

Approach to Lower Gastrointestinal bleeding

Orderlysgebou
iSakhiwo seMundo
vo seMundo Education Building

Dr MY Sungay
Gastroenterology Fellow
Tygerberg Hospital
Supervisor: Dr W Simmonds

Photo by Stefan Els

Introduction



Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

Learning Objectives

- Epidemiology, risk factors, and key aetiologies
- Definition acute lower GI bleeding (LGIB)
- Risk stratification tools (Shock Index, Oakland Score)
- Outline a stepwise diagnostic and therapeutic algorithm based on hemodynamic stability
- Discuss endoscopic, radiologic, and surgical management strategies
- Integrate antithrombotic and transfusion management into the acute pathway

Introduction



Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

Epidemiology

- Lower gastrointestinal bleeding (LGIB) has an estimated incidence of 33–87/100 000
- 3% of emergency surgical referrals
- Acute LGIB accounting for approx. 20% of GI bleeding
- Demographics: Predominantly elderly with high comorbidity burden
- Spontaneous cessation: Most cases stop without intervention

K Oakland, BSG 2019
L Lisa, AGA 2016

Introduction



Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

Epidemiology

- **Mortality:**
 - Overall, in-hospital mortality: ~3.4% (UK data)
 - Rises to **18%** if bleeding develops during hospitalization
 - Rises to **20%** if transfusion requirements ≥ 4 units RBCs

K Oakland, BSG 2019
L Lisa, AGA 2016

Introduction



Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

Risk factors

- Smoking
- Alcohol consumption
- NSAIDS - Aspirin
- Colorectal cancers
- Antiplatelet Agents
- Anticoagulants – warfarin and DOACS

Kostantinos et al 2021 ESGE

Introduction



Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

Definitions

- Lower GI bleeding: bleeding distal to the ligament of Treitz
- Overt (90%): clinically visible bleeding (hematochezia or melena). Melena implies at least 100 mL of blood loss from a proximal source.
- Occult: not visible to the naked eye. Identified via a positive fecal occult blood test or iron deficiency, often incidentally on screening
- Obscure (5%): bleeding source undetected following bi directional endoscopic workup
 - Obscure-overt: bleeding is visible, but the source remains unclear after endoscopy
 - Obscure-occult: Positive fecal occult blood test, but endoscopy fails to identify a source

Introduction



Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

Causes

- Benign or Malignant
- Malignant
 - Colorectal cancer
 - Metastatic disease
 - Invasive Cancer
 - Anal Cancer

Introduction



Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

Benign Causes

Category	Causes
Diverticular	Diverticular disease- most common
Anorectal conditions	Hemorrhoids, anal fissure, solitary rectal ulcer, rectal prolapse, radiation proctopathy, trauma
Vascular lesions	Angioectasias, hereditary hemorrhagic telangiectasia (HHT), Dieulafoy's lesion, rectal varices
Colitis	Inflammatory bowel disease (ulcerative colitis, Crohn's disease), ischemic colitis, infectious colitis, undetermined colitis
Polyps	Adenomas, hamartomas
Iatrogenic	Post-endoscopic intervention (polypectomy, EMR, ESD), post-surgical
Other	Chronic anastomotic ulcer

Management



Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

Initial Management

- History: onset, colour, prior LGIB, comorbidities
- Examination: vitals (including postural changes), cardiopulmonary, abdominal, and digital rectal examination
- Labs: FBC, creatinine, electrolytes, coagulation profile, type & screen
- Medication review: NSAIDs- aspirin, anticoagulants, antiplatelets
- Risk scores can aid but must not replace clinical judgment

ESGE 2021; BSG 2019

Management



Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

Risk Stratification

- LGIB patients are heterogeneous: many are elderly with cardiovascular comorbidity
- Goal: identify low-risk patients suitable for early discharge vs high-risk patients needing admission, early intervention, or ICU
- Several scores exist: Oakland, NOBLADS, Strate
- No single score reliably predicts all adverse outcomes (mortality, rebleeding, transfusion, intervention)

ESGE 2021; BSG 2019

Risk stratification



Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

Oakland score

- First score derived and externally validated specifically for LGIB
- Variables: age, sex, prior LGIB admission, DRE findings, heart rate, systolic BP, haemoglobin
- Score ≤ 8 : 95% probability of safe discharge
- Recommendation: In self-limited bleed with no adverse features, Oakland ≤ 8 can guide discharge for outpatient investigation

ESGE 2021; BSG 2019

Oakland score



Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

Table 1 Variables comprising the Oakland score

Predictor	Score component value
Age	
<40	0
40–69	1
≥70	2
Gender	
Female	0
Male	1
Previous LGIB admission	
No	0
Yes	1
DRE findings	
No blood	0
Blood	1

Reference

Oakland score

Previous LGIB admission

Yes

DRE findings

No blood

0

Blood

1

Heart rate

<70

0

70–89

1

90–109

2

≥110

3

Systolic blood pressure

<90

5

90–119

4

120–129

3

130–159

2

≥160

0

Haemoglobin (g/L)

<70

22

70–89

17

Reference



Oakland score

70–89

90–109

≥110

Systolic blood pressure

<90

5

90–119

4

120–129

3

130–159

2

≥160

0

Haemoglobin (g/L)

<70

22

70–89

17

90–109

13

110–129

8

130–159

4

≥160

0

Patients scoring ≤8, with no other indications for hospital admission are suitable for immediate discharge from Accident and Emergency and outpatient investigation.
DRE, digital rectal examination; LGIB, lower gastrointestinal bleeding.

Reference



Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

The Unstable Patient – Shock Index

- Shock Index (SI) = Heart Rate / Systolic BP
- SI >1 suggests active bleeding and predicts need for hospital-based intervention
- Also correlates with extravasation on angiography
- **Caution:** interpret carefully in patients on β -blockers
- If SI >1 or refractory hypotension → classify as **unstable LGIB**

ESGE 2021; BSG 2019; ACG 2016

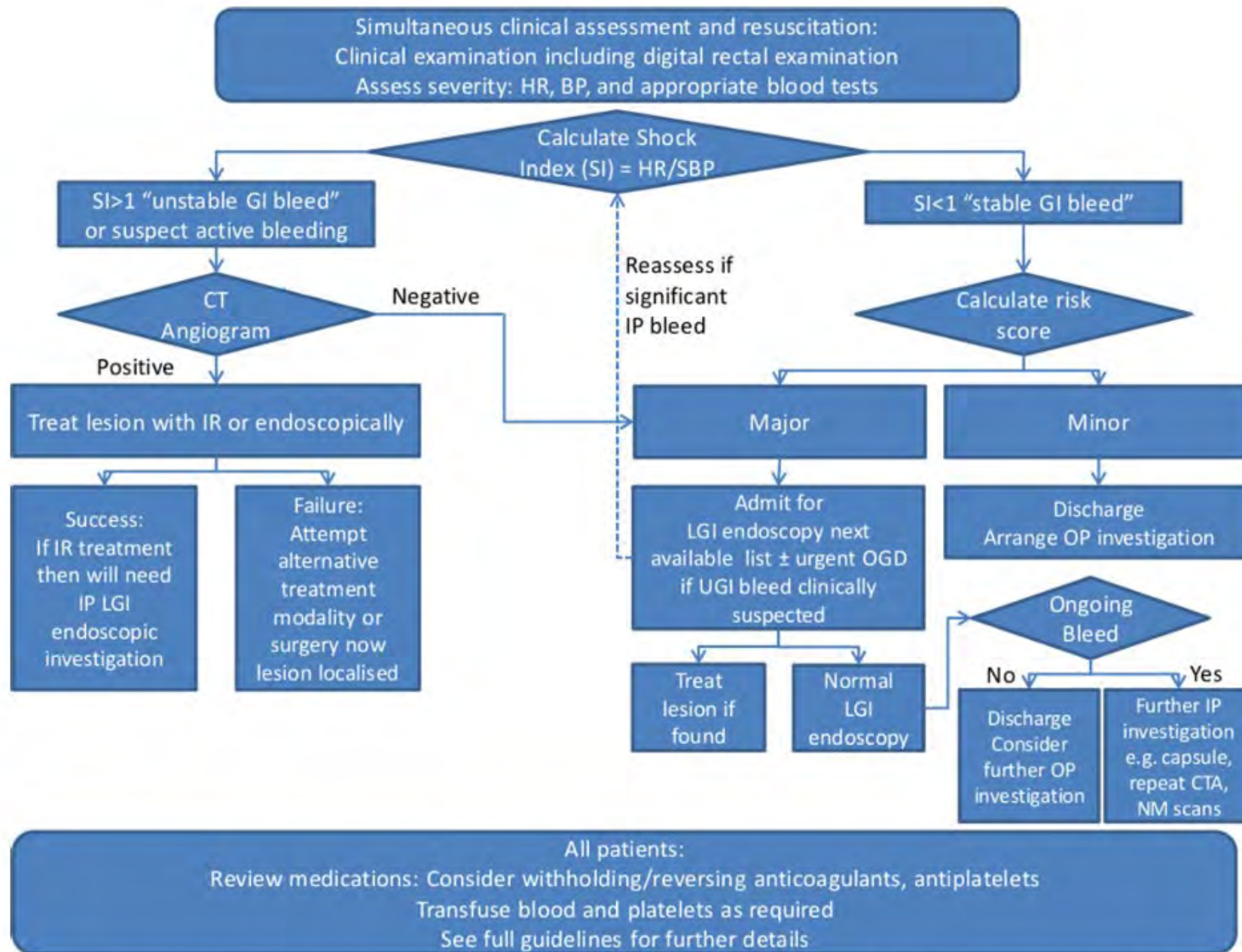
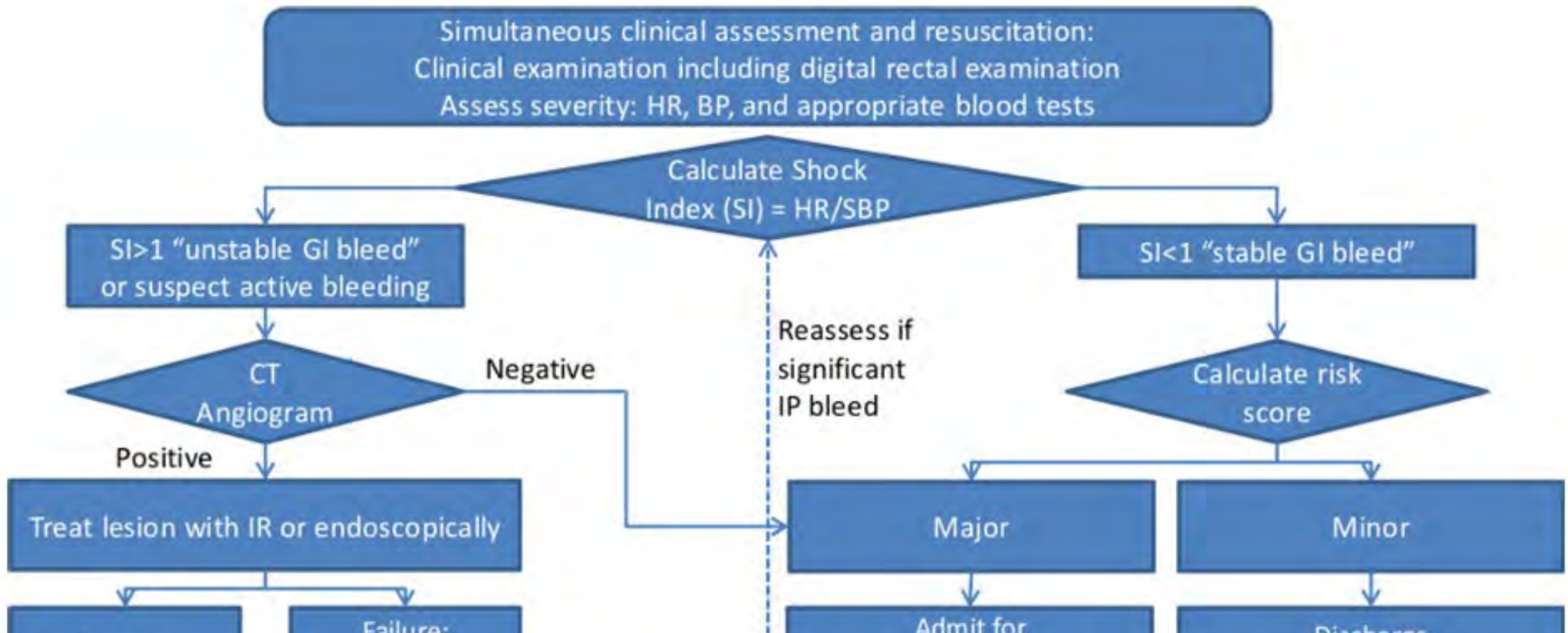


Figure 1 Management algorithm for patients presenting with acute lower gastrointestinal bleeding. Shock index (SI) is calculated by dividing the heart rate (HR) by the systolic blood pressure (SBP). IP, inpatient; IR, interventional radiology; OGD, oesophagogastroduodenoscopy; OP, outpatient; UGI, upper gastrointestinal.

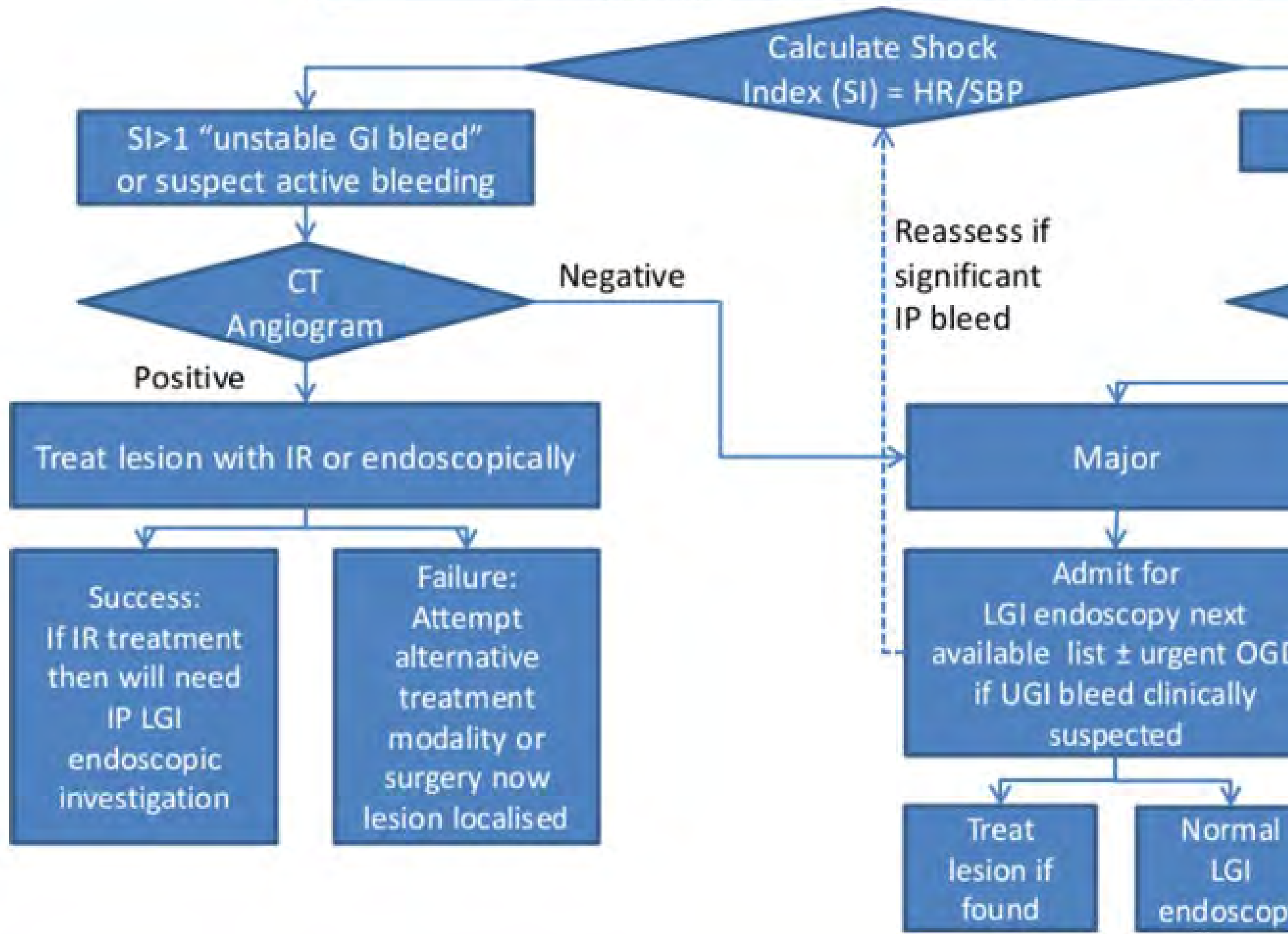
Introduction

Management of Acute lower GI Bleed



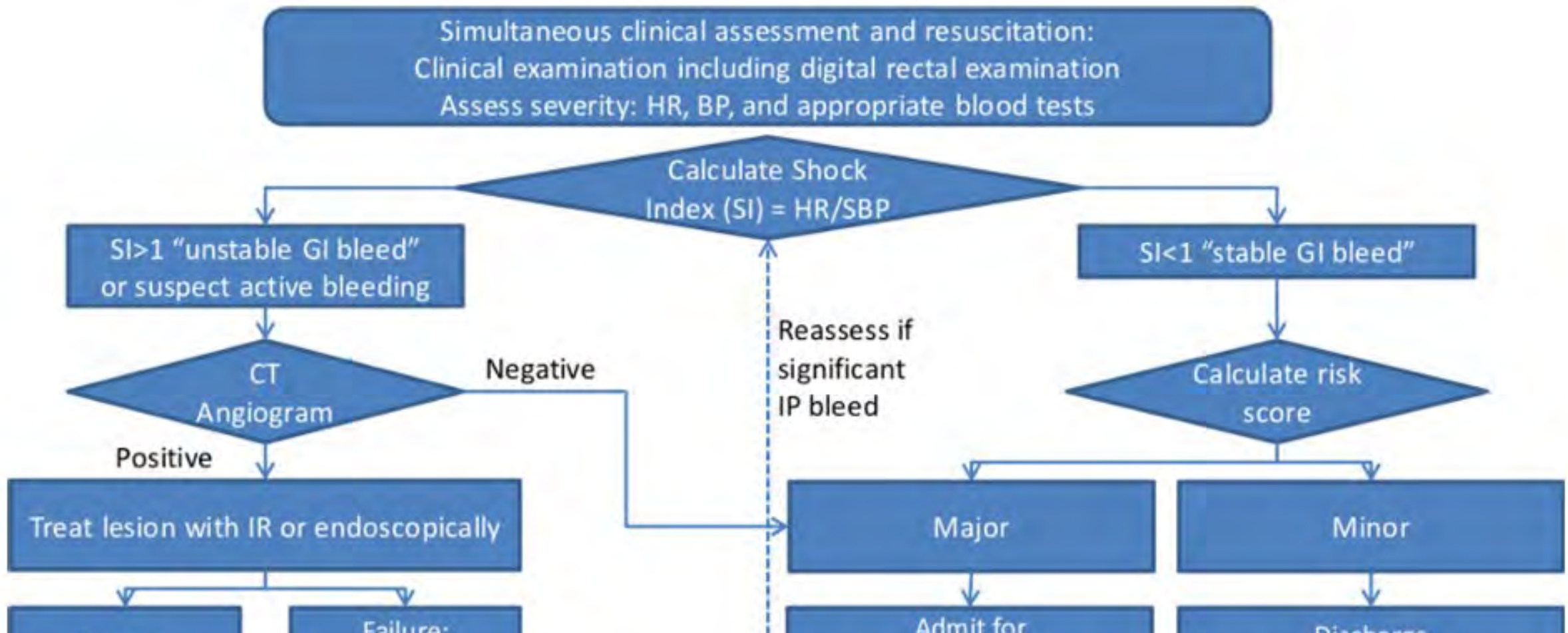
Introdu

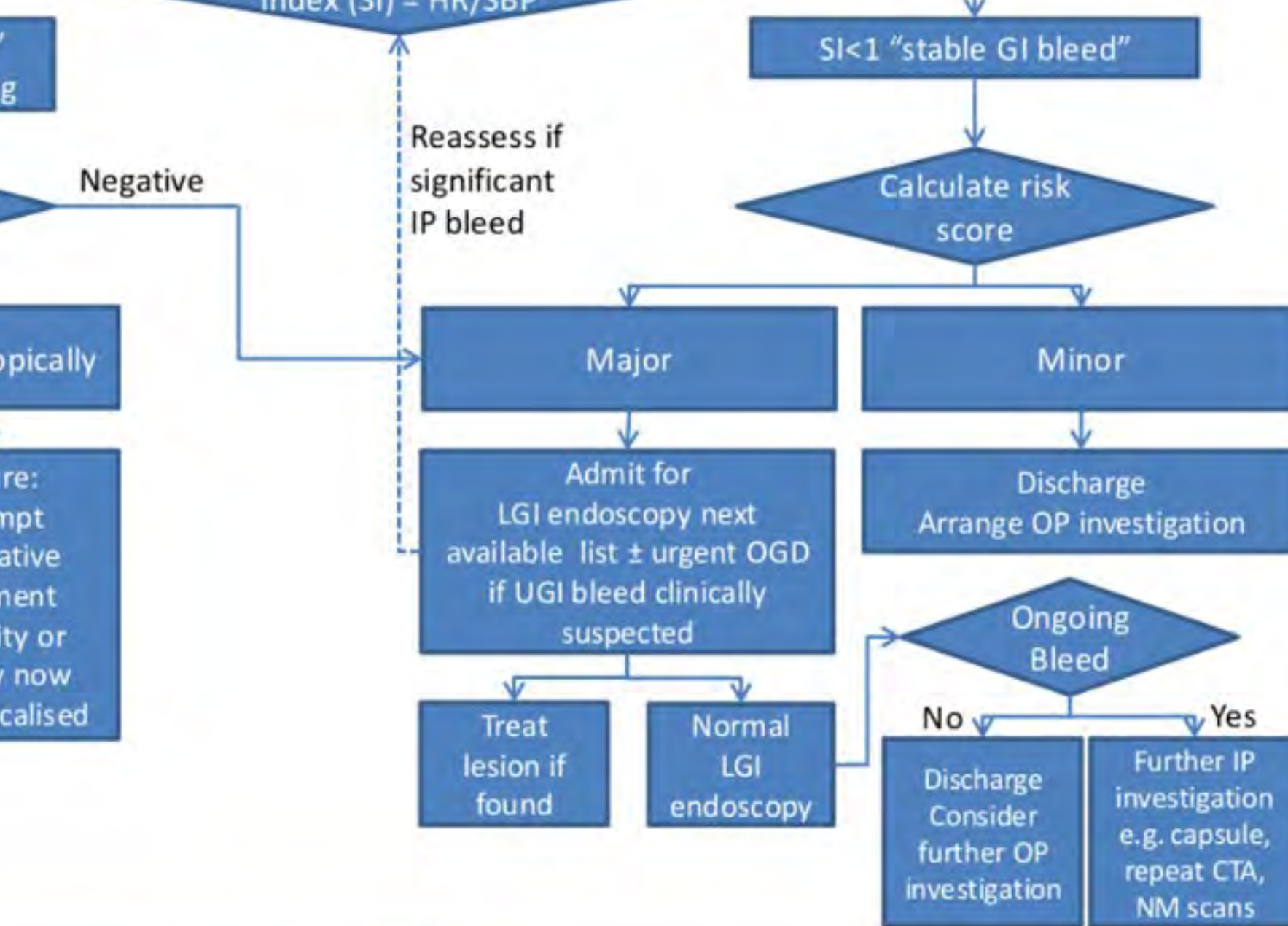
Managem



Introduction

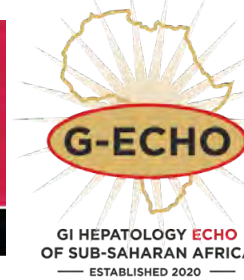
Management of Acute lower GI Bleed





All patients:
Consider withholding/reversing anticoagulants, antiplatelets
Transfuse blood and platelets as required

Management



Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

Excluding an Upper GI Source

- 8–15% of patients with presumed LGIB have an upper GI bleed
- Red flags: hemodynamic instability + hematochezia, history of PUD/portal hypertension, antiplatelet use, elevated BUN/Cr ratio >30
- BSG/ESGE: If no source on CTA, perform upper endoscopy immediately in unstable patients
- If patient stabilizes, gastroscopy may be the first investigation

ESGE 2021; BSG 2019; ACG 2016

Colonoscopy – First-Line Diagnostic Modality?

- Yes, for the majority of hemodynamically stable patients
- Advantages: diagnosis + therapy + biopsy + tattooing in one session
- Diagnostic yield: 42–90% Therapeutic yield: 10–63%
- ESGE: Colonoscopy should be performed sometime during the hospital stay for major LGIB
- ACG: Initial diagnostic procedure for nearly all patients

ESGE 2021, ACG 20216

Timing of Colonoscopy – The Controversy

Guideline	Recommendation
ACG 2016	Within 24 h for high-risk/ongoing bleed; next available for others
BSG 2019	On the next available list (not necessarily <24 h)
ESGE 2021	Sometime during hospital stay; no high-quality evidence that early (<24 h) colonoscopy improves mortality or rebleeding

- RCTs and meta-analyses show no difference in mortality, rebleeding, or surgery between early (<24 h) and elective colonoscopy
- Observational data suggest shorter LOS with early colonoscopy, but this may reflect selection bias

Bowel Preparation for Urgent Colonoscopy

- Adequate prep is essential for visualization and safety
- 4–6 L of PEG-based solution over 3–4 hours until rectal effluent is clear
- Nasogastric tube + antiemetic can facilitate rapid prep in patient's intolerant of oral intake (if low aspiration risk)
- CO₂ insufflation recommended
- Unprepped colonoscopy/sigmoidoscopy is NOT recommended :
 - low cecal intubation rates
 - poor visualization
 - higher perforation risk

ESGE 2021; BSG 2019; ACG 2016

Endoscopic Hemostasis - General Principles

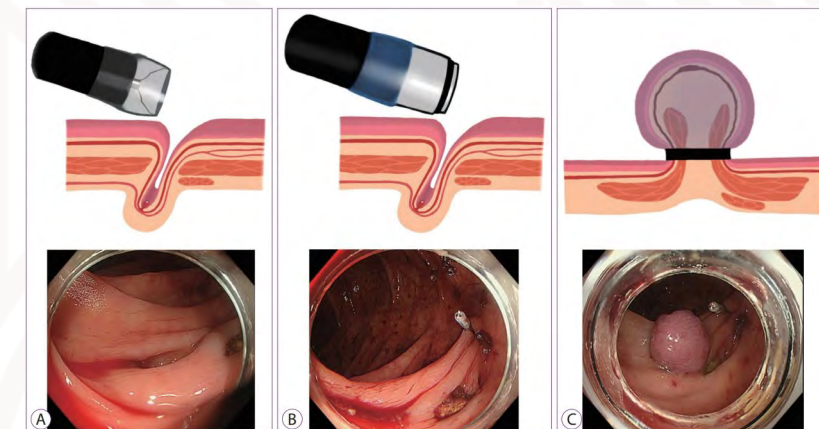
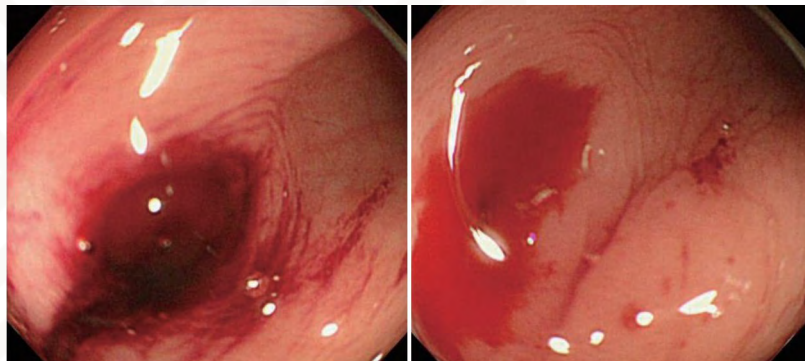
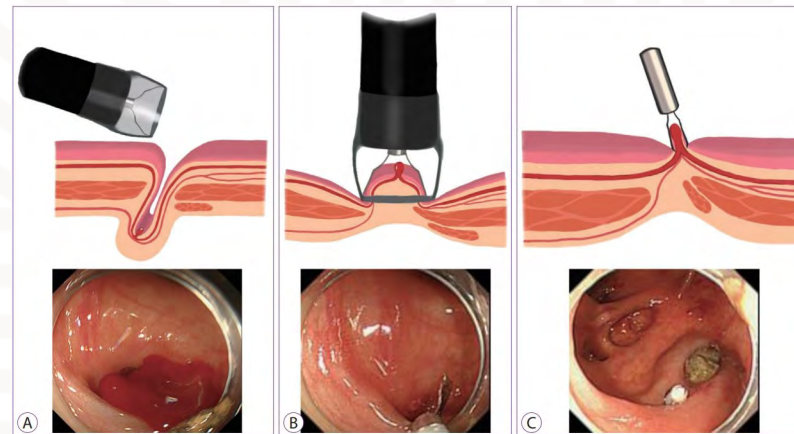
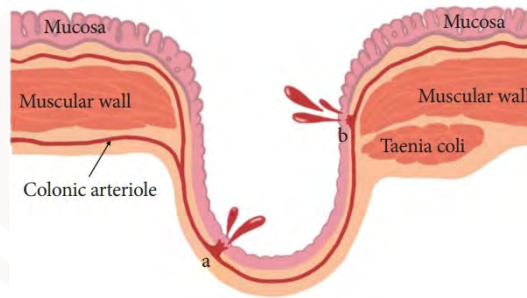
- Treat high-risk stigmata only: active bleeding (spurting/oozing), non-bleeding visible vessel, adherent clot
- Do not treat clean-based ulcers or flat pigmented spots
- Adrenaline injection (1:10,000 dilution) can be used for initial control but must be combined with a second modality (mechanical or thermal) for definitive hemostasis
- Tattoo the lesion (or leave a clip) to facilitate re-localization if rebleeding occurs

Diverticular Bleeding - Endoscopic Therapy

- Mechanical therapy preferred: through-the-scope (TTS) clips or endoscopic band ligation (EBL)
- TTS clips: widely available, rapid, no scope removal needed; safer than thermal in thin-walled colon
- EBL: lower long-term rebleeding rates in Asian cohorts; however, risk of delayed perforation (especially right colon)
- Avoid adrenaline monotherapy
- Haemostatic powders (e.g., Hemospray, EndoClot) may be rescue options

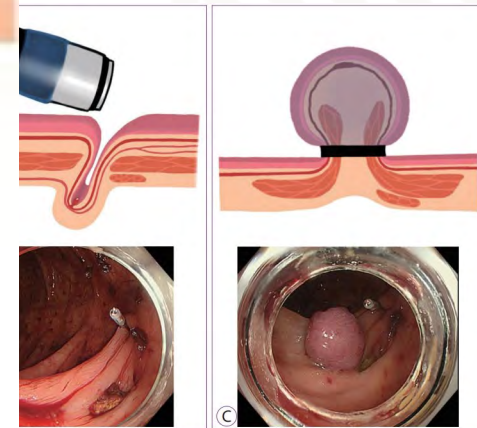
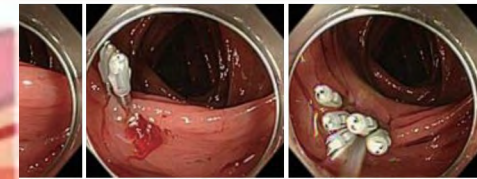
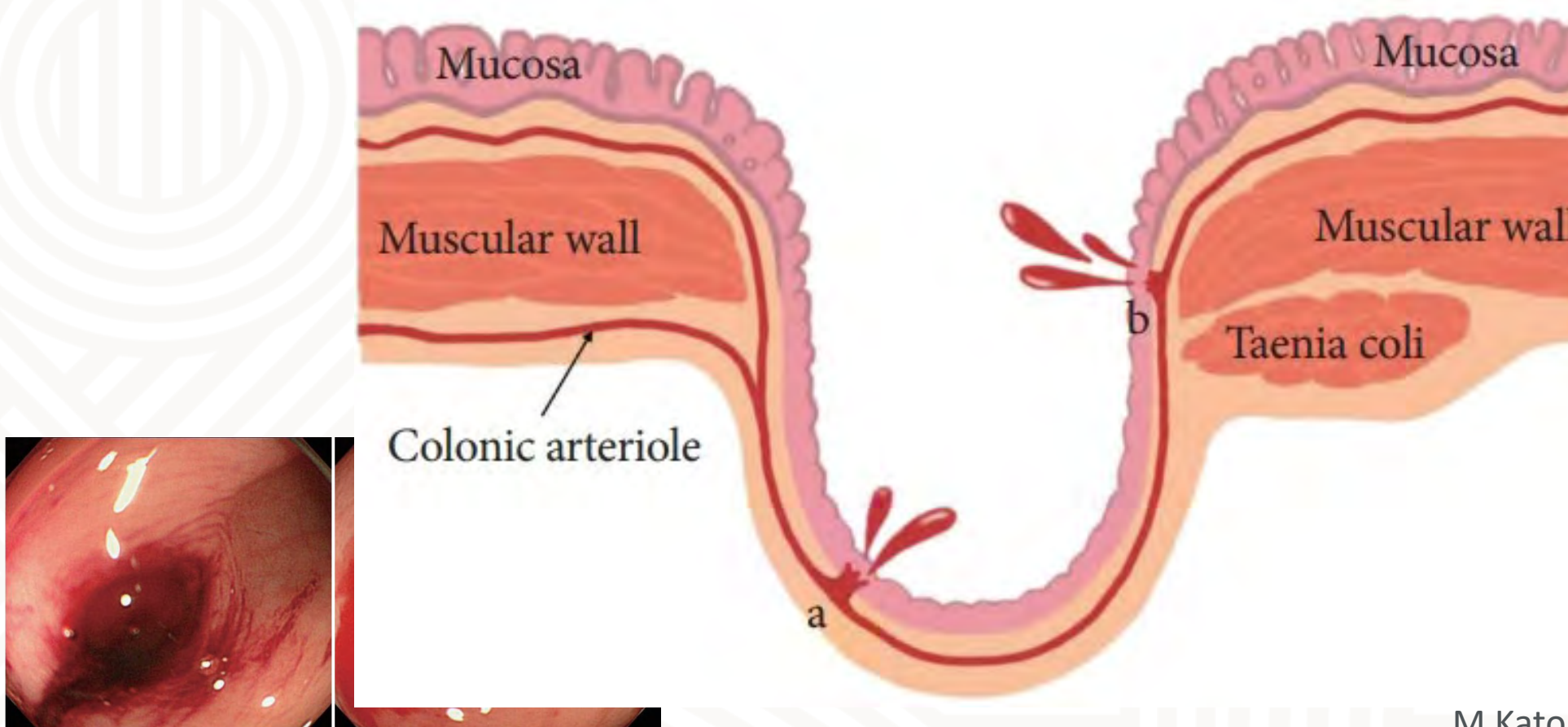
ESGE 2021; BSG 2019; ACG 2016

Diverticular Bleeding - Endoscopic Therapy



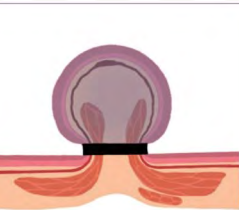
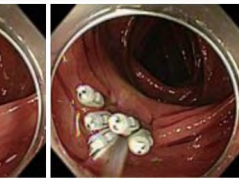
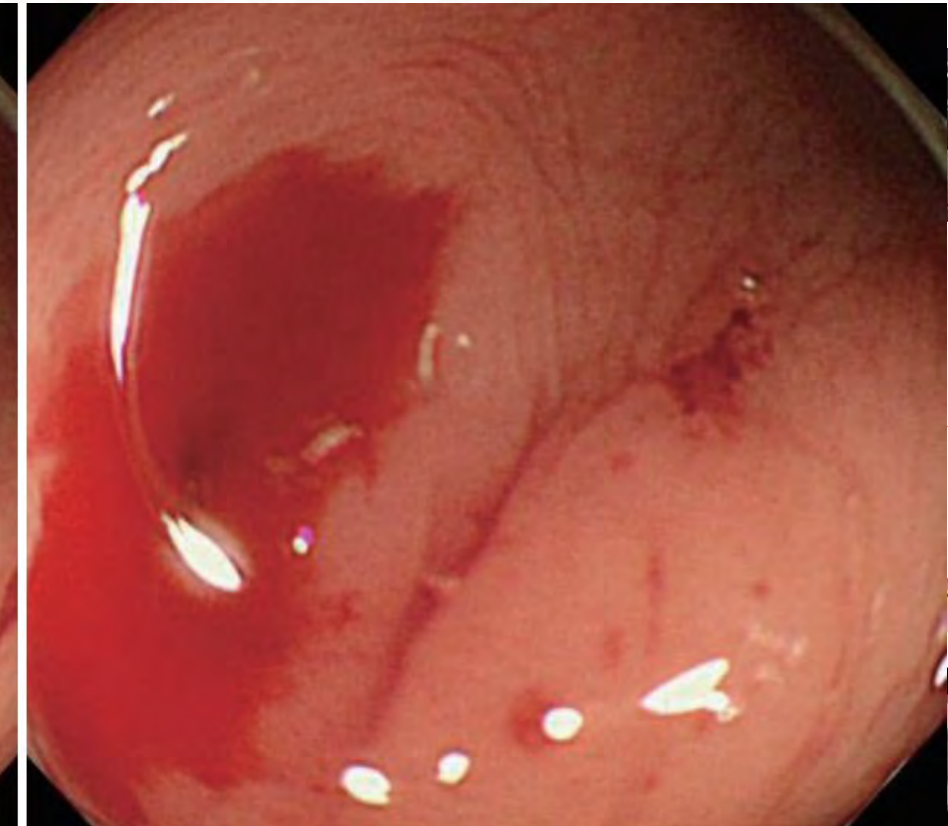
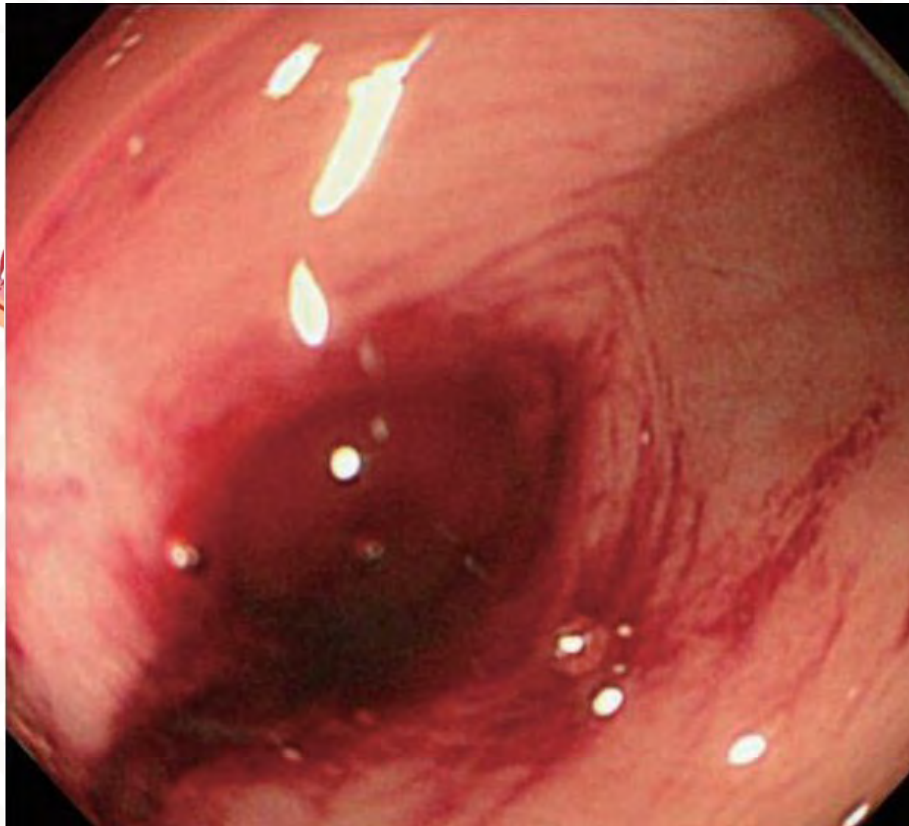
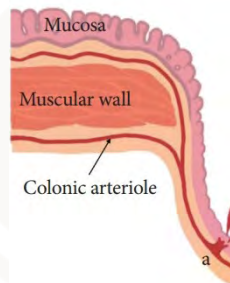
M Kato. Clinical Endoscopy 2019

Diverticular Bleeding - Endoscopic Therapy



M Kato. Clinical Endoscopy 2019

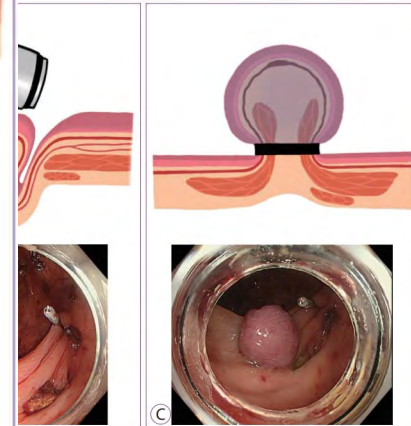
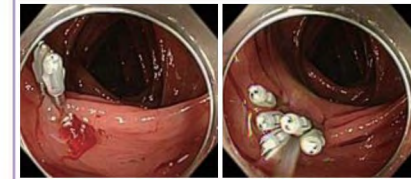
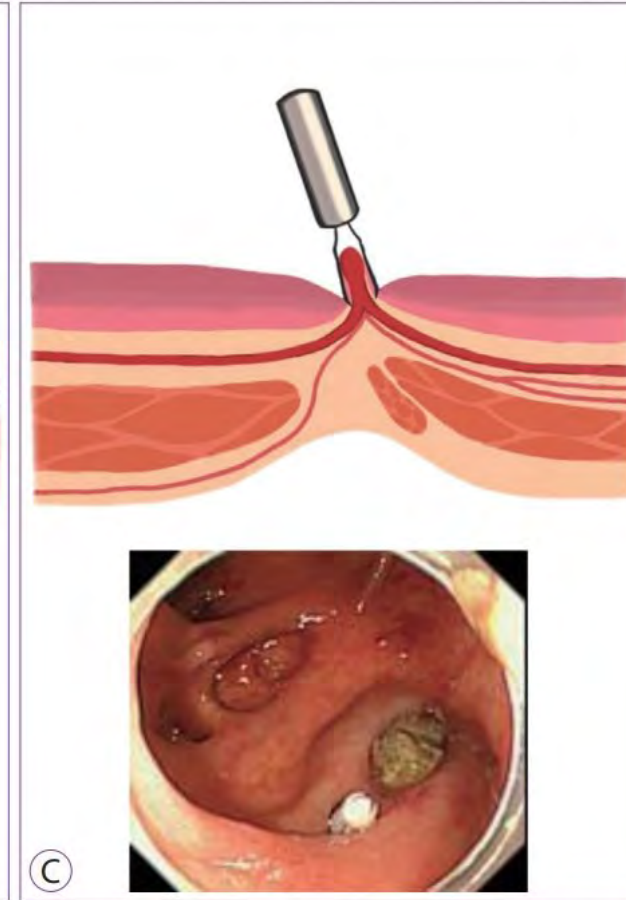
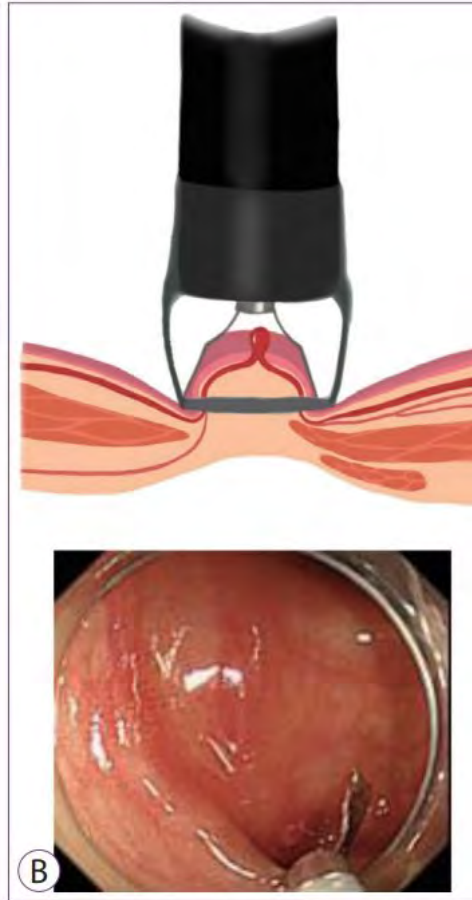
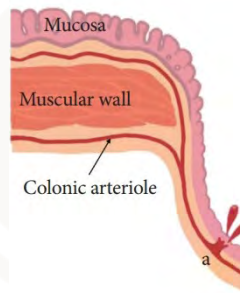
Diverticular Bleeding - Endoscopic Therapy



(A) (B) (C)

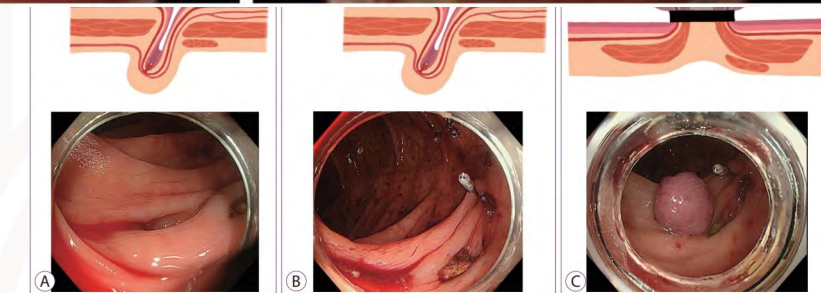
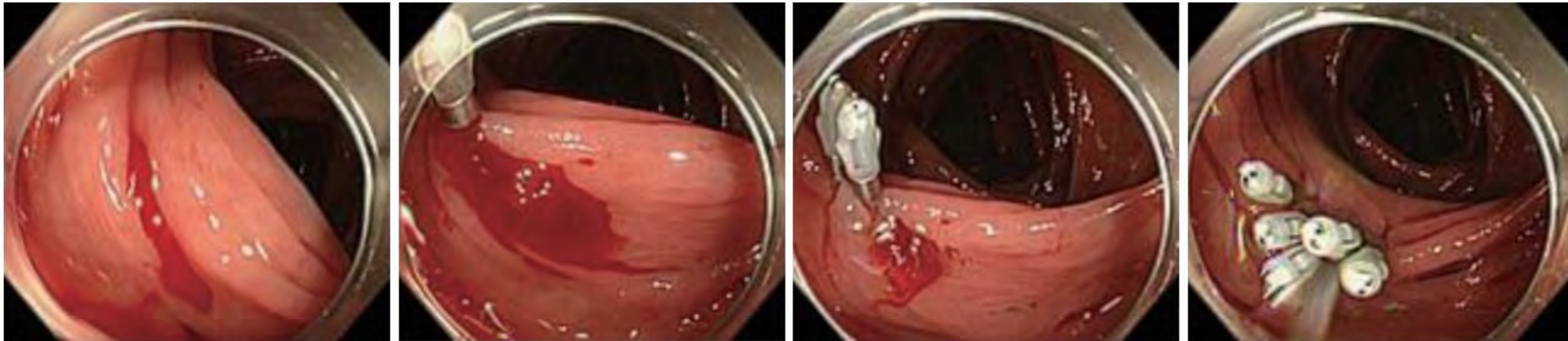
M Kato. Clinical Endoscopy 2019

Diverticular Bleeding - Endoscopic Therapy



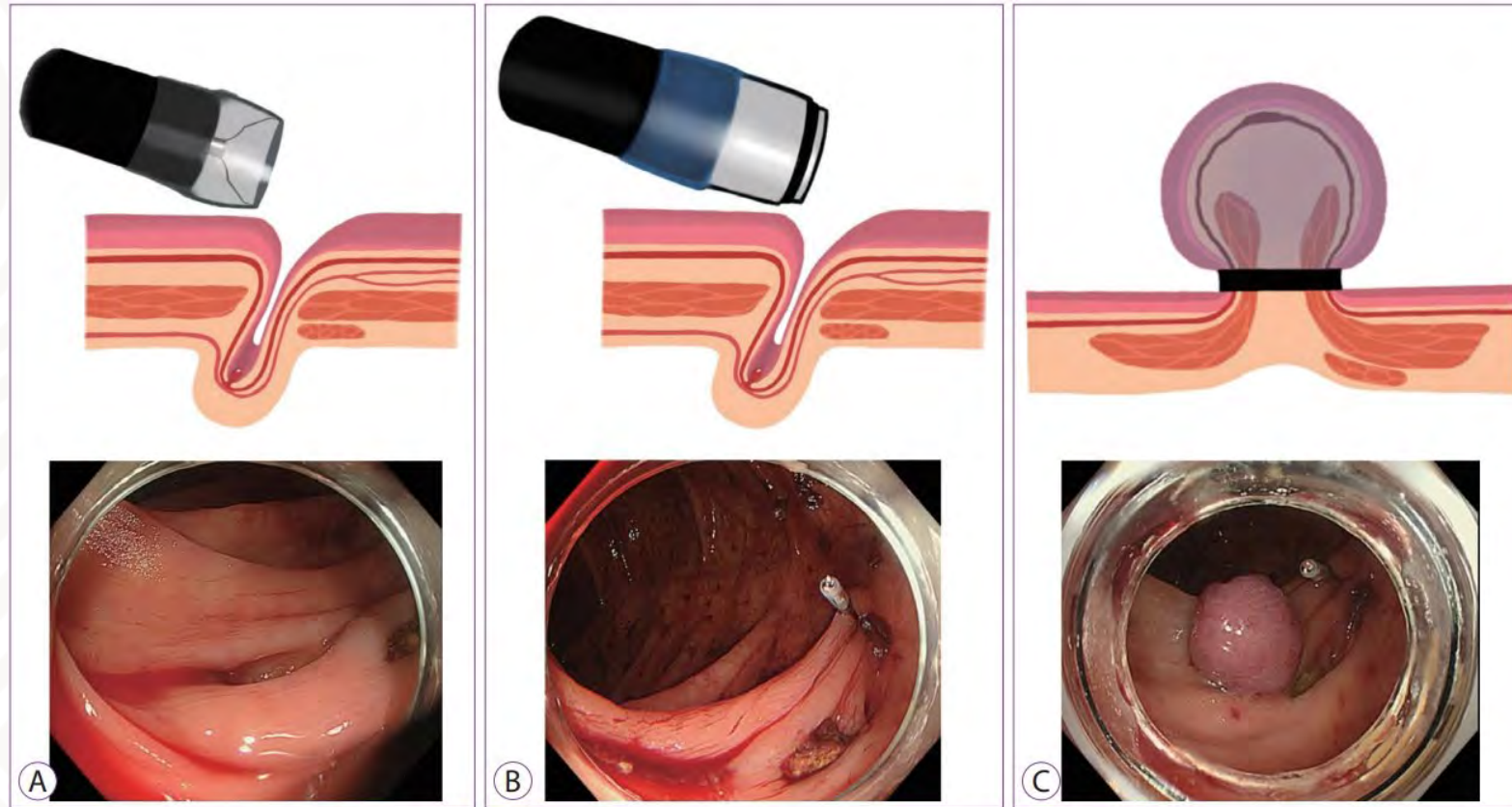
M Kato. Clinical Endoscopy 2019

Diverticular Bleeding - Endoscopic Therapy



M Kato. Clinical Endoscopy 2019

Diverticular Bleeding - Endoscopic Therapy



M Kato. Clinical Endoscopy 2019

Angioectasia

- Degenerative, dilated submucosal vessels that are fragile and thin-walled.
- Usually present with anemia, and bleeding stops spontaneously. 50% rebleed in 5 years.
- Source of major bleed
- Location commonly found in Jejunum > Colon (cecum and right side) > stomach > rest of GI
- Associated with CLD, CKD, Elderly, Heyde's syndrome

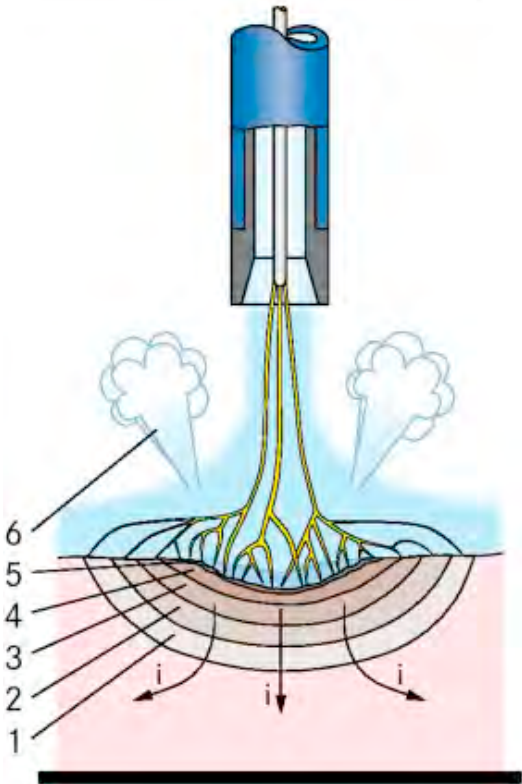
Angioectasia

- Argon Plasma Coagulation (APC) is treatment of choice
- Settings: 20–60 W, gas flow 1–2.5 L/min; use lower power in right colon
- Consider submucosal saline lift for large right-sided lesions to reduce perforation risk

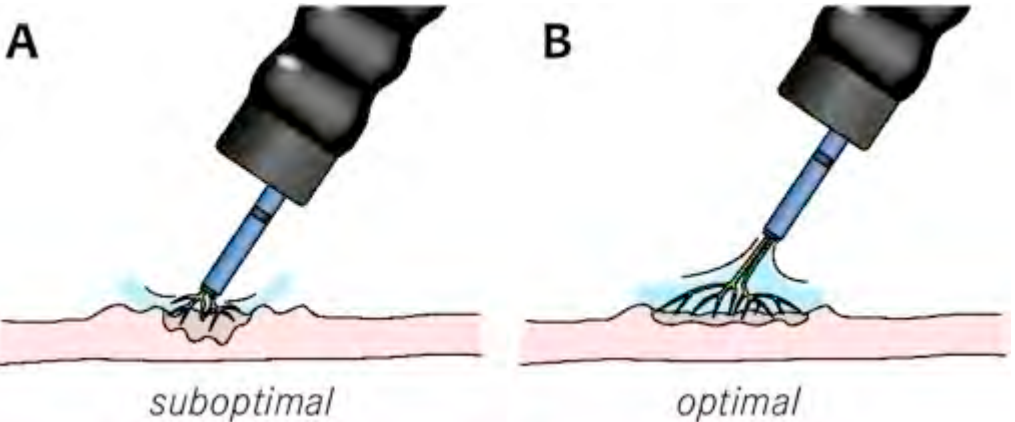
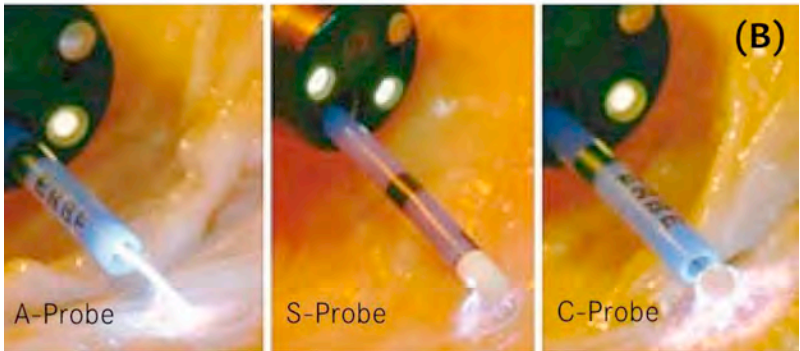
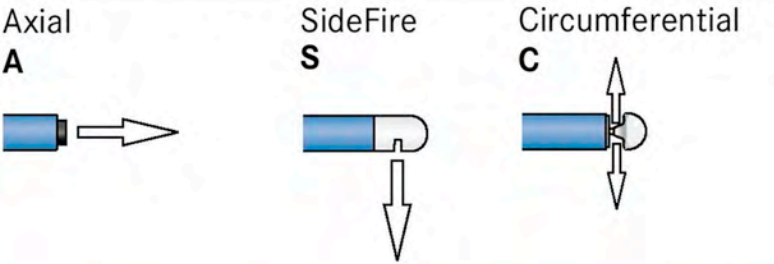


APC- Argon plasma coagulation

	approx. from
1. Hyperthermia	40° C
2. Devitalization	42° C
3. Coagulation	60° C
4. Desiccation	100° C
5. Carbonization	200° C
6. Vaporization	500° C



Probe Opening (A)



E Mendonca et al 2016

Colonoscopy in LGIB: practical pointers

- Use large working channel
- Water jet irrigation
- Use of distal transparent cap attachment
- Always attempt to intubate TI
- Haemostatic equipment on hand
- Low flow rate APC 0.8-1.0l/min power of 20-40W

Interventional Radiology

- Indication: Hemodynamically unstable patients with active bleeding demonstrated on CTA who cannot tolerate bowel prep/colonoscopy
- Goal: embolization within 60 minutes of CTA positivity to maximize yield
- Super-selective embolization achieves immediate hemostasis in 40–100%
- Rebleeding rate: 0–50%
- Bowel ischemia: 1–4% in modern series (historically up to one-third)

ESGE 2021; BSG 2019; ACG 2016

Red Cell scintigraphy

- Scintigraphy is NOT recommended as first-line (logistical constraints, poor localization)
- It can detect LGIB at a rate as low as 0.1mL/ml
- Potentially useful for intermittent or obscure-overt bleeding
- RBC scintigraphy may be more sensitive for intermittent bleeding
- CTA is more gainful and more accurate for anatomical localization

Surgery – The Last Resort

- No patient should proceed to emergency laparotomy unless every effort has been made to localize the bleed endoscopically or radiologically
- Indications: failure of endoscopic and IR therapy, or pathology not amenable to those modalities (e.g., aorto-enteric fistula, bleeding Meckel's)
- Mortality after emergency subtotal colectomy for massive LGIB: up to 27%
- If surgery is unavoidable, on-table endoscopy after induction is advisable
- Ideally performed by experienced surgeons and endoscopist with GI bleeding expertise

ESGE 2021; BSG 2019; ACG 2016

Blood Transfusion Strategy

- Restrictive strategy is preferred in hemodynamically stable patients without cardiovascular disease
 - Hb trigger ≤ 7 g/dL (70 g/L)
 - Post-transfusion target: Hb 7–9 g/dL (70–90 g/L)
- Rationale: large UGIB trials show improved survival and less rebleeding with restrictive transfusion; LGIB data are consistent
- In the UK national audit, 80% of RBC transfusions in LGIB were potentially avoidable

ESGE 2021; BSG 2019; ACG 2016

Blood Transfusion Strategy in cardiovascular disease

- Patients with acute or chronic cardiovascular disease tolerate anaemia poorly
- Use a more liberal threshold:
 - Hb trigger ≤ 8 g/dL (80 g/L)
 - Post-transfusion target: ≥ 10 g/dL (100 g/L)
- Elderly patients may also benefit from a higher threshold
- Balance the risk of transfusion (volume overload, TRALI) vs. myocardial ischemia

ESGE 2021; BSG 2019

Aspirin – Primary vs Secondary Prevention

- Primary prevention:
 - Stop aspirin at presentation; consider permanent discontinuation after discussion with patient
 - Little net cardiovascular benefit in most older adults (0.07% absolute risk reduction/year)
- Secondary prevention:
 - Do NOT routinely stop aspirin
 - If interrupted, restart within 5 days (or sooner if hemostasis achieved)
 - Data from peptic ulcer bleeding: continuation reduces all-cause mortality despite slightly higher rebleeding risk
 - ~50% of circulating platelets are renewed by Day 5

ESGE 2021; BSG 2019; ACG 2016

Dual Antiplatelet Therapy (DAPT)

- Do NOT routinely discontinue DAPT before cardiology consultation
- Continue aspirin; interrupt the P2Y12 inhibitor only if bleeding is severe/persistent
- Restart P2Y12 within 5 days if still indicated
- Never discontinue DAPT in patients with:
 - Acute coronary syndrome within past 90 days
 - Coronary stenting within past 30 days
- DAPT is associated with 5-fold increased risk of in-hospital rebleeding, but stent thrombosis can be fatal

ESGE 2021; BSG 2019; ACG 2016

Managing Warfarin in LGIB

- Minor bleed (Oakland ≤ 8): may continue warfarin or interrupt briefly
- Major bleed: withhold warfarin at presentation
- Unstable / life-threatening: reverse with IV vitamin K + 4-factor PCC (or FFP if PCC unavailable)
- Restart: as soon as possible from Day 7 after interruption in low-risk patients
- High thrombotic risk (mechanical mitral valve, AF + prosthetic valve, <3 months post-VTE): consider LMWH bridging at 48–72 hours after haemorrhage

ESGE 2021; BSG 2019; ACG 2016

Managing DOACs in LGIB

- Withhold at presentation in major LGIB (short half-life allows rapid dissipation of effect)
- Life-threatening / ongoing bleed:
 - Dabigatran → Idarucizumab
 - Anti-Xa agents (apixaban, rivaroxaban) → Andexanet alfa or 4-factor PCC (consult haematology)
- Vitamin K, FFP, and protamine are ineffective
- Restart: as soon as possible from Day 7 after haemorrhage cessation
- If high rebleeding risk, consider switching to warfarin (easier to reverse)

Reference

Preventing Recurrent LGIB

- Avoid NSAIDs in patients with history of diverticular bleeding or angioectasia
- Avoid aspirin for primary prevention in most patients with LGIB
- For diverticular disease: address modifiable risk factors (obesity, hypertension, hyperlipidemia, smoking, physical inactivity)
- Tranexamic acid is NOT recommended in LGIB (HALT-IT trial showed increased thromboembolic events without mortality benefit)
- Ensure outpatient colonoscopy within 2 weeks for high-risk patients (age >50 with unexplained rectal bleeding)

ESGE 2021; BSG 2019; ACG 2016

Take-Home Messages

- Risk stratify early: Oakland ≤ 8 identifies low-risk patients suitable for discharge
- Resuscitate before you investigate: restrictive transfusion ($\text{Hb} \leq 7 \text{ g/dL}$) unless CVD
- CTA first in unstable patients: localize before endoscopy or IR
- Colonoscopy is first-line for stable patients: timing remains controversial; next available list is reasonable
- Mechanical therapy (clips/EBL) for diverticular bleeding; APC for angioectasia
- Do not stop aspirin for secondary prevention; restart P2Y12 within 5 days if interrupted
- Never operate without first attempting to localize the bleed



Stellenbosch
UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

forward together
sonke siya phambili
saam vorentoe

Thank you
Enkosi
Dankie



Photo by Stefan Els