Management of anti-thrombotic therapy

in patients undergoing dental procedures

Literature review

Antiplatelet

1.SAPT (single antiplatelet therapy)

: Aspirin (ASA)

2.DAPT (dual antiplatelet therapy)

: Aspirin (ASA) + Clopidogrel (P2Y12 inhibitor)

Anticoagulant

1.VKA (vitamin K antagonist)

: Warfarin

2.DOACs(direct oral anticoagulants)

: Apixaban, Rivaroxaban, Dabigatran

Thromboembolic risk

Bleeding risk

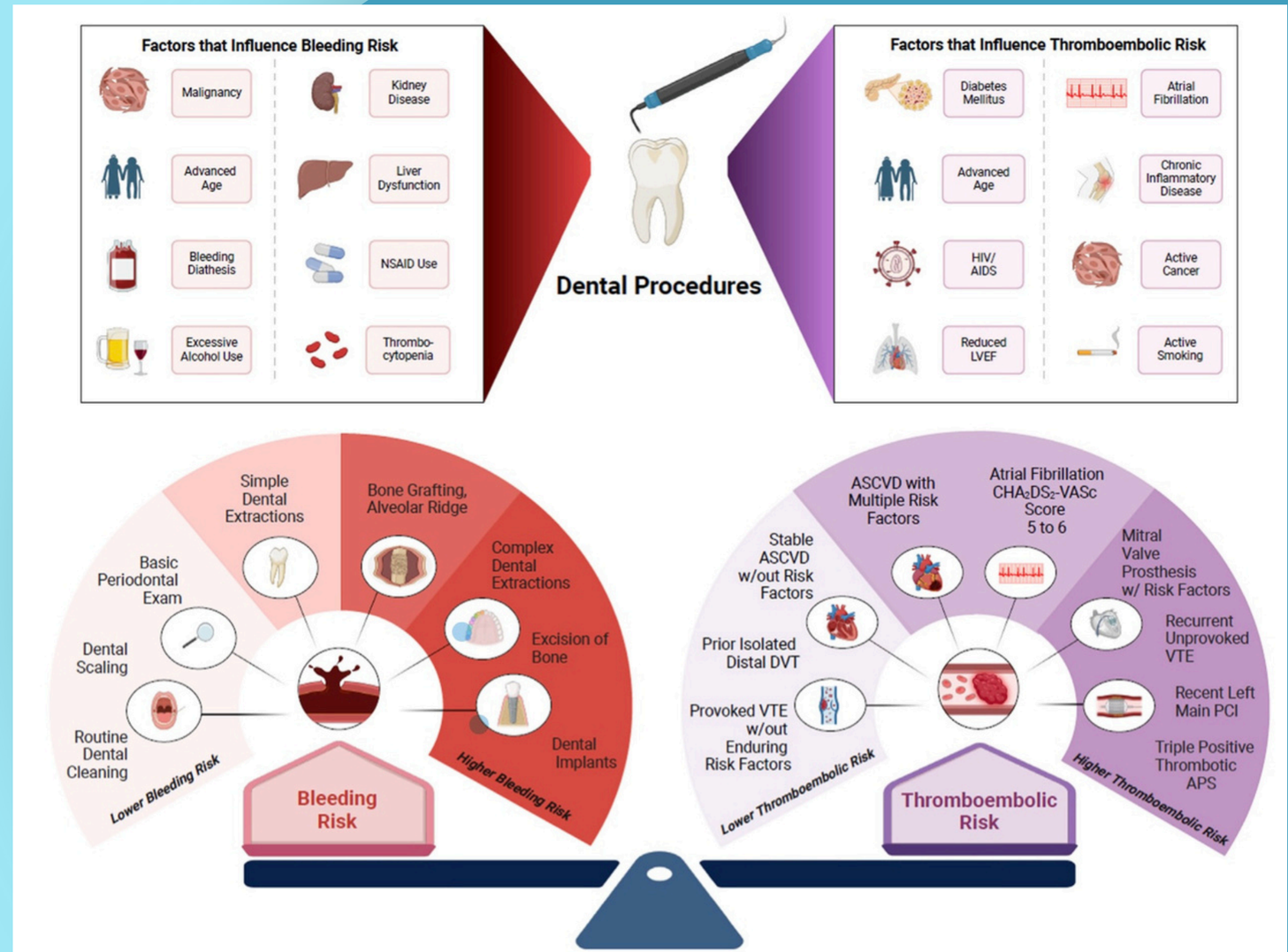

FIGURE 2 Balance between thromboembolic and bleeding risk in patients receiving antithrombotic therapy and undergoing dental procedures. This figure was created with BioRender.com. APS, antiphospholipid syndrome; ASCVD, atherosclerotic cardiovascular disease; CHA^2DS^2-VASc, congestive heart failure, hypertension, age ≥ 75 years, diabetes mellitus, prior stroke or transient ischemic attack, vascular disease history, age ≥ 65 years, female sex; DVT, deep vein thrombosis; LVEF, left ventricular ejection fraction; NSAID, nonsteroidal anti-inflammatory drugs; PCI, percutaneous coronary intervention; VTE, venous thromboembolism.

Patient-related factors
that influence bleeding risk

- Age
- Underlying disease

: CKD, Liver dysfunction, Hematologic malignancy

- Medication

: NSAIDs, steroid, Antiplatelet, Anticoagulant

- Excessive alcohol intake
- etc.

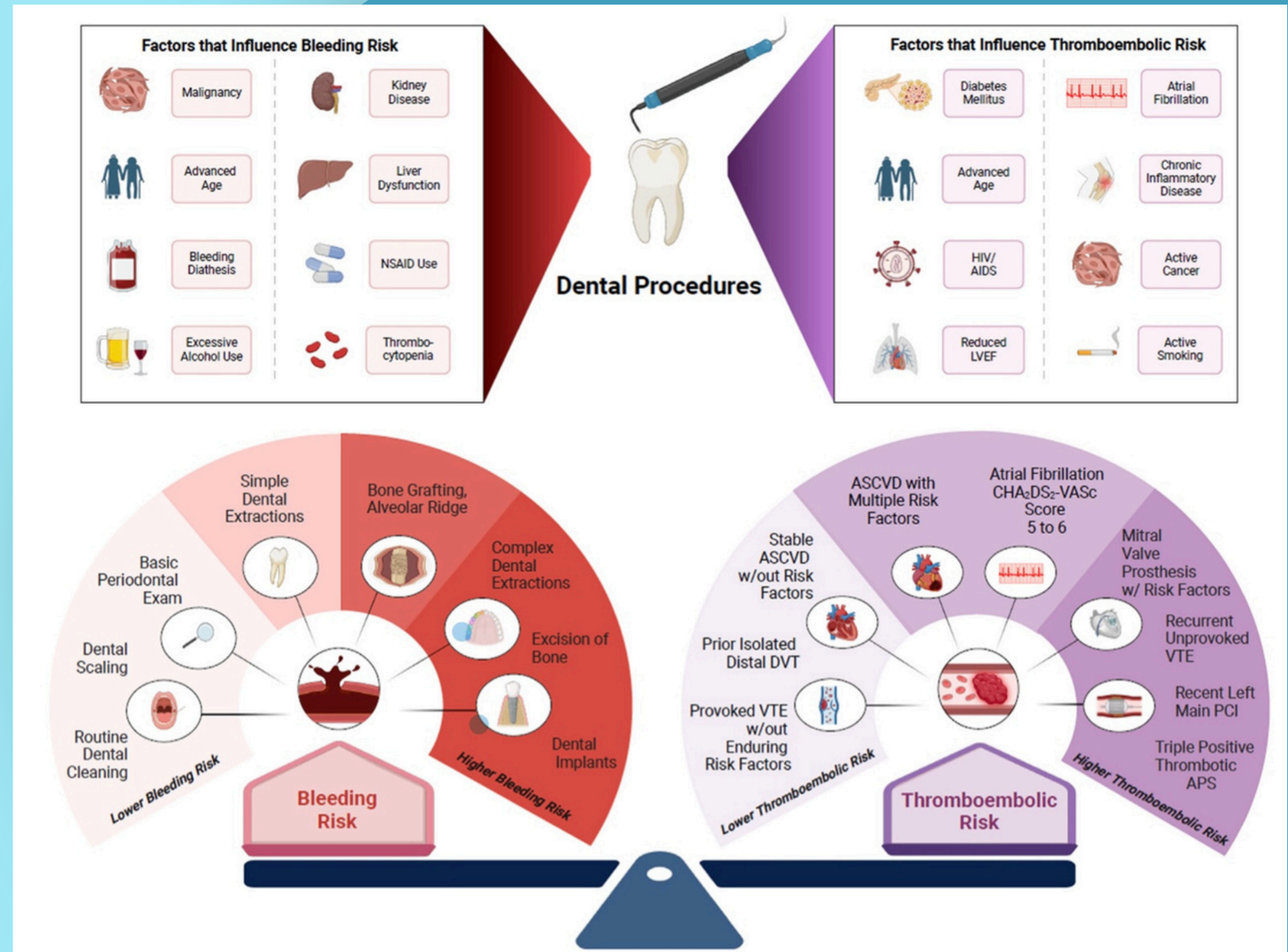

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TABLE 2 Dental procedures categorized based on the bleeding risk.

Bleeding risk	References
Negligible or minimal bleeding risk	
Endodontic treatment[a]	SDCEP [16], ISTH [13]
Fitting and adjustment of orthodontic appliances	SDCEP [16]
Dental cleaning and filling	ISTH [13]
Local anesthesia by infiltration, intraligamentary or mental nerve block, inferior alveolar nerve block, or other regional nerve blocks	SDCEP [16], AAOMS [28]
Basic periodontal examination	SDCEP [16]
Direct or indirect restorations with supragingival margins	SDCEP [16], ISTH [13]
Supragingival removal of plaque, calculus, and stain	SDCEP [16]
Impressions and other prosthetic procedures	SDCEP [16], ISTH [13]
Low-to-moderate bleeding risk	
Biopsy or excisions of oral soft tissue lesions	AAOMS [28]
Bone grafting, alveolar ridge	AAOMS [28]
Extractions of impacted teeth flap or bone removal SR	AAOMS [28]
Simple extractions (1-3 teeth with restricted wound size)[c] Simple ext. ≤ 3 개	SDCEP [16]
Incision and drainage of intraoral swellings[b] I&D	SDCEP [16]
Root surface debridement RP	SDCEP [16]
Direct or indirect restorations with subgingival margins	SDCEP [16]
Relatively higher bleeding risk	
Complex extractions,[c] ie, adjacent extractions that will cause a large wound or more than 3 extractions at once (>3 개)	SDCEP [16]
Excision of bone or large soft tissue pathology	AAOMS [28]
Corrective jaw or facial surgery	AAOMS [28]
Facial trauma repair by open techniques	AAOMS [28]
Gingival recontouring	SDCEP [16]
Flap-raising procedures (eg, dental implant surgery,[c] crown lengthening, periradicular surgery, preprosthetic surgery,[c] and periodontal surgery)	SDCEP [16]

Bleeding risk
of dental procedures

- minimal bleeding risk
- low to moderate bleeding risk
- high bleeding risk

Practical management
of patients on antiplatelet drugs

TABLE 8 Major guidelines or professional society recommendations for the management of patients on antiplatelet medications undergoing various dental procedures.

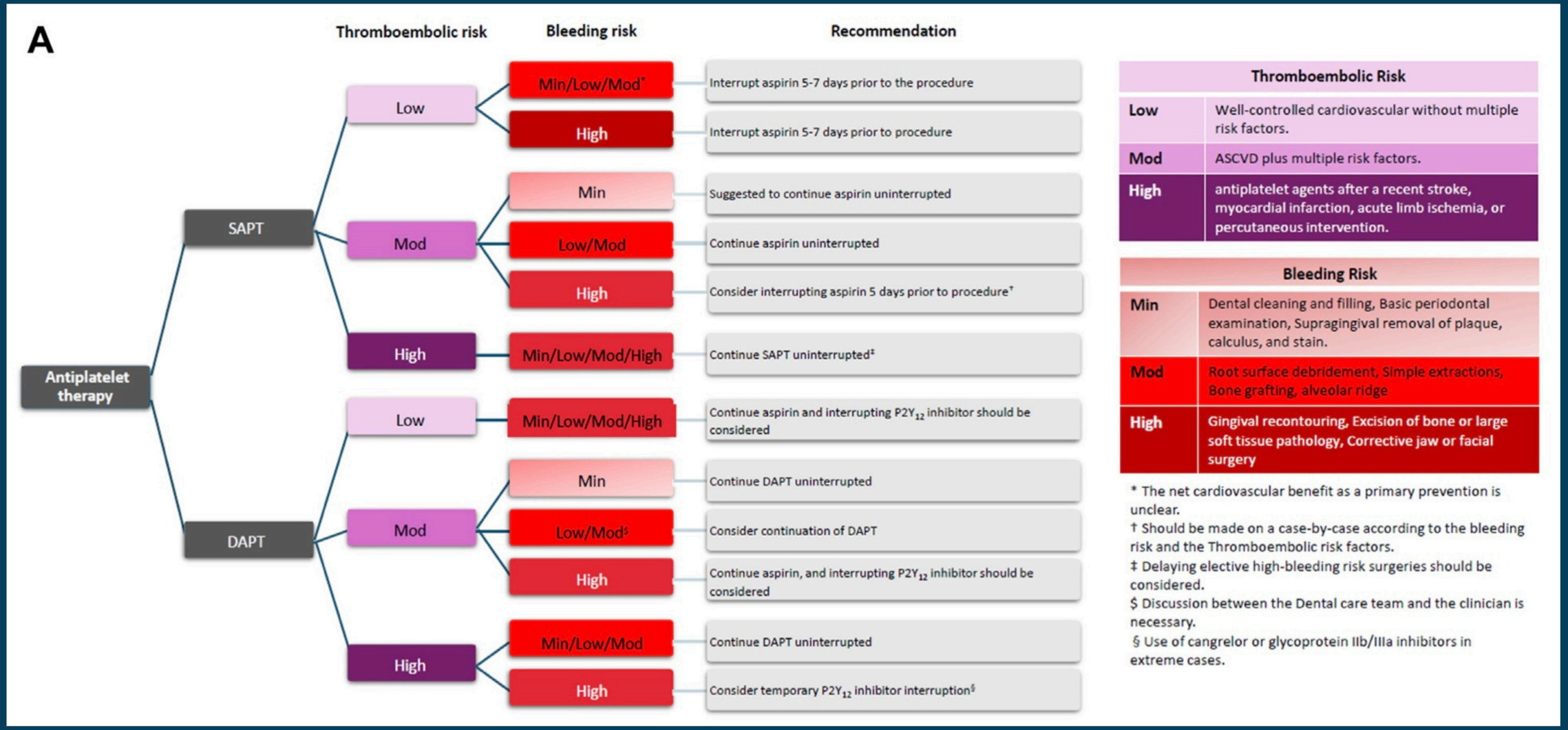
Clinical scenario and different dental procedures	Major guidelines or professional society recommendations		
	ACCP 2022 [14]	BCSH 2016 [102]	AHA/ACC 2007 [105]
Antiplatelet drugs			
SAPT continuation in procedures with minimal bleeding risk	Suggested[a]	Suggested	Not addressed
Aspirin continuation with $P2Y_{12}$ inhibitor interruption for patients on DAPT undergoing dental procedures with minimal bleeding risk	Suggested[a,b]	Not addressed	Not recommended[e]
DAPT continuation in patients with coronary stents placed 6-12 wk before undergoing elective procedures	Suggested[c]	Suggested	Suggested[e]
Aspirin continuation with $P2Y_{12}$ inhibitor interruption for patients on DAPT with coronary stents for 3-12 mo undergoing elective procedures	Suggested	Not addressed	Not recommended
Routine bridging with glycoprotein IIb/IIIa, cangrelor, or heparin in patients with coronary stents requiring antiplatelet interruption for elective procedures	Not recommended	Not addressed	Not recommended[f]
Delaying elective high bleeding risk procedures in patients with coronary stents (or recent acute coronary syndrome) requiring continued DAPT	Suggested	Suggested[d]	Suggested[g]

Practical management
of patients on anticoagulant drugs

TABLE 9 Major guidelines or professional society recommendations for the management of patients on anticoagulation medications undergoing various dental procedures.

Clinical scenario and different dental procedures	Major guidelines or professional society recommendations			
	ACCP 2022 [14]	ACC 2017 [28]	BCSH 2016 [102]	SNACC 2020 [46]
Anticoagulant drugs				
VKA continuation in dental procedures with minimal bleeding risk	Suggested[a]	Suggested[g]	Not addressed	Not addressed
Local hemostatic agents (eg, tranexamic acid) used for dental procedures	Suggested[b]	Not addressed	Not addressed	Not addressed
VKA interruption for procedures with higher bleeding risk	Suggested[c]	Suggested[h]	Suggested	Suggested
Heparin bridging in case of VKA interruption and high thromboembolic risk	Suggested[d]	Suggested	Suggested[j]	Suggested
Heparin bridging in case of VKA interruption and low thromboembolic risk	Not recommended[d]	Not recommended	Not recommended[j]	Not recommended
Heparin bridging in case of VKA interruption and moderate thromboembolic risk	Not recommended[d]	Not recommended[j]	Not addressed	Suggested (based on clinician judgment)
DOAC continuation with holding just on the day of dental procedures with minimal bleeding risk	Suggested[a]	Not addressed	Not addressed	Not addressed
DOAC stopping 1 d before low-to-moderate bleed risk procedures and resumption 24 h after the procedure	Suggested[e]	Suggested	Suggested[k]	Suggested[l]
DOAC stopping 2 d before high bleed risk procedures and resumption 48-72 h after the procedure	Suggested[f]	Suggested	Suggested	Suggested[l]
Heparin bridging in case of DOAC interruption	Not recommended	Not recommended	Not addressed	Not recommended

Practical management
of patients on antiplatelet drugs



Thromboembolic Risk	
Low	Well-controlled cardiovascular without multiple risk factors.
Mod	ASCVD plus multiple risk factors.
High	antiplatelet agents after a recent stroke, myocardial infarction, acute limb ischemia, or percutaneous intervention.

Bleeding Risk	
Min	Dental cleaning and filling, Basic periodontal examination, Supragingival removal of plaque, calculus, and stain.
Mod	Root surface debridement, Simple extractions, Bone grafting, alveolar ridge
High	Gingival recontouring, Excision of bone or large soft tissue pathology, Corrective jaw or facial surgery

* The net cardiovascular benefit as a primary prevention is unclear.
† Should be made on a case-by-case according to the bleeding risk and the Thromboembolic risk factors.
‡ Delaying elective high-bleeding risk surgeries should be considered.
$ Discussion between the Dental care team and the clinician is necessary.
§ Use of cangrelor or glycoprotein IIb/IIIa inhibitors in extreme cases.

Practical management
of patients on antiplatelet drugs

- **SAPT**

🟢 Low TE risk + Low/mod/high bleeding risk >> interrupt aspirin 5-7D preop

prior MI, stroke, coronary stent > 1yr
+multiple risk factors

🟡 Moderate TE risk + Low/mod bleeding risk >> continue aspirin

+ high bleeding risk >> consider interrupt aspirin (case by case)

🔴 High TE risk + Low/mod/high bleeding risk >> continue aspirin

(Delay elective high bleeding risk surgeries)

Practical management
of patients on antiplatelet drugs

- **DAPT**

Low TE risk + Low/mod/high bleeding risk >> continue aspirin
& interrupt P2Y12 inhibitor

coronary stent 3-12 mth

Moderate TE risk + Low/mod bleeding risk >> continue DAPT
+ high bleeding risk >> continue aspirin
& interrupt P2Y12 inhibitor

Clopidogrel 5D preop
Ticagrelor 3-5D preop
Prasugrel 7D preop
(resume in 24h post-op)

Practical management
of patients on antiplatelet drugs

- **DAPT**

coronary stent < 3 mth (12wk)

High TE risk + Low/mod bleeding risk >> continue DAPT

+ high bleeding risk >> delay elective high bleeding risk surgeries

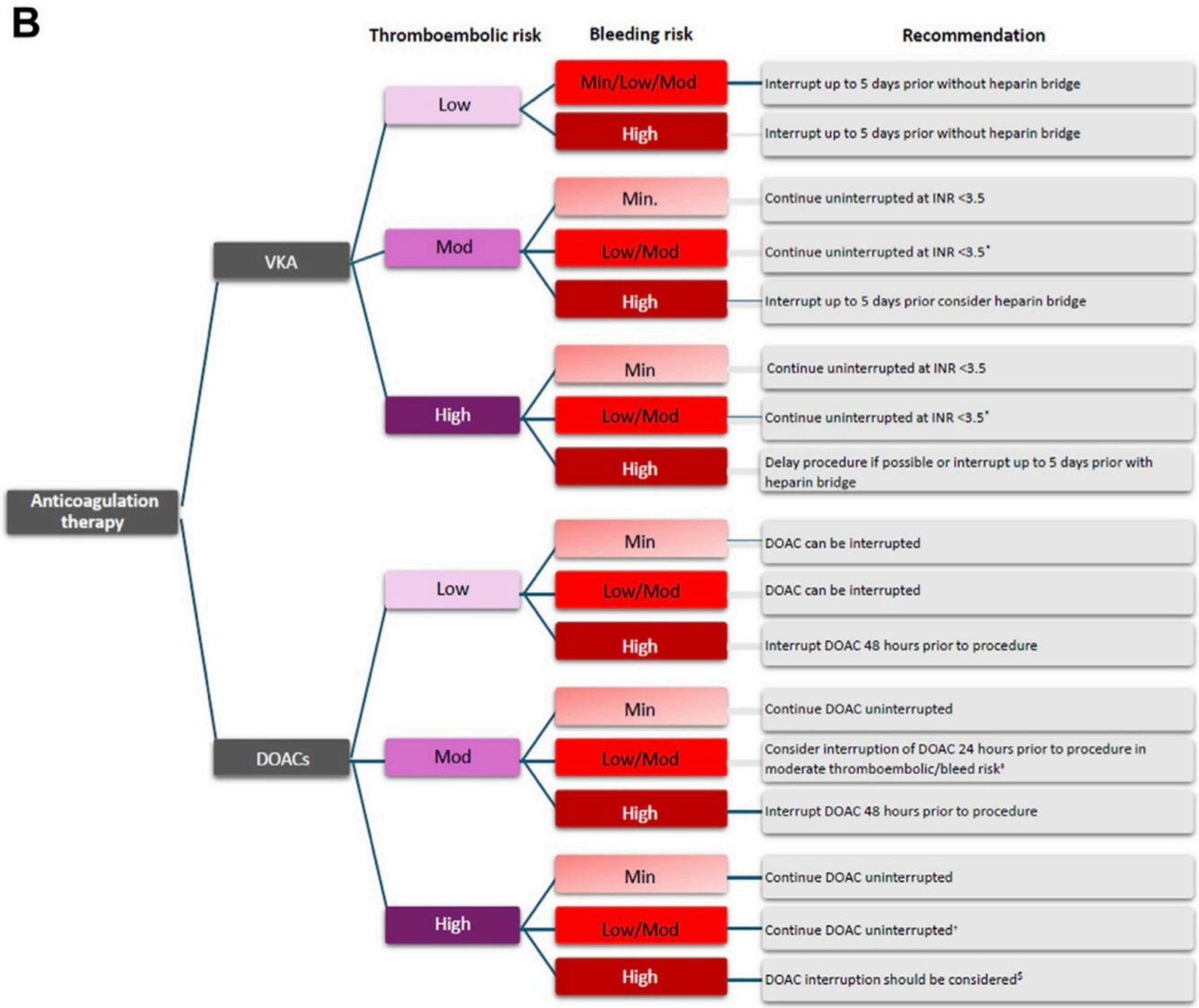
>> if bleeding cannot be mitigated by

local hemostatic > temporary interrupt P2Y12

or use cangrelor

or GP IIb/IIIa inhibitors

Practical management
of patients on anticoagulant drugs



Thromboembolic Risk	
Low	Bi-leaflet aortic valve without risk factors In mechanical heart valve patients, AF with CHA_2DS_2-VASc score up to 4 and no prior CVA/TIA.
Mod	Mitral valve prosthesis without risk factors, , AF with CHA_2DS_2-VASc score 5 to 6.
High	Caged ball /tilting-disc aortic or mitral valve prosthesis, CVA / TIA within 3 months. AF with CHA_2DS_2-VASc above 7

Bleeding Risk	
Min	Dental cleaning and filling, Basic periodontal examination, Supragingival removal of plaque, calculus, and stain.
Mod	Root surface debridement, Simple extractions, Bone grafting, alveolar ridge
High	Gingival recontouring, Excision of bone or large soft tissue pathology, Corrective jaw or facial surgery

* Temporary INR target reduction (e.g., 1.5-2.0) can be used instead of full interruption in cases with moderate bleeding risk.

‡ Discussion between the dental care team and the clinician prescribing DOAC therapy is necessary.

† Interruption of one dose within 12 Hours and Restarting the next day can be considered.

§ Delaying non-urgent procedures should be considered if the thromboembolic risk is time-dependent.

Practical management
of patients on anticoagulant drugs

- VKA (Vitamin K antagonist, Warfarin)

🟢Low TE risk + Low/mod/high bleeding risk >> interrupt warfarin 5D preop
(w/o heparin bridge)

🟡Moderate TE risk + Low/mod bleeding risk >> <u>continue warfarin at INR <3.5</u>
+ high bleeding risk >> interrupt warfarin 5D preop
+- heparin bridge

🔴High TE risk + Low/mod bleeding risk >> continue warfarin at INR <3.5
+ high bleeding risk >> delay procedure if possible
>> interrupt 5D preop
+heparin bridge

Practical management
of patients on anticoagulant drugs

- DOACs (Apixaban, Rivaroxaban, Dabigatran)

🟢 Low TE risk + Low/mod bleeding risk >> can be interrupt 24h preop
(resume 24h postop)
+ high bleeding risk >> interrupt 48h preop
(resume 48-72h postop)

🟡 Moderate TE risk + Low bleeding risk >> continue DOAC
+ mod bleeding risk >> interrupt 24h preop
+ high bleeding risk >> interrupt 48h preop

🔴 High TE risk + Low/mod bleeding risk >> continue DOAC
+ high bleeding risk >> delay procedure if possible
>> consult for heparin bridging

Practical management
of patients on anticoagulant drugs

- Antiplatelet plus anticoagulation therapy

>> delay procedure if possible

>> consider temporary hold or bridge anticoagulant (individualized)

Local hemostatic measures

- **Local tranexamic acid**

> mouthwash

sig: pre-op

post-op bid/tid for 1-2 days

> soaked gauze

- 4.8% tranexamic acid mw preparation

> Tranexamic acid 500 mg

in water 10-15 ml

Thank You