İNVAZİV İŞLEMLERDE ANTİKOAGULAN ANTİAGREGAN TEDAVİ ALAN HASTALARDA YAKLAŞIM

Dr. Meral ULUKÖYLÜ MENGÜÇ

Marmara Üniversitesi Pendik Eğitim ve Araştırma Hastanesi

-Tromboemboli riski
-Cerrahi /işlem kaynaklı kanama riski
-Multidisipliner değerlendirme!!!

1)Tromboembolik riskin belirlenmesi
2)İşleme bağlı kanama riskinin belirlenmesi
3)Antikoagulan/antiagregan tedavinin kesilip kesilmeyeceğinin belirlenmesi
4)Köprü antikaogulasyon gerekliliği

TROMBOEMBOLİK RİSKİN BELİRLENMESİ

- Atriyal fibrilasyon (CHA2DS2-VASc)
- Prostetik kalp kapağı varlığı
- Geçirilmiş tromboemboli (son 1 ay >son 3 ay)

DÜŞÜK	ORTA	YÜKSEK
-CHA2DS2-VASc 0-2 -DVT >12 ay -Çift kanat aort kapağı > 3 ay sinüs ritmi	-CHA2DS2-VASc 3-4 -DVT 3-12 ay -Onkolojik hastada DVT -Rekürren DVT -Çift kanat aort kapak + CHA2DS2-VASc>0 -Sinüs ritminde biyolojik kapak	-CHA2DS2-VASc 5-6 - DVT < 3 ay - P.embolinin eşlik ettiği DVT <12 ay - Strok < 3 ay - MVR - Eski mekanik aort kapak - AF +biyolojik kapak -Herediter trombofili

Steffel J, et al. The 2018 European Heart Rhythm Association Practical Guide on the use of non-vitamin K antagonist oral anticoagulants in patients with atrial fibrillation. *Eur Heart J* 2018;39:1330–93

TROMBOEMBOLİK RİSKİN BELİRLENMESİ

RİSK KATEGORİSİ	MEKANİK KALP KAPAĞI	ATRİYAL FİBRİLASYON	VENÖZ TROMBOEMBOLİZM
YÜKSEK (ATE riski > %10/yıl veya VTE riski > % 10 /ay)	-Mekanik mitral kapak (tüm tipler) -Mitral /aortik pozisyonda kafesli ya da kayan diskli kapak	CHADS2 5-6 CHA2DS2-VASc ≥ 7 < 3 ay inme /TİA Romatizmal kalp kapak h.	Prot. C , Prot. S , ATIII eks. AFAS Çoklu trombofili v.cava filtre varlığı Aktif kanser*
ORTA (ATE riski %4-%10/yıl veya VTE riski %4 – % 10 /ay)	İnme için majör risk f. (+) bileaflet AVR	CHADS2 3-4 CHA2DS2-VASc 5-6	VTE 3-12ay içinde Rekürren VTE Ağır olmayan trombofili Aktif kanser /yakın zamanda kanser
DÜŞÜK (ATE riski < %4/yıl veya VTE riski < % 2 /ay)	İnme için major risk f. (-) bileaflet AVR	CHADS2 0-2 (inme/TİA öyküsü yok) CHA2DS2-VASc 1-4	VTE > 12 ay

Spyropoulos et al. SSC Subcommittee on Perioperative and Critical Care Thrombosis and Haemostasis of the International Society on Thrombosis and Haemostasis. (2019). Scientific and Standardization Committee Communication: Guidance document on the periprocedural management of patients on chronic oral anticoagulant therapy: Recommendations for standardized reporting of procedural/surgical bleed risk and patient-specific thromboembolic risk. *Journal of Thrombosis and Haemostasis*, *17*(11), 1966-1972.

İŞLEME BAĞLI RİSKİN BELİRLENMESİ

TABLE 2] Suggested Risk Stratification for Procedural Bleed Risk, Based on ISTH Guidance Statements[25]

High-bleed-risk surgery/procedure[a] (30-d risk of major bleed ≥ 2%)	Major surgery with extensive tissue injury Cancer surgery, especially solid tumor resection (lung, esophagus, gastric, colon, hepatobiliary, pancreatic) Major orthopedic surgery, including shoulder replacement surgery Reconstructive plastic surgery Major thoracic surgery Urologic or GI surgery, especially anastomosis surgery Transurethral prostate resection, bladder resection, or tumor ablation Nephrectomy, kidney biopsy Colonic polyp resection Bowel resection Percutaneous endoscopic gastrostomy placement, endoscopic retrograde cholangiopancreatography Surgery in highly vascular organs (kidneys, liver, spleen) Cardiac, intracranial, or spinal surgery Any major operation (procedure duration > 45 min) Neuraxial anesthesia[b] Epidural injections
Low-to-moderate-bleed-risk surgery/procedure[c] (30-d risk of major bleed 0%-2%)	Arthroscopy Cutaneous/lymph node biopsies Foot/hand surgery Coronary angiography[d] GI endoscopy ± biopsy Colonoscopy ± biopsy Abdominal hysterectomy Laparoscopic cholecystectomy Abdominal hernia repair Hemorrhoidal surgery Bronchoscopy ± biopsy
Minimal-bleed-risk surgery/procedure[e] (30-d risk of major bleed approximately 0%)	Minor dermatologic procedures (excision of basal and squamous cell skin cancers, actinic keratoses, and premalignant or cancerous skin nevi) Ophthalmologic (cataract) procedures Minor dental procedures (dental extractions, restorations, prosthetics, endodontics), dental cleanings, fillings Pacemaker or cardioverter-defibrillator device implantation

Douketis, J. D.et al. (2022). Perioperative management of antithrombotic therapy: an American College of Chest Physicians clinical practice guideline. *Chest*, *162*(5), e207-e243

ANTİKOAGULAN /ANTİAGREGAN TEDAVİNİN KESİLMESİ

- Kanama riski minimal olan işlemler ya da bazı cerrahilerde antikoagulasyon kesilmeyebilir / kısa süreli (işlem günü) ara verilebilir
- Düşük / orta kanama riskli işlemler / cerrahilerde preoperatif kısa süreli ara verme ve post-operatif erken başlama dönemleri kabul edilebilir.
- Kanama riski yüksek işlem / cerrahilerde cerrahi sırasında antikoagulan etkinin olmadığı ya da minimal düzeyde antikoagulan etkiyi elde etmek için preoperatif yeterli süre antikoagulasyona ara verilmesi , postoperatif dönemde antikoagulasyon başlamanın cerrahi bölgede hemostaz sağlanıncaya kadar geciktirilmesi önerilir.

Douketis, J. D. et al. (2022). Perioperative management of antithrombotic therapy: an American College of Chest Physicians clinical practice guideline. *Chest*, *162*(5), e207-e243

JAMA Internal Medicine | Original Investigation

Perioperative Management of Patients With Atrial Fibrillation Receiving a Direct Oral Anticoagulant

James D. Douketis, MD; Alex C. Spyropoulos, MD; Joanne Duncan, BSc; Marc Carrier, MD, MSc; Gregoire Le Gal, MD; Alfonso J. Tafur, MD; Thomas Vanassche, MD; Peter Verhamme, MD; Sudeep Shivakumar, MD; Peter L. Gross, MD, MSc; Agnes Y. Y. Lee, MD, MSc; Erik Yeo, MD; Susan Solymoss, MD; Jeannine Kassis, MD; Geneviève Le Templier, MD; Stephen Kowalski, MD; Mark Blostein, MD; Vinay Shah, MD; Elizabeth MacKay, MD; Cynthia Wu, MD; Nathan P. Clark, PharmD; Shannon M. Bates, MDCM, MSc; Frederick A. Spencer, MD; Eleni Arnaoutoglou, MD, PhD; Michiel Coppens, MD, PhD; Donald M. Arnold, MD, MSc; Joseph A. Caprini, MD; Na Li, PhD; Karen A. Moffat, MLT; Summer Syed, MD, MSc; Sam Schulman, MD, PhD

Prospektif (2014-2018)

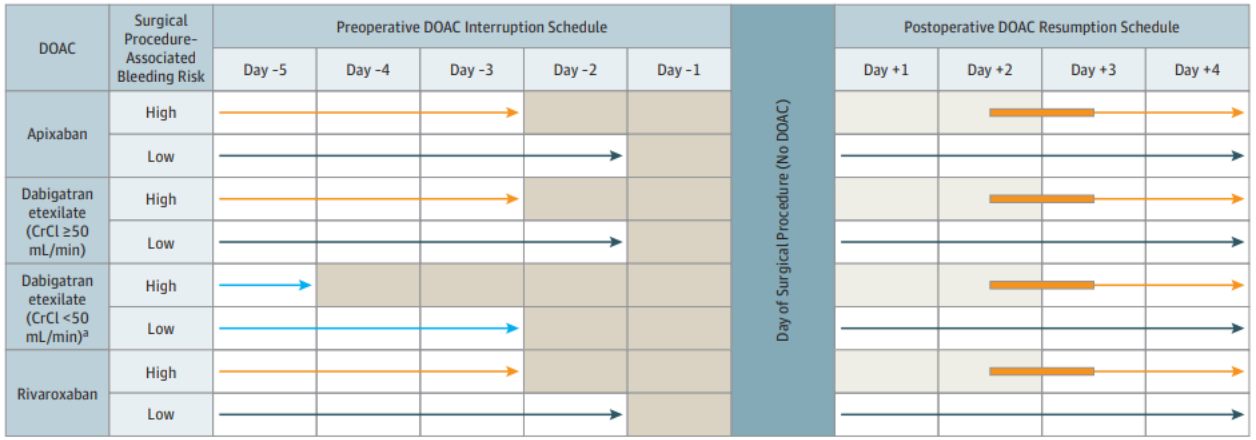
n:3007

AF nedeniyle uzun süreli YOAK kullanımı olan ,

Elektif cerrahi /işlem planlanan hastalar dahil edilmiş.

VTE'li hastalar alınmamış.

Figure. Perioperative Direct Oral Anticoagulant (DOAC) Management Protocol



No DOAC was taken on certain days (shaded) and on the day of the elective surgery or procedure. The light blue arrows refer to an exception to the basic management, a subgroup of patients taking dabigatran with a creatinine clearance (CrCl) less than 50 ng/mL. The orange arrows refer to patients having a high-bleed-risk surgical procedure. Dark blue arrows refer to patients having a low-bleed-risk surgical procedure. The thickened orange part of arrows refer to flexibility in the timing of DOAC resumption after a procedure.

[a] Cancer diagnosed within 3 months or has been treated within 6 months or metastatic.

Table 3. Primary Study Outcomes

Outcome	DOAC Cohort		
	Apixaban (n = 1257)	Dabigatran Etexilate (n = 668)	Rivaroxaban (n = 1082)
Primary			
Major bleeding[a]			
No. (%)	17 (1.35)	6 (0.90)	20 (1.85)
1-Sided 95% CI	0-2.00	0-1.73	0-2.65
P value	.051	.02	.36
Arterial thromboembolism[b,c]			
No. (%)	2 (0.16)	4 (0.60)	4 (0.37)
1-Sided 95% CI	0-0.48	0-1.33	0-0.82
P value	<.001	.03	.001

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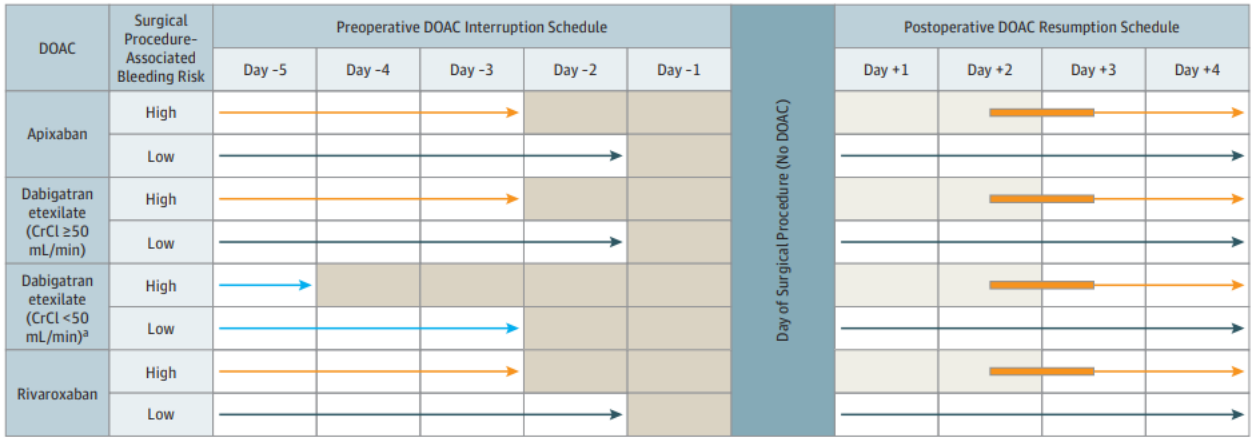

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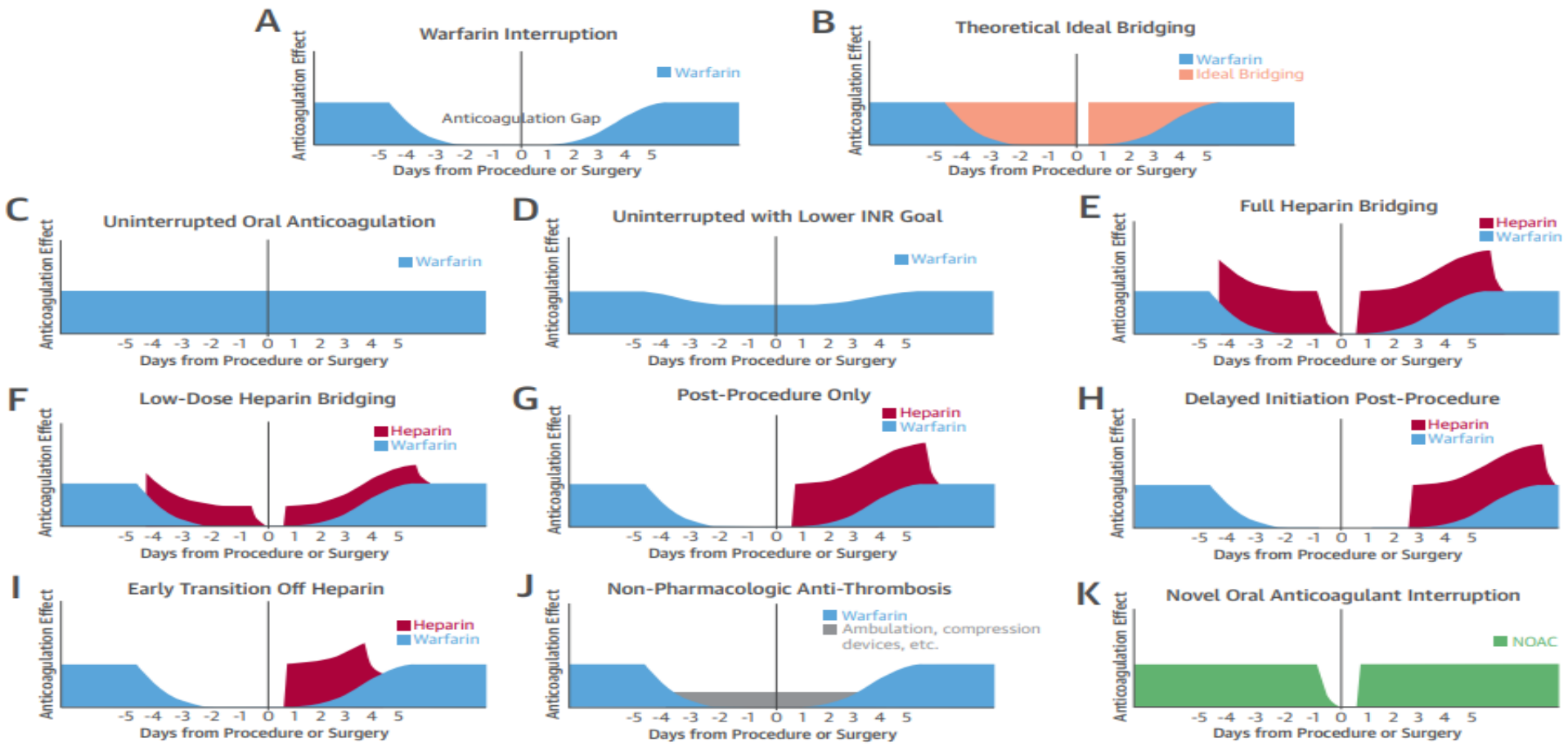
KÖPRÜ ANTİKOAGULASYON

- **TANIM:** VKA kesilmesini takiben gelişen subterapötik INR düzeyinde 8-10 günlük perioperatif dönemde kısa etkili antikaogulan (LMWH , UFH) uygulanması
- Terapötik dozda LMWH (enoxaparin 1 mg/kg 2X1 veya 1,5 mg /kg/gün – dalteparin 100 IU/kg 2X1 ya da 200 IU/kg/gün)
- Tam doz UFH (aPTT →1,5-2 X kontrol aPTT)

- Amaç arteryel tromboemboliyi (strok, sistemik emboli ,vs) önlemek ; perioperatif dönemde VTE'yi önlemek için kullanılan düşük doz LMWH 'le karıştırılmamalı!!!

FIGURE 3 **Periprocedural Antithrombotic Strategies**



Warfarin interruption produces an anticoagulation gap **(A)**. Various strategies **(C to K)** attempt to emulate a theoretical ideal bridge **(B)**. See text for discussion. INR = international normalized ratio; NOAC = novel oral anticoagulant.

Rechenmacher S.J. and Fang J.C. : "Bridging anticoagulation: primum non nocere". J Am Coll Cardiol 2015; **66**: 1392.

The NEW ENGLAND JOURNAL of MEDICINE

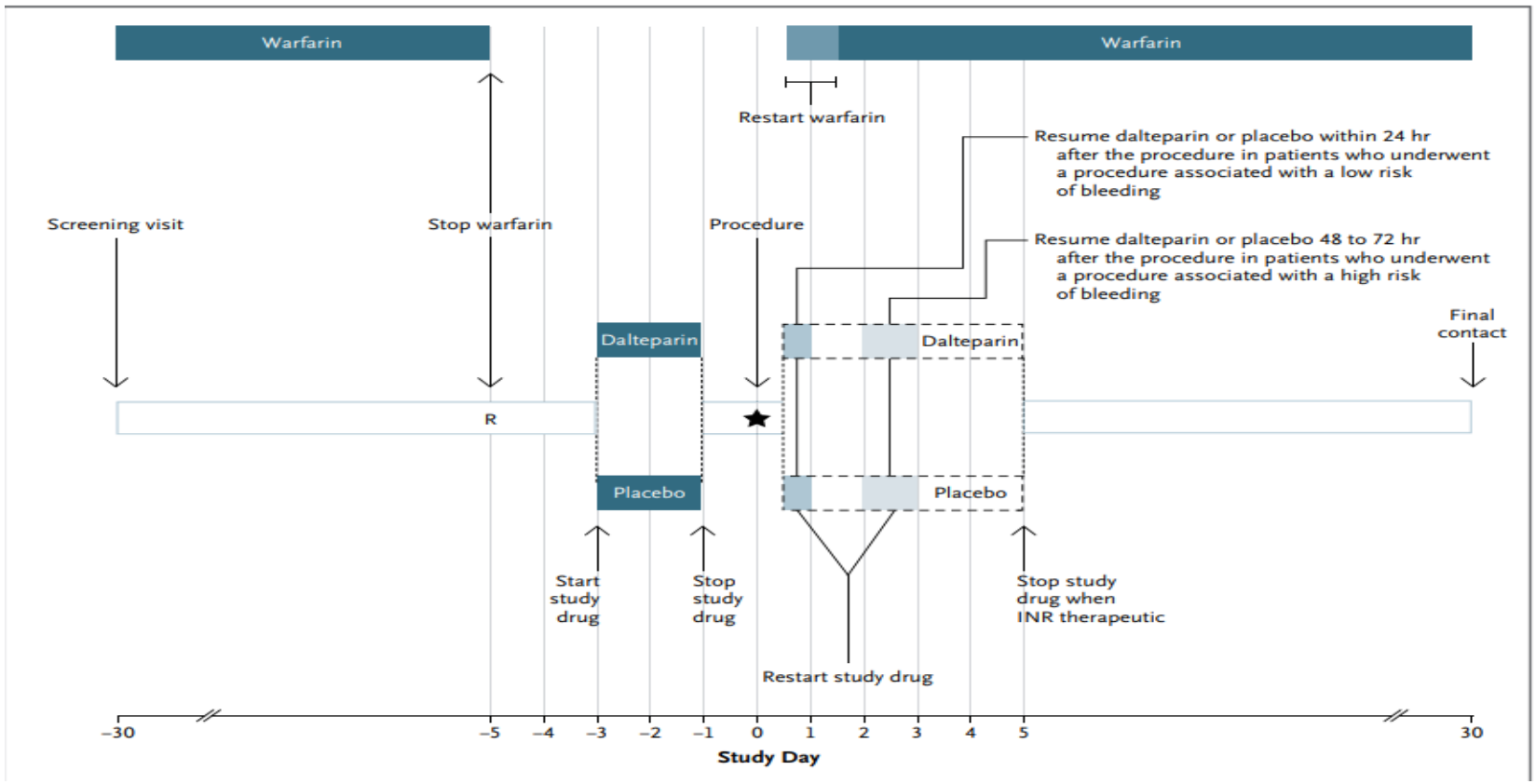
ORIGINAL ARTICLE

Perioperative Bridging Anticoagulation in Patients with Atrial Fibrillation

James D. Douketis, M.D., Alex C. Spyropoulos, M.D., Scott Kaatz, D.O., Richard C. Becker, M.D., Joseph A. Caprini, M.D., Andrew S. Dunn, M.D., David A. Garcia, M.D., Alan Jacobson, M.D., Amir K. Jaffer, M.D., M.B.A., David F. Kong, M.D., Sam Schulman, M.D., Ph.D., Alexander G.G. Turpie, M.B., Vic Hasselblad, Ph.D., and Thomas L. Ortel, M.D., Ph.D., for the BRIDGE Investigators*

Randomize ,plasebo kontrollü çift -kör dizayn

n:1884 (934 köprü ted.+ ,950 köprü ted. -)



N Engl J Med 2015;373:823-33.

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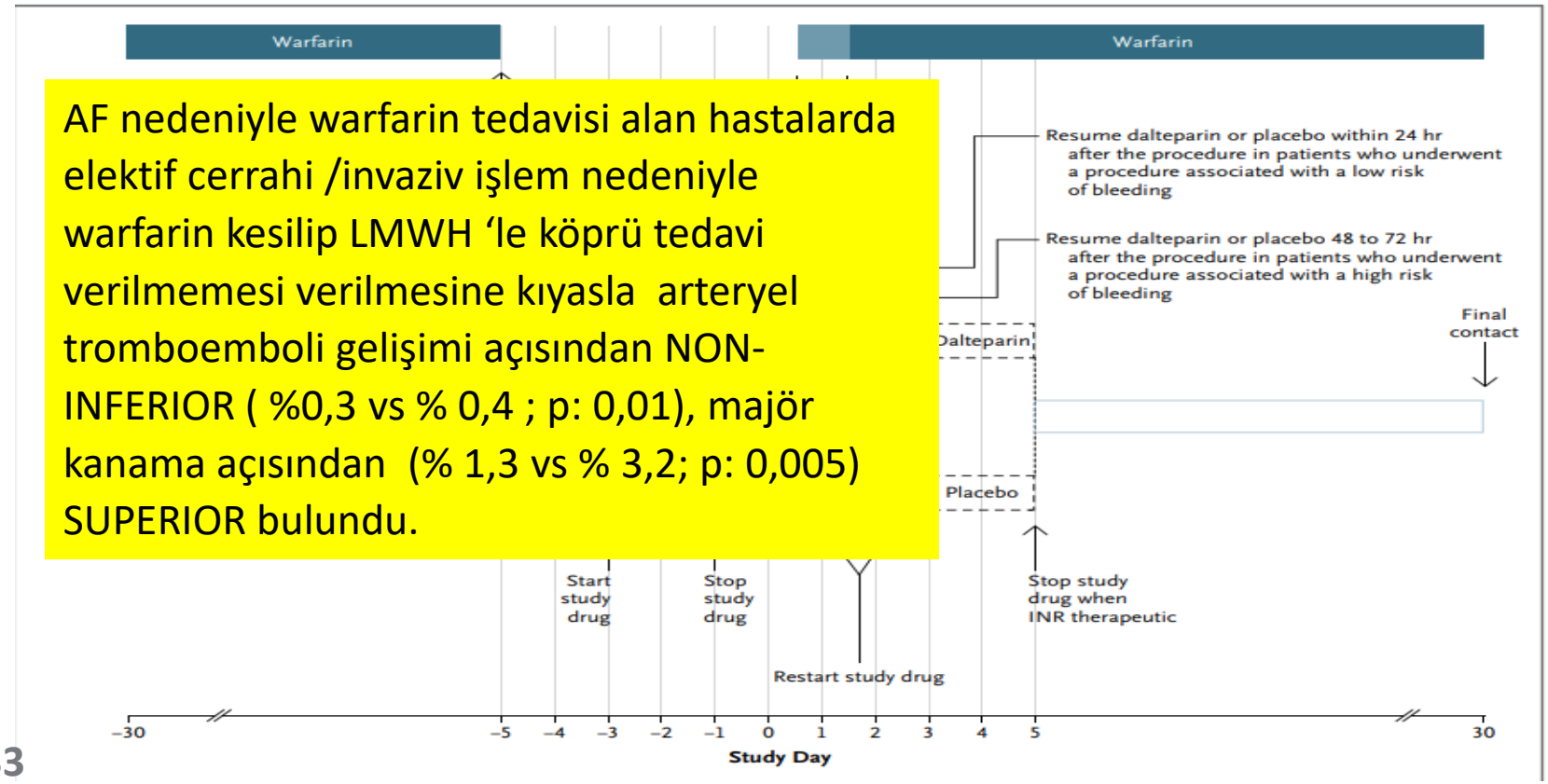
AF nedeniyle warfarin tedavisi alan hastalarda elektif cerrahi /invaziv işlem nedeniyle warfarin kesilip LMWH 'le köprü tedavi verilmemesi verilmesine kıyasla arteryel tromboemboli gelişimi açısından NON-INFERIOR (%0,3 vs % 0,4 ; p: 0,01), majör kanama açısından (% 1,3 vs % 3,2; p: 0,005) SUPERIOR bulundu.



N Engl J Med 2015;373:823-33

ORIGINAL RESEARCH

Management of Antithrombotic Agents During Surgery or Other Kinds of Medical Procedures With Bleeding: The MARK Study

Seiji Gotoh, MD, PhD; Masahiro Yasaka, MD, PhD; Asako Nakamura, MD, PhD; Takahiro Kuwashiro, MD, PhD; Yasushi Okada, MD, PhD

Prospektif gözlemsel

Aralık 2011-Haziran 2014

n: 9700

*Antitrombotik tedavi alan

*Cerrahi / invaziv işlem planlanan hastalar

En sık GIS endoskopisi n: 1515

Açık torasik cerrahi n:749

Laparotomi n:616

Kraniyotomi n: 89

Table 2. Rates of Adverse Events During the Periprocedural Period

	All Patients	Continuation	Discontinuation	
	N=9700	n=3551	n=6149	*P* Value
Any TE, n (%)	128 (1.3)	23 (0.6)	105 (1.7)	<0.001
Ischemic stroke	58 (0.6)	15 (0.4)	43 (0.7)	0.10
Ischemic heart disease	18 (0.2)	4 (0.1)	14 (0.2)	0.23
Deep vein thrombosis	31 (0.3)	0 (0)	31 (0.5)	<0.001
Other TE	25 (0.3)	4 (0.1)	21 (0.3)	0.04
Any bleeding complications, n (%)	1377 (14.2)	321 (9.0)	1056 (17.2)	<0.001
MB	485 (5.0)	15 (0.4)	470 (7.6)	<0.001
Transfusion of whole blood or red cells	670 (6.9)	30 (0.8)	640 (10.4)	<0.001
Hemorrhagic stroke	14 (0.1)	4 (0.1)	10 (0.2)	0.59
Other bleeding events	397 (4.1)	57 (1.6)	340 (5.5)	<0.001
Increased surgical site bleeding	886 (9.1)	257 (7.2)	629 (10.2)	<0.001
Death, n (%)	65 (0.7)	15 (0.4)	50 (0.8)	0.03

MB indicates major bleeding; TE, thromboembolism.

Management of Antithrombotic Agents During Surgery or Other Kinds of Medical Procedures With Bleeding: The MARK Study

Seiji Gotoh, MD, PhD; Masahiro Yasaka, MD, PhD; Asako Nakamura, MD, PhD; Takahiro Kuwashiro, MD, PhD; Yasushi Okada, MD, PhD

Table 4. Rates of Adverse Events According to Type of Antithrombotic Agents

	Incident TEs			Incident MB			Death		
	Continuation	Discontinuation	*P* Value	Continuation	Discontinuation	*P* Value	Continuation	Discontinuation	*P* Value
Antiplatelet agents, n/n (%)	20/2646 (0.8)	68/4420 (1.5)	0.004	11/2646 (0.4)	321/4420 (7.3)	<0.001	9/2646 (0.3)	29/4420 (0.7)	0.09
SAPT*	11/1542 (0.7)	48/3088 (1.6)	0.02	9/1542 (0.6)	217/3088 (7.0)	<0.001	5/1542 (0.3)	18/3088 (0.6)	0.28
CAPT†	7/1012 (0.7)	14/716 (2.0)	0.02	6/1012 (0.6)	83/716 (11.6)	<0.001	4/1012 (0.4)	9/716 (1.3)	0.049
Anticoagulant agents, n/n (%)	1/615 (0.2)	18/1148 (1.6)	0.006	2/615 (0.3)	86/1148 (7.5)	<0.001	6/615 (1.0)	9/1148 (0.8)	0.79
VKA	1/547 (0.2)	18/928 (1.9)	0.003	1/547 (0.2)	84/928 (9.1)	<0.001	6/547 (1.1)	12/928 (1.3)	0.81
DOAC	0/83 (0)	2/268 (0.8)	1.00	1/83 (1.2)	8/268 (3.0)	0.69	0/83 (0)	0/268 (0)	. . .
Antiplatelet plus anticoagulant agents‡	3/361 (0.8)	16/431 (3.7)	0.009	5/361 (1.4)	53/431 (12.3)	<0.001	1/361 (0.3)	8/431 (1.9)	0.04

CAPT indicates combination antiplatelet therapy; DOAC, direct oral anticoagulants; MB, major bleeding; SAPT, single antiplatelet agents; TE, thromboembolic event; VKA, vitamin K antagonists.

*Taking one of the main 3 antiplatelet agents: aspirin, thienopyridines, or cilostazol.

†Taking ≥2 of the main 3 antiplatelet agents: aspirin, thienopyridines, or cilostazol.

‡Taking ≥1 of the main antiplatelet agents (aspirin, thienopyridines, or cilostazol) plus an anticoagulant agent.

DOI: 10.1161/JAHA.119.012774

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									alue
A									9
									8
									49
A									9
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Düşük kanama riskli işlemlerde antitrombotik tedavi kesilenlerde herhangi bir tromboembolik olay (1.7% vs 0.6%, P<0.001) , majör kanama (7.6% vs 0.4%, P<0.001) ve ölüm (0.8% vs 0.4%, P<0.001) insidansı kesilmeyenlere göre daha yüksek bulundu .

CAPT indicates combination antiplatelet therapy; DOAC, direct oral anticoagulants; MB, major bleeding; SAPT, single antiplatelet agents; TE, thromboembolic event; VKA, vitamin K antagonists.
*Taking one of the main 3 antiplatelet agents: aspirin, thienopyridines, or cilostazol.
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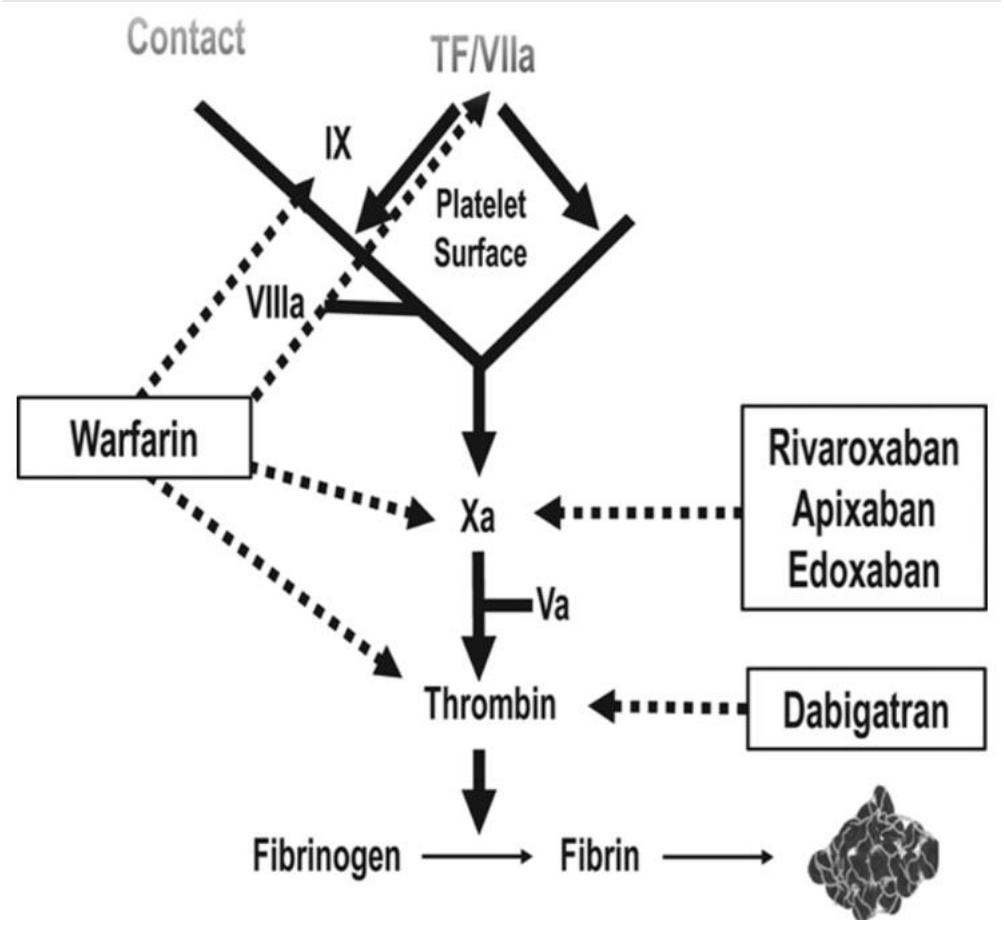

Table 1. Comparison of the Pharmacological Properties of Warfarin, Rivaroxaban, Apixaban, and Edoxaban (Table view)

	Warfarin	Dabigatran	Rivaroxaban	Apixaban	Edoxaban
Target	VKORC1	Thrombin	Factor Xa	Factor Xa	Factor Xa
Prodrug	No	Yes	No	No	No
Bioavailability, %	100	7	80	60	62
Dosing	OD	BID	OD (BID)	BID	OD
Time-to-peak effect	4–5 d	1–3 h	2–4 h	1–2 h	1–2 h
Half-life, h	40	14–17	7–11	8–14	5–11
Renal clearance as unchanged drug, %	None	80	33	27	50
Interactions	Multiple	P-gp	3A4/P-gp	3A4/P-gp	P-gp

Yeh, C. H., Hogg, K., & Weitz, J. I. (2015). Overview of the new oral anticoagulants: opportunities and challenges. *Arteriosclerosis, thrombosis, and vascular biology*, *35*(5), 1056-1065.

WARFARIN

1- İşlem ilişkili kanama riski belirlenmeli

2-Warfarin kesilmesiyle ilişkili tromboemboli riski hesaplanmalı

3-kanama riski vs tromboemboli riski ; köprü tedavi gereksinimi ??

Kanama riski düşük işlemlerde VKA kesilmeyebilir, yüksek riskli işlemlerde Warfarin işlemden ≥5 gün önce kesilir , özel durumlarda (yaşlı hastalar ,warfarin genetik polimorfizmi olanlar , işlem öncesi subterapotik INR'si olanlar , vs) işlemden 24 saat önce INR tekrar değerlendirilir, özel durumlar dışında işlemden önce INR monitorizasyon önerilmiyor .

Prostetik kapak ,AF varlığında VTE nedeniyle VKA alanlarda tromboemboli riski yüksek durumlar dışında VKA kesildiği dönemde köprü tedavi önerilmiyor (**enoxaparin 1 mg/kg 2x1 → işlemden 24 st önce STOP, Enoxaparin 1,5 mg/kg/gün → işlemden 24 saat önce 0,75 mg/kg, UFH sc kullanılıyorsa son doz işlemden 24 st önce uygulanmalı, İV Heparin infüzyonu işlemden 4-6 st önce STOP

4-İşlemden sonra uygun hemostaz sağlandıktan **12-24 saat sonra Warfarin başlanır**.

*** **Kanama riski düşükse** post-op hemostaz sağlandıktan ≥24 st içinde köprü antikoagulasyon başlanır

Kanama riski yüksek işlemlerde post-op hemostaz sağlandıktan 48-72 saat sonra köprü tedavi (düşük doz / terapötük doz LMWH ya da UFH) başlanır ya da tamamen atlanır.

Douketis, J. D. et al. (2022). Perioperative management of antithrombotic therapy: an American College of Chest Physicians clinical practice guideline. *Chest*, *162*(5), e207-e243

YENİ ORAL ANTİKOAGULANLAR

Table 8. When to Interrupt and Restart DOAC Therapy During Elective Procedures

	Dabigatran	Rivaroxaban	Apixaban	Edoxaban	Betrixaban
Minor-bleeding-risk procedure					
Recommended to not stop in most minor surgical procedures					NA†
STOP: 12–24 h before procedure*					
RESTART: 6 h after intervention					
Low-bleed-risk procedure Stop 24–96 h before procedure					
CrCl ≥80 mL/min	STOP: ≥24	STOP: ≥24	STOP: ≥24	STOP: ≥24	STOP: ≥96
CrCl ≤50–79 mL/min	STOP: ≥36	STOP: ≥24	STOP: ≥24	STOP: ≥24	STOP: ≥96
CrCl ≤30–49 mL/min	STOP: ≥48	STOP: ≥24	STOP: ≥24	STOP: ≥24	Not indicated
CrCl ≤15–29 mL/min	Not indicated	STOP: ≥36	STOP: ≥36	STOP: ≥36	Not indicated
CrCl ≤15 mL/min	Consider measuring drug activity to determine absence of drug affect				Not indicated
RESTART	≥24 h after intervention				
High-bleed-risk procedure Stop 48–96 h before procedure					
CrCl ≥80 mL/min	STOP: ≥48	STOP: ≥48	STOP: ≥48	STOP: ≥48	STOP: ≥96
CrCl ≤50–79 mL/min	STOP: ≥72	STOP: ≥48	STOP: ≥48	STOP: ≥48	STOP: ≥96
CrCl ≤30–49 mL/min	STOP: ≥96	STOP: ≥48	STOP: ≥48	STOP: ≥48	Not indicated
CrCl ≤15–29 mL/min	Not indicated	STOP: ≥48	STOP: ≥48	STOP: ≥48	Not indicated
CrCl ≤15 mL/min	Consider measuring drug activity to determine absence of drug effect			Not indicated	
RESTART	≥48 to 72 h after intervention				

Minor-bleeding-risk interventions: dental, cataract, glaucoma, endoscopy without biopsy or resection, superficial surgery; low-bleeding-risk interventions: endoscopy with biopsy, prostate biopsy, bladder biopsy, pacemaker or implantable cardioverter-defibrillator implantation, noncoronary angiography, electrophysiological study/catheter ablation; high-bleeding-risk intervention: major surgery, spinal puncture or placement of spinal/epidural catheter, other situations in which complete hemostasis is required. CrCl indicates Cockcroft-Gault creatinine clearance; and NA, not applicable.

*Skip 1 dose of dabigatran or apixaban; no dose of edoxaban or rivaroxaban is skipped.

†Has not been studied.

Düşük kanama riskli işlemlerde işlemden 24 saat sonra , orta-yüksek riskli işlemlerde 48-72 saat sonra başlanmaları öneriliyor.

Douketis, J. D. et al. (2022). Perioperative management of antithrombotic therapy: an American College of Chest Physicians clinical practice guideline. *Chest*, *162*(5), e207-e243

Chen, A., Stecker, E., & A. Warden, B. (2020). Direct oral anticoagulant use: a practical guide to common clinical challenges. *Journal of the American Heart Association*, *9*(13), e017559.

ANTİPLATELET TEDAVİ-Aspirin (ASA)

- ASA ve P2Y12 inhibitörü kesilme kararı ve zamanı -→Kardiyoloji görüşü !!!
- Non-kardiyak cerrahide
- a)Düşük kanama riskli işlemler

  ** → ASA devam edilir

  b) Yüksek kanama riskli işlemler

  **Kardiyak olay riski düşük hastalar → ASA işlemden 7-10 gün önce kesilir

  **Kardiyak olay riski yüksek hastalar →ASA kesilmeden devam edilir

Douketis, J. D. et al. (2022). Perioperative management of antithrombotic therapy: an American College of Chest Physicians clinical practice guideline. *Chest*, *162*(5), e207-e243

Kumbhani DJ et al. 2020 ACC expert consensus decision pathway for anticoagulant and antiplatelet therapy in patients with atrial fibrillation or venous thromboembolism undergoing percutaneous coronary intervention or with atherosclerotic cardiovascular disease: a report of the American College of Cardiology Solution Set Oversight Committee. J Am Coll Cardiol. 2021;77:629–58.

Aboul-Hassan SS et al. The use of preoperative aspirin in cardiac surgery: a systematic review and meta-analysis. J Card Surg. 2017;32:758–74

Fleisher LA et al. 2014 ACC/AHA guideline on perioperative cardiovascular evaluation and management of patients undergoing noncardiac surgery: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Circulation. 2014;130:e278–333.

ANTİPLATELET TEDAVİ –P2Y12 İNHİBİTÖRLERİ

İlaç kaplı stent takılmasından sonraki 12 ay içinde ya da çıplak metal stent sonrası 6 hafta içinde gereken işlemler (non-kardiyak)

- Dual antiplatelet tedaviye perioperatif dönem boyunca devam edilir.
- İlaç kesme kararı sadece kardiyoloji görüşü ile alınabilir

-Ticagrelor →işlemden 5 gün önce

-Klopidogrel →işlemden 5 gün önce

-Prasugrel →işlemden 7 gün önce kesilir

İşlemden sonraki 24 st içinde antiplatelet tedavi tekrar başlanır

Kardiyak cerrahi gereken hastalar

A)CABG planlananlar

ASA devam edilir , P2Y12 inhibitörleri nonkardiyak cerrahideki sürelerde kesilir

B)Stentli hastalar

-Dual antiplatelet alan çıplak metal stentlilerde işlemin 6 hf sonraya , ilaç kaplı stentlilerde 6 ay sonraya ertelenmesi önerilir

-Bahsedilen sürelerden önce cerrahi yapılacak hastalarda aksi yönde kardiyoloji görüşü olmadıkça dual tedaviye devam edilir.

Levine GN et al. 2016 ACC/AHA guideline focused update on duration of dual antiplatelet therapy in patients with coronary artery disease: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation 2016;134:e123-55. Circulation. 2016;134:e123–55.

Kumbhani DJ et al. 2020 ACC expert consensus decision pathway for anticoagulant and antiplatelet therapy in patients with atrial fibrillation or venous thromboembolism undergoing percutaneous coronary intervention or with atherosclerotic cardiovascular disease: a report of the American College of Cardiology Solution Set Oversight Committee. J Am Coll Cardiol. 2021;77:629–58.

Table 1 Recommended preoperative withholding times of oral antiplatelet and anticoagulant drugs

Drug	Half-life	Time to withhold prior to		Time to restart after	
		Minor surgery	Major Surgery	Minor surgery	Major surgery
Warfarin	20–60 h	3–5 days*	3–5 days	24 h, overlapping therapy with heparin	48–72 h; overlapping therapy with heparin
Phenprocoumon	70–130 h	5–7 days*	5–7 days	24 h, overlapping therapy with heparin	48–72 h; overlapping therapy with heparin
Apixaban	8–15 h	24 h**	48 h**	24 h	24–48 h
Rivaroxaban	5–9 h (Elderly: 11–13 h)	24 h**	48 h**	24 h	24–48 h
Edoxaban	10–14 h	24 h**	48 h**	24 h	24–48 h
Betrixaban	19–27 h	≥4 days	≥4 days	24 h	24–48 h
Dabigatran	12–17 h	CrCl >50 ml: 24 h CrCl <50 ml: 72 h	CrCl >50 ml: 72 h CrCl <50 ml: 120 h	24 h	24–48 h
Aspirin	7–10 days	usually continued	usually continued	usually continued	usually continued
Clopidgrel	7–10 days	5–7 days	5–7 days	24 h	24–48 h
Prasugrel	7–10 days	5–7 days	5–7 days	24 h	24–48 h
Ticagrelor	5–7 days	3–5 days	3–5 days	24 h	24–48 h

*In some cases, continued drug administration is feasible

**In case of impaired renal function, withholding interval should be prolonged and/or drug level should be evaluated by laboratory tests

Abbreviations: *CrCl*, creatinine clearance

Moster, M., & Bolliger, D. (2022). Perioperative guidelines on antiplatelet and anticoagulant agents: 2022 update. *Current Anesthesiology Reports*, *12*(2), 286-296.

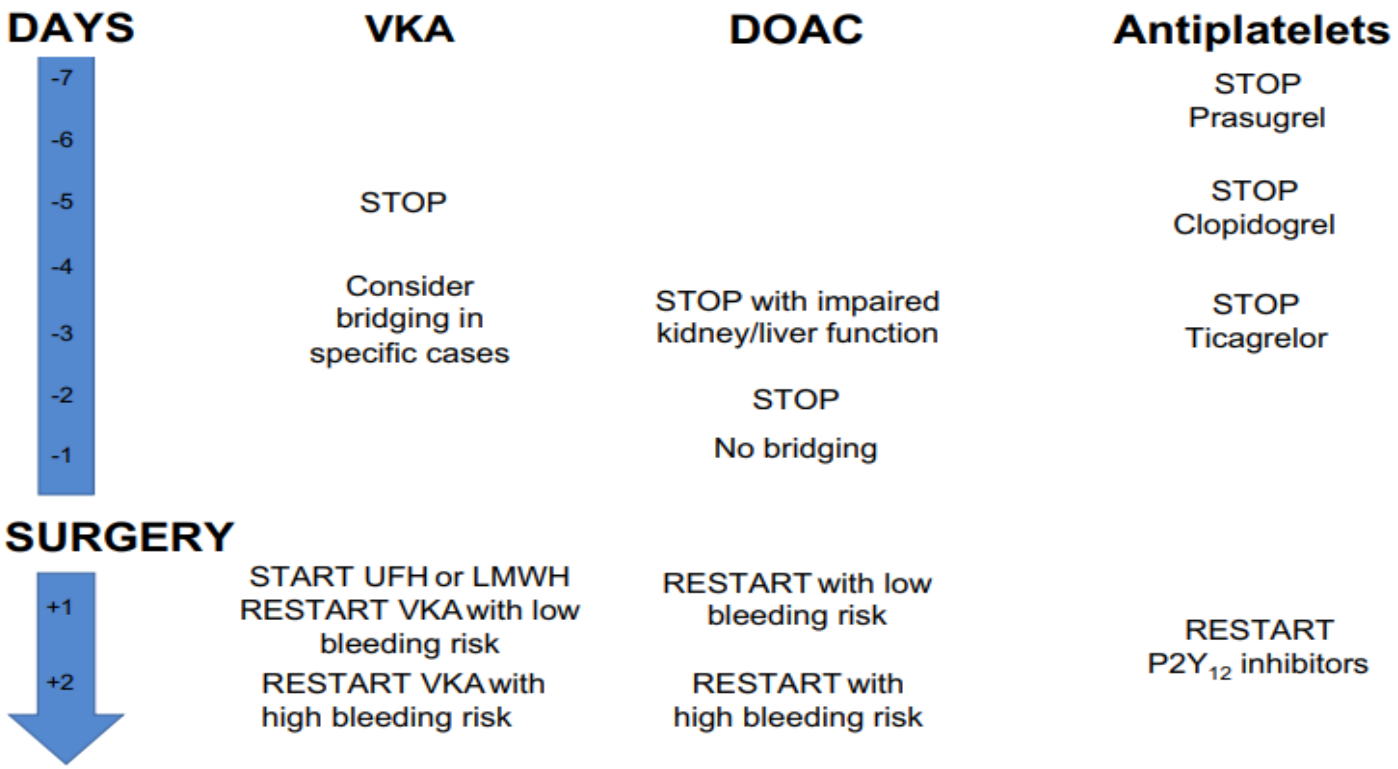

Fig. 1 Management of oral anticoagulation and antiplatelet therapy in elective patients with and without indication for pre- and/or postoperative bridging (adapted from [15]). Abbreviations: DOAC, direct-acting oral anticoagulants; VKA, vitamin K antagonists.

Moster, M., & Bolliger, D. (2022). Perioperative guidelines on antiplatelet and anticoagulant agents: 2022 update. *Current Anesthesiology Reports*, *12*(2), 286-296.

ÖZET

- Antikoagulan antiagregan kullanan hastalarda perioperatif değerlendirme multidisipliner işbirliğini gerektirmektedir.
- Perioperatif değerlendirmede hastanın bireysel özellikleri de dikkate alınarak tromboemboli riski ile kanama riski arasındaki denge sağlanmalıdır.
- Warfarin kanama riski yüksek işlemlerde genellikle işlemden 5 gün önce kesilip , işlem öncesi INR <1,5 hedeflenerek işlem sonrası 24 saatte yeniden başlanabilir. Köprü tedavi gereksinimi için hastalar değerlendirilmelidir.
- YOAK'larda kısa yarı ömürleri ve hızlı etki başlangıç süreleri nedeniyle köprü tedaviler gerekmemektedir.

ÖZET

- Non –kardiyak cerrahi işlemlerde köprü tedavilerin verilmesinin verilmemesine göre tromboemboliyi önleme açısından fark yaratmazken majör kanama olaylarını arttırdığına yönelik kanıtlar mevcuttur.
- Antiplatelet tedavi alanlarda non-kardiyak cerrahide hem düşük kanama riskli hem de yüksek kanama riskli işlemlerde kardiyak olay riski yüksek hastalarda antiplatelet tedavi aksi yönde kardiyoloji görüşü olmadıkça kesilmemelidir.

Teşekkürler…