Communication from the ASGE Standards of Practice Committee

GUIDELINE

The management of antithrombotic agents for patients undergoing GI endoscopy

Prepared by: ASGE STANDARDS OF PRACTICE COMMITTEE

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This document was reviewed and approved by the Governing Board of the American Society for Gastrointestinal Endoscopy.

This is one of a series of statements discussing the use of GI endoscopy in common clinical situations. The Standards of Practice Committee of the American Society for Gastrointestinal Endoscopy (ASGE) prepared this text. In preparing this guideline, a search of the medical literature was performed using PubMed and the Cochrane Database, with dates of search from August 1966 to December 2014. Additional references were obtained from the bibliographies of the identified articles and from recommendations of expert consultants. When limited or no data exist from well-designed prospective trials, emphasis is given to results from large series and reports from recognized experts. Guidelines for appropriate use of endoscopy are based on a critical review of the available data and expert consensus at the time the guidelines are drafted. Further controlled clinical studies may be needed to clarify aspects of this guideline. This guideline may be revised as necessary to account for changes in technology, new data, or other aspects of clinical practice. The recommendations were based on reviewed studies and were graded on the strength of the supporting evidence (Table 1).[1]

This guideline is intended to be an educational device to provide information that may assist endoscopists in providing care to patients. This guideline is not a rule and should not be construed as establishing a legal standard of care or as encouraging, advocating, requiring, or discouraging any particular treatment. Clinical decisions in any particular case involve a complex analysis of the patient's condition and available courses of action. Therefore, clinical considerations may lead an endoscopist to take a course of action that varies from these guidelines.

Antithrombotic therapy is used to reduce the risk of thromboembolic events in patients with conditions such as atrial fibrillation (AF), acute coronary syndrome (ACS), deep vein thrombosis (DVT), hypercoagulable states, and endoprostheses. Antithrombotics include medications classified as anticoagulants or antiplatelet agents (APAs). Anticoagulants prevent the clotting of blood by interfering with the native clotting cascade and include the following 4 drug classes: vitamin K antagonists (eg, warfarin), heparin derivatives (eg, unfractionated [UFH] and low molecular weight [LMWH], fondaparinux [Arixtra, GlaxoSmithKline, Research Triangle Park, NC, USA]), direct factor Xa inhibitors (eg, rivaroxaban [Xarelto, Janssen Pharmaceuticals, Inc, Raritan, NJ, USA], apixaban [Eliquis, Bristol-Myers Squibb Company, Princeton, NJ, USA], edoxaban [Savaysa, Daiichi Sankyo Co, LTD, Tokyo, Japan]), and direct thrombin inhibitors (eg, dabigatran [Pradaxa, Boehringer Ingelheim Pharmaceuticals Inc, Ridgefield, Conn, USA], hirudins, argatraban [Acova, Abbott Laboratories, North Chicago, Ill, USA]). APAs decrease platelet aggregation, thus preventing thrombus formation. APAs include the thienopyridines (eg, clopidogrel, [Plavix, Bristol-Myers Squibb/Sanofi Pharmaceuticals Partnership, Bridgewater, NJ, USA], prasugrel [Effient, Eli Lilly and Company, Indianapolis, Ind, USA], ticlopidine [Ticlid, Roche Pharmaceuticals, Nutley, NJ, USA], and ticagrelor [Brilinta, AstraZeneca, Wilmington, Del, USA]), the protease-activated receptor-1 (PAR-1) inhibitor vorapaxar (Zontivity, Merck Sharp & Dohme Corp, Whitehouse Station, NJ, USA), glycoprotein IIb/IIIa receptor inhibitors (GPIIb/IIIa inhibitors) (eg, abciximab [ReoPro, Eli Lilly and Company, Indianapolis, Ind, USA], eptifibatide [Integrilin, Merck Sharp & Dohme Corp, Whitehouse Station, NJ, USA], and tirofiban [Aggrastat, Medicure Pharma, Inc, Somerset, NJ, USA]),

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TABLE 1. System for rating the quality of evidence for guidelines

Quality of evidence	Definition	Symbol
High quality	Further research is very unlikely to change our confidence in the estimate of effect.	⊕⊕⊕⊕
Moderate quality	Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.	⊕⊕⊕O
Low quality	Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.	⊕⊕OO
Very low quality	Any estimate of effect is very uncertain.	⊕OOO

Adapted from Guyatt et al.[1]

TABLE 2. Antithrombotic drugs: duration of action and approach to reversal when indicated

			Approach to reversal based on procedural urgency	
Drug class	**Specific agent(s)**	**Duration of action**	**Elective**	**Urgent**
APAs	Aspirin	7-10 days	NA	Hold, can give platelets
	NSAIDs	Varies	NA	Hold
	Dipyridamole (Persantine)	2-3 days	Hold	Hold
	Cilostazol (Pletal, Otsuka Pharmaceutical Co., Ltd., Tokushima, Japan)	2 days	Hold	Hold
	Thienopyridines: clopidrogrel (Plavix) prasugrel (Effient) ticlodipine (Ticlid) ticagrelor (Brilinta)	5-7 days: clopidogrel, 3-5 days: ticagrelor 5-7 days: prasugrel 10-14 days[98]: ticlopidine	Hold	Hold
	GPIIb/IIIa inhibitors: tirofiban (Aggrastat) abciximab (ReoPro) eptifibatide (Integrilin)	tirofiban: 1-2 seconds abciximab: 24 hours eptifibitide: 4 hours	NA	Hold HD: tirofiban
	PAR-1 inhibitor: vorapaxar (Zontivity)	5-13 days	Hold	Hold
Anticoagulants	Warfarin (Coumadin)	5 days	Hold	Vitamin K, PCC
	UFH	IV 2-6 hours SQ 12-24 hours	Hold	Protamine sulfate* (partial)
	LMWH: enoxaparin (Lovenox) dalteparin (Fragmin, Pfizer Inc, New York, NY, USA)	24 hours	Hold	Protamine sulfate, consider rVIIa
	Fondaparinux (Arixtra)	36-48 hours		Protamine sulfate, consider rVIIa
	Direct factor Xa Inhibitor: rivaroxaban (Xarelto) apixaban (Eliquis) edoxaban (Savaysa)	See Tables 7 and 8	Hold	Charcoal (if last intake within 2-3 hours); nonactivated PCC or activated PCC
	Direct thrombin inhibitor, oral: dabigatran (Pradaxa) IV: Desirudin (Iprivask, Aventis Pharmaceuticals Inc., Bridgewater, NJ, USA)	See Table 9	Hold	Charcoal (if last intake within 2-3 hours); nonactivated PCC or activated PCC; HD

NSAIDs, Nonsteroidal anti-inflammatory drugs; *NA,* not applicable; *HD,* hemodialysis; *PCC,* prothrombin complex concentrate; *rVIIa,* recombinant factor VIIa.
*Caution: Can cause severe hypotension and anaphylaxis.

aspirin (acetylsalicylic acid [ASA]), and nonsteroidal anti-inflammatory drugs. The duration of action and reversal routes for the antithrombotic drug classes are described in Table 2.

Adverse events of antithrombotic therapy include GI bleeding,[2,3] and their use increases the risk of hemorrhage after some endoscopic interventions.[4-6] For patients taking these medications who require endoscopy, one should consider the following important factors: (1) the urgency of the procedure, (2) the bleeding risk of the procedure, (3) the effect of the antithrombotic drug(s) on the bleeding risk, and (4) the risk of a thromboembolic event related to periprocedural interruption of antithrombotic agents.[7]

PROCEDURE RISKS

Common endoscopic procedures vary in their potential to induce bleeding, and these have been outlined in other