Antithrombotic Management Prior to Cardiac Interventions

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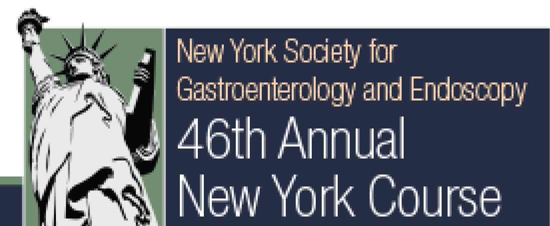

Outline

- Definitions
- Current Guidelines
- Summary

Definitions

- Anticoagulants
  - Block clotting cascade (usually factors II, VII, IX, X)

- Anti-platelets
  - Decrease platelet aggregation

Anti-Thrombotic Agent Categories

- Anticoagulants
  - Heparin derivatives
  - Vitamin K antagonists
  - Direct thrombin inhibitors
  - Direct factor Xa inhibitors

- Anti-platelets
  - P2Y12-R inhibitors
  - Protease-activated receptor-1 inhibitors
  - Glycoprotein 2b/3a receptor inhibitors
  - NSAIDs and ASA

Main Questions – Cardiac Standpoint

- Is this a cardiac procedure wherein coagulation risk is too great to risk stopping the anti-thrombotic?
- Is this a surgical or percutaneous intervention?
- What is the likely outcome with NOT doing the cardiac procedure?

Bleeding Risk for Cardiac Procedures

Low Bleeding Risk Procedure (0-2% Major Bleed Risk in 2dd)
Central venous catheter removal
Non-coronary angiography
Pacemaker and defibrillator insertion and testing

High Bleeding Risk Procedure (2-4% Major Bleed Risk in 2dd)
Any major operation >45 minutes
AAA repair
CABG
Heart valve replacement
Vascular surgeries
Coronary angiography

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CHA_2DS_2VASc Score

CHA_2DS_2-VASc score	Patients (n = 73,538)	Stroke and thromboembolism event rate at 1-year follow-up (%)
0	6369	0.78
1	8203	2.01
2	12,771	3.71
3	17,371	5.92
4	13,887	9.27
5	8942	15.26
6	4244	19.74
7	1420	21.50
8	285	22.38
9	46	23.64

CHA_2DS_2-VASc: Congestive heart failure, Hypertension, Age (≥75; doubled), Diabetes, Stroke (doubled), Vascular disease, Age (65 to 74), Sex.

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HAS-BLED Score

Letter	Clinical characteristic*	Points
H	Hypertension (ie, uncontrolled blood pressure)	1
A	Abnormal renal and liver function (1 point each)	1 or 2
S	Stroke	1
B	Bleeding tendency or predisposition	1
L	Labile INRs (for patients taking warfarin)	1
E	Elderly (age greater than 65 years)	1
D	Drugs (concomitant aspirin or NSAIDs) or excess alcohol use (1 point each)	1 or 2
		Maximum 9 points
HAS-BLED score (total points)	**Bleeds per 100 patient-years¶**	
0	1.13	
1	1.02	
2	1.88	
3	3.74	
4	8.70	
5 to 9	Insufficient data	

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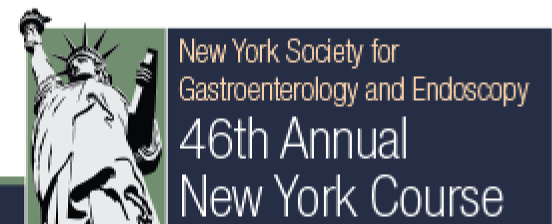

Main Questions – GI Interventions

- Is this an elective or emergent procedure?
- What is the likely outcome if the GI procedure is NOT done?

Prior Guidelines – ASGE (2016)

- Age is most important risk factor for DOAC-related GI bleeding (>75 y.o.)

- Can stop anti-thrombotics for CHA2DS2VASc 0-1 points

- Low bleeding risk: EGD and colonoscopy w/w/o bx, push or balloon-assisted enteroscopy, APC, ERCP w/o sphincterotomy, ERCP w/biliary stent, EUS

- High risk: Polypectomy 10+ mm, sphincterotomy, dilation, PEG, EVL, hot snare

Caveats

- Most analyses of POST-procedural bleeding risks are from patients NOT on complex anti-thrombotic regimens

- Thorough analyses of low-risk vs. high-risk endoscopic procedures and need for anti-coagulant reversal need updating

ACG 2022 Guidelines

American College of Gastroenterology-Canadian Association of Gastroenterology Clinical Practice Guideline: Management of Anticoagulants and Antiplatelets During Acute Gastrointestinal Bleeding and the Periendoscopic Period

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New York Society for Gastroenterology and Endoscopy
46th Annual New York Course

ACG 2022 Guidelines – Principle #1

2022 Management Acute Anticoagulant GIB

Initial assessment

- Patient with acute GIB bleeding on an anticoagulant

Severity of bleeding

- Life-threatening bleed
- No life-threatening bleed

Management based on the type of anticoagulant

Life-threatening bleed		No life-threatening bleed	
Patient on VKA; consider PCC	Patient on a DOAC: consider DOAC-specific direct reversal agent or PCC	Patient on VKA: suggest against FFP or Vit K; cannot recommend for or against PCC	Patient on a DOAC: suggest against drug-specific reversal agent or PCC

ACG 2022 Guidelines – Principle #1

- “Life-Threatening” = Hemorrhagic shock
- Hgb drops by >5g/dL
- Pressor requirement

Guideline Changes

- ASGE (2016) advised 4-factor prothrombin complex concentrate or else IV Vitamin K

- No FFP (hypervolemia risk) or recombinant factor VIIa (costly)

- ACG (2022) advised PCC, but NEITHER Vitamin K nor FFP

Reversal of Anti-Vitamin K Agents (VKA)

- IV Vitamin K does NOT achieve rapid hemostasis
- Risk of anaphylaxis with IV Vitamin K
- Impaired response to warfarin lasting up to a week after
- 1% VTE risk if warfarin resumed w/in 4-7dd of drug discontinuation

Reversal of Direct Oral Anticoagulants (DOAC)

- No routine use of DOAC reversal agents advised
- Andexanet-alfa is costly and has higher VTE risk → consider if rivaroxaban or apixaban taken w/in 24h
- Idarucizumab can be considered for dabigatran users

ACG 2022 Guidelines – Principle #1

Initial assessment		Patient with acute GI bleeding* on antiplatelet agents for secondary cardiovascular prevention**
Management guidance	Suggest against platelet transfusion unless thrombocytopenia***	If patient on ASA for secondary cardiovascular prevention, suggest against holding ASA
Additional management guidance		If ASA was stopped, suggest restarting on the day hemostasis is endoscopically confirmed

Reversal of Anti-Platelet Agents

- Routine platelet transfusion NOT advised (increased mortality risk from GIB, CABG, others)

- Do NOT interrupt ASA being used for secondary prevention

ACG 2022 Guidelines – Principle #2

Elective Endo? Do No Harm

Defer elective exams until the patient is no longer high-risk

Ex: CRC screening/surveillance, Family History CRC, FIT + (can wait *up to* 9 months); DGBI; GERD/Barrett's Esophagus or cirrhosis screening/surveillance, etc.

Patients <3 months out from:	Patients with PTCA/PCI
Transient Ischemic Attack	Drug-eluting stent (<6 months)
Stroke	Bare-metal stent (<4 weeks)
Lower extremity deep vein thrombosis	ACS *plus* drug-eluting stent (<6 months)
Pulmonary embolus	ACS *plus* bare-metal stent (<2 months)
Acute Coronary Syndrome (ACS)	

Bleeding Risk for GI Procedures

Low Bleeding Risk Procedure (0-2% Major Bleed Risk in 30dd)
EGD or Colonoscopy or Sigmoidoscopy w/w/o biopsies
ERCP w/stent (PD or biliary) or balloon dilation; NO sphincterotomy
EUS w/o FNA
Push or diagnostic balloon-assisted enteroscopy
Enteral stent deployment or balloon dilations
APC/Tattooing/Clipping/Polypectomy <10mm

Uptodate.com: “Perioperative management of patients receiving anticoagulants”

Abraham NS, et al. ACG-CAG Clinical Practice Guideline (2022)

Bleeding Risk for GI Procedures

High Bleeding Risk Procedure (>2% Major Bleed Risk in 30dd)
Polypectomy 10+ mm/EMR/ESD
PEG/PEJ Placement
Sphincterotomy/FNA
Pneumatic/Savary Dilation
Therapeutic balloon-assisted enteroscopy
Cystogastrostomy
POEM/RFA/EVL

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Peri-Procedure Considerations - VKA

- If low-risk procedures → Okay to continue warfarin (ACG 2022)
- Advanced endoscopy procedures → Can interrupt warfarin for 5dd w/o bridging
- **Consider bridging if** mechanical valve, CHADSVASC >5, high-risk CV surgery, and h/o VTE when off AC, otherwise bridging not necessary

Peri-Procedure Considerations - VKA

- Resume warfarin immediately

Peri-Procedure Considerations - DOAC

- Hold DOAC for 2-3dd (incl. day of procedure)

- Stop interval varies based on adv. vs. non-adv procedure

Peri-Procedure Considerations - DOAC

- No guideline on resuming DOACs (including ACG 2022)

- Resume w/in 24-48h ideally

Pre-Procedure Considerations – Anti-Platelet

- DAPT → hold ticagrelor and clopidogrel 5dd and prasugrel for 7dd
- Continue ASA if for SECONDARY prevention

- ASA for <u>primary</u> prevention can be stopped, especially if high-risk endoscopic procedure

- Can likely resume immediately after procedure (no guideline for resumption otherwise)

Summary

- Is the GIB life-threatening or not?
- If warfarin → PCC > FFP; NO FFP or Vitamin K
- If DOAC → Consider reversal agent if life-threatening AND if DOAC taken w/in 24h, otherwise no recommendation
- If anti-platelet → Continue ASA for secondary prevention, NO platelet transfusion unless PC very low

Summary

- If endoscopy is elective → wait until patient no longer high-risk
- Low-risk endoscopy → Continue warfarin
- High-risk endoscopy:
  - Stop warfarin 5dd prior and resume immediately
  - Bridging not necessary unless very high-risk CV issue (e.g. mechanical valve)
  - Hold DOAC 2-3dd (incl. proc day) and resume w/in 24-48h
  - Hold DAPT 5-7dd and resume immediately

THANK YOU!

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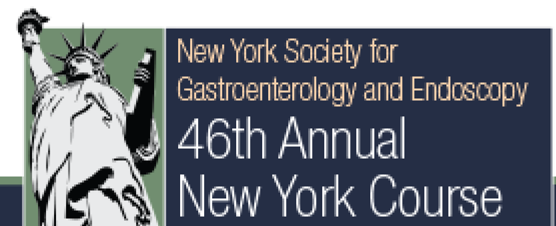

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