Risk factors for postpolypectomy bleeding in patients receiving anticoagulation or antiplatelet medications

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BRITISH SOCIETY OF GASTROENTEROLOGY

ESGE

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

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ESGE 2016

Risk factors for postpolypectomy bleeding in patients receiving anticoagulation or antiplatelet medications CME

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- Introduction
- What guidelines say about polypectomy and antiplatelet or anticoagulation
- What is NEW??

Introduction

- 14 million colonoscopies performed each year for colorectal cancer screening .
- In fact, approximately 4 million Americans are on long-term anticoagulation alone.
- The challenge is to minimize both the risks for thromboembolism and postpolypectomy bleeding.

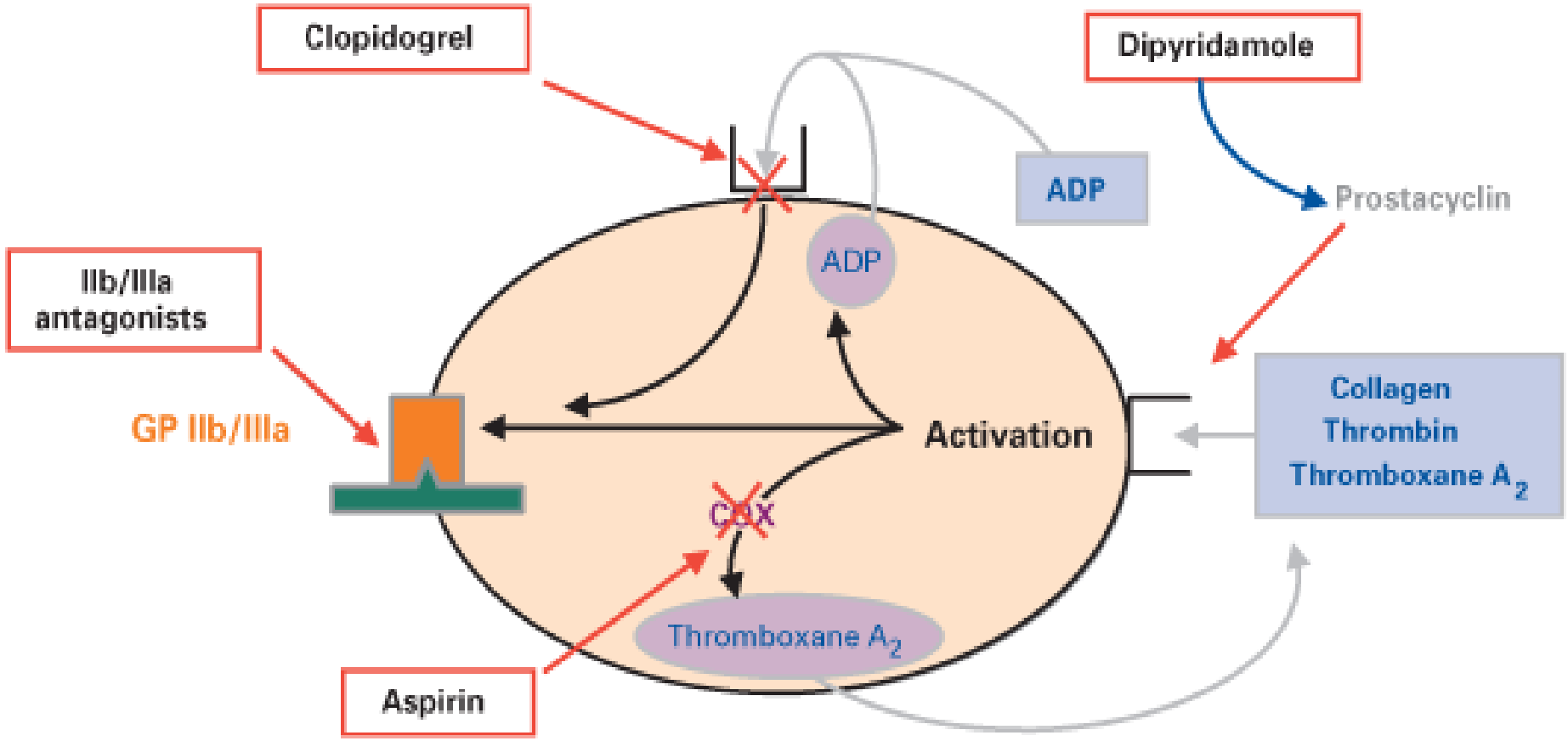
High risk / Low risk

Table 1 Risk stratification of endoscopic procedures based on the risk of haemorrhage

High risk	Low risk
Endoscopic polypectomy	Diagnostic procedures±biopsy
ERCP with sphincterotomy	Biliary or pancreatic stenting
Sphincterotomy+large balloon papillary dilatation	Device-assisted enteroscopy without polypectomy
Ampullectomy	
Endoscopic mucosal resection or endoscopic submucosal dissection	
Endoscopic dilatation of strictures in the upper or lower GI tract	
Endoscopic therapy of varices	
Percutaneous endoscopic gastrostomy	
Endoscopic ultrasound with fine needle aspiration	
Oesophageal, enteral or colonic stenting	

ESGE guidelines 2016

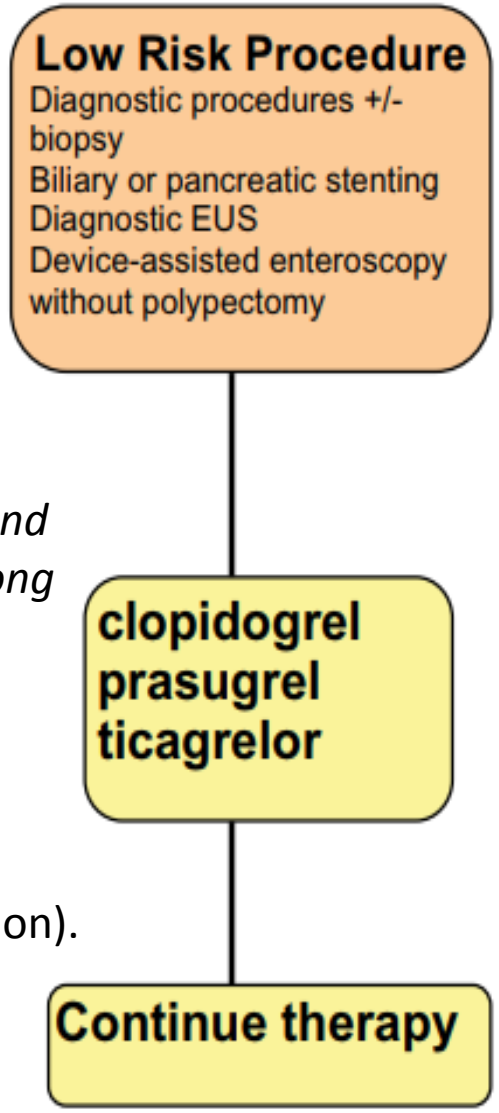
ANTIPLATELET AGENTS

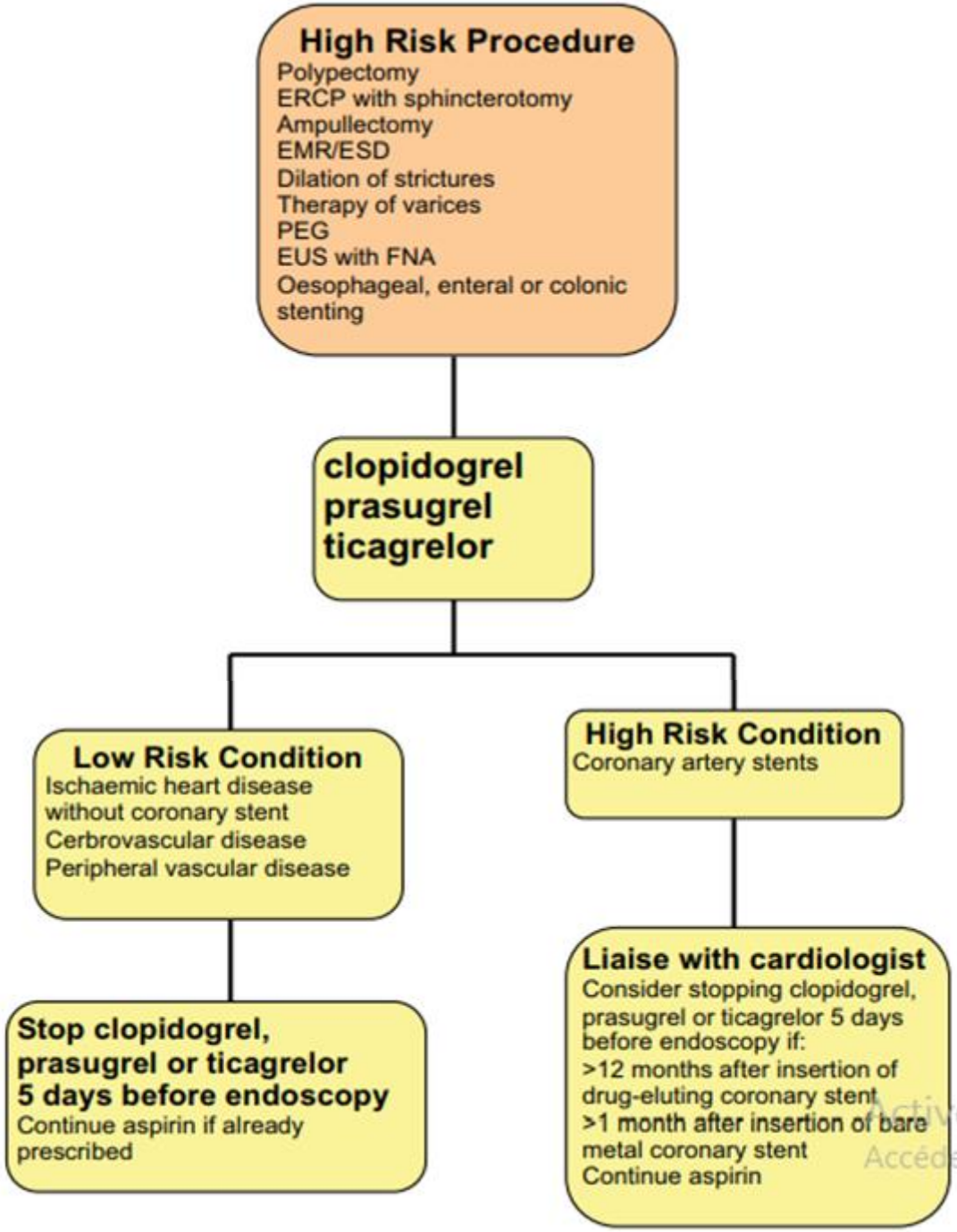


For all endoscopic procedures we recommend continuing aspirin (moderate evidence, strong recommendation), with the exception of :

1. **ESD,**
2. **large colonic EMR (>2 cm)**
3. **Upper gastrointestinal EMR**
4. **Ampullectomy.**

(low quality evidence, weak recommendation).





Warfarin

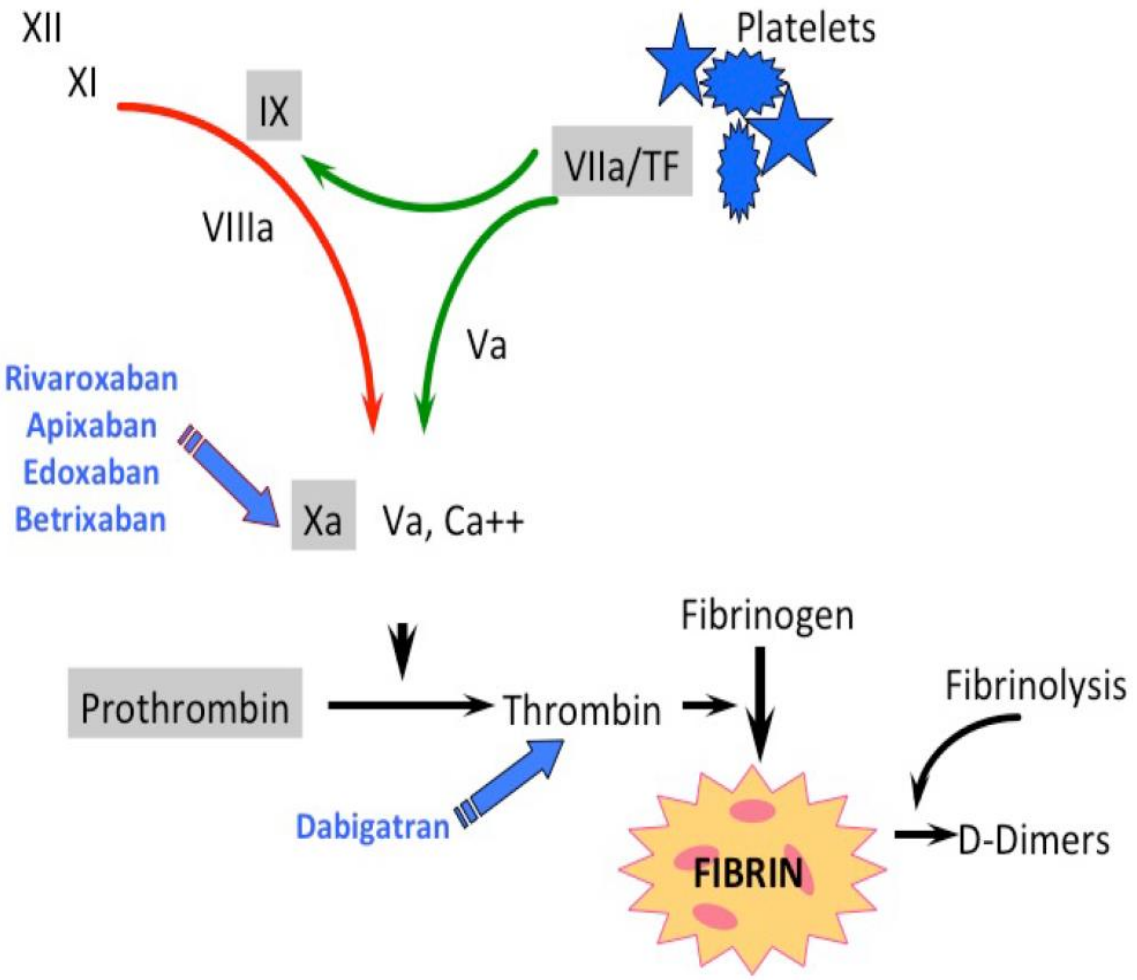
Table 3 Risk stratification for discontinuation of warfarin therapy with respect to the requirement for heparin bridging

High risk	Low risk
Prosthetic metal heart valve in mitral position	Prosthetic metal heart valve in aortic position
Prosthetic heart valve and atrial fibrillation	Xenograft heart valve
Atrial fibrillation and mitral stenosis*	Atrial fibrillation without valvular disease
<3 months after venous thromboembolism	>3 months after venous thromboembolism Thrombophilia syndromes (discuss with haematologist)

*Uncertainty exists regarding the thrombotic risk of temporarily discontinuing warfarin in patients with atrial fibrillation and mitral stenosis following the BRIDGE trial,[17] but there is insufficient evidence at present to alter the risk category.

ESGE guidelines 2016

DOAC



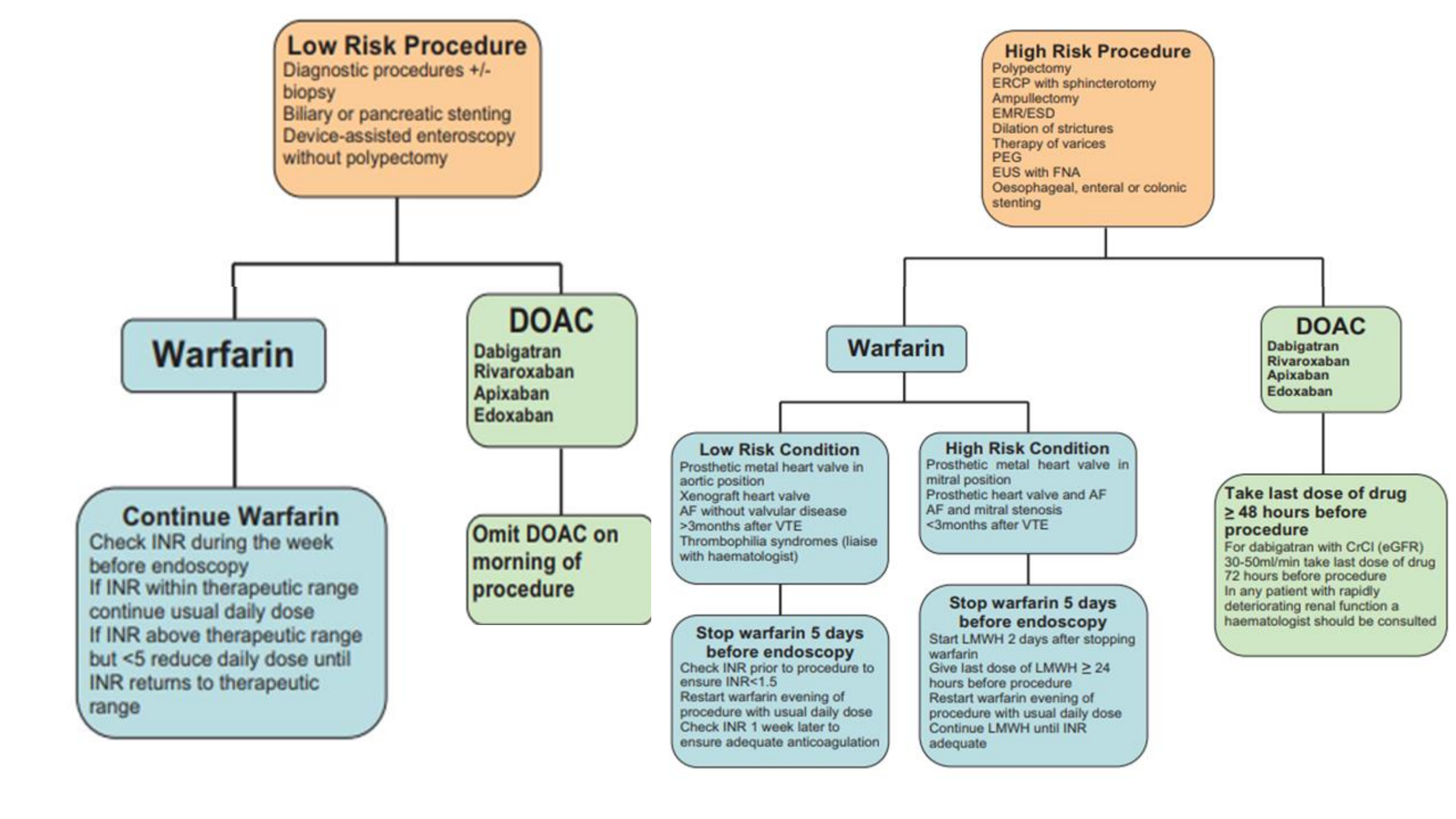
Renal Function Impact on NOAC Half Lives

	Dabigatran	Rivaroxaban	Apixaban	Edoxaban
CrCl > 80 mL/min	12-17 h	5-9 h (young) 11-13 h (elderly)	12 h	10-14 h
CrCl 50-80 mL/min	≈17 h	≈8.7 h	≈14.6 h	≈8.6 h
CrCl 30-50 mL/min	≈19 h	≈9.0 h	≈17.6 h	≈9.4 h
CrCl 15-30 mL/min	≈28 h	≈9.5 h	≈17.3 h	≈16.9 h
CrCl ≤ 15 mL/min	No data	—	—	—

Assessment of kidney function is important to estimate the clearance of NOACs

*All NOAC half-lives are shorter than warfarin half-life. Given the short half-life of NOACs, a wait-and-see approach can be used in most cases of active bleeding.

Heidbuchel H, et al. *Europace*. 2015;17:1467-1507.


Low Risk Procedure
Diagnostic procedures +/- biopsy
Biliary or pancreatic stenting
Device-assisted enteroscopy without polypectomy
Warfarin
DOAC
Dabigatran
Rivaroxaban
Apixaban
Edoxaban
Continue Warfarin
Check INR during the week before endoscopy
If INR within therapeutic range continue usual daily dose
If INR above therapeutic range but <5 reduce daily dose until INR returns to therapeutic range
Omit DOAC on morning of procedure
High Risk Procedure
Polypectomy
ERCP with sphincterotomy
Ampullectomy
EMR/ESD
Dilation of strictures
Therapy of varices
PEG
EUS with FNA
Oesophageal, enteral or colonic stenting
Warfarin
DOAC
Dabigatran
Rivaroxaban
Apixaban
Edoxaban
Low Risk Condition
Prosthetic metal heart valve in aortic position
Xenograft heart valve
AF without valvular disease
>3months after VTE
Thrombophilia syndromes (liaise with haematologist)
High Risk Condition
Prosthetic metal heart valve in mitral position
Prosthetic heart valve and AF
AF and mitral stenosis
<3months after VTE
Take last dose of drug ≥ 48 hours before procedure
For dabigatran with CrCl (eGFR) 30-50ml/min take last dose of drug 72 hours before procedure
In any patient with rapidly deteriorating renal function a haematologist should be consulted
Stop warfarin 5 days before endoscopy
Check INR prior to procedure to ensure INR<1.5
Restart warfarin evening of procedure with usual daily dose
Check INR 1 week later to ensure adequate anticoagulation
Stop warfarin 5 days before endoscopy
Start LMWH 2 days after stopping warfarin
Give last dose of LMWH ≥ 24 hours before procedure
Restart warfarin evening of procedure with usual daily dose
Continue LMWH until INR adequate

Risk factors for postpolypectomy bleeding in patients receiving anticoagulation or antiplatelet medications (CME)

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Background and Aims: Balancing the risks for thromboembolism and postpolypectomy bleeding in patients requiring anticoagulation and antiplatelet agents is challenging. We investigated the incidence and risk factors for postpolypectomy bleeding on anticoagulation, including heparin bridge and other antithrombotic therapy.

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Methods:

- The study was conducted at 2 veterans affair hospitals with similar endoscopic practices, Palo Alto and San Francisco.

- From January 2004 to June 2012.

- The study was conducted in 2 parts.

1. The first was a retrospective cohort study to assess the primary endpoint and the incidence of postpolypectomy bleeding on various antithrombotics.

2. The second was a matched case control study to examine the secondary endpoint, risk factors for postpolypectomy bleeding in patients receiving antithrombotics.

Bleeding incidence

TABLE 1. Incidence of postpolypectomy bleeding in patients on antithrombotics undergoing colonoscopy with polypectomy, stratified by antithrombotic agent*

	Palo Alto, no.		San Francisco, no.		Postpolypectomy bleeding no., %, (95% CI)
	Bleeding	Total	Bleeding	Total	
All patients†	39	3515	20	1408	59/4923, 1.19%, (0.91%-1.54%)
Heparin bridge	9	47	4	40	13/87, 14.90% (8.20%-24.4%)
Warfarin only	2	427	2	177	4/604, 0.66% (0.18%-1.69%)
Clopidogrel	3	369	2	226	5/595, 0.84% (0.27%-2.00%)
Aspirin	25	2870	11	1063	36/3933, 0.92% (0.64%-1.26%)

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Bleeding characteristics

TABLE 3. Polyp baseline characteristics*

	Patients with postpolypectomy bleeding (n = 59)	Matched controls† (n = 174)	*P* value
Polyp characteristics			
No. of polyps removed, mean ± SD, median (range)	3.9 ± 4.4, 2 (1-22)	3.1 ± 2.9, 2 (1-19)	.06
Largest polyp size, mean ± SD, median (range) mm	13.9 ± 14.6 12 (2-80)	7.3 ± 4.3 5 (2-32.4)	< .001
Polyp size ≥2 cm, no. (%)	24 (41%)	23 (13%)	< .001
Polyp size ≤ 5 mm, no. (%)	8 (14%)	39 (22%)	.14
Location in right side of colon, no. (%)	47 (80%)	127 (73%)	.31
Pedunculated shape, no. (%)	6 (10%)	36 (21%)	.07
Polypectomy technique			
Use of cautery, no. (%)	55 (93%)	163 (94%)	.60
Without submucosal injection, no. (%)	31 (56%)	67 (41%)	
EMR, no. (%)	24 (44%)	96 (59%)	
Use of prophylactic clip, no. (%)	26 (44%)	64 (37%)	.32

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Risk of bleeding

TABLE 4. Risk factors of postpolypectomy bleeding in patients on antithrombotics*

	Patients on antithrombotic agents who underwent colonoscopy with polypectomy (N = 233)				
	Postpolypectomy bleeding n = 59	Matched controls n = 174	Odds ratio (95% CI)	Adjusted odds ratio (95% CI)	*P* value
Risk factor					
Restart within 1 week	44	60	4.50 (2.21-9.44)	–	< .001
Polyp size, mm					
≤5	8	39	Reference	–	Reference
6-9	8	58	0.67 (0.23-1.97)		.46
10-19	19	54	1.72 (0.70-4.53)		.25
≥20	24	23	5.09 (2.03-13.85)		< .001
Multiple large polyps	12	14	2.92 (1.14-7.29)	–	.001
Cautery use in right side of colon	45	96	2.61 (1.29-5.52)	–	.004
Prophylactic clip placement	26	64	1.35 (0.71-2.57)	–	.32
Warfarin, n = 66	17	49			
Heparin bridge	13	9	14.4 (3.28-71.8)	10.27 (2.51-42.1)	.0001
Polyp size ≥2 cm	7	2	16.45 (2.48-174)	8.8 (1.28-60.7)	.027

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Bleeding severity

TABLE 5. Outcomes of patients with postpolypectomy bleeding	
Hospitalization, no. (%)	45 (76%)
Admission to the intensive care unit, no. (%)	13 (22%)
Length of hospitalization, mean ± SD, d	3 ± 2.8
Blood transfusion, no. (%)	23 (39%)
No. of blood units transfused, mean ± SD (range)	1.4 ± 2.5 (0-12)
Repeat colonoscopy, no. (%)	49 (83%)
Bleeding stigmata present during colonoscopy, no. (%)	38 (78%)
Bleeding	15 (39%)
Nonbleeding vessel	8 (21%)
Clot	9 (24%)
Red spot	6 (16%)
Hemostatic procedure during colonoscopy, no. (%)	43 (88%)
Endoscopic clip as sole treatment, no. (%)	33 (77%)
Epinephrine injection followed by clip placement, no. (%)	10 (23%)
Interventional radiology, surgical intervention, thromboembolic events, or deaths	0

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Conclusion

- We found that the risk of postpolypectomy bleeding in patients on bridge anticoagulation was significantly higher than that of patients on warfarin alone.

- Moreover, this was an independent risk factor for postpolypectomy bleeding, conferring a 10-fold higher risk of bleeding.

- In clinical practice, bridge therapy plays a role for patients with a high risk of thromboembolism who undergo procedures with high bleeding risks.

- The underlying rationale is that the higher bleeding risk of therapy is mitigated by a decreased risk for thromboembolism.

- However, the fact that we found a much higher than anticipated effect of bridge anticoagulation on postpolypectomy bleeding decreases the utility of this therapy.

Risk Factors

1. Antithrombotics restarted earlier within 1 week after the procedure
2. Polyps 2 cm or more in size
3. Multiple large polyps
4. Having a polyp in the right side of the colon removed with cautery

Thank You