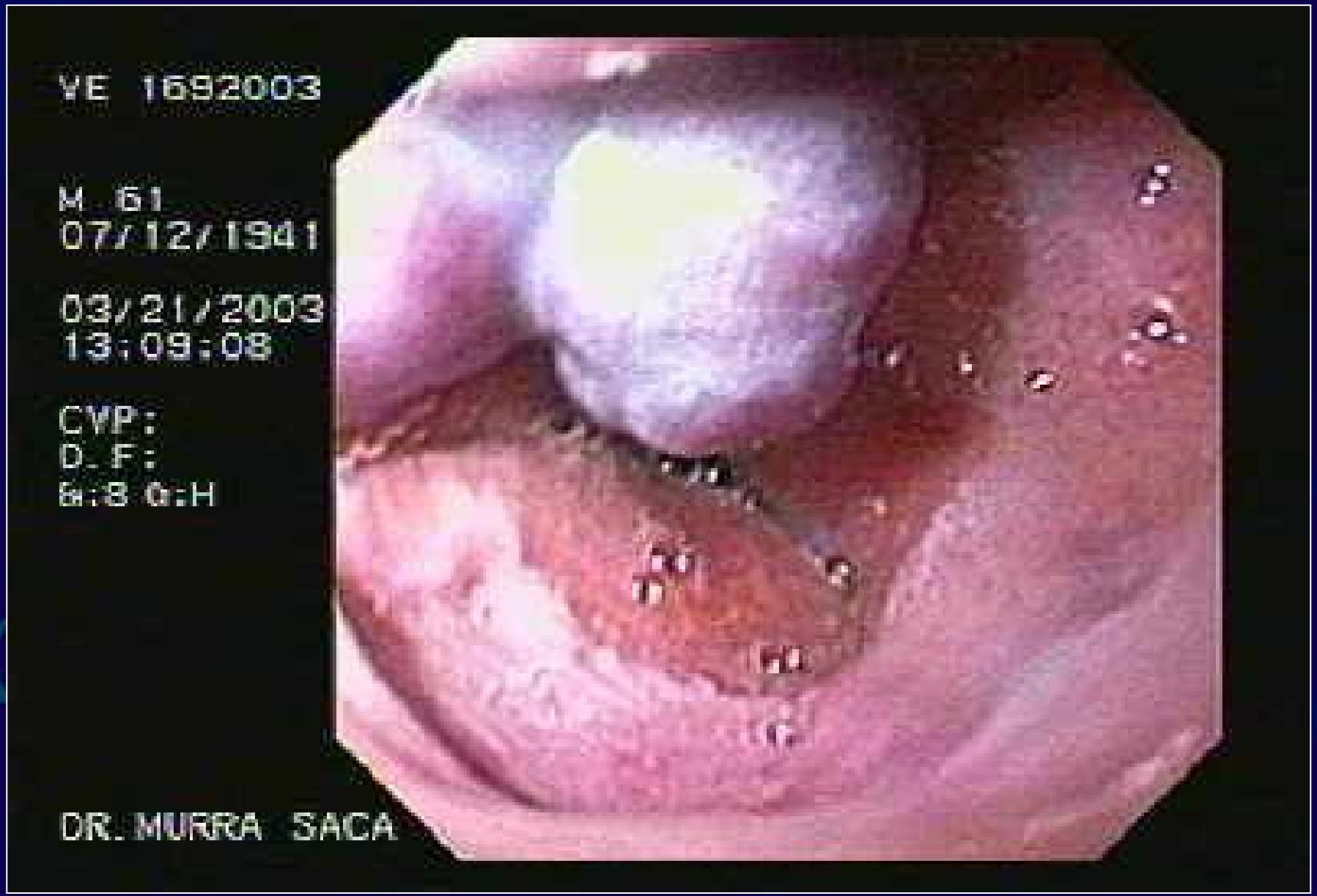
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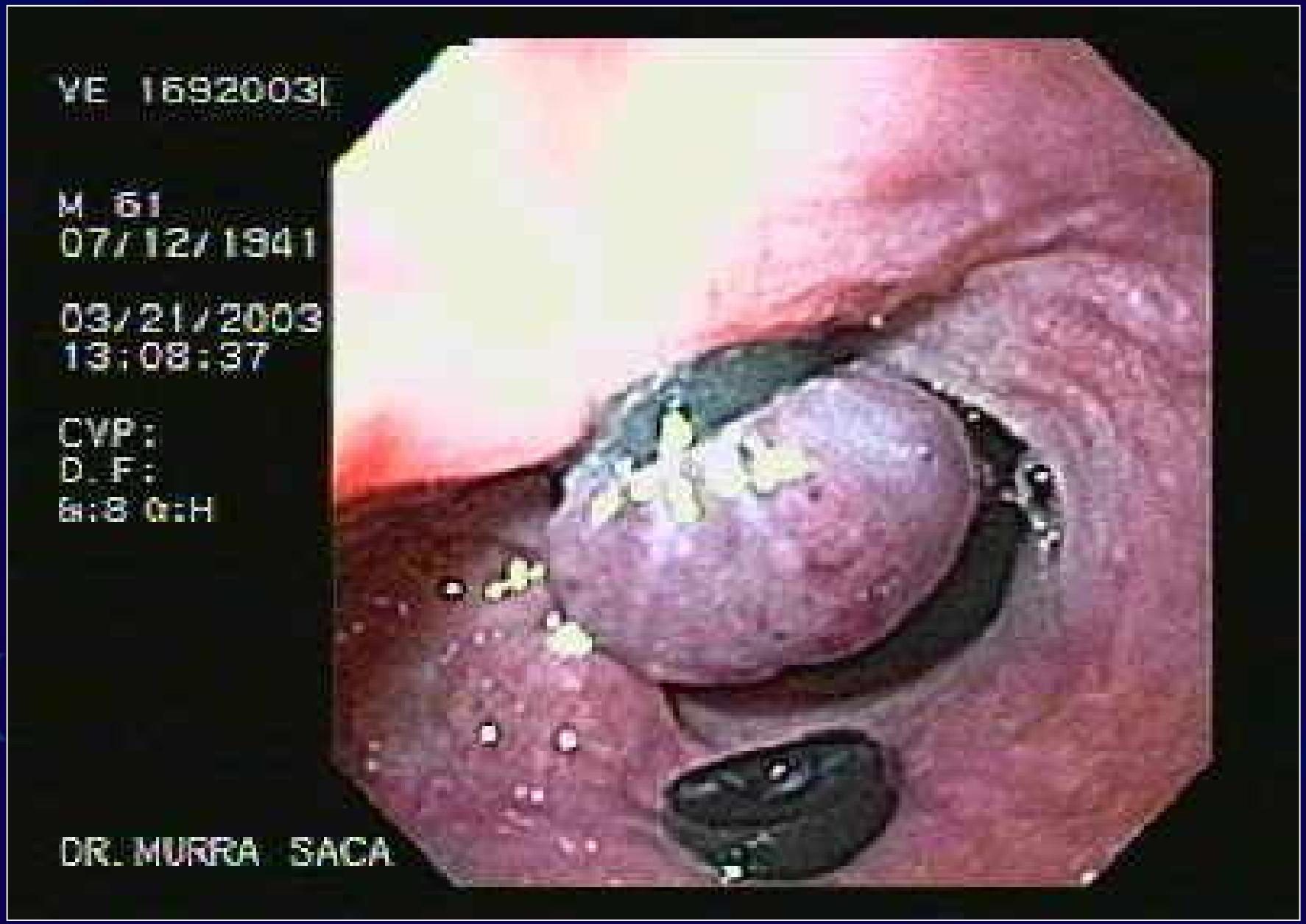
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Prevention of variceal bleeding

- Primary prevention
- Indications (Endoscopic criteria)
  - Large esophageal varices
  - Small esophageal varices
    - High Child-Pugh Score
    - Varices with red wale markings
- Efficacy
  - Reduce risk of bleeding from 45% to 22%
- Agents (target Heart Rate reduction 20 to 25%)
  - Propranolol start at 10 mg PO tid
  - Nadolol 20 mg PO qd
- Esophageal banding (Variceal band ligation)
  - As effective as Propranolol in bleeding prevention
  - Fewer adverse effects than medication management

Cont.

- Secondary prevention (prior episode of bleeding)
  - Isosorbide mononitrate 20 mg PO bid
  - Esophageal banding (Variceal band ligation)
  - Sclerotherapy to varices

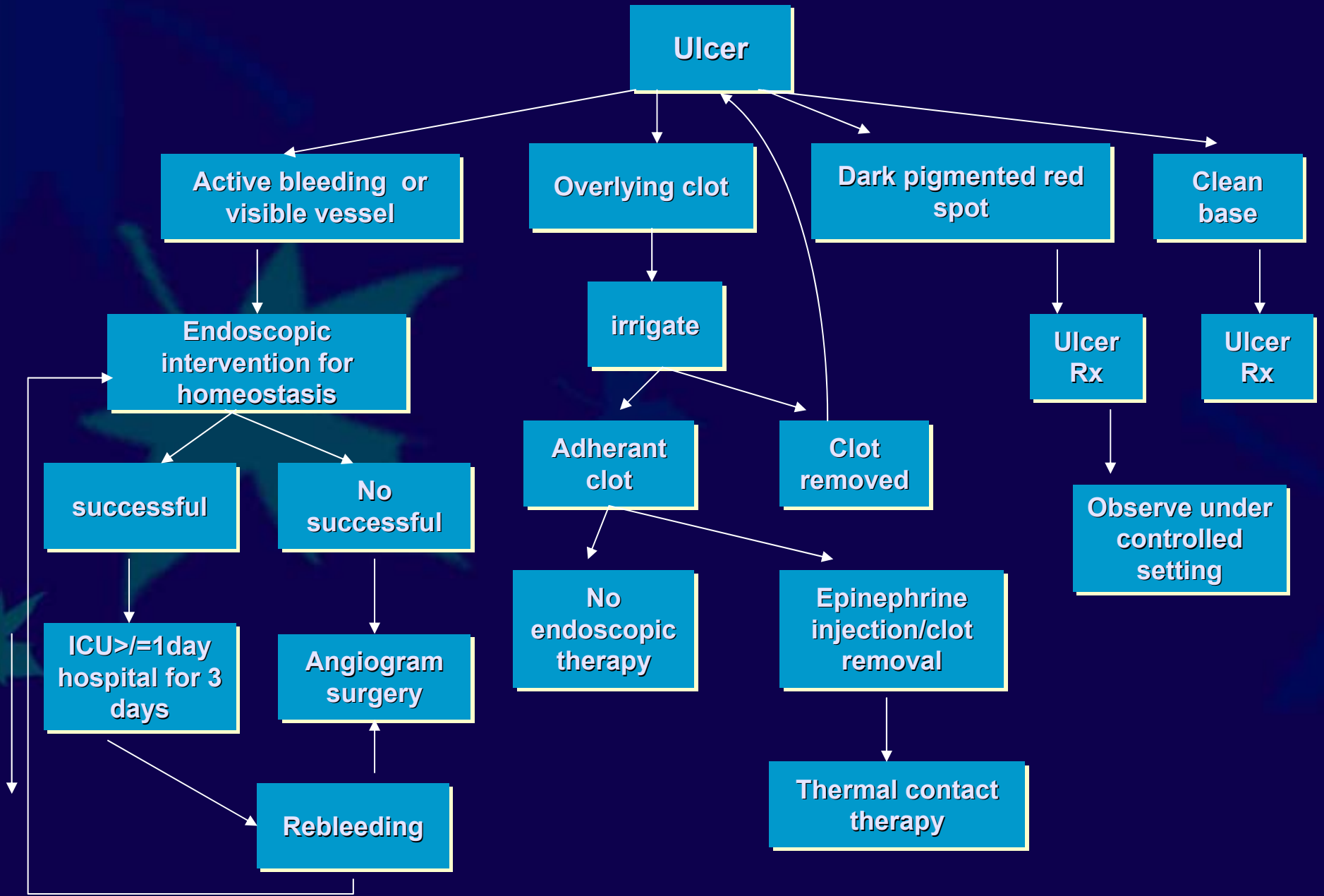
Prognosis

- Predictors of mortality with variceal bleeding
  - Active bleeding during endoscopy
  - Encephalopathy
  - Ascites
  - Serum Bilirubin increased
  - Aspartate Aminotransferase increased
  - Prothrombin Time increased
  - *Graham (1981) Gastroenterology 80:800-9*
- Risk of bleeding from large varices: 40 to 45% per year
  - Higher risk with varices with red wale markings.
  - Higher risk with advanced Child-Pugh Score.
- Risk of death from each bleeding episode: 50%.

Peptic Ulcer Bleeding

Appropriate therapy is dictated by findings at endoscopy.

Endoscopic finding	Risk of rebleeding (%)
Arterial spurting	90
Visible vessel	50
Adherent clot	25
Oozing without visible vessel	10-20
Pigment spot	7-10
Clean-based ulcer	3-5


Ulcer
Active bleeding or visible vessel
Overlying clot
Dark pigmented red spot
Clean base
Endoscopic intervention for homeostasis
irrigate
Ulcer Rx
Ulcer Rx
successful
No successful
Adherant clot
Clot removed
Observe under controlled setting
ICU>/=1day hospital for 3 days
Angiogram surgery
No endoscopic therapy
Epinephrine injection/clot removal
Rebleeding
Thermal contact therapy

Cont.

Drugs

- H2 antagonists have not been shown to reduce surgery or mortality rates in patients with UGI hemorrhage.
- Significant reduction in surgery and mortality when patients at high risk for rebleeding were given high-dose proton pump inhibitors (PPIs) (omeprazole, 40 mg PO bid for 5 days).

Endoscopic therapy

- Indication: Ulcers that demonstrate arterial spurting or a "Visible vessel.
- Hemostatic techniques:

1- leaser therapy.

2-Thermal coagulation by mono-or bipolar electrocautery and heater probes.

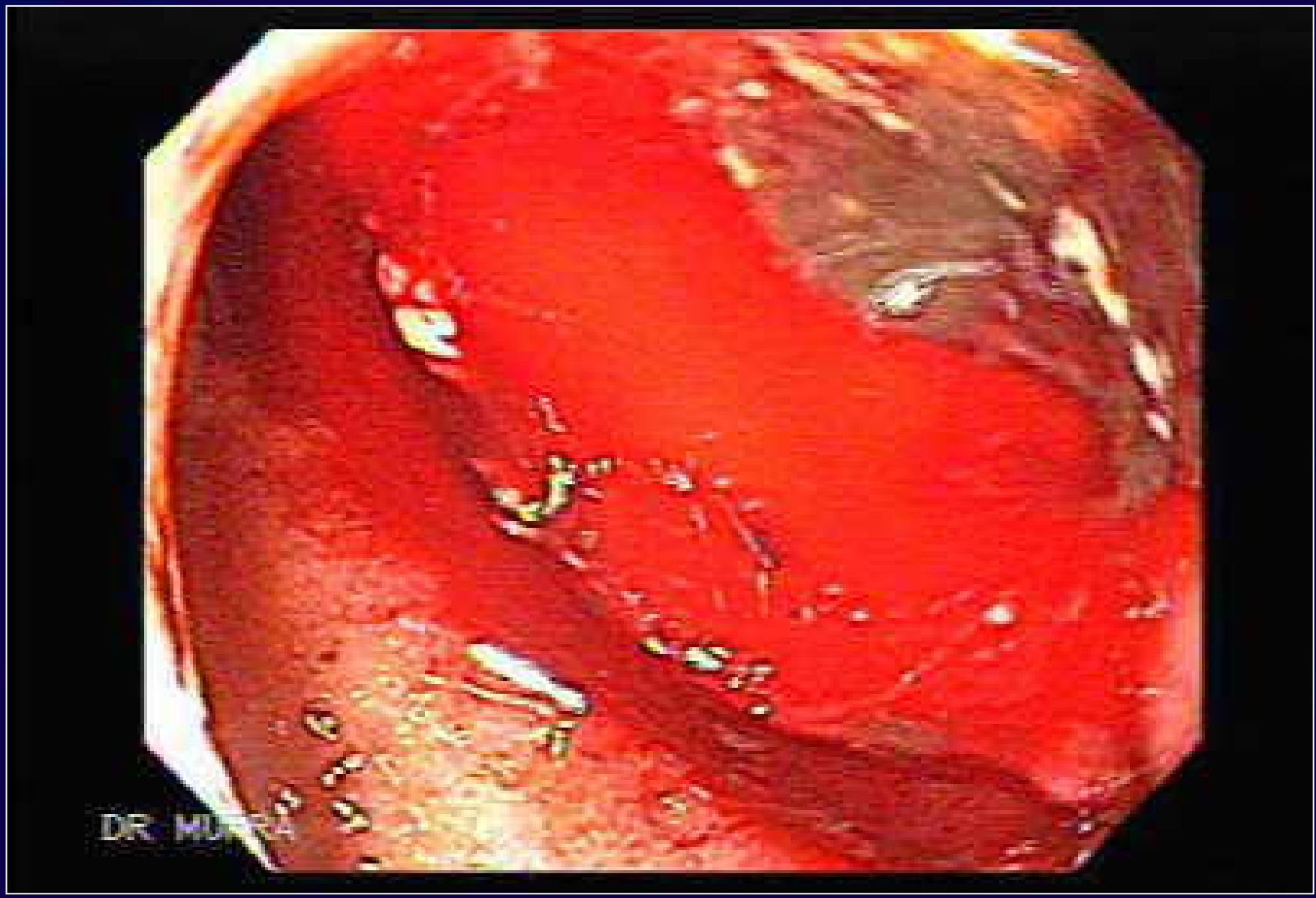
3-Injection therapy with epineph-rine (1:10.000 dilution).

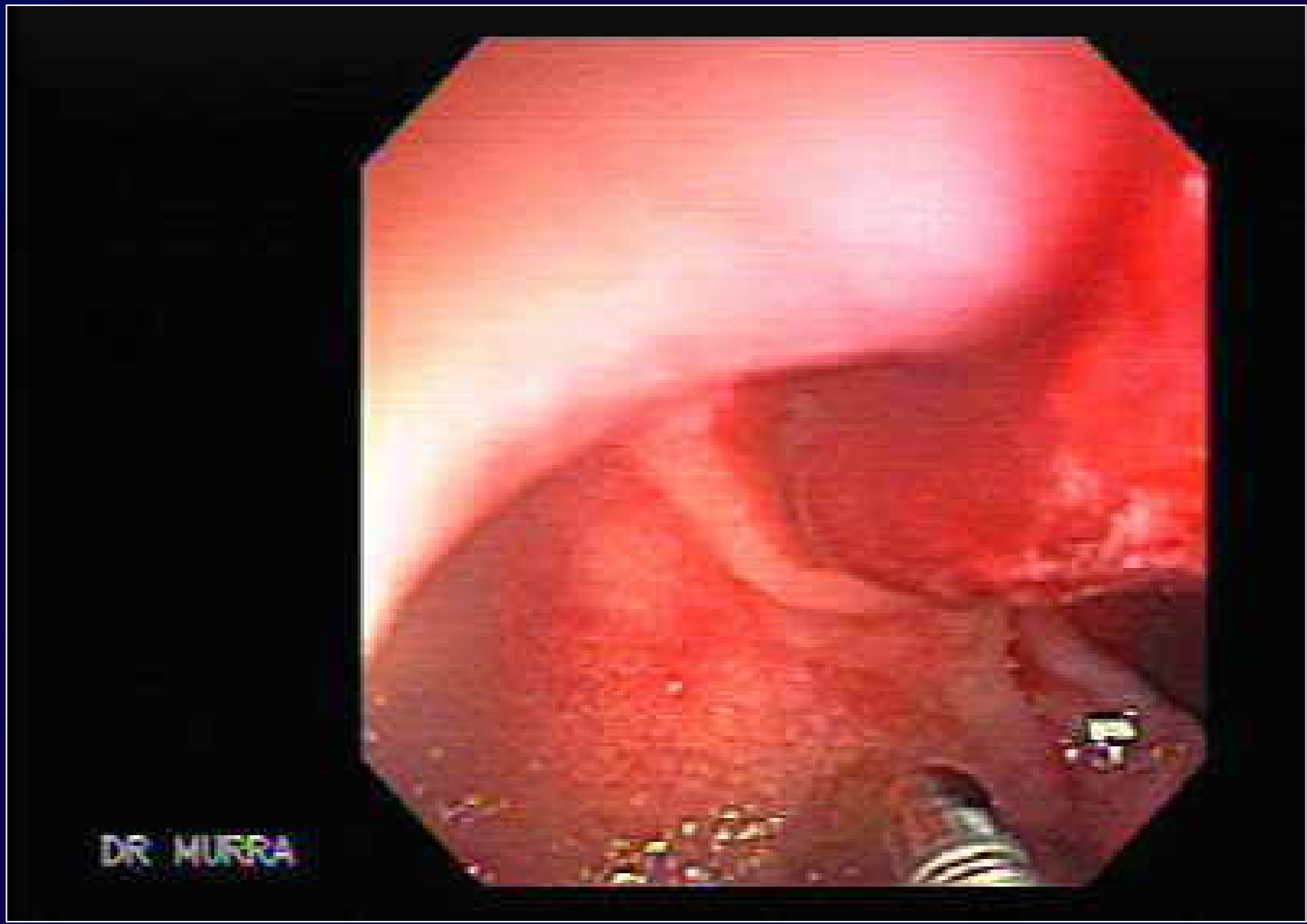
4-Thermal coagulation and Injection therapy have both been shown to achieve hemostasis and decrease rebleeding rates.

5- New techniques of endoscopic haemostatic methods:

- Not yet approved due to limited experience
- Ligating devices: Hemoclips
- Biological injection agents as fibrin glue and thrombin.
- Argon plasma coagulation (APC).

Cont.

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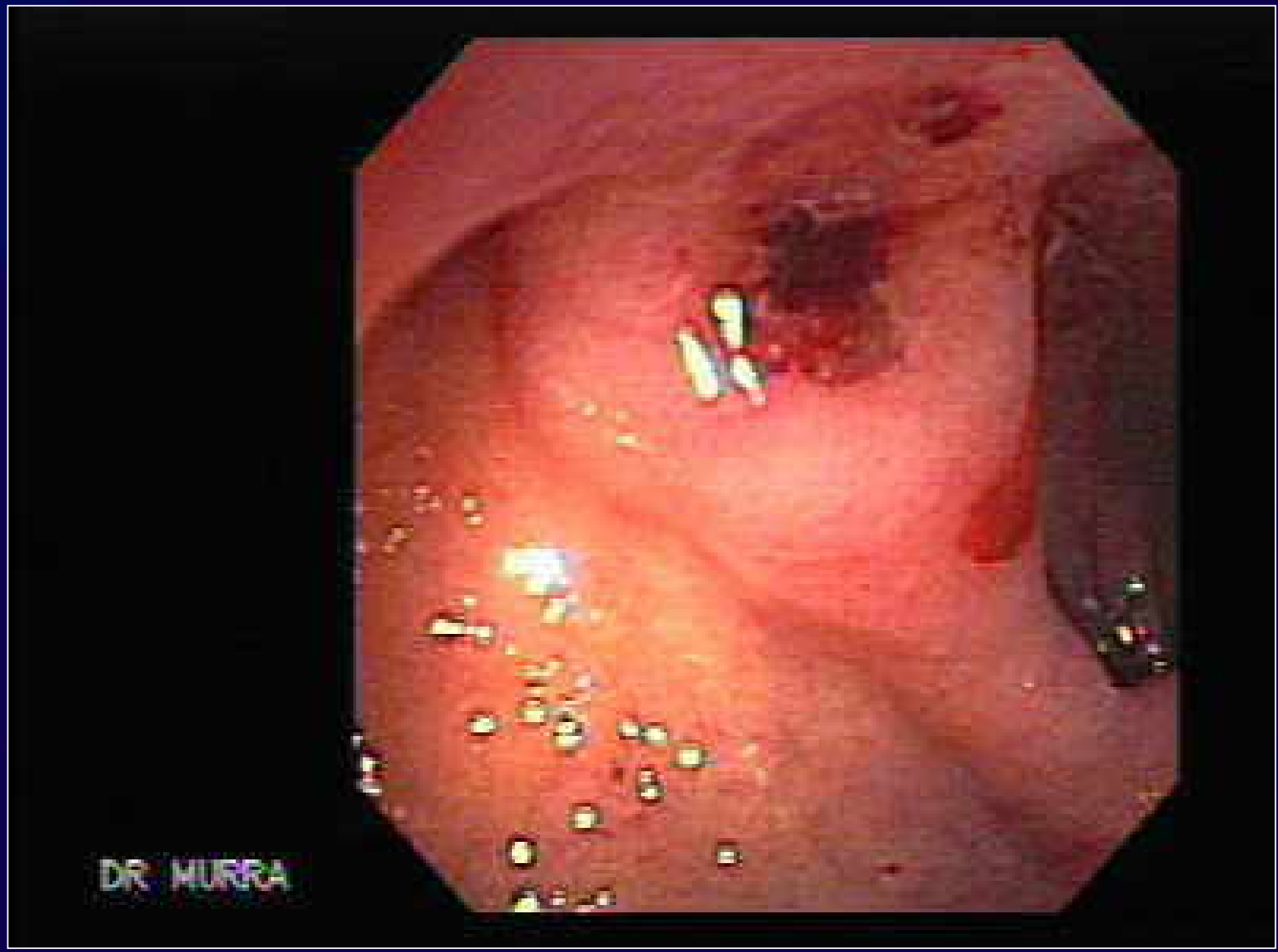
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Surgery

Surgery is reserved for patients with intractable hemorrhage, recurrent bleeding despite repeated attempts at endoscopic therapy, or blood types that are difficult to crossmatch. **Arterial embolization** by selective arterial catheterization is an alterna-tive for patients too unstable to undergo surgery.

Mallory-Weiss Tear

Endoscopic treatment is only employed when tears involve active and ongoing bleeding. Epinephrine injection and thermal coagulation are both efficacious in controlling hemorrhage. Sclerosants shouldEe avoided due to risk of further tearing or perfora-tion. PPIs can promote healing after the acute episode.

Gastric Erosions

Management is directed at primary prevention. In the ICU, IV H2-receptor blockers or oral PPIs are used to prevent stress ulceration. PPIs have replaced misoprostol for use in patients who require continued NSAID therapy.

UGI bleeding
Management: Refractory and Recurrent Bleeding

- **Indications**
  - Persistent or recurrent bleeding despite EGD
- **Protocol**
  - Surgical Intervention
  - Consider embolization for non-surgical patient

UGI bleeding
Prognosis: Outcomes

- Overall Mortality: 2-15% (often related to comorbidity)
- Bleeding stops and does not recur: 70% (<2% Mortality)
- Bleeding after initially stopped: 25% (10% Mortality)
- Continued active bleed: 5% (30% Mortality)

UGI bleeding
Predictors of Rebleeding

1.	Older age
2.	Shock/hemodynamic instability/orthostasis
3.	Comorbid disease states (e.g., coronary artery disease, congestive heart failure, renal and hepatic diseases, cancer)
4.	Specific endoscopic diagnosis (e.g., GI malignancy)
5.	Use of anticoagulants/coagulopathy
6.	Presence of a high-risk lesion (e.g., arterial bleeding, nonbleeding, visible vessel and clot)


Thank
you


اللهم إني أسألك علماً نافعاً..