GI EMERGENCIES

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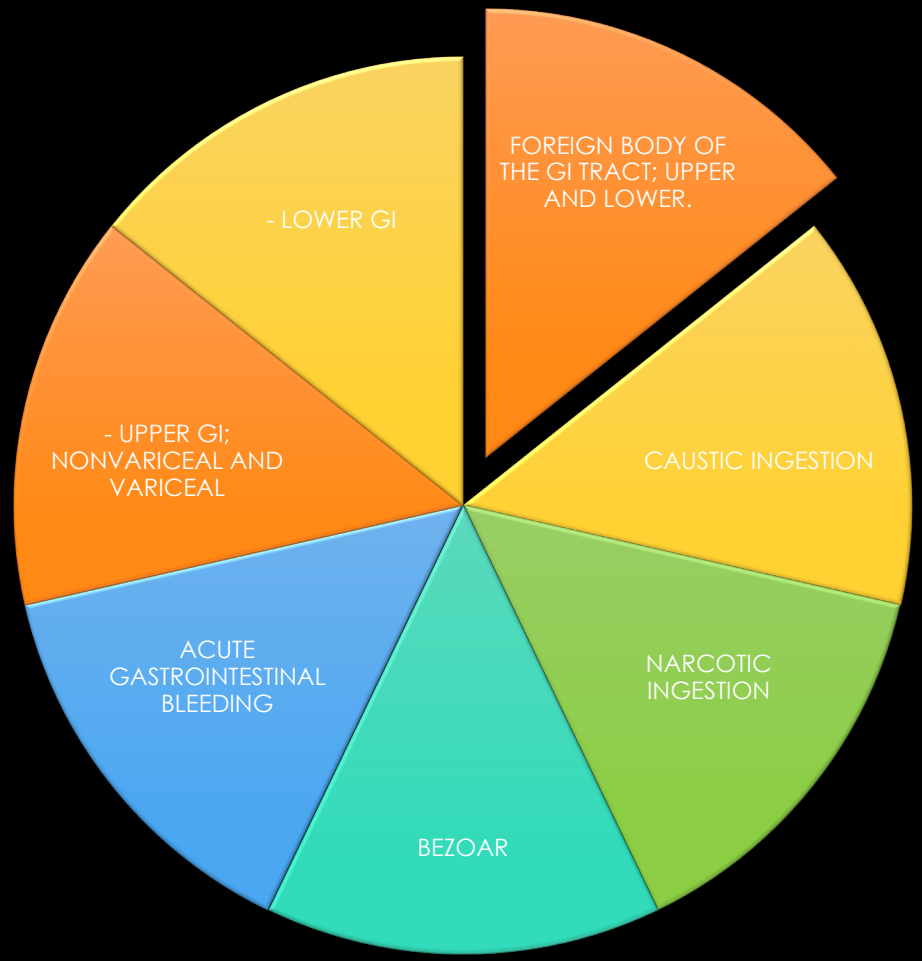
OBJECTIVES

TO IDENTIFY, EVALUATE AND TREAT COMMON GI EMERGENCIES

YES! THERE ARE GI EMERGENCIES

INFORMATION IS OBTAINED FROM ASGE VIDEO LIBRARY, SLEISENGER AND FORDTRAN 11TH EDITION, ACG GUIDELINES, INTERNET AND YOUTUBE.

OUTLINE


FOREIGN BODY OF THE GI TRACT; UPPER AND LOWER.
CAUSTIC INGESTION
NARCOTIC INGESTION
BEZOAR
ACUTE GASTROINTESTINAL BLEEDING
- UPPER GI; NONVARICEAL AND VARICEAL
- LOWER GI

UPPER GI FOREIGN BODY INGESTION

80-90% PASS SPONTANEOUSLY

10-20% REQUIRE GASTROSCOPY

<1% REQUIRE SURGERY

1500 PATIENTS DIE ANNUALLY OF UGI FB INGESTION

USUALLY ACCIDENTAL/INTENTIONAL

WHO DOES THIS?

PEDIATRIC POPULATION 6 months to 3 years.	Edentulous	Prisoners
Psychiatric patients	Alcoholics, steakhouse syndrome	Occupations; roofers, seamstress, tailor, carpenters

SOME "STICKING POINTS"

- Cricopharyngeas
- Ic valve
- Aortic arch
- Diaphragmatic hiatus

RISK OF PERFORATION

- SHARP OR POINTED OBJECTS; GLASS, RAZOR BLADES, LIGHT BULBS, METAL OBJECTS
- ANIMAL OR FISHBONES
- TOOTH PICS

ESOPHAGEAL FOOD IMPACTION

- Most common GI foreign body
- 16/100,000, >75% have GI pathology-EoE, Schatzki ring, peptic stricture
- Esophageal cancer is rare cause
- Esophagectomy, fundoplication, bariatric surgery, achalasia

INDICATION FOR GASTROSCOPY

Any foreign body in the hypopharynx or esophagus

Sharp or pointed (15%) perforate; razor blades

Obstructing foreign body

Thickness >2.0cm or >5cm in length

CONTRAINDICATION: PERFORATION, if the object is passed the ligament of treitz and the object is blunt and <2.5cm/5cm in length.

INDICATION FOR GASTROSCOPY

Food impaction with salivation, drooling or inability to handle secretions suggesting esophageal obstruction should be scoped soon <6 hours.

If able to swallow secretions, it is non urgent >6 hours.

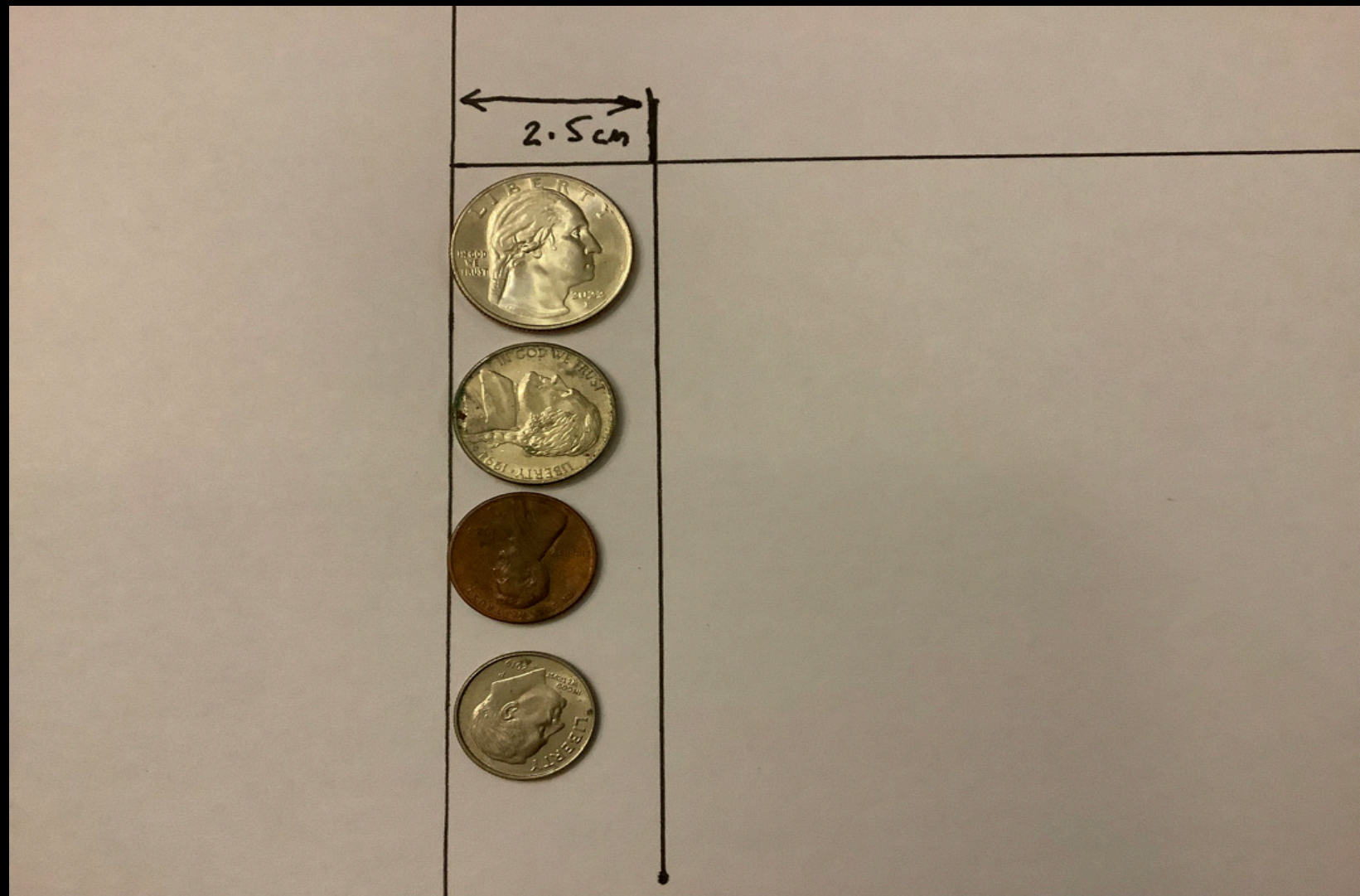
WHAT ARE TREATMENTS FOR UGIFB

Endoscopy >95% effective(overtube retrograde removal or push)
Observation
Glucagon 0.5-2mg; relax smooth muscle and LES (60%), glucagon is successful in 12-58% of cases of food impaction.
No gas forming or carbonated beverages or sodium bicarb/citric acid substances. CO_2 may distend esophagus and increase perforation.
No meat tenderizers-papain-not recommended
Dilation recommended if needed 2-4 weeks post removal after bid PPI.

SOME RULES OF UGIFB

No object should be left in the esophagus >24 hrs	If the object is in the stomach > 3-5 days should be removed	2.5cm wide or >5cm in length should be removed	If the object reaches the small intestine, most pass without enteroscopy
Oropharynx or hypopharynx ? ENT consult for removal	Sharp or pointed objects in the esophagus; medical emergency	All coins pass except ½ dollars and 50 cent pieces(30mm), silver dollars(38mm) .	If sharp or pointed object reaches small intestine; get serial xrays and if not passage in 3 days, surgical consult or enteroscopy.

COIN SIZE IN CENTIMETERS



RULES CONTINUED

If coins swallowed, get an xray in 1-2 weeks to confirm passage
If > 3 weeks; needs removal
Disc batteries; alkaline solution; liquefaction necrosis; if in esophagus must remove
if batteries pass into the SB, rarely cause issue and 85% pass in 72 hours.
Cylinder batteries cause(AA, AAA) cause less damage to the stomach.
If >20mm and not passed in 48-72 hours; remove
All magnets, especially coupling; given they can cause SB to stick together

TABLE 2. Timing of endoscopy for ingested foreign bodies

Emergent endoscopy
Patients with esophageal obstruction (ie, unable to manage secretions)
Disk batteries in the esophagus
Sharp-pointed objects in the esophagus
Urgent endoscopy
Esophageal foreign objects that are not sharp-pointed
Esophageal food impaction in patients without complete obstruction
Sharp-pointed objects in the stomach or duodenum
Objects >6 cm in length at or above the proximal duodenum
Magnets within endoscopic reach
Nonurgent endoscopy
Coins in the esophagus may be observed for 12-24 hours before endoscopic removal in an asymptomatic patient
Objects in the stomach with diameter >2.5 cm
Disk batteries and cylindrical batteries that are in the stomach of patients without signs of GI injury may be observed for as long as 48 hours. Batteries remaining in the stomach longer than 48 hours should be removed.

Management of ingested foreign bodies and food impactions

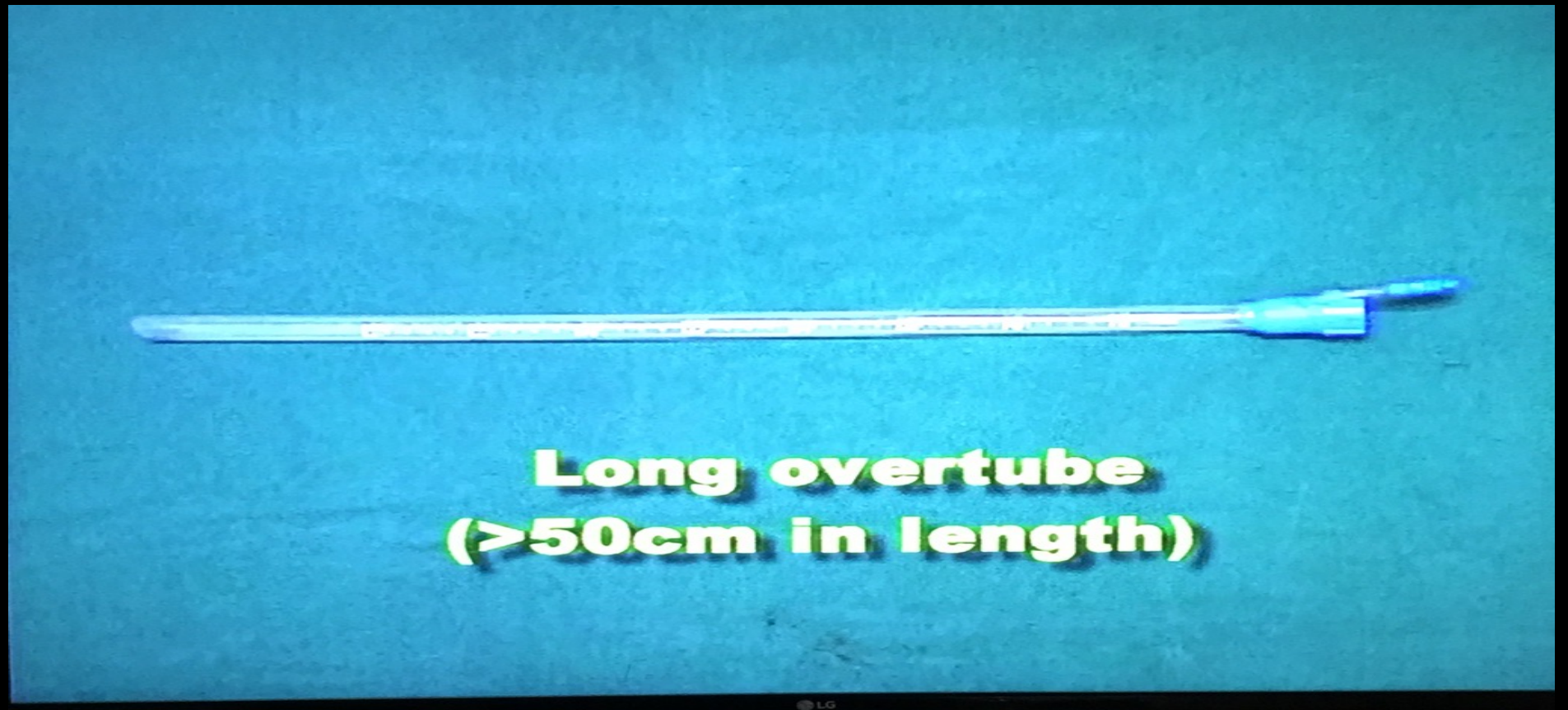
Gastrointest Endosc 2011:73:1085-1091 / DOI: http://dx.doi.org/10.1016/j.gie.2010.11.010

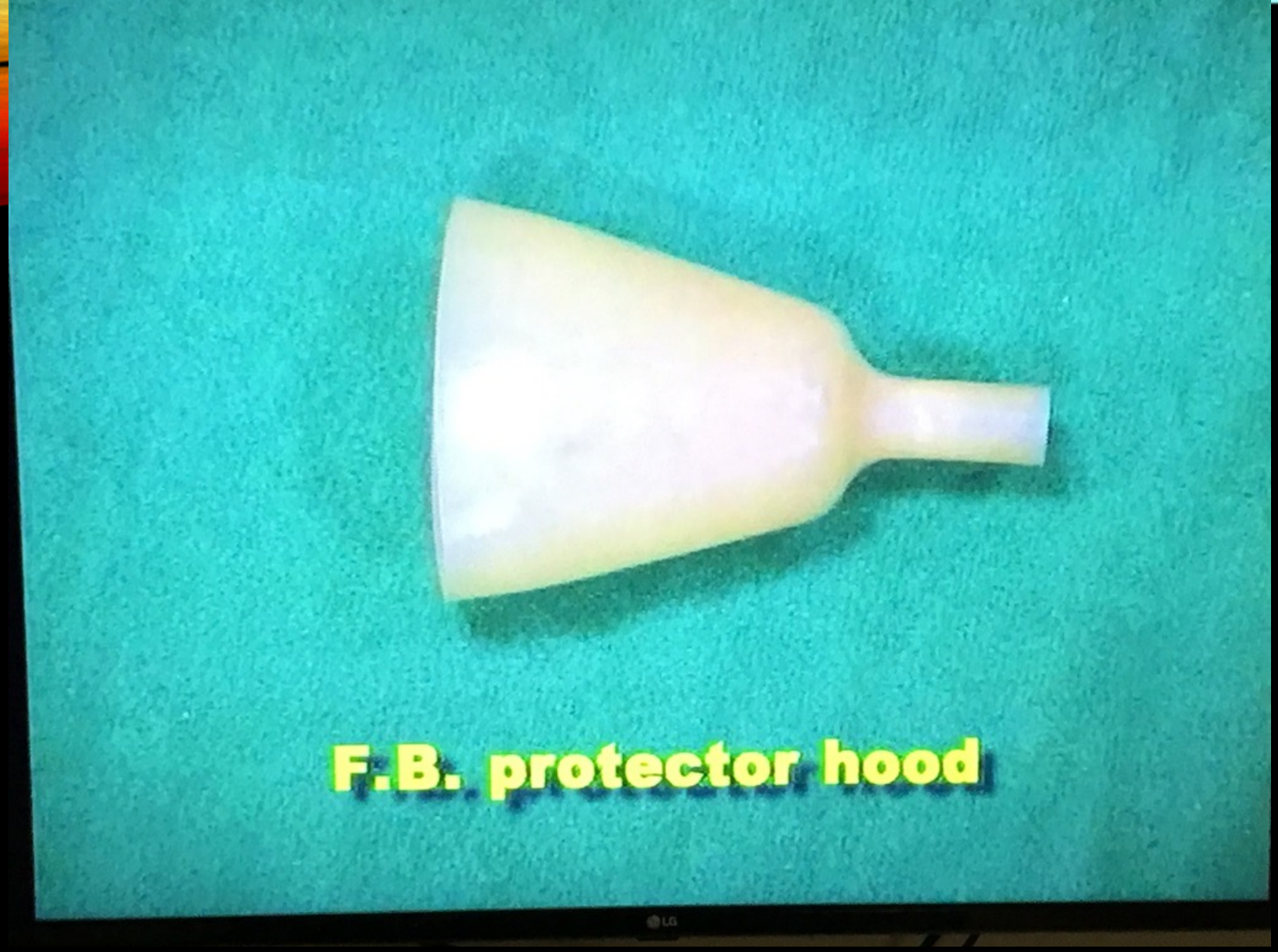
LOWER GI FOREIGN BODIES

- More commonly inserted, not ingested-usually intentional
- AXR- prior to removal; location, orientation, size and configuration.
- No digital exam until confirm the object(sharp or not)
- Manual removal of small or blunt objects
- Usually we perform exam under anesthesia to relax the anal sphincters
- Non palpable or sharp objects need endoscopic removal
- Standard removal devices can be used
- Most complications are with objects beyond the rectum; which can lead to perforation, obstruction or abscess

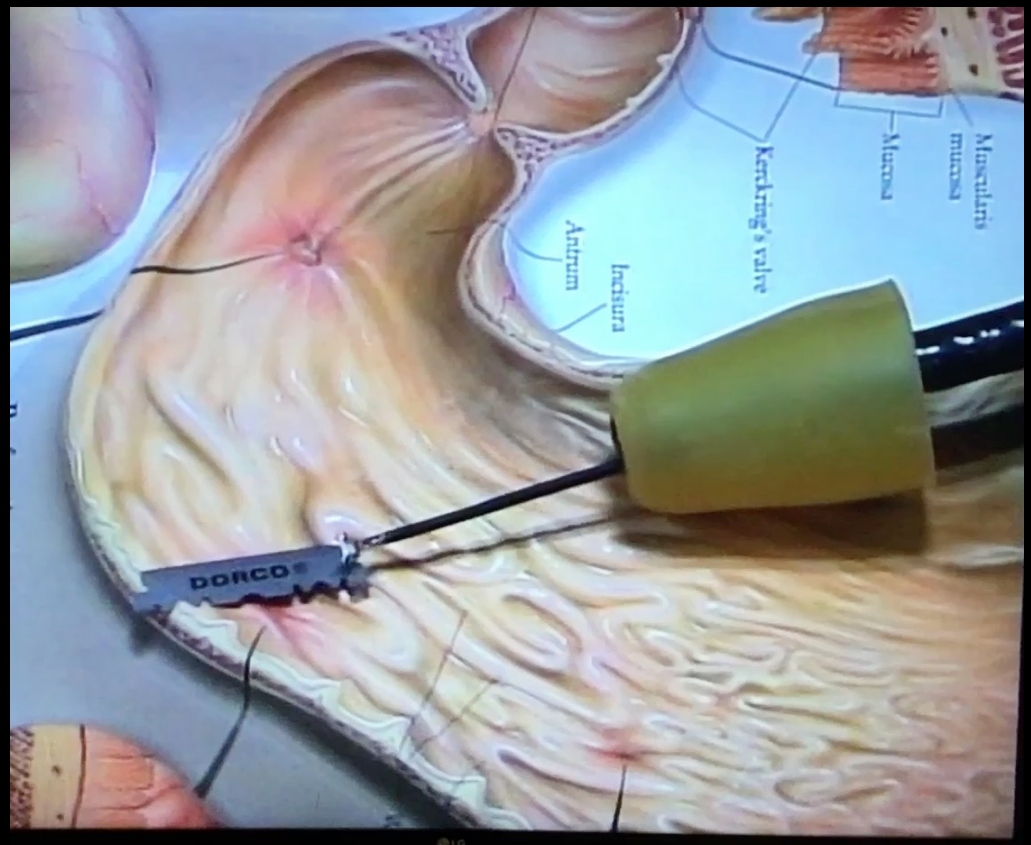
COMPLICATIONS OF FOREIGN BODY REMOVAL

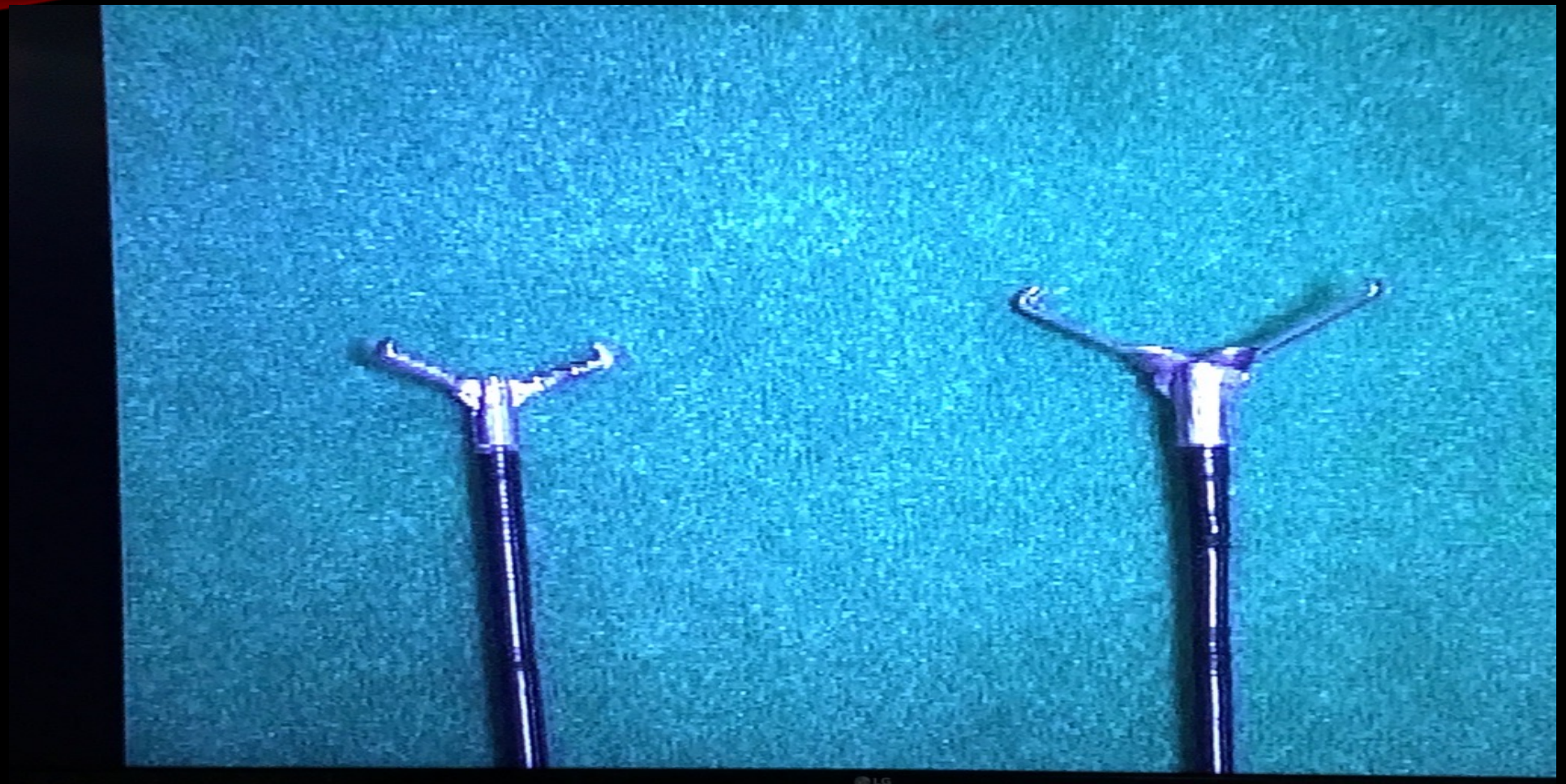
Perforation	Aspiration	Cardiopulmonary complications secondary to anesthesia
More common when removing sharp or pointed objects	Deliberate ingestion, uncooperative patient	Extended food impaction

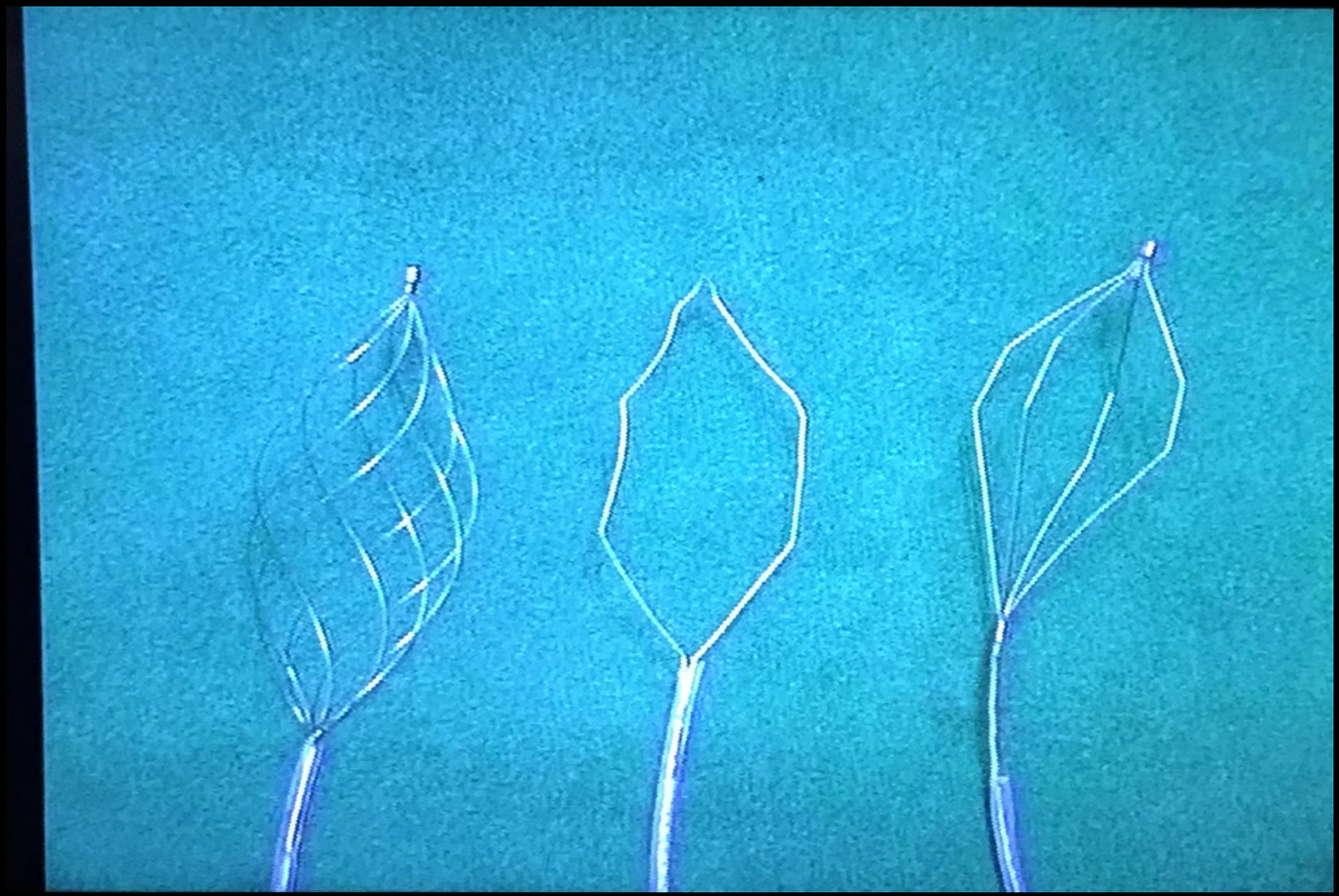

Long overtube
(>50cm in length)

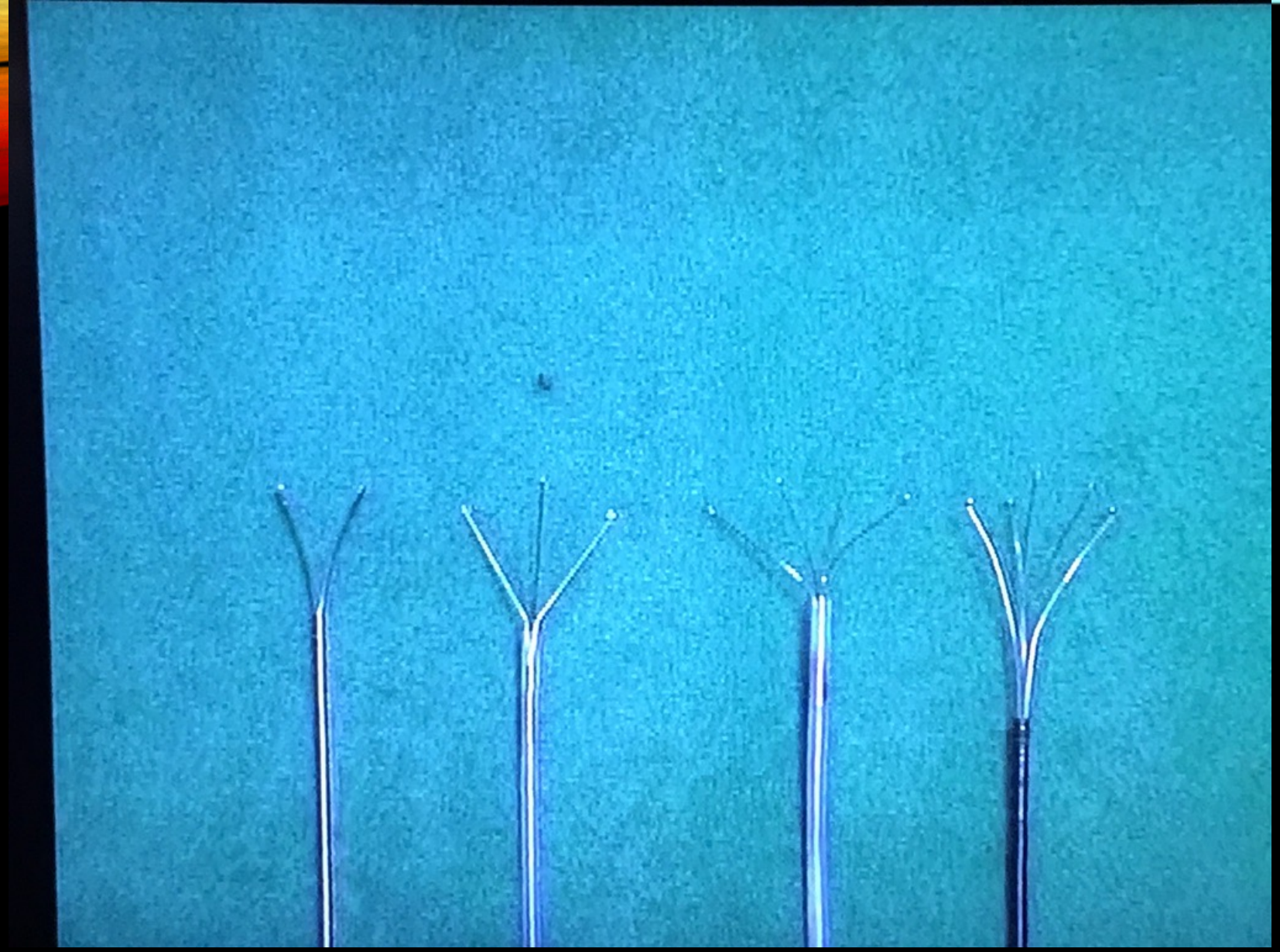

F.B. protector hood

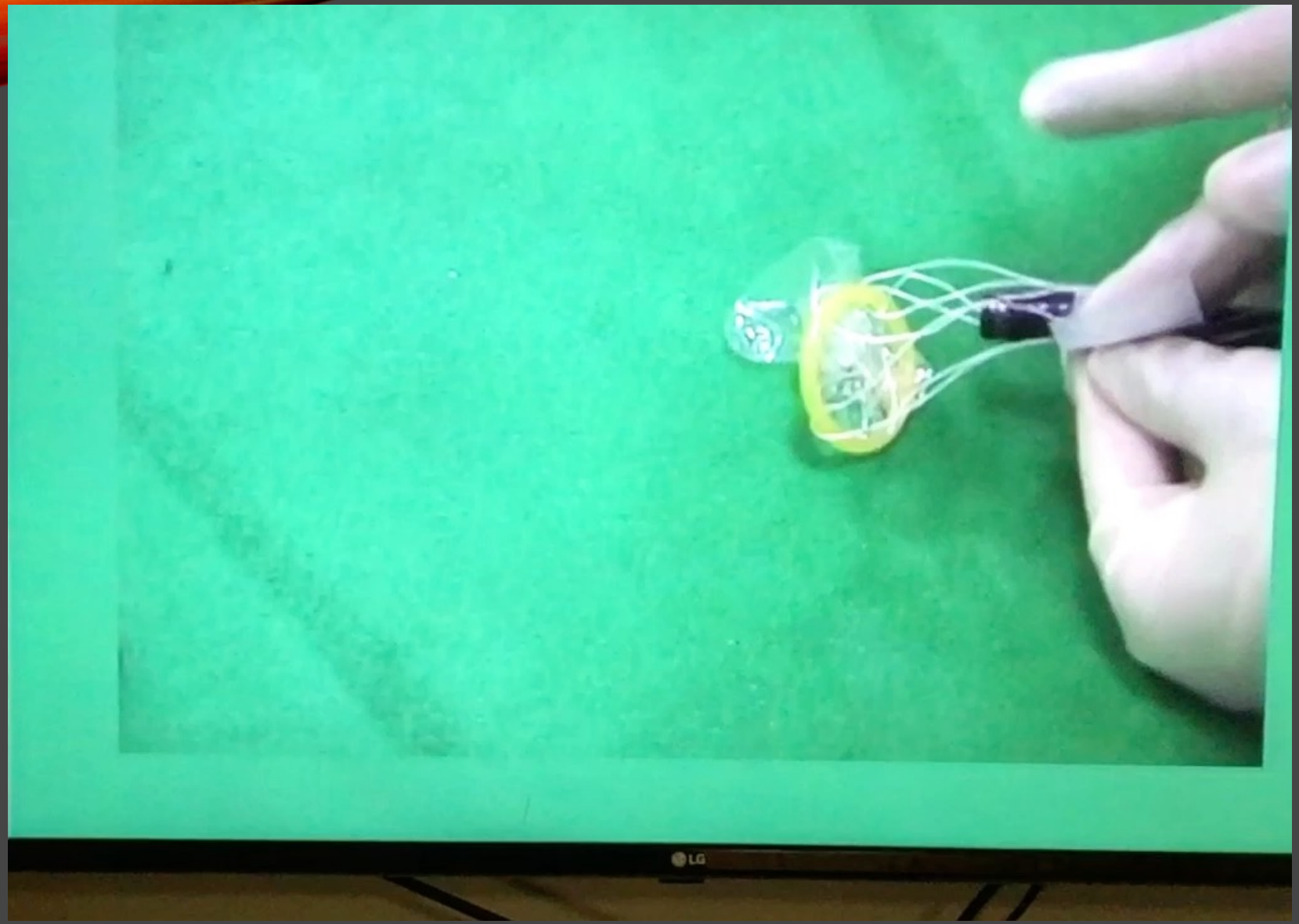
PROTECTOR HOOD USE ASGE VIDEO LIBRARY



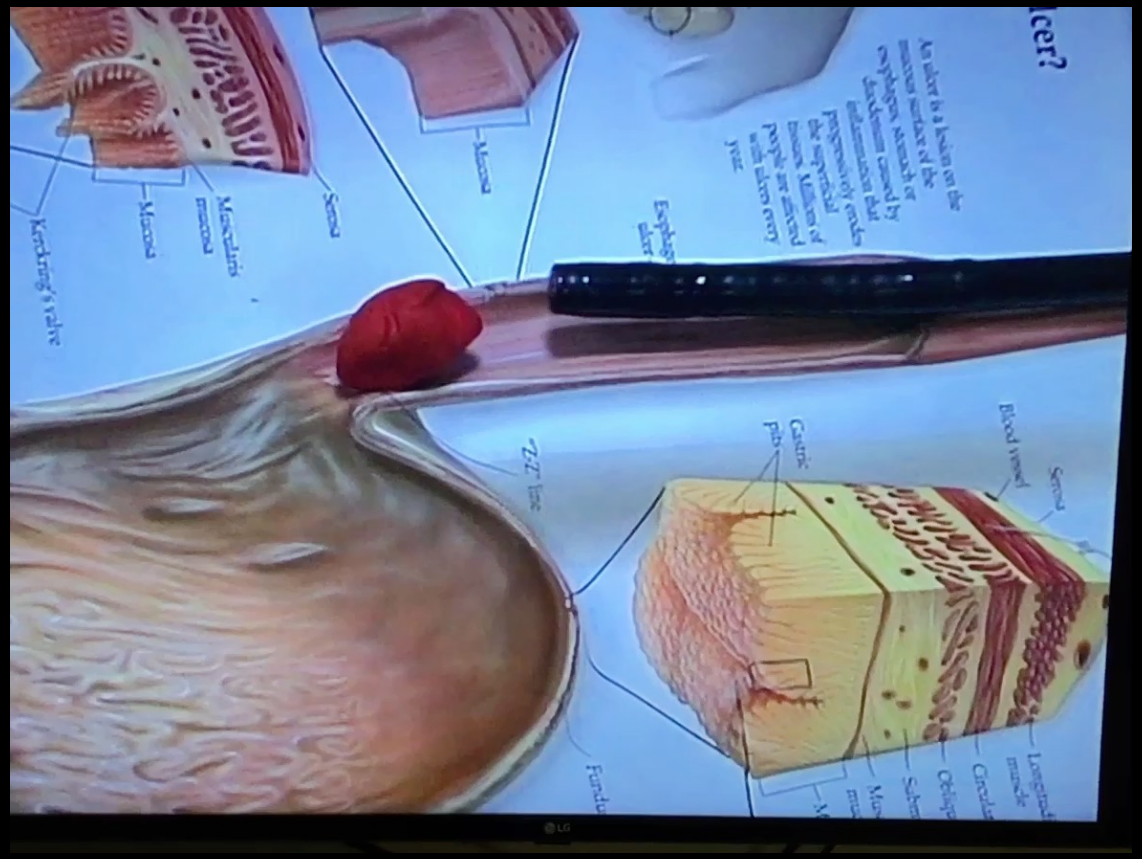


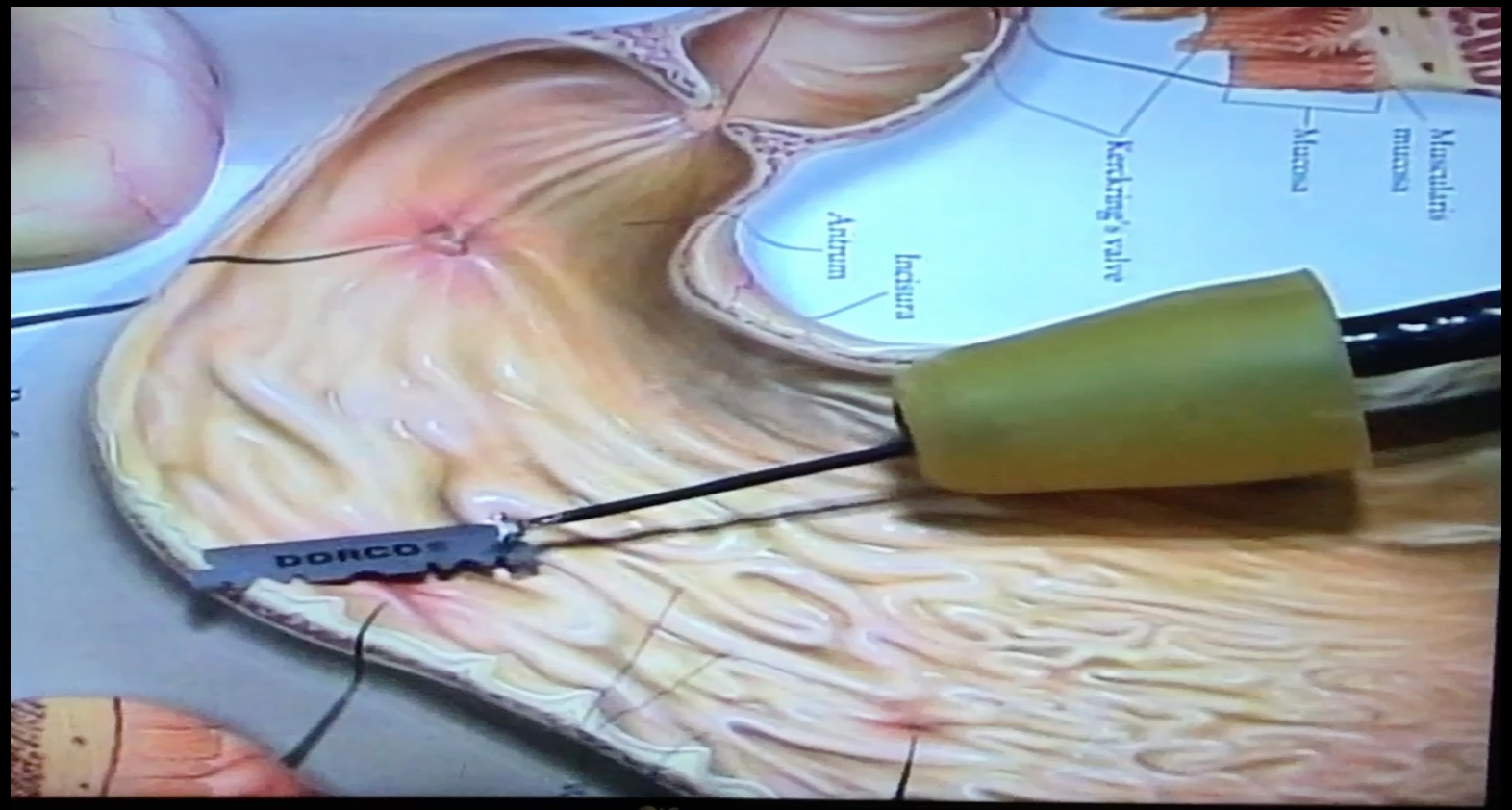





LG

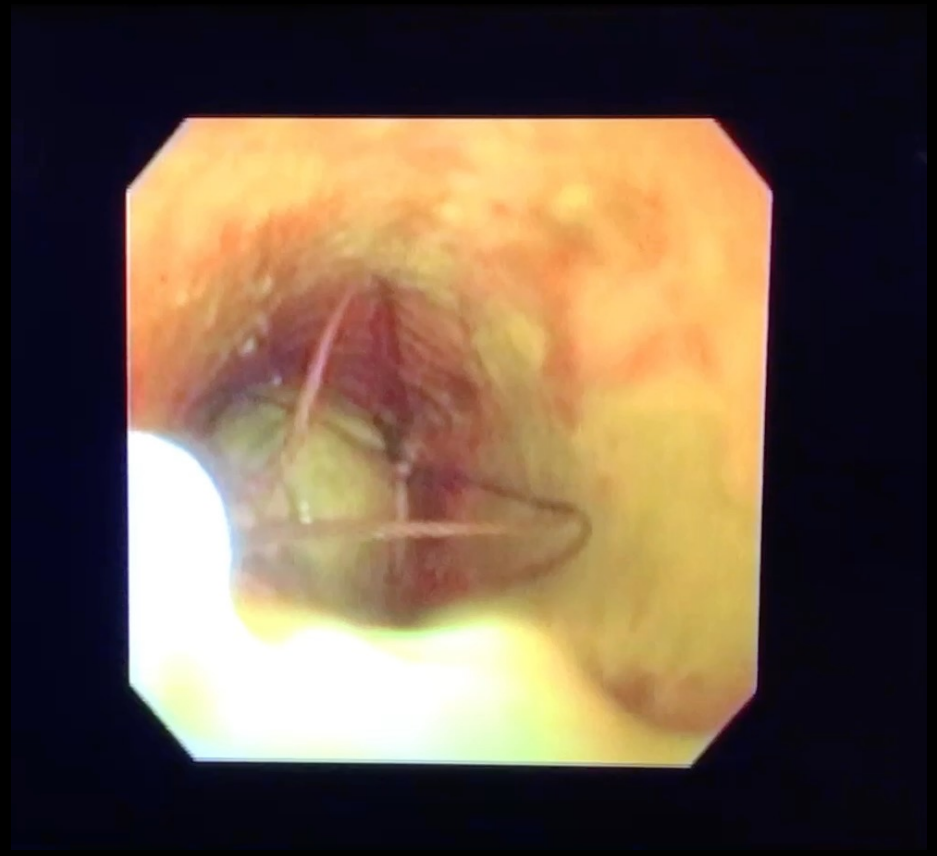
DEMONSTRATION PUSH METHOD

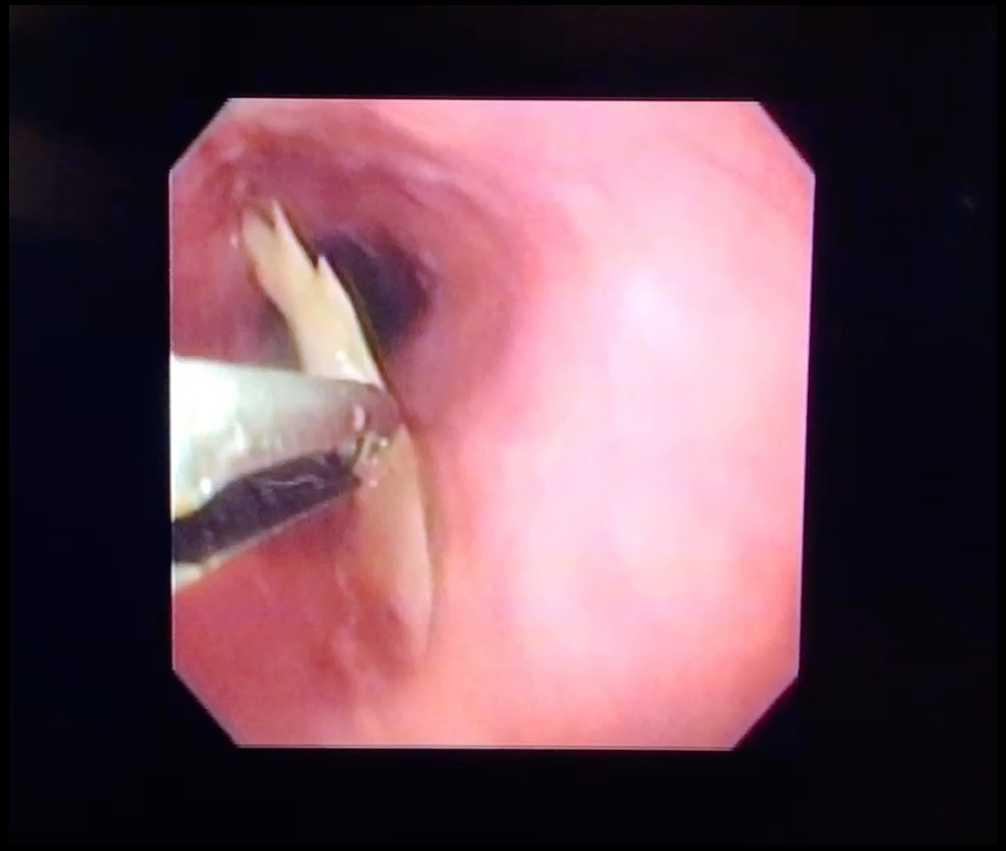



Muscularis mucosa
Mucosa
Kerckring's valve
Incisura
Antrum
DORCD


persimmon seed bolus

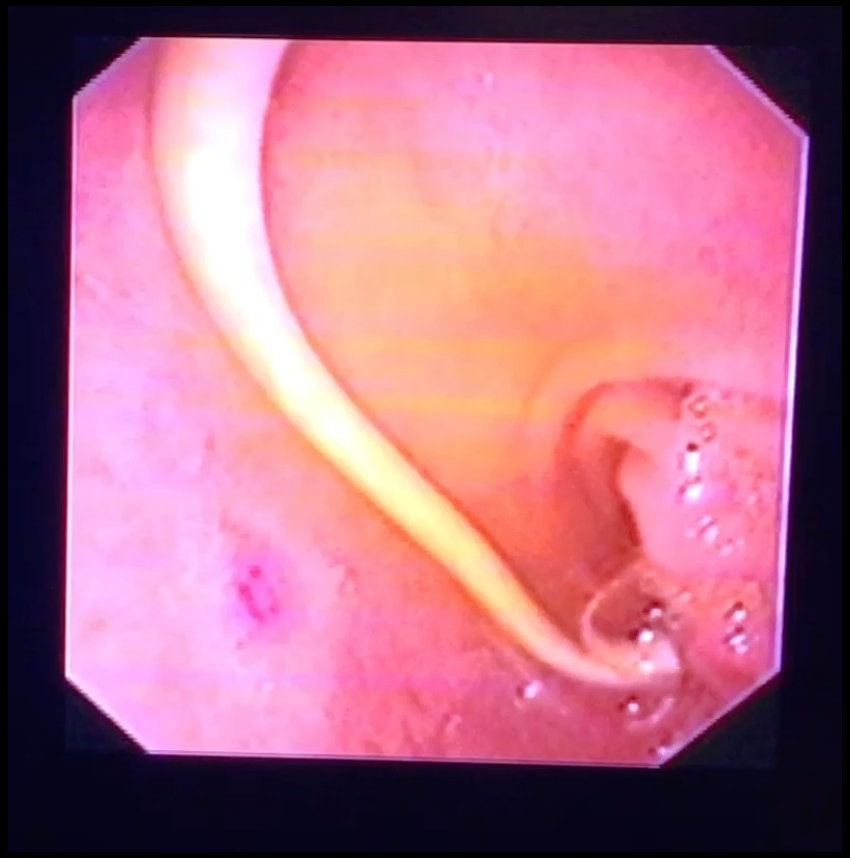

persimmon seed bolus

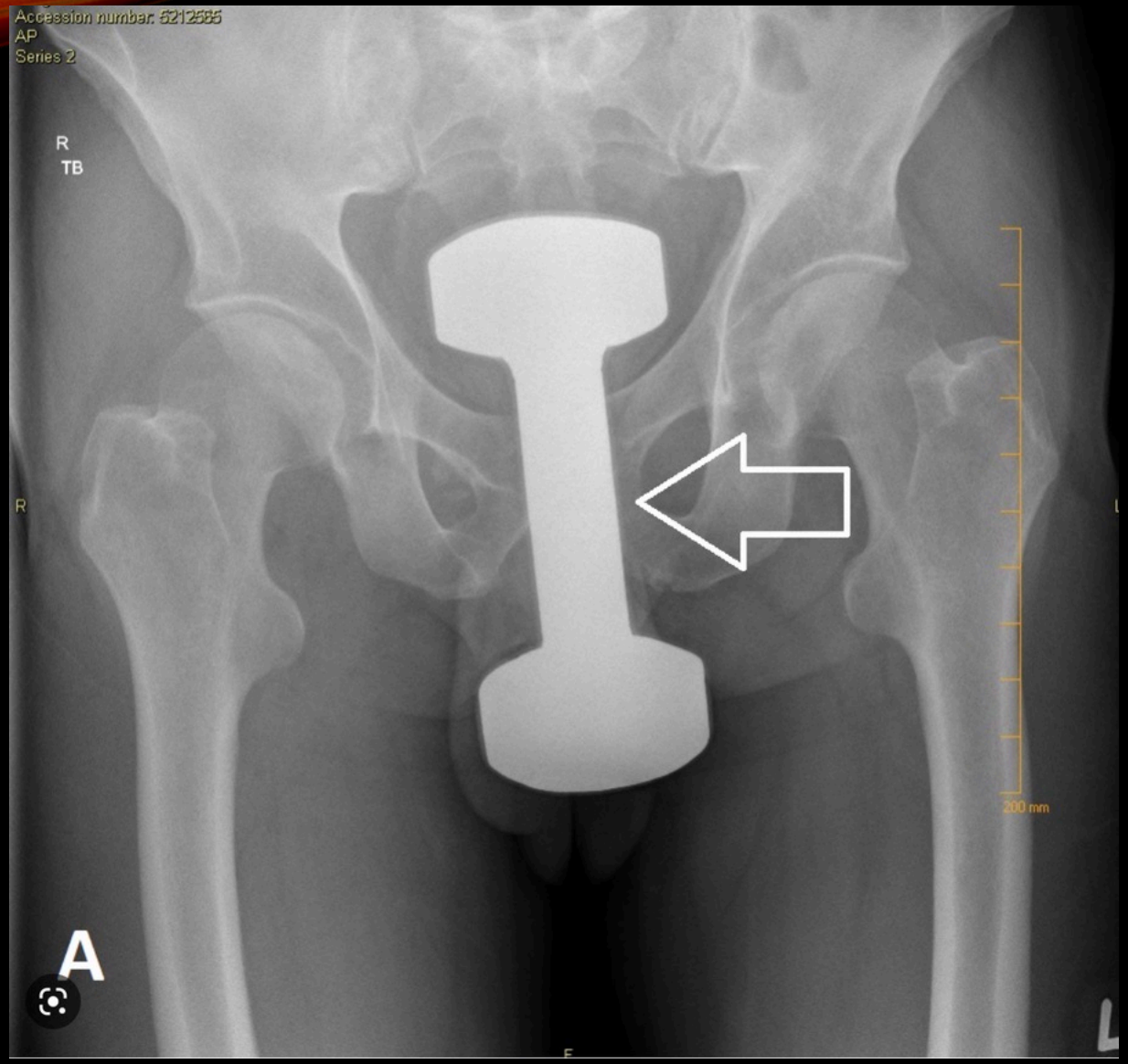





hair pin

ASCARIS LUMBRICOIDES WORM

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L
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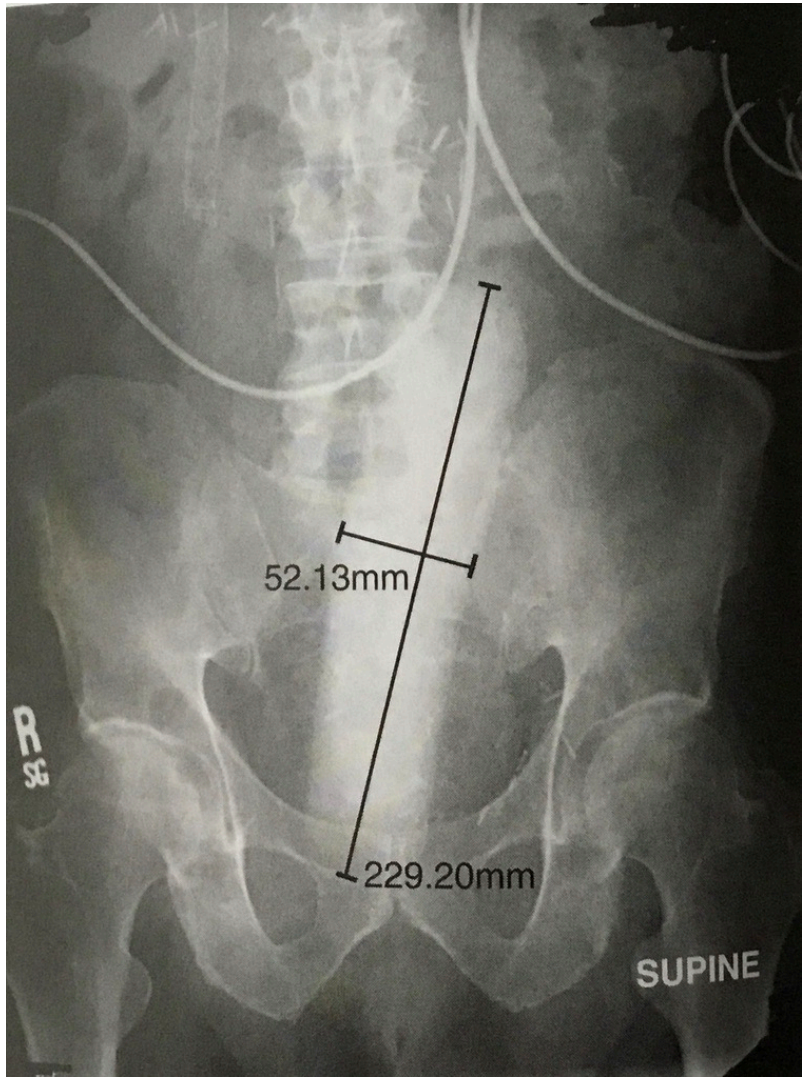
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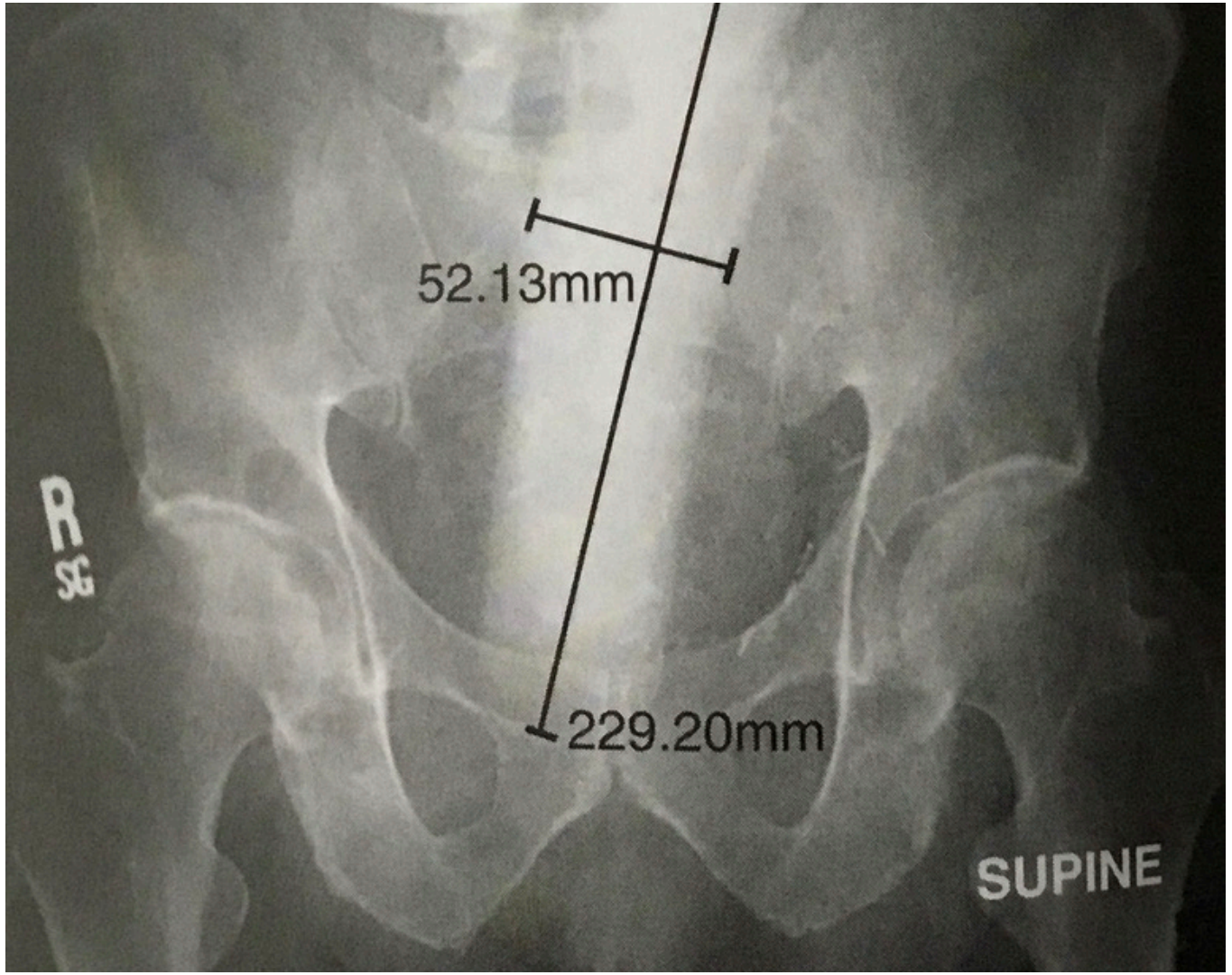
R
SUPINE


52.13mm
229.20mm
R
SUPINE

CAUSTIC INGESTON

5000 cases annually in the United States

Mostly children

Adults with suicide attempts, mental illness, intoxicated or homicide

Adults are usually worse than children due to more ingested, children usually vomit after small amount ingested

2 types: Alkali ingestion, Acid ingestion

TYPES OF ACID/ALKALI INGESTANTS

Alkali ingestion	Acid ingestion
Drain or toilet bowl cleaner Oven cleaner	Toilet bowl cleaner Swimming pool cleaner
Lye(sodium or potassium hydroxide) Odorless or tasteless	Battery acid Immediate pain
Results in large amount ingested Disc batteries Usually more esophageal injury.	Less ingested Bleach(both acid and alkali) Rarely causes significant injury

DAMAGE IN CAUSTIC INGESTION

Alkali damage	Acid damage		
-liquefaction necrosis -rapidly extends through mucosa to muscularis	-coagulation necrosis with thrombosis of mucosal blood vessels -more limited/superficial damage		
-vascular thrombosis, necrosis, transmural damage and perforation	-Smaller amounts ingested -due to more immediate pain		
-may lead to stricture	-more stomach/antral damage		
-esophageal injury more common	-has a bad taste		
- Less stomach damage, due tomneutralization by stomach acid			

CAUSTIC INGESTION SYMPTOMS

Oropharyngeal pain, epigastric pain, chest pain	Dysphagia, odynophagia	Hoarseness, stridor(if epiglottis injury) or mediastinitis	Chest/back pain (if esophageal perforation or mediastinitis
Abdominal pain-gastric perforation or peritonitis	GET CT Scan if perforartion, chest or abdominal pain	Early sx may not always correlate with extent of injury	AXR/CXR do not always help

GRADES OF CAUSTIC INJURY

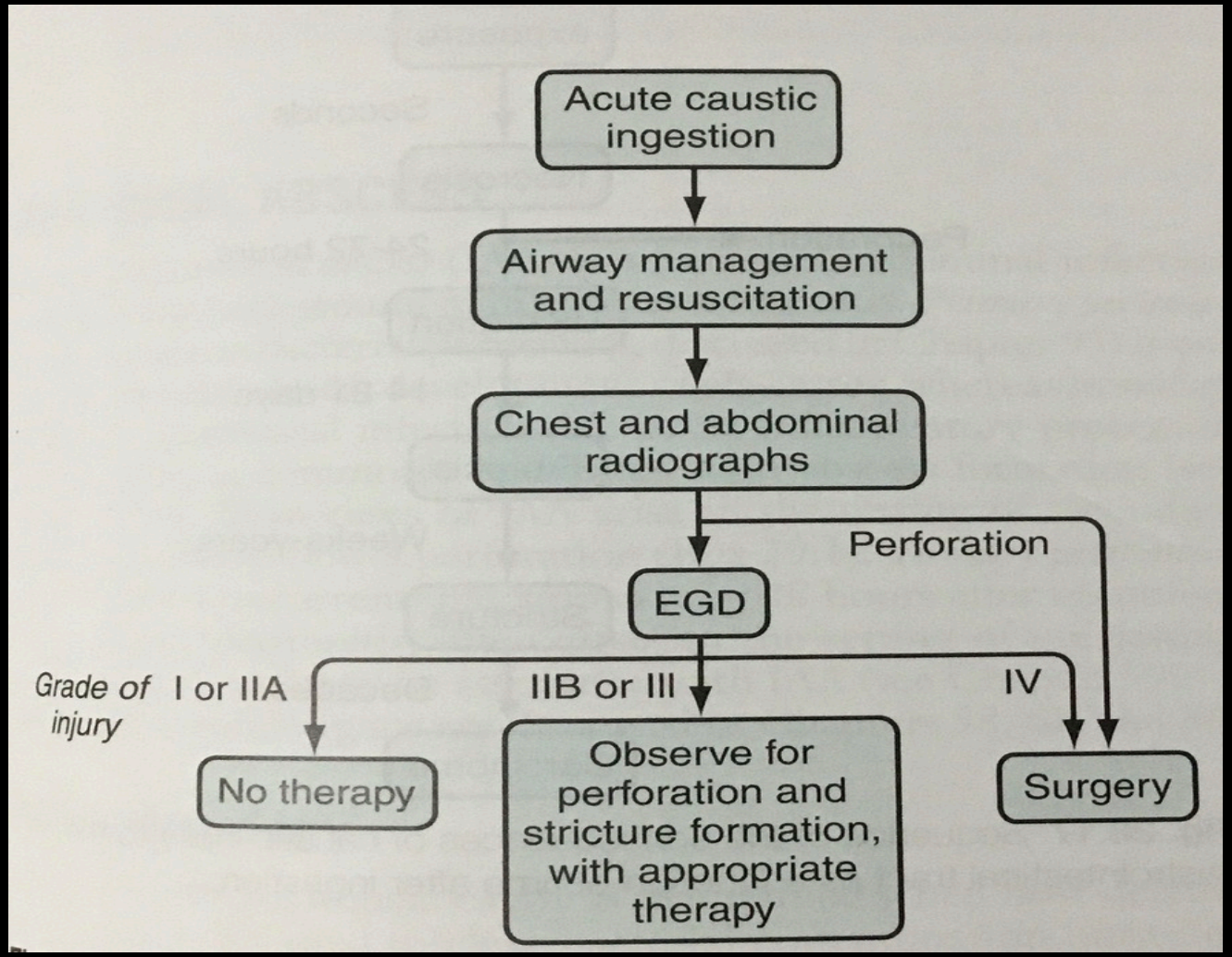
TABLE 28.1 Endoscopic Grades of Caustic Injury

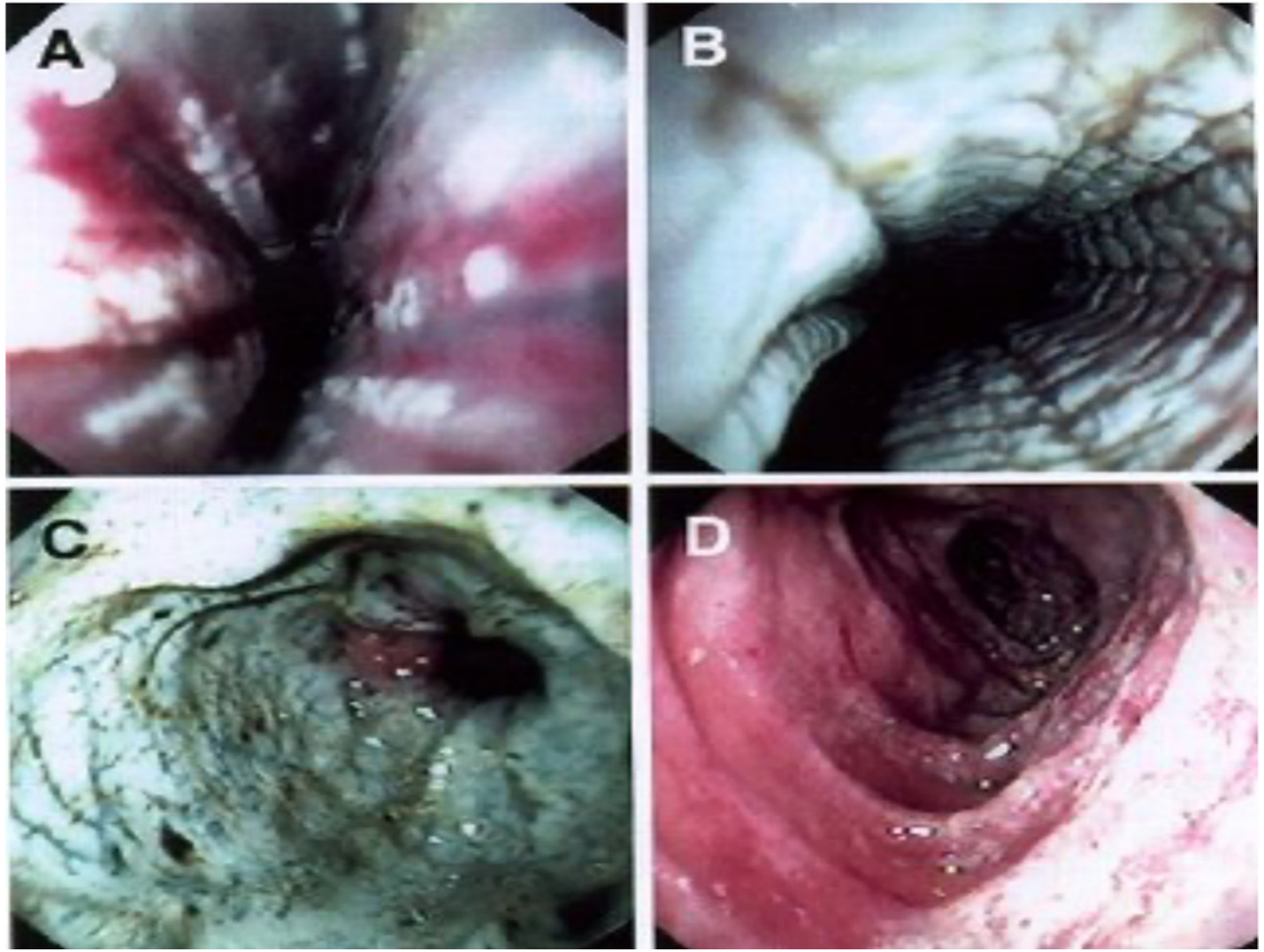
Grade	Endoscopic Findings
I	Edema and erythema
IIA	Hemorrhage, erosions, blisters, ulcers with exudate
IIB	Circumferential ulceration
III	Multiple deep ulcers with brown, black, or gray discoloration
IV	Perforation

EVALUATION OF CAUSTIC INGESTION

- Gastroscopy in 24-48 hrs
- Gastroscopy repeated 5 days later
- CT scan may grade esophageal injury
- Grade 1-2a heal without injury most of the time
- Grade 2b-3 stricture 70-100%
- Grade 4 with perforation, 65% mortality and require surgery

CAUSTIC INGESTION ALGORITHM




A
B
C
D

TREATMENT OF CAUSTIC INGESTION

Initial treatment is A, B, C's

Regional poison control: 1800 222 1222.

Management is based upon the grading of injury at gastroscopy

Asymptomatic with grade 1-2a; start oral intake in 24-48 hrs and d/c.

If; hypotension, resp distress and grade 2b-3; Admit to ICU monitor for perforation.

If resp distress progress; laryngoscopy, if significant inflammation/edema, could require tracheostomy, not intubation to maintain airway.

Esophagectomy, gastrectomy for perforation with colonic interposition

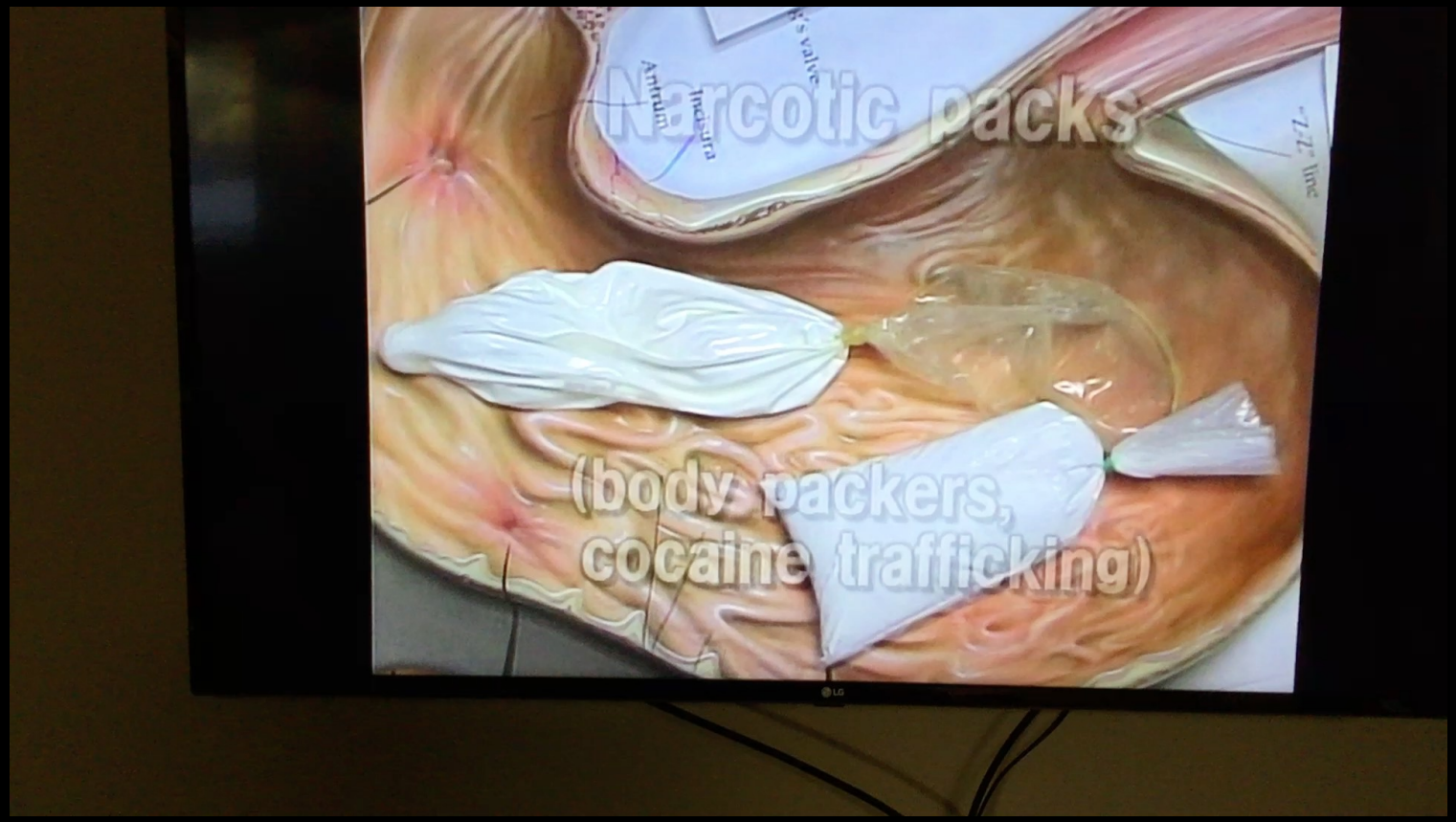
TREATMENT OF CAUSTIC INGESTION

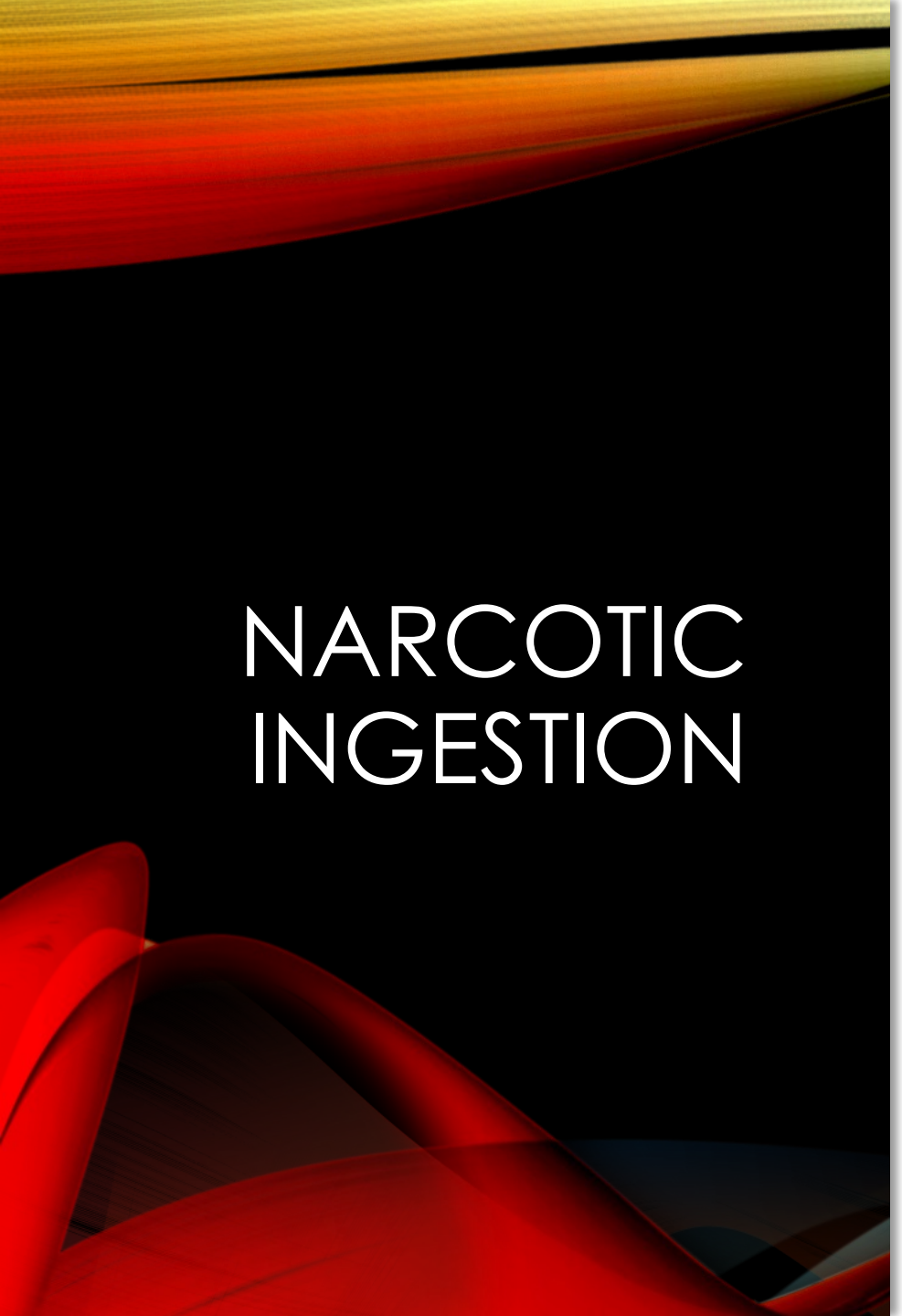
- Inducing emesis or NGT not recommended
- Neutralizing agents not recommened
- Routine use of glucocorticoids or antibiotics not recommended
- PPI are beneficial

COMPLICATIONS OF CAUSTIC INGESTION

- Esophageal stricture; 2 weeks to 2months post ingestion; 2a-3 grade
- If treating stricture; goal is to dilate to 15mm esophageal diameter
- Surgery after hospitalization shown to decrease mortality, as opposed to urgent surgery
- Alkaline injury increases esophageal cancer(lye) 100 fold, 40 years later.

NARCOTIC INGESTION ASGE VIDEO LIBRARY





NARCOTIC INGESTION

Usually 2 types: body stuffer and body packer

Body stuffer: drug user/trafficker who ingests small amounts, but poorly packed. Prone to rupture.

Body packer: are "mules" used by drug smugglers for drug transport. Usually larger amounts of more carefully packed to withstand GI transit. Can present with bowel obstruction, or symptoms replated to drug ingestion.

If packages rupture, severe toxicity or death can result 5%.

Diagnosis: Xray or CT scan

Patient usually uncooperative, police involved.

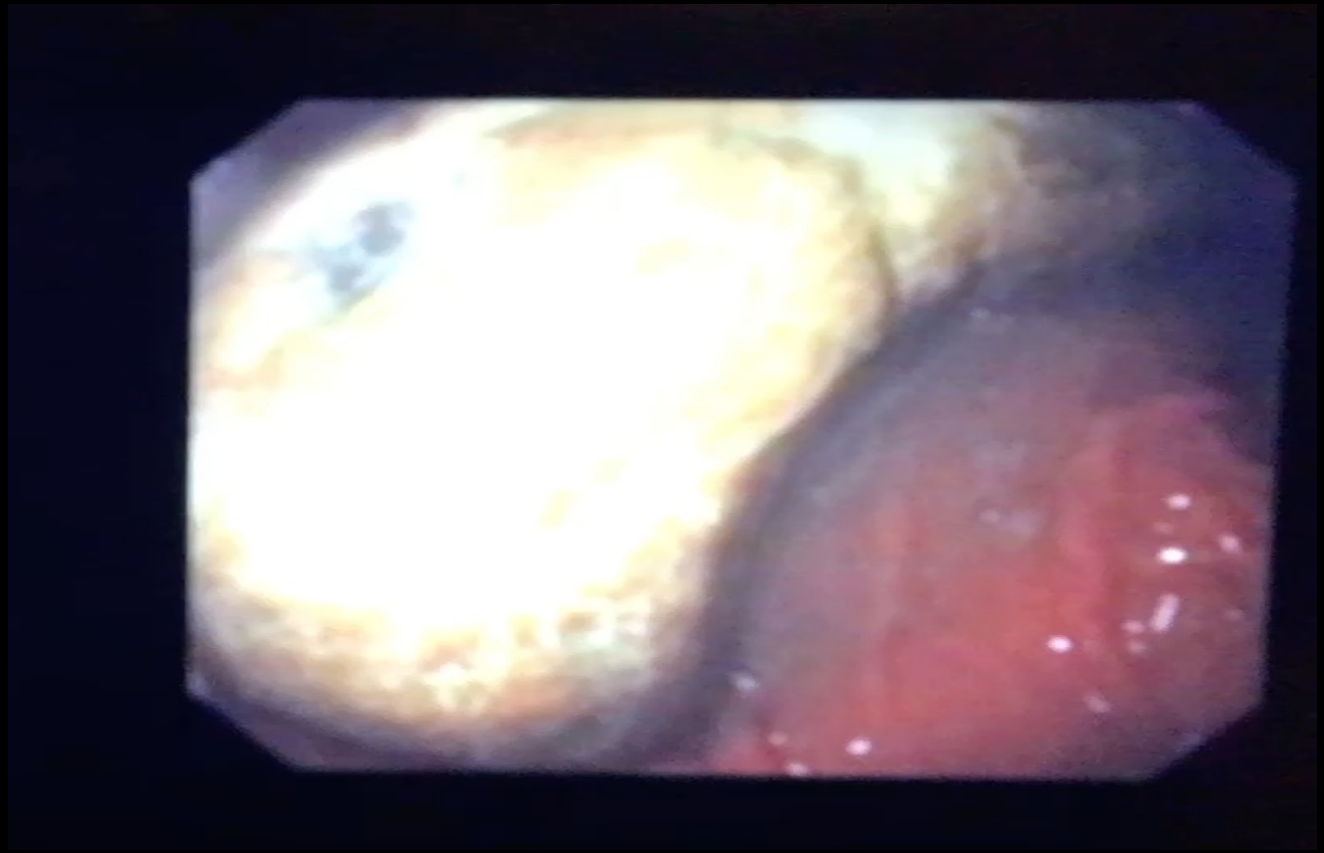
Contraindicated to remove due to rupture, toxicity or death.

Surgery; when obstruction or failure to progress, drug leakage or toxicity.

45% could require surgery with gastrotomy, enterotomy, colotomy

Conservative approach recommended first

BEZOAR IN STOMACH ASGE VIDEO LIBRARY



BEZOAR

Ingested material that collects in the GI tract: usually stomach

3 types: phytobezoar(vegetable), trichobezoar(hair, carpet, string) pharmacobezoar(medication/vitamins).

Risks: gastric surgery, vagotomy or pyloroplasty, reduced acid activity, gastroparesis-advanced diabetes.

Diagnosis: Hx of ingested substances above, CT/Xray does not always dx, palpable abdominal mass, EGD, halitosis due to putrification, baldness(trichillomania; eating own hair)

Treatment: small; observation, clear liquids, prokinetic agents, coca cola, cellulase, urso, pancreatin. Large: fragment during EGD, laser, snare,lithotripsy. Surgery if perforation or obstruction.

BOX 28.2 Oral Pharmacologic Agents Associated with Medication Bezoar Formation

- Nonabsorbable antacids
- Bulk laxatives
- Cardiovascular medications
  - Nifedipine
  - Verapamil
  - Procainamide
- Vitamins and minerals
  - Vitamin C
  - Vitamin B_{12}
  - Ferrous sulfate
- Miscellaneous agents
  - Sucralfate
  - Guar gum
  - Cholestyramine
  - Enteral feeding formulations
  - Theophylline
  - Sodium polystyrene sulfonate (Kayexalate) resin

ACUTE (NON-VARICEAL)UGI BLEEDING

- Still a major cause of morbity and mortality
- 150 cases/100,000
- Mortality 5-10%, not much changed despite advances
- Goals of therapy; control active bleeding, reduce rebleeding rate, improve outcomes
- Outcomes; transfusion requirement, need for surgery, length of hospital stay, bleed related morbidity and mortality, cost

TOOLS FOR HEMOSTASIS

Injection: epinephrine or sclerosants(alcohol, salt solution)

-1:10,000 epinephrine. 1:1000 in 10cc syringe

Thermal contact; bipolar heater probe, gold probe

Non contact: APC monopolar coagulation.

Mechanical; clips, bands, OTS clips(bear claw)

Cryotherapy: compressed CO2, -78 degrees C

Hemospray: oxidized regenerated cellulose fabric, produce a mechanical barrier and induce anticoagulant effect. Pressurized CO2 administration.

PRE-PROCEDURE EVALUATION

A,B,C; check blood pressure, pulse, oxygenation.

Check COVID

Resusitation; ivf, blood transfusion, platelets, hold anticoagulation

Airway protection; obtunded patient, active hematemesis, large amount of blood in stomach, possible EV/GV

Correct clotting abnormalities: INR < 2.0, platelet count >50k

Clear stomach of blood with prokinetic agents, Emycin, reglan

Have the proper equipment available, discuss before you start the case; scopes, sprays, bands, injectors

What is available at your hospital if bleeding cannot be stopped with EGD

CAUSES OF UGI BLEEDING SLEISENGER 11TH EDITION

TABLE 20.2 Causes of Severe UGI Bleeding in the UCLA CURE Database (N*n* = 968)

Cause	Frequency (%)
Peptic ulcer	35.2
Esophageal or gastric varix	21.9
Portal hypertension-related lesion*	4.6
Esophagitis	4.6
Angioectasia†	4.0
Mallory-Weiss tear	4.0
Dieulafoy lesion	3.2
UGI tract neoplasm	3.1
Epistaxis	2.2
Erosions	1.2
Other	8.8
No cause found	7.3

*Other than an esophageal or gastric varix
†Angioectasia and telangiectasia
CURE, Center for Ulcer Research and Education; *UCLA*, University of California, Los Angeles.

PREDICTORS OF WORSE OUTCOME SLEISENGER 11TH EDITION

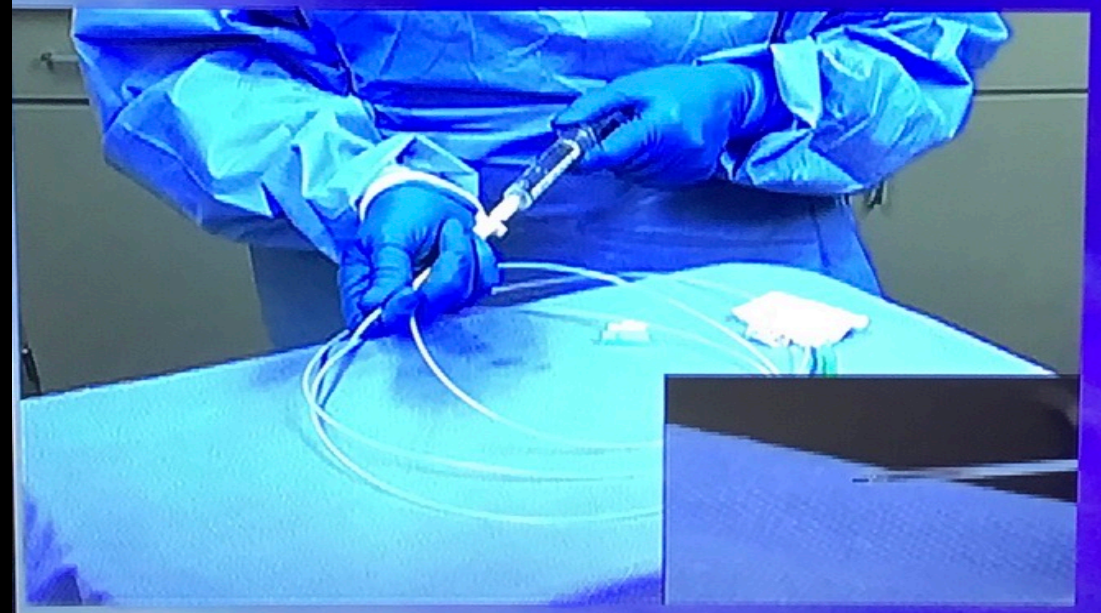
BOX 20.1 Factors Predictive of a Poor Prognosis After Hemorrhage From Peptic Ulcer

- Age >60 years
- Bleeding onset in hospital
- Severe comorbid medical illness
- Shock or orthostatic hypotension
- Fresh blood in NG tube
- Coagulopathy
- Multiple transfusions required
- Higher lesser curve gastric ulcer (adjacent to left gastric artery)
- Posterior duodenal bulb ulcer (adjacent to gastroduodenal artery)
- Endoscopic finding of arterial bleeding or visible vessel
- Residual arterial blood flow after endoscopic treatment

TREATMENT OF NON VARICEAL UGI BLEEDING

- Physical examination and history, including rectal examination
- Assess medication; NSAIDS, aspirin, anticoagulants
- Check for covid
- Give iv PPI bolus and infusion; shown to decrease bleeding and improve SRH
- Type and cross, start transfusion and/or IVF replacement
- Assess stability; urgent EGD may increase morbidity and mortality
- Assess need for octreotide(variceal bleeding)
- Assess need for NGT

Epinephrine Injection



- 21-25G injection catheter
- 1:10,000 dilution (standard)

BIPOLAR COAGULATION SETTINGS

Thermal Modalities

Bipolar Electrocoagulation

	Peptic Ulcer	Dieulafoy	MWT	GAVE	Angio-dysplasia
Probe size	10F	10F	10F or 7F	10F	10F or 7F
Power (W)	20	20	15	15	15
Contact duration (s)	7-10	7-10	2-4	2-4	2-4
Contact pressure	Firm	Firm	Moderate	Moderate	Light

ARGON PLASMA COAGULATION

Thermal Modalities
Argon Plasma Coagulation

	Peptic Ulcer*	Dieulafoy*	MWT	GAVE	Angio-dysplasia
Power (W)	–	–	45	60	45
Argon flow rate (L/min)	–	–	1	1	1
Probe-tissue distance (mm)	–	–	1-2	1-2	1-2

*Coaptive coagulation recommended over APC for these lesions

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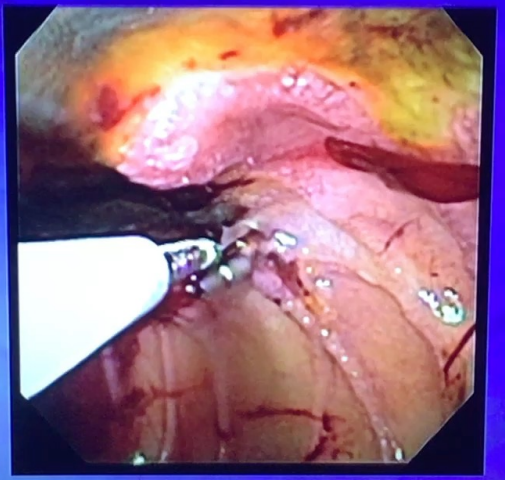
Duodenal Ulcer with Active Bleeding

Epinephrine Injection & Clipping

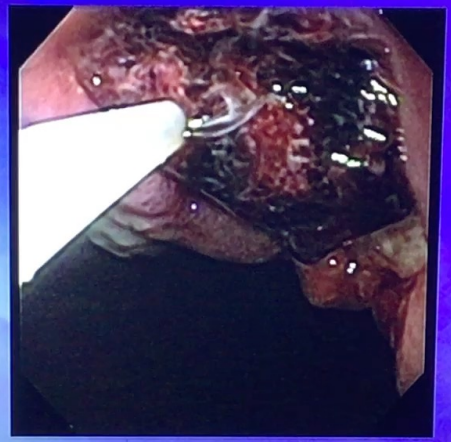
Duodenal Ulcer with Active Bleeding

Epinephrine Injection & Clipping



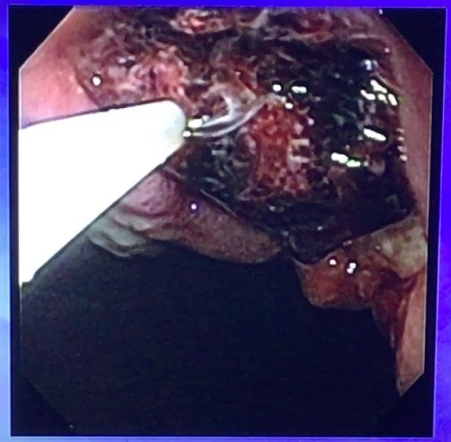
Gastric Ulcer with Adherent Clot

Epinephrine Injection, Clot Removal & Contact Thermal

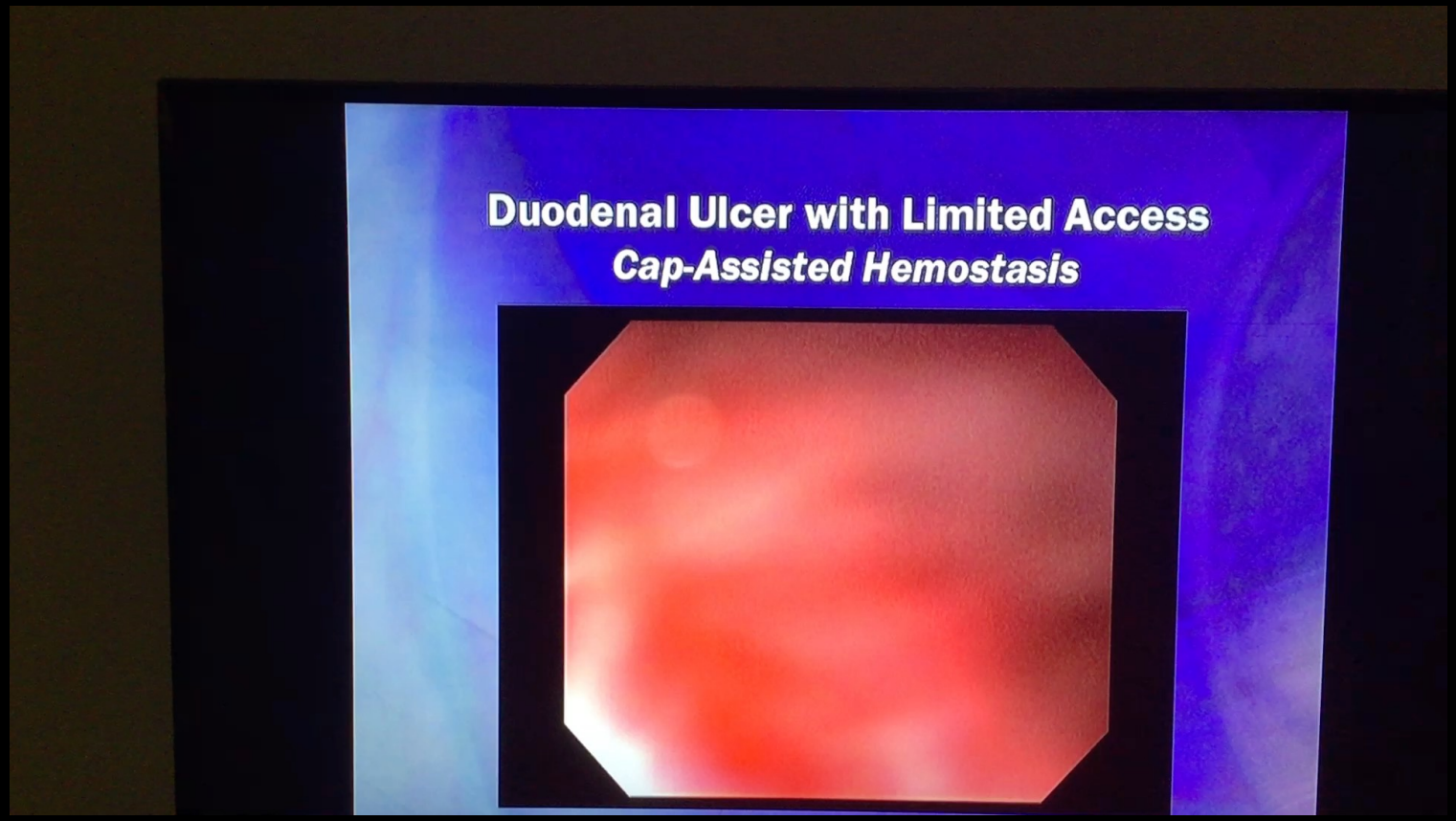


Gastric Ulcer with Adherent Clot

Epinephrine Injection, Clot Removal & Contact Thermal

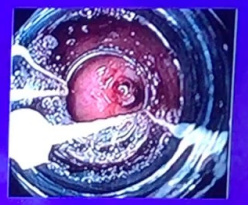


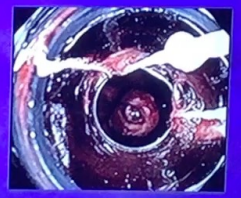
CAP ASSISTED THERAPY



Dieulafoy Lesion

Banding





Gastric Antral Vascular Ectasia

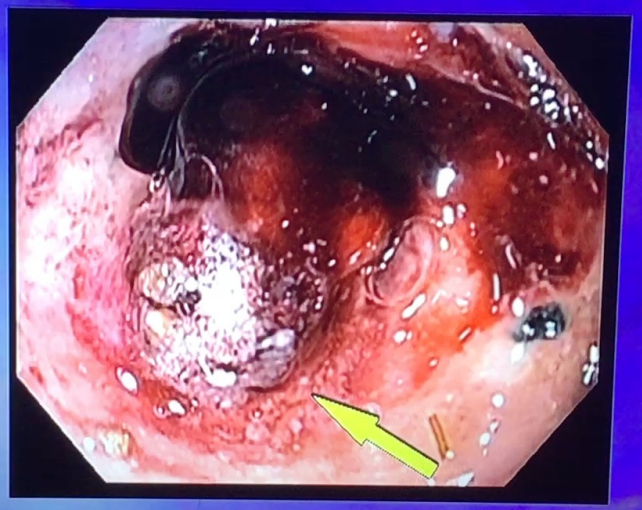
Argon Plasma Coagulation

Gastric Antral Vascular Ectasia

Cryotherapy

Pitfalls of Endoscopic Therapy

Precipitation of Torrential Bleeding



PROGNOSIS POST EGD; STIGMATA ASSESSMENT

Ulcer Stigmata

Stigmata	Clean base	Flat spot	Oozing without VV	Adherent clot	NBVV	Active arterial bleed
Rebleed rate	5%	10%	10-20%	20-30%	50%	90%
EndoTx	No	No	Yes	Yes/No	Yes	Yes
Modality			Mono	Dual	Dual > mono	Dual

Mono = thermal or clipping
Dual = epinephrine plus thermal or clipping

MANAGEMENT OF ESOPHAGEAL VARICES

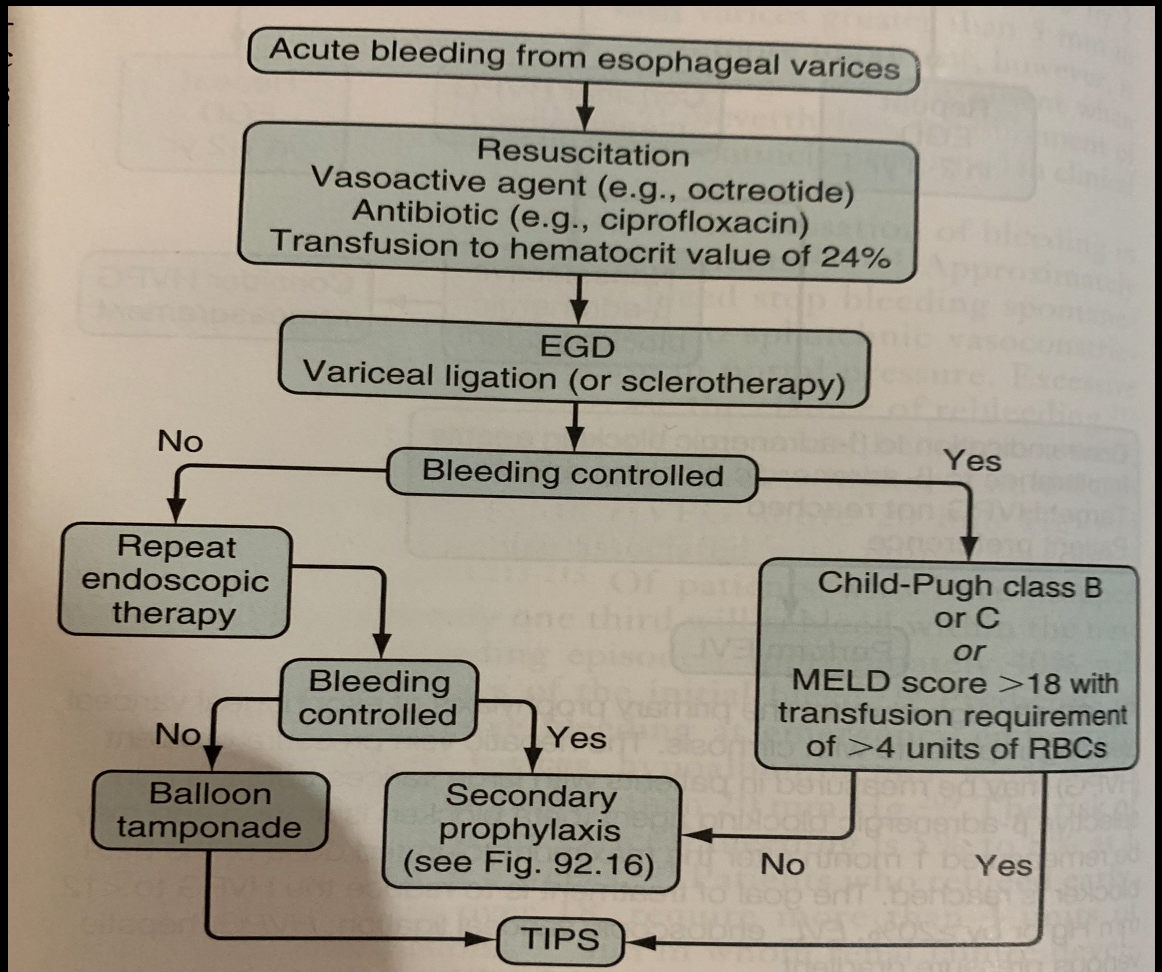
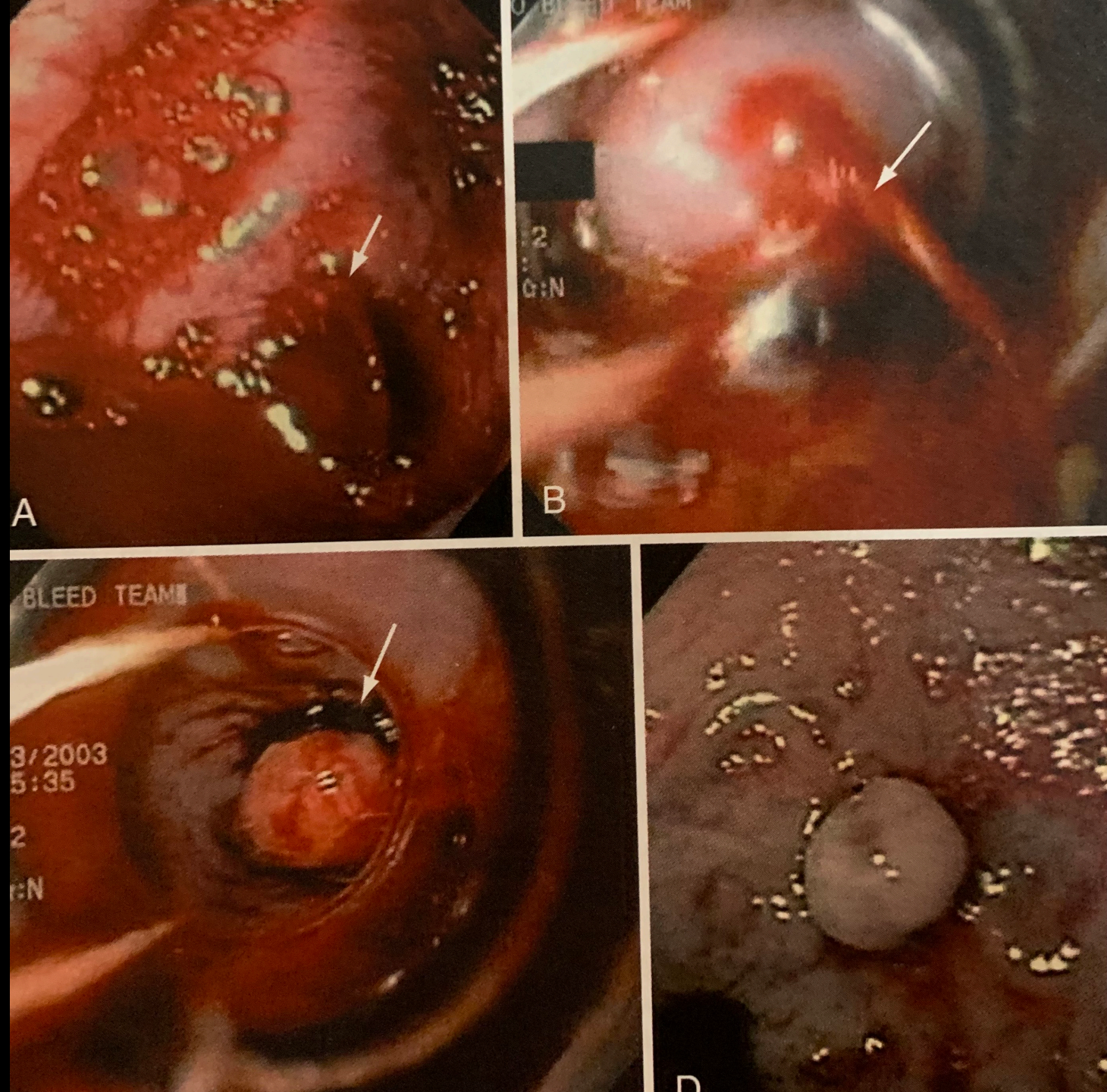


Fig. 92.15 Algorithm for the management of bleeding esophageal varices. *RBC*, red blood cell.

MANAGEMENT OF ACUTE ESOPHAGEAL VARICEAL BLEEDING SF-11TH EDITION

- A: actively bleeding esophageal varix
- B: Pulling the varix into the bander
- C: varix banded, bleeding controlled
- D: post banding; no further bleeding



MANAGEMENT OF ESOPHAGEAL VARICES

- If band ligation does not work?
- Can try esophageal covered metal stent
- Blakemore tube "get the football helmet"
- Sclerotherapy-not really used much anymore
- TIPS

MANAGEMENT OF GASTRIC VARICES- SLEISENGER AND FORDTRAN 11TH EDITION

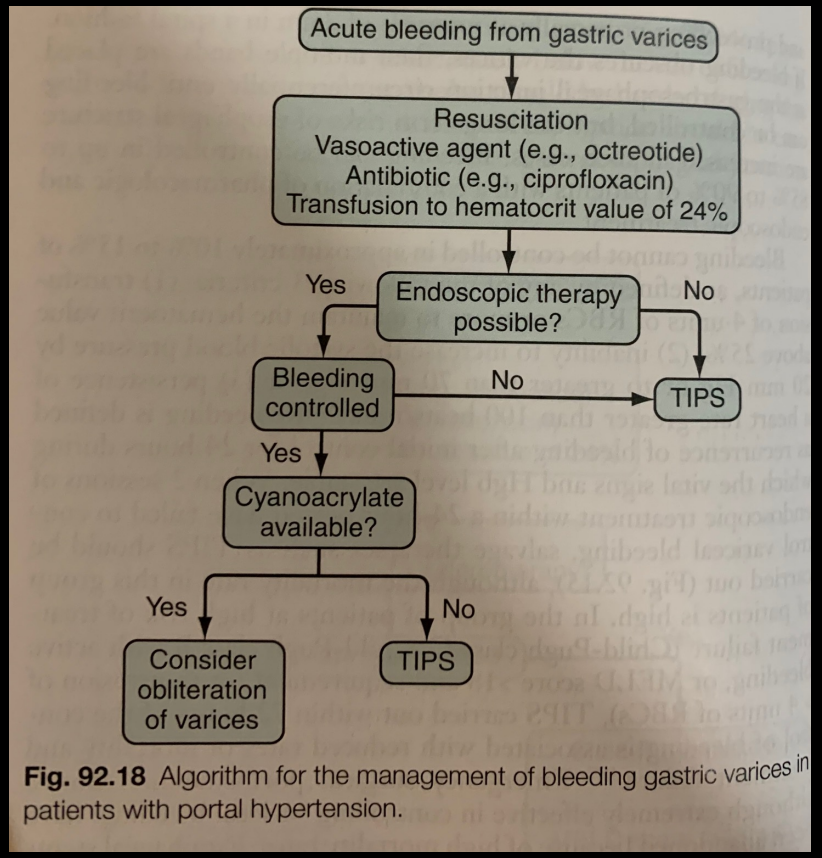


Fig. 92.18 Algorithm for the management of bleeding gastric varices in patients with portal hypertension.

ACUTE GASTRIC VARICES BLEEDING- SF 11TH EDITION

- A: gastric varix bleeding
- B: post injection; bleeding controlled

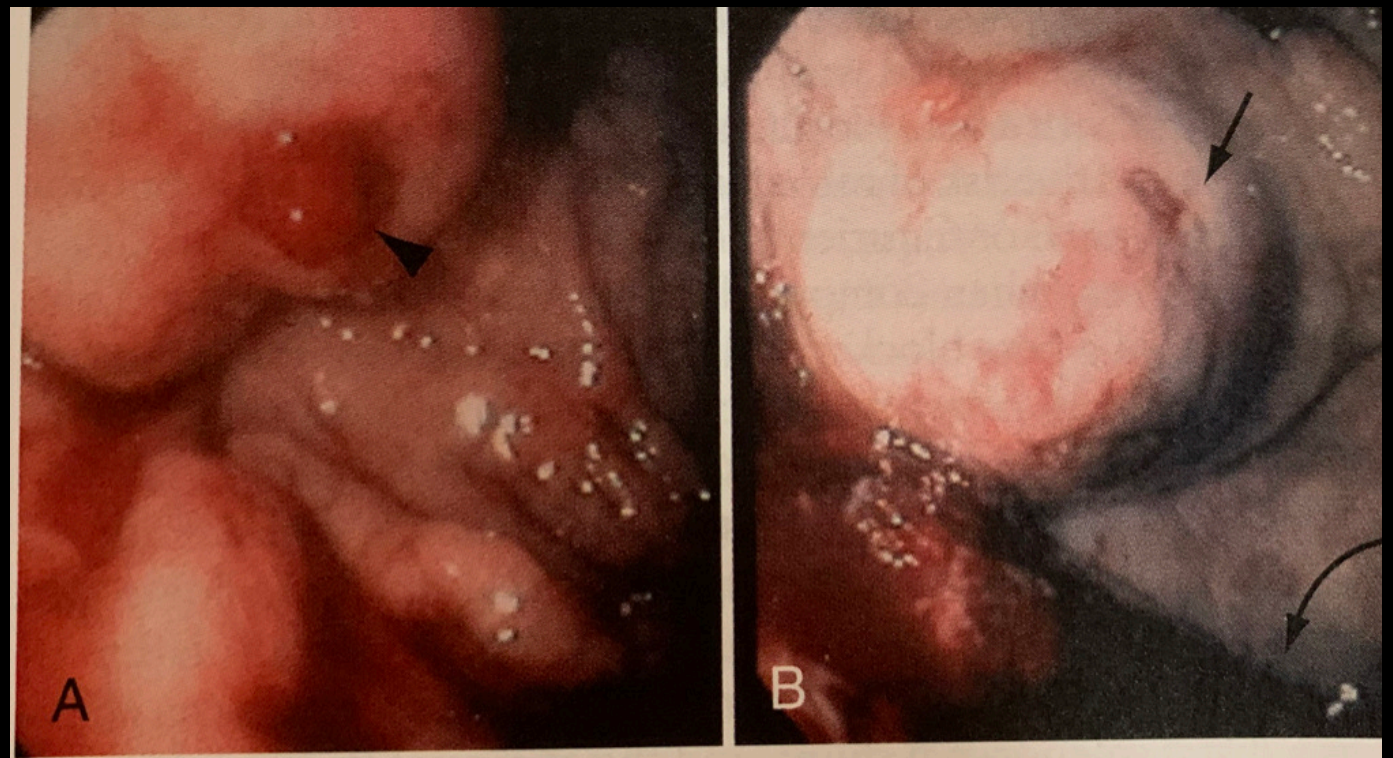


Fig. 92.17 Gastric variceal bleeding. *A,* Active bleeding from a gastr varix (*arrowhead*) can be seen. *B,* Bleeding from the varix (*straight ar row*) is controlled following injection of sodium tetradecyl sulfate. Poo ing of blood in the stomach is indicated by the *curved arrow*.

ACUTE LOWER GI BLEEDING

New guidelines: ACG; management of ALGIB: An Updated Guideline, Volume 118, Number 2; Page 208-231. Feb 2023.

Risks: Increasing age, anticoagulants, antiplatelets, ASA, NSAIDS.

ASA, NSAIDS, antiplatelets: increase diverticular bleeding by increasing mucosal irritation at the dome/neck of the diverticulum leading to internal rupture.

DOAC/Vit K antagonists Increase risks > warfarin

ETIOLOGY OF ACUTE LGIB

- Diverticular most common
- Vascular lesions
- Ischemic colitis
- Hemorrhoids
- Post polypectomy
- Colitis
- Neoplasia
- Sometimes no cause found

MANAGEMENT OF LGIB

Focused H and P, Lab evaluation at presentation

Hemodynamic resuscitation with patient initial assessment(Oakland score)

Evaluate for hx of cardio/pulmonary disease, oncology, renal disease or prior GI surgery, cirrhosis, PUD

Ask about anticoagulation/ASA/NSAIDS

Associated Symptoms: abdominal pain, change in bowels, weight loss

Assess vitals signs; blood pressure, pulse and oxygenation

Perform rectal examination

Assess for possible brisk UGI bleeding need for EGD, (15% brisk hematochezia is UGI bleeding). (-) NGT does not rule out UGI bleeding.

MANAGEMENT OF ACUTE LGIB

Risk assessment Oakland score <8, early discharge and elective scope

Unstable patient; IVF with crystalloid solution to normalize BP/P

Assess for transfusion; transfuse is active bleeding and hgb<7; restrictive transfusion strategy has shown benefit as opposed to over transfusing >9

Reverse anticoagulants INR <2.5

DOAC reversal only if bleeding is life threatening, otherwise just hold

When possible targeted reversal agents should be used; idarucizumab for dabigatron, andexanet alfa for apixaban or rivaroxaban if taken within 24 hours. Praxbind/Pradaxa, 4 factor PCC for faxtor XA inhibitors Eliquis/Xarelto

Antiplatelet agents: give platelet if platelet <30k, want >50k if endoscopy is considered. No benefit to platelet transfusion in universally.

Cardiac aspirin can be continued.

MANAGEMENT OF ACUTE LGIB

- Get cardiology involved early if on antiplatelets, anticoagulants, recent stents or significant coronary disease.

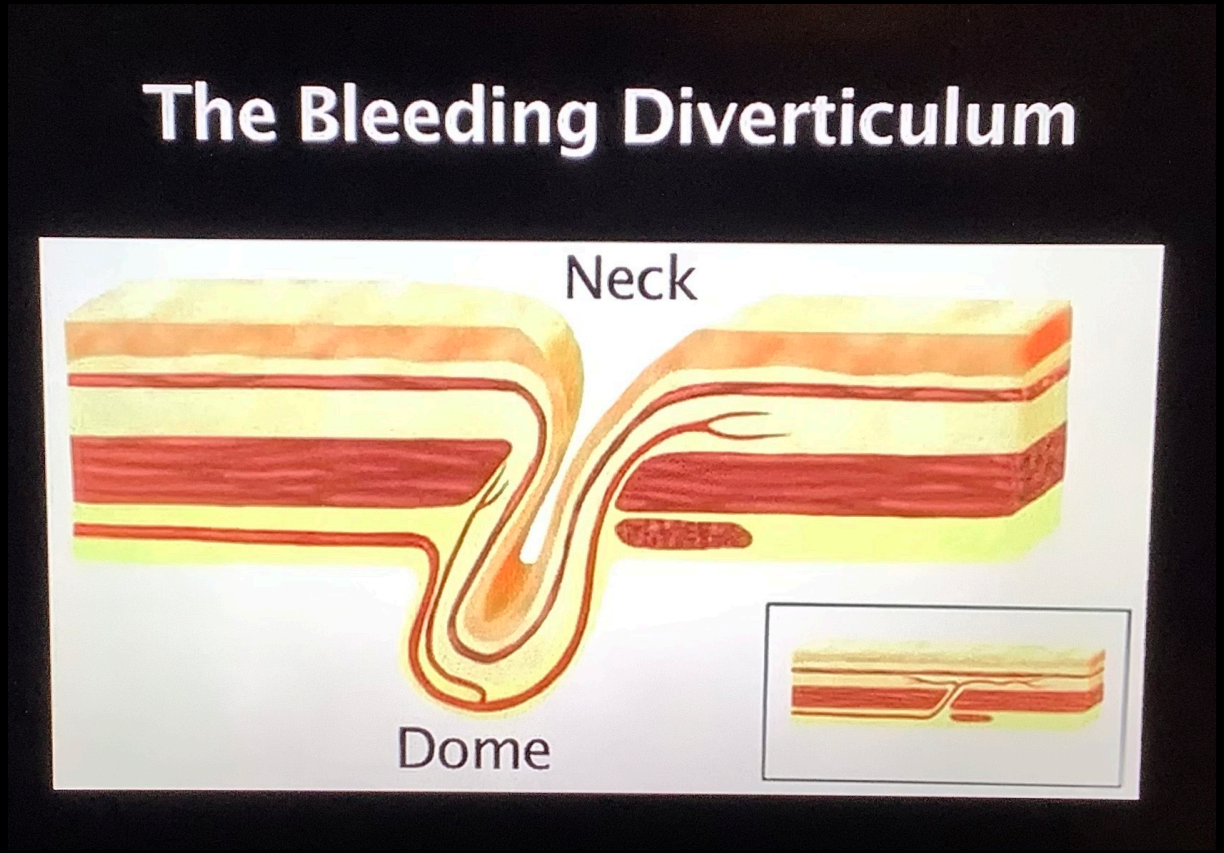
ROLE OF COLONOSCOPY

- Recommend non urgent colonoscopy >24 hours, urgent colonoscopy can be associated with higher mortality
- Use cap assisted colonoscopy to see and treat lesions
- Intubate terminal ileum to rule out proximal cause
- Colonoscopy may not be needed if high quality colonoscopy was performed in the past 1 year, especially if showing diverticulosis
- Colonoscopy is recommended for most patient with LGIB due to value of detecting lesions.
- Consider split does 4L PEG prep or 2L low volume prep.
- When diverticular bleeding detected; treat with clips, bands or coagulation

COLONOSCOPY CONTINUED

- CT angiography is recommended as first line if active bleeding with hemodynamic instability
- If CTA positive this should be treated with IR transcatheter arteriography and embolization
- Stop NSAIDS and aspirin for primary prevention after hospitalization for diverticular bleeding
- Continue aspirin in patients with established CAD due to benefits or reduced ischemic events
- Re-evaluate the risks of non aspirin atiplatelets such as P2Y12 receptor antagonists due to riskof recurrent diverticular hemorrhage
- Resume anticoagulants post diverticular hemorrhage due to decrease thromboembolism and mortality

ANATOMY OF DIVERTICULUM



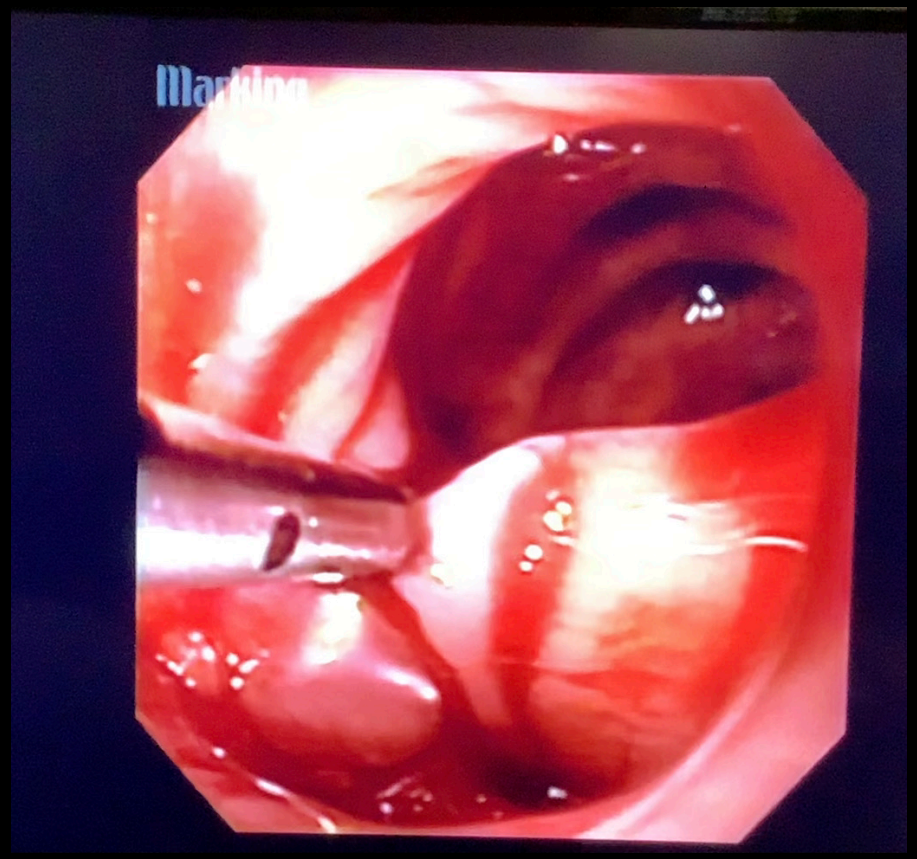
OPTIONS DURING COLONOSCOPY

Choice of Endoscopic Therapy

Diagnosis		Therapy
Diverticular bleeding	→	Clip, band, thermal, injection
Ischemic	→	Self-limited
Neoplasm	→	Clip, loop, thermal
AVM	→	Clip, APC, thermal, injection
Radiation proctopathy	→	APC, thermal
Hemorrhoids	→	Band

If therapy is not possible, mark location for IR/ surgery.

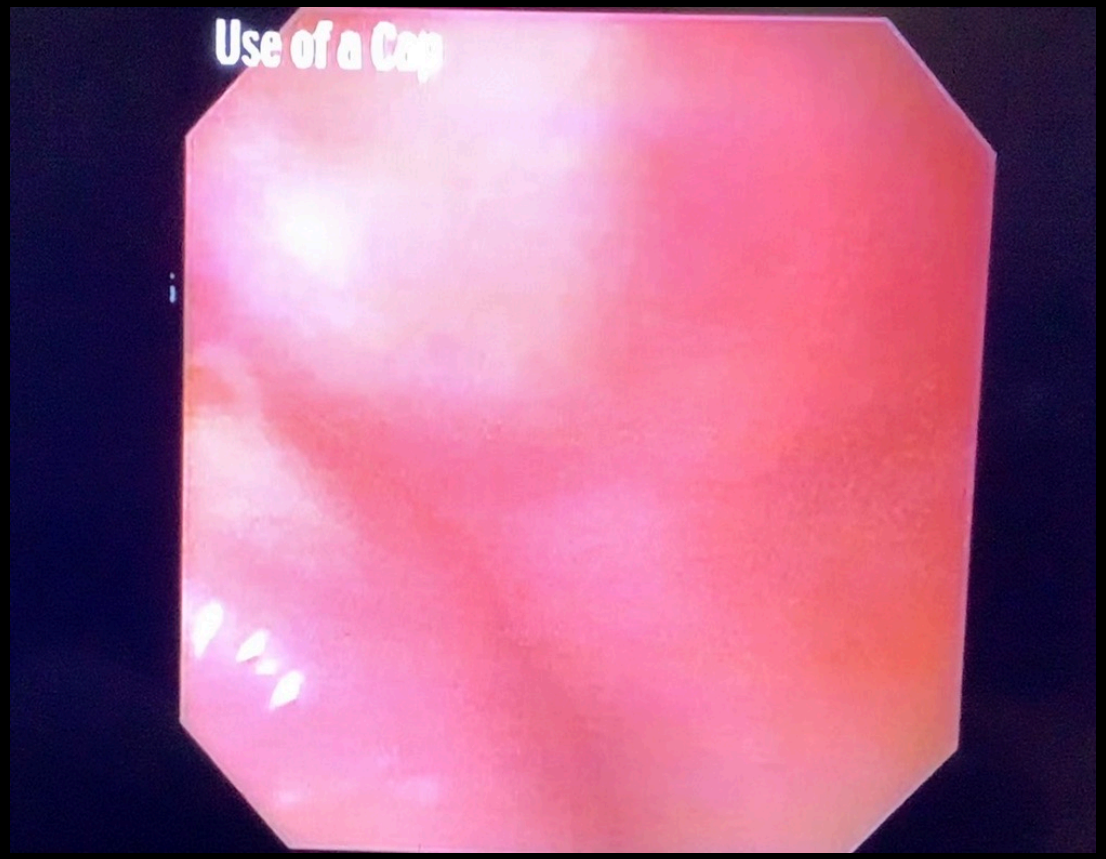
MARKING AREA AND CLIPPING



CLIPPING VESSEL IN DOME OF DIVERTICULA

CLEARING CLOT

TREATMENT OF DIVERTICULAR BLEED



CLIPPING VESSEL IN DIVERTICULUM

ROLE OF CT ANGIOGRAPHY

Increase role in LGIB; due to no bowel prep, diagnostic and therapeutic

Can perform embolization

Takes only minutes

Down side: radiation exposure, iv contrast.

A CTA performed within a 4 hour window of presentation increases the change of it being positive

IF CTA is positive: IR for transcatheter arteriography and emblization.

Colonoscopy can also be considered if CTA is positive