Endoscopy in patients on antiplatelet or anticoagulant therapy, including direct oral anticoagulants: British Society of Gastroenterology (BSG) and European Society of Gastrointestinal Endoscopy (ESGE) guidelines

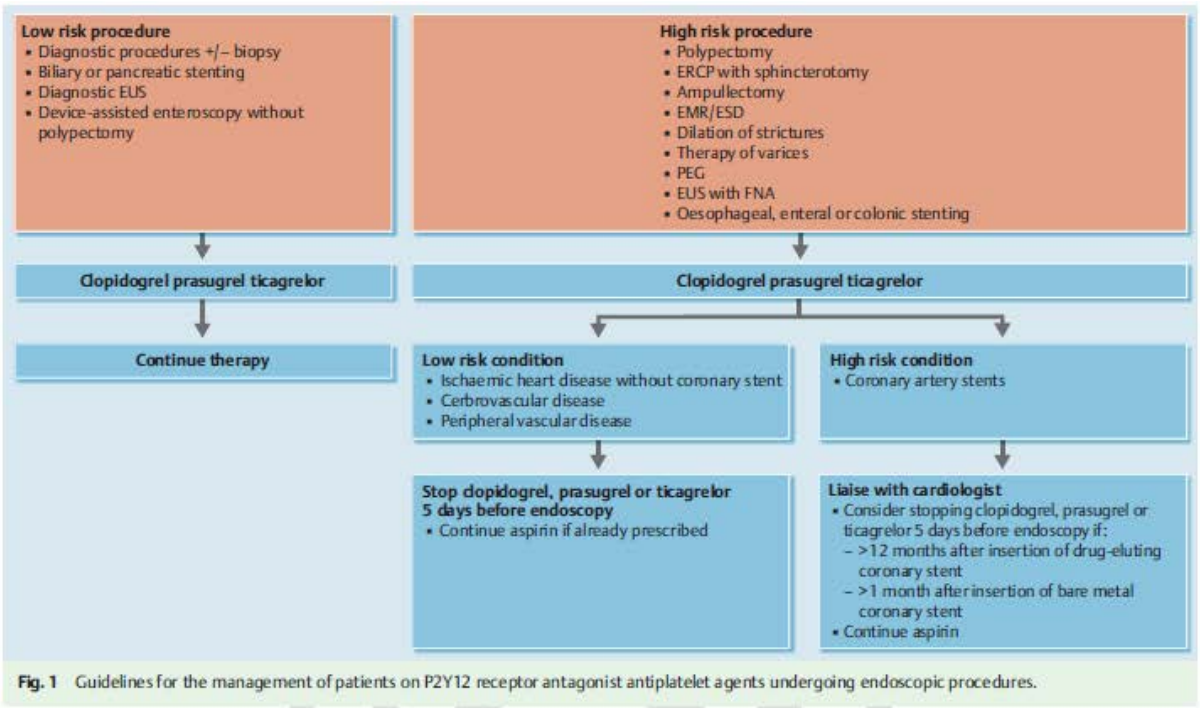

Fig. 1 Guidelines for the management of patients on P2Y12 receptor antagonist antiplatelet agents undergoing endoscopic procedures.

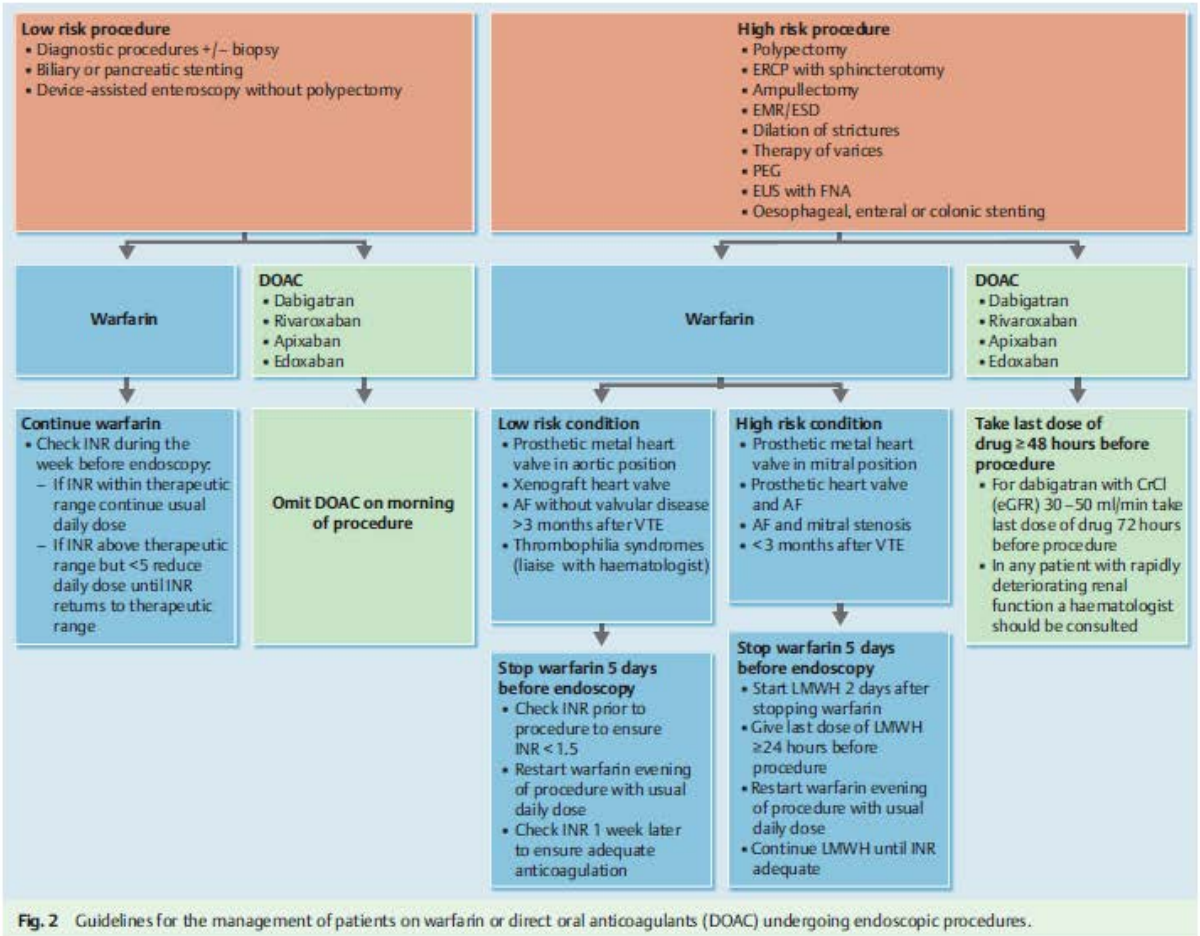

Fig. 2 Guidelines for the management of patients on warfarin or direct oral anticoagulants (DOAC) undergoing endoscopic procedures.

Veitch A M et. al. Endoscopy 2016;48: 1-18.

Schweizerische Gesellschaft für Gastroenterologie
Société Suisse de Gastroentérologie
Società Svizzera di Gastroenterologia

SGGSSG

oral anticoagulants: Practical Management 2016

Bleeding risk of gastrointestinal procedures

Procedures without bleeding risk	Procedures with low-bleeding risk	Procedures with high-bleeding risk
Endoscopy without biopsy EUS without FNA ERCP without intervention	Endoscopy with biopsy ERCP with stent placement Enteroscopy with/without biopsy	Polypectomy* Sphincterotomy Sphincterotomy with large ballon dilatation Dilatation of digestive stenosis Digestive stenting PEG EUS with FNA Laserablation, APC Therapy of varices EMR, ESD, ampullary resection Ligation of hemorrhoids Transcutaneous liver biopsy and FNA

Polypectomy in patients taking antiplatelet agents and oral anticoagulants

Polypectomy is rated as a procedure with high bleeding risk in all published guidelines. However, depending on the size of the polyps, the authors consider the bleeding risk of polypectomy comparable to that of a biopsy. In addition, preventive measures (clips, loops) are available.

The following strategies are proposed:

	Polypectomy is safe in patients taking:	Polypectomy is probably safe with preventive measures in patients taking:
Polyps < 5mm	• ASS	• Clopidogrel • ASS&Clopidogrel • VKA (INR in therapeutic range) • DOAC if procedure is done in through plasma level
Polyps 5-10 mm	• ASS	• Clopidogrel
Polyps 10-20mm	• ASS	

Empfehlung vor elektiven Kolonoskopien, da Polypstatus i.d.R. unbekannt:

ASS fortsetzen, Clopidogrel 5 Tage vorher durch ASS ersetzen, Marcumar vorher absetzen, INR-Wert vor Untersuchung, DOAK 24 h vorher absetzen (bei Niereninsuff. 48-72 h)

Schweizerische Gesellschaft für Gastroenterologie
Société Suisse de Gastroentérologie
Società Svizzera di Gastroenterologia

SGGSSG

Discontinuation of antiplatelet agents

Days stopped before procedure

Aspirin	5 d
Clopidogrel	5 d
Prasugrel	7 d
Ticagrelor	5 d

- Restart usually 24 h after procedure
- In patients with high thromboembolic risk receiving a P2Y12 receptor antagonist consider loading dose of 300 mg clopidogrel, and switch to prasugrel or ticagrelor later if appropriate

Discontinuation of vitamin K antagonist anticoagulants (VKA)
Part 1: Phenprocoumon

Discontinuation without bridging (procedure = day 0)

Day -7 to -5	Stop Phenprocoumon; consider INR testing before
Day -2	INR testing; if INR >1.5 administer vitamin K 1-2.5 mg po
Day 0 to +1	Resume phenprocoumon (evening after procedure)

Discontinuation with bridging (procedure = day 0)

Day -7 to -5	Stop Phenprocoumon
Day -4 to -2	INR testing; if INR <2.0 start LMWH (2 sc doses/day);
Day -1	INR testing; if INR >1.5 administer vit. K 1-2.5 mg po; last LMWH dose >24 h before procedure, consider anti-factor Xa testing before procedure in renal insufficiency
Day 0	If adequate hemostasis, LMWH at prophylactic or therapeutic (2 sc doses/day) level according to bleeding risk ≥ 6 h after procedure; resume phenprocoumon, stop LMWH when INR is within target range

Discontinuation of direct oral anticoagulants (DOAC)
Part 1

Before procedure: discontinue DOAC; no bridging

After procedure:
- Low bleeding risk → restart DOAC the next morning
- High bleeding risk
  → low thromboembolic risk: restart after 24-48 hrs (or longer if very high risk of bleeding as e. g. EMR, ESD)
  → high thromboembolic risk: UFH at prophylactic or therapeutic level, switch to DOAC when lower bleeding risk

Patients with high thromboembolic risk + high bleeding risk + renal insufficiency
→ consult hematology

The management of antithrombotic agents for patients undergoing GI endoscopy

TABLE 13. Management of antithrombotic agents in the elective endoscopic setting

			Endoscopy-induced bleeding risk		
			Low		High
CV risk	Low	AC	1. Continue warfarin and NOAC	AC	1. Discontinue AC 2. Restart warfarin on same day of procedure 3. Delay reinitiating NOACs until adequate hemostasis is achieved
		APA	1. Continue standard doses of ASA/NSAIDs 2. Continue thienopyridines	APA	1. Continue standard doses of ASA/NSAIDs* 2. Discontinue thienopyridines at least 5 days before switch to ASA† 3. Dual APA, hold thienopyridines for at least 5 days, continue ASA†
	High	AC	1. Continue warfarin and NOAC	AC	1. Discontinue AC 2. Bridge therapy‡ 3. Restart warfarin on same day of procedure 4. Delay reinitiating NOACs until adequate hemostasis is achieved
		APA	1. Continue standard doses of ASA/NSAIDs 2. Continue thienopyridines	APA	1. Continue standard doses of ASA/NSAIDs 2. Discontinue thienopyridines at least 5 days before endoscopy or switch to ASA† 3. Dual APA, hold thienopyridines for at least 5 days, continue ASA†

AC, Anticoagulants; *APA*, antiplatelet agent; *NOAC*, novel oral anticoagulant; *ASA*, acetylsalicylic acid, or aspirin; *NSAID*, nonsteroidal anti-inflammatory drug; *CV*, cardiovascular.

TABLE 11. Approach to bridge therapy for warfarin (Coumadin)[69-70]

Condition	Associated diagnosis	Management
AF	None CHA_2DS_2-VASc score < 2	No bridge recommended
	Mechanical valves History of CVA CHA_2DS_2-VASc score ≥ 2	Bridge therapy recommended
Valvular heart disease	Bileaflet mechanical AVR	No bridge recommended
	Mechanical AVR and any thromboembolic risk factor Older-generation mechanical AVR Mechanical mitral valve replacement	Bridge therapy recommended

AF, atrial fibrillation; *CHA_2DS_2-VASc*, Congestive heart failure, Hypertension, Age ≥ 75 years [2 points], Diabetes Mellitus, Stroke [2 points], Vascular disease, Age 65-74 years, Sex category [ie, female sex]; *CVA*, cerebrovascular accident; *AVR*, aortic valve replacement.

TABLE 12. Best practice recommendations for the management of DAPT[36]

Avoid cessation of all antiplatelet therapies after PCI with stent placement.
Avoid cessation of clopidogrel (even when aspirin is continued) within the first 30 days after PCI and either DES or BMS placement when possible.
Defer elective endoscopic procedures, possibly up to 12 months, if clinically acceptable from the time of PCI to DES placement.
Perform endoscopic procedures, particularly those associated with bleeding risk, 5-7 days after thienopyridine drug cessation. ASA should be continued.
Resume thienopyridine and ASA drug therapy after the procedure once hemostasis is achieved. A loading dose of the former should be considered among patients at risk for thrombosis.
Continue platelet-directed therapy in patients undergoing elective endoscopy procedures associated with a low-risk for bleeding.

DAPT, dual antiplatelet therapy; *BMS*, Bare metal stent(s); *DES*, drug-eluting stent(s); *PCI*, percutaneous coronary intervention; *ASA*, acetylsalicylic acid, or aspirin.

TABLE 6. Periprocedural management of dabigatran (Pradaxa)[53]

Creatinine clearance (mL/min)	Time to onset of action (h)	Half-life (h)	Timing of discontinuation before procedure	
			Moderate procedural bleeding risk (2-3 half-lives)	High procedural bleeding risk (4-5 half-lives)
>80	1.25-3	13 (11-22)	1-1.5 days	2-3 days
50-80	1.25-3	15 (12-34)	1-2 days	2-3 days
30-49	1.25-3	18 (13-23)	1.5-2 days	3-4 days
≤29	1.25-3	27 (22-35)	2-3 days	4-6 days

TABLE 7. Periprocedural management of apixaban (Eliquis)[54]

Creatinine clearance (mL/min)	Time to onset of action (h)	Timing of discontinuation before high-risk endoscopic procedure (day)
>60	1-3	1 or 2
30-59	1-3	3
15-29	1-3	4

TABLE 8. Periprocedural management of rivaroxaban (Xarelto)[54]

Creatinine clearance (mL/min)	Time to onset of action (h)	Timing of discontinuation before high-risk endoscopic procedure (day)
>90	2-4	≥1
60-90	2-4	2
30-59	2-4	3
15-29	2-4	4