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ΕΝΩΣΗΣ ΕΛΕΥΘΕΡΟΕΠΑΓΓΕΛΜΑΤΙΩΝ
ΚΑΡΔΙΟΛΟΓΩΝ ΕΛΛΑΔΟΣ

«Τι νεότερο με τις κατευθυντήριες οδηγίες στα Οξέα Στεφανιαία Σύνδρομα»

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ESC/EACTS GUIDELINES

2018 ESC/EACTS Guidelines on myocardial revascularization

The Task Force on myocardial revascularization of the European Society of Cardiology (ESC) and European Association for Cardio-Thoracic Surgery (EACTS)

Developed with the special contribution of the European Association for Percutaneous Cardiovascular Interventions (EAPCI)

New recommendations in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization

- Calculation of the Syntax Score, if left main or multivessel revascularization is considered
- Radial access as standard approach for coronary angiography and PCI
- DES for any PCI
- Systematic re-evaluation of patients after myocardial revascularization
- Stabilised NSTE-ACS patients: revascularization strategy according to principles for SCAD
- Use of the radial artery grafts over saphenous vein grafts in patients with high-degree stenosis
- Myocardial revascularization in patients with CAD, heart failure, and LVEF ≤35%
  - CABG preferred
  - PCI as alternative to CABG
- Completeness of revascularization prioritized, when considering CABG vs PCI
- NOAC preferred over VKA in patients with non-valvular AF requiring anticoagulation and antiplatelet treatment
- No-touch vein technique, if open vein harvesting for CABG
- Annual operator volume for left main PCI of at least 25 cases per year
- Pre- and post-hydration with isotonic saline in patients with moderate or severe CKD if the expected contrast volume is >100 mL

	Class I		Class IIa
	Class IIb		Class III

- Routine non-invasive imaging surveillance in high-risk patients 6 months after revascularization
- Double-kissing crush technique preferred over provisional T-stenting in true left main bifurcations.
- Cangrelor in $P2Y_{12}$-inhibitor naïve patients undergoing PCI
- GP IIb/IIIa inhibitors for PCI in $P2Y_{12}$-inhibitor naïve patients with ACS undergoing PCI
- Dabigatran 150-mg dose preferred over 110-mg dose when combined with single antiplatelet therapy after PCI
- De-escalation of $P2Y_{12}$ inhibitor guided by platelet function testing in ACS patients
- Routine revascularization of non-IRA lesions in myocardial infarction with cardiogenic shock
- Current generation BRS for clinical use outside clinical studies

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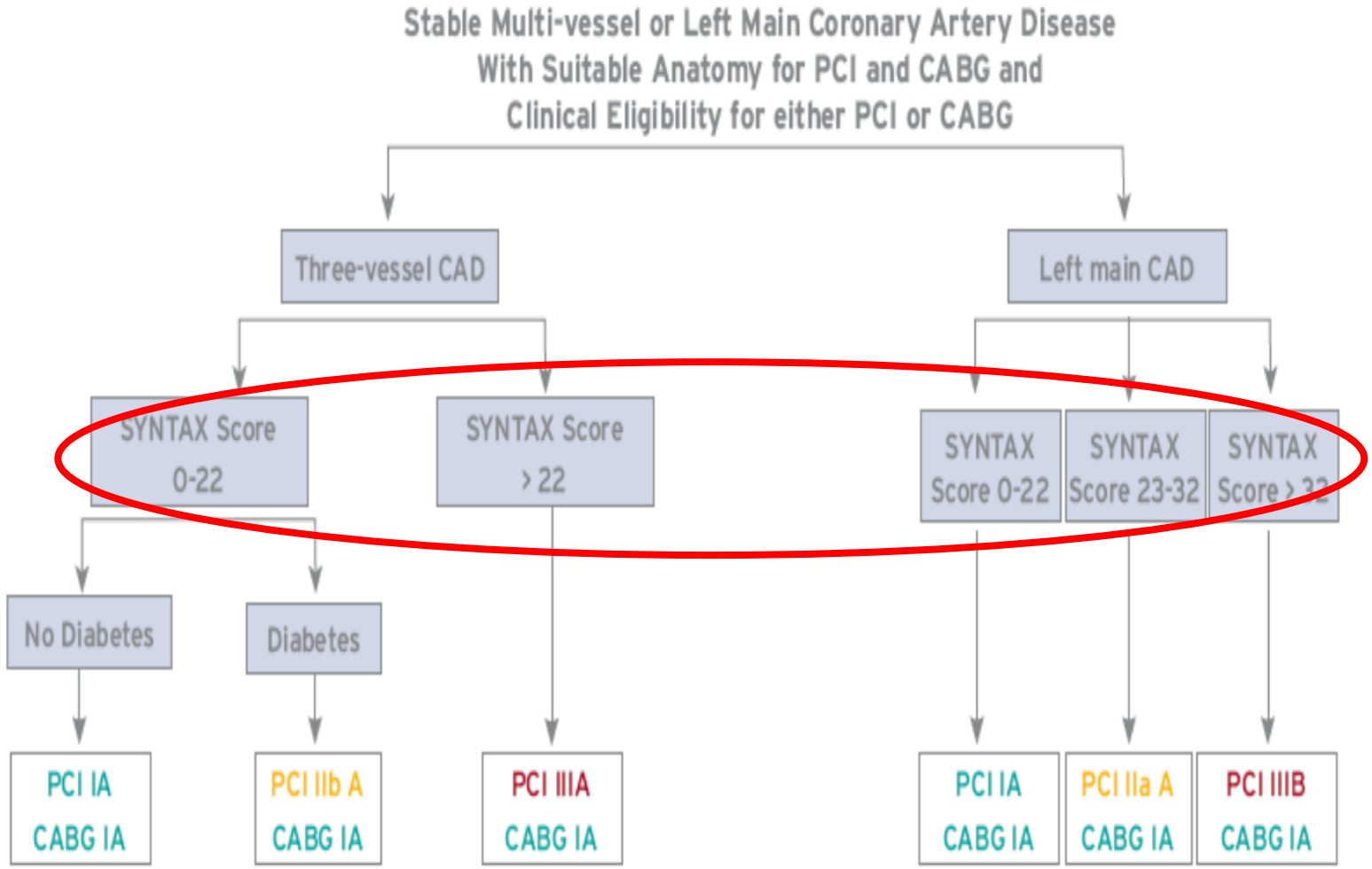
Myocardial revascularization in patients with CAD, heart failure, and LVEF ≤35% CABG preferred



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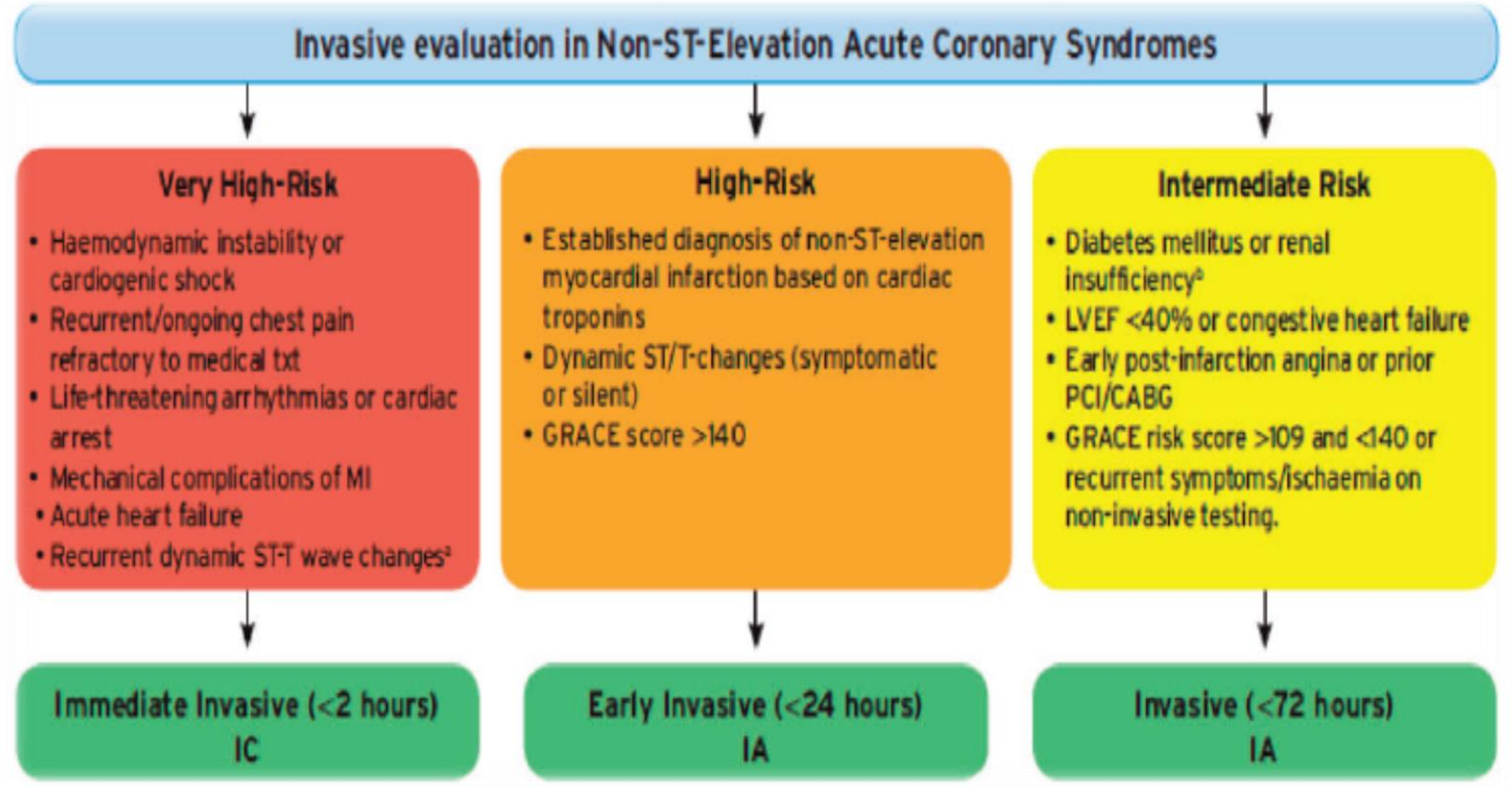

New recommendations in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization

Calculation of the Syntax Score, if left main or multivessel revascularization is considered		
Radial access as standard approach for coronary angiography and PCI		
DES for any PCI		
Systematic re-evaluation of patients after myocardial revascularization		
Stabilised NSTE-ACS patients: revascularization strategy according to principles for SCAD		
Use of the radial artery grafts over saphenous vein grafts in patients with high-degree stenosis	The use of the radial artery is recommended over the saphenous vein in patients with high-grade coronary artery stenosis.[d 482,549,550,552,553]	I B
Myocardial revascularization in patients with CAD, heart failure, and LVEF ≤35%	In patients with severe LV systolic dysfunction and coronary artery disease suitable for intervention, myocardial revascularization is recommended.[81,250]	I B
CABG preferred	CABG is recommended as the first revascularization strategy choice in patients with multivessel disease and acceptable surgical risk.[68,81,248,255]	I B
PCI as alternative to CABG	In patients with one- or two-vessel disease, PCI should be considered as an alternative to CABG when complete revascularization can be achieved.	IIa C
	In patients with three-vessel disease, PCI should be considered based on the evaluation by the Heart Team of the patient's coronary anatomy, the expected completeness of revascularization, diabetes status, and comorbidities.	IIa C

New recommendations in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization

Completeness of revascularization prioritized, when considering CABG vs PCI

NOAC preferred over VKA in patients with non-valvular AF requiring anticoagulation and antiplatelet treatment

No-touch vein technique, if open vein harvesting for CABG

Annual operator volume for left main PCI of at least 25 cases per year

Pre- and post-hydration with isotonic saline in patients with moderate or severe CKD if the expected contrast volume is >100 mL

	Class I		Class IIa
	Class IIb		Class III

When considering the decision between CABG and PCI, completeness of revascularization should be prioritized.[131,132,134–136] | IIa | B

No-touch vein harvesting should be considered when an open technique is used.[506,507,555,556] | IIa | B

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	Class I		Class IIa
	Class IIb		Class III

In patients with non-valvular AF requiring anti-coagulation and antiplatelet treatment, a NOAC should be preferred over VKAs.[758–760]	IIa	A

N Engl J Med. 2017 Oct 19;377(16):1513-1524. doi: 10.1056/NEJMoa1708454. Epub 2017 Aug 27.

Dual Antithrombotic Therapy with Dabigatran after PCI in Atrial Fibrillatio

Cannon CP[1], Bhatt DL[1], Oldgren J[1], Lip GYH[1], Ellis SG[1], Kimura T[1], Maeng M[1], Merkely B[1], Zeymer U[1], Gropper S[1], Manassie J[1], Januzzi JL[1], Ten Berg JM[1], Steg PG[1], Hohnloser SH[1]; RE-DUAL PCI Steering Committee and Inves

Collaborators (473)

Author information

Abstract

BACKGROUND: Triple **antithrombotic therapy** with warfarin plus two antiplatelet agents is th
coronary intervention (**PCI**) for patients with **atrial fibrillation**, but this **therapy** is associated

METHODS: In this multicenter trial, we randomly assigned 2725 patients with **atrial fibrillati**
warfarin plus a P2Y12 inhibitor (clopidogrel or ticagrelor) and aspirin (for 1 to 3 months) (tri
dabigatran (110 mg or 150 mg twice daily) plus a P2Y12 inhibitor (clopidogrel or ticagrelo
groups). Outside the United States, elderly patients (≥80 years of age; ≥70 years of age
dual-therapy group or the triple-**therapy** group. The primary end point was a major or
follow-up (mean follow-up, 14 months). The trial also tested for the noninferiority of **d**
triple **therapy** with warfarin with respect to the incidence of a composite efficacy en
stroke, or systemic embolism), death, or unplanned revascularization.

RESULTS: The incidence of the primary end point was 15.4% in the 110-mg **dua**
herapy group (hazard ratio, 0.52; 95% confidence interval [CI], 0.42 to 0.63; P
he 150-mg **dual-therapy** group as compared with 25.7% in the corresponding
outside the United States (hazard ratio, 0.72; 95% CI, 0.58 to 0.88; P<0.001 for
oint was 13.7% in the two **dual-therapy** groups combined as compared with 13
.84 to 1.29; P=0.005 for noninferiority). The rate of serious adverse events did not

CONCLUSIONS: Among patients with **atrial fibrillation** who had undergone **PCI**, the risk of
ual therapy with **dabigatran** and a P2Y12 inhibitor than among those who received triple **therapy** with
spirin. **Dual therapy** was noninferior to triple **therapy** with respect to the risk of thromboembolic events. (Funded by
RE-**DUAL PCI** ClinicalTrials.gov number, NCT02164864 .).

J Med. 2016 Dec 22;375(25):2423-2434. doi: 10.1056/NEJMoa1611594. Epub 2016 Nov 14.

Prevention of Bleeding in Patients with Atrial Fibrillation Undergoing PCI.

Gibson CM[1], Mehran R[1], Bode C[1], Halperin J[1], Verheugt FW[1], Wildgoose P[1], Birmingham M[1], Ianus J[1], Burton P[1], van Eickels M[1], Korjian S[1], Daaboul Y[1], Lip GY[1], Cohen M[1], Husted S[1], Peterson ED[1], Fox KA[1].

Author information

Abstract

BACKGROUND: In **patients** with **atrial fibrillation undergoing** percutaneous coronary intervention (PCI) with placement of stents, standard anticoagulation with a vitamin K antagonist plus dual antiplatelet therapy (DAPT) with a P2Y12 inhibitor and aspirin reduces the risk of thrombosis and stroke but increases the risk of **bleeding**. The effectiveness and safety of anticoagulation with rivaroxaban plus either one or two antiplatelet agents are uncertain.

METHODS: We randomly assigned 2124 participants with nonvalvular **atrial fibrillation** who had undergone PCI with stenting to receive, in a 1:1:1 ratio, low-dose rivaroxaban (15 mg once daily) plus a P2Y12 inhibitor for 12 months (group 1), very-low-dose rivaroxaban (2.5 mg twice daily) plus DAPT for 1, 6, or 12 months (group 2), or standard therapy with a dose-adjusted vitamin K antagonist (once daily) plus DAPT for 1, 6, or 12 months (group 3). The primary safety outcome was clinically significant **bleeding** (a composite of major **bleeding** or minor **bleeding** according to Thrombolysis in Myocardial Infarction [TIMI] criteria or **bleeding** requiring medical attention).

RESULTS: The rates of clinically significant **bleeding** were lower in the two groups receiving rivaroxaban than in the group receiving standard therapy (16.8% in group 1, 18.0% in group 2, and 26.7% in group 3; hazard ratio for group 1 vs. group 3, 0.59; 95% confidence interval [CI], 0.47 to 0.76; P<0.001; hazard ratio for group 2 vs. group 3, 0.63; 95% CI, 0.50 to 0.80; P<0.001). The rates of death from cardiovascular causes, myocardial infarction, or stroke were similar in the three groups (Kaplan-Meier estimates, 6.5% in group 1, 5.6% in group 2, and 6.0% in group 3; P values for all comparisons were nonsignificant).

CONCLUSIONS: In participants with **atrial fibrillation undergoing** PCI with placement of stents, the administration of either low-dose rivaroxaban plus a P2Y12 inhibitor for 12 months or very-low-dose rivaroxaban plus DAPT for 1, 6, or 12 months was associated with a lower rate of clinically significant **bleeding** than was standard therapy with a vitamin K antagonist plus DAPT for 1, 6, or 12 months. The three ups had similar efficacy rates, although the observed broad confidence intervals diminish the surety of any conclusions regarding efficac
d by Janssen Scientific Affairs and Bayer Pharmaceuticals; PIONEER AF-PCI ClinicalTrials.gov number, NCT01830543 .).

New recommendations in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization

Completeness of revascularization prioritized, when considering CABG vs PCI		
NOAC preferred over VKA in patients with non-valvular AF requiring anticoagulation and antiplatelet treatment		
No-touch vein technique, if open vein harvesting for CABG		
Annual operator volume for left main PCI of at least 25 cases per year		
Pre- and post-hydration with isotonic saline in patients with moderate or severe CKD if the expected contrast volume is >100 mL		

	Class I		Class IIa
	Class IIb		Class III

It should be considered that PCI for LM be performed by trained operators with an annual volume of ≥25 LM PCI cases per year.		IIa	C

Pre- and post-hydration with isotonic saline should be considered if the expected contrast volume is >100 mL.	1 mL/kg/h 12 h before and continued for 24 h after the procedure (0.5 mL/kg/h if LVEF ≤35% or NYHA >2).	IIa	C

JACC Cardiovasc Interv. 2016 Oct 24;9(20):2086-2093. doi: 10.1016/j.jcin.2016.08.011.

Impact of Operator Experience and Volume on Outcomes After Left Main Coronary Artery Percutaneous Coronary Intervention.

Xu B[1], Redfors B[2], Yang Y[3], Qiao S[1], Wu Y[1], Chen J[1], Liu H[1], Chen J[1], Xu L[1], Zhao Y[1], Guan C[1], Gao R[4], Généreux P[5].

Author information

Abstract

OBJECTIVES: The aim of this study was to assess the **impact** of **operator experience** on prognosis **after left main coronary artery** (LM) **percutaneous coronary intervention** (PCI).

BACKGROUND: LM PCI can be technically challenging and potentially risky considering the amount of supplied myocardium.

METHODS: Consecutive patients who underwent unprotected LM PCI at a single institution were included and compared according to whether the primary **operator** was an experienced, high-**volume** LM **operator** (defined as an **operator** who performed at least 15 LM PCIs per year for at least 3 consecutive years) or not. Kaplan-Meier estimates and Cox proportional hazards models are presented.

RESULTS: From January 2004 to December 2011, a total of 1,948 patients underwent unprotected LM PCI by 25 operators. Of these, 7 operators (28%) were considered experienced, and 18 (72%) were considered less experienced, with an overall mean **experience** of 12.0 ± 11.5 LM PCIs per year. LM PCI was performed in 1,422 patients (73%) by experienced operators and in 526 patients (27%) by less experienced operators. Patients treated by experienced operators had more complex and extensive **coronary artery** disease. Unadjusted and adjusted risks for cardiac death were lower for patients who were treated by experienced operators, both at 30-day (unadjusted hazard ratio [HR]: 0.23; 95% confidence interval [CI]: 0.09 to 0.60; p = 0.003; adjusted HR: 0.22; 95% CI: 0.09 to 0.59; p = 0.003) and 3-year (unadjusted HR: 0.53; 95% CI: 0.32 to 0.89, p = 0.02; adjusted HR: 0.49; 95% CI: 0.29 to 0.84; p = 0.009) follow-up. Discrimination improved when **operator experience** was added to Cox proportional hazards models containing the SYNTAX (Synergy Between PCI With Taxus and Cardiac Surgery) score (integrated discriminatory index = 0.004, p = 0.03) or SYNTAX score II (integrated discriminatory index = 0.007, p = 0.02). No significant interaction was detected between **operator experience** and distal bifurcation LM lesion, 2-stent bifurcation stenting, and intravascular ultrasound use (p > 0.10 for all).

CONCLUSIONS: Patients who underwent LM PCI by high-**volume** and experienced operators had better short- and long-term prognoses. **Operator experience** is an important factor in a complex **intervention** such as LM PCI.

New recommendations in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization

Routine non-invasive imaging surveillance in high-risk patients 6 months after revascularization		
Double-kissing crush technique preferred over provisional T-stenting in true left main bifurcations.		
Cangrelor in $P2Y_{12}$-inhibitor naïve patients undergoing PCI		
GP IIb/IIIa inhibitors for PCI in $P2Y_{12}$-inhibitor naïve patients with ACS undergoing PCI		
Dabigatran 150-mg dose preferred over 110-mg dose when combined with single antiplatelet therapy after PCI		
De-escalation of $P2Y_{12}$ inhibitor guided by platelet function testing in ACS patients		
Routine revascularization of non-IRA lesions in myocardial infarction with cardiogenic shock		
Current generation BRS for clinical use outside clinical studies		

After high-risk PCI (e.g. unprotected LM stenosis), late (3–12 months) surveillance angiography may be considered, irrespective of symptoms.	IIb	C
Routine non-invasive imaging-based stress testing may be considered 1 year after PCI and >5 years after CABG.	IIb	C

In true bifurcation lesions of the left main, the double-kissing crush technique may be preferred over provisional T-stenting.[620]	IIb	B

J Am Coll Cardiol. 2017 Nov 28;70(21):2605-2617. doi: 10.1016/j.jacc.2017.09.1066. Epub 2017 Oct 30.

Double Kissing Crush Versus Provisional Stenting for Left Main Distal Bifurcation Lesions: DKCRUSH-V Randomized Trial.

Chen SL[1], Zhang JJ[2], Han Y[3], Kan J[2], Chen L[4], Qiu C[5], Jiang T[6], Tao L[7], Zeng H[8], Li L[9], Xia Y[10], Gao C[11], Santoso T[12], Paiboon C[13], Wang Y[14], Kwan TW[15], Ye F[16], Tian N[16], Liu Z[2], Lin S[16], Lu C[17], Wen S[18], Hong L[19], Zhang Q[20], Sheiban I[21], Xu Y[22], Wang L[23], Rab TS[24], Li Z[25], Cheng G[26], Cui L[27], Leon MB[28], Stone GW[29].

⊕ Author information

Abstract

BACKGROUND: Provisional stenting (PS) is the most common technique used to treat distal **left main** (LM) bifurcation lesions in patients with unprotected LM **coronary artery** disease undergoing **percutaneous coronary intervention**. The double kissing (DK) crush planned 2-stent technique has been shown to improve clinical **outcomes** in non-LM bifurcations compared with PS, and in LM bifurcations compared with culotte stenting, but has never been compared with PS in LM bifurcation lesions.

OBJECTIVES: The authors sought to determine whether a planned DK crush 2-stent technique is superior to PS for patients with true distal LM bifurcation lesions.

METHODS: The authors randomized 482 patients from 26 centers in 5 countries with true distal LM bifurcation lesions (Medina 1,1,1 or 0,1,1) to PS (n = 242) or DK crush stenting (n = 240). The primary endpoint was the 1-year composite rate of target lesion failure (TLF): cardiac death, target vessel myocardial infarction, or clinically driven target lesion revascularization. Routine 13-month angiographic follow-up was scheduled **after** ascertainment of the primary endpoint.

RESULTS: TLF within 1 year occurred in 26 patients (10.7%) assigned to PS, and in 12 patients (5.0%) assigned to DK crush (hazard ratio: 0.42; 95% confidence interval: 0.21 to 0.85; p = 0.02). Compared with PS, DK crush also resulted in lower rates of target vessel myocardial infarction I (2.9% vs. 0.4%; p = 0.03) and definite or probable stent thrombosis (3.3% vs. 0.4%; p = 0.02). Clinically driven target lesion revascularization (7.9% vs. 3.8%; p = 0.06) and angiographic restenosis within the LM complex (14.6% vs. 7.1%; p = 0.10) also tended to be less frequent with DK crush compared with PS. There was no significant difference in cardiac death between the groups.

CONCLUSIONS: In the present multicenter randomized trial, **percutaneous coronary intervention** of true distal LM bifurcation lesions using a planned DK crush 2-stent strategy resulted in a lower rate of TLF at 1 year than a PS strategy. (Double Kissing and Double Crush Versus Provisional T Stenting Technique for the Treatment of Unprotected Distal **Left Main** True Bifurcation Lesions: A Randomized, International, Multi-Center Clinical Trial [DKCRUSH-V]; ChiCTR-TRC-11001213).

New recommendations in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization

Routine non-invasive imaging surveillance in high-risk patients 6 months after revascularization		
Double-kissing crush technique preferred over provisional T-stenting in true left main bifurcations.		
Cangrelor in $P2Y_{12}$-inhibitor naïve patients undergoing PCI	Cangrelor may be considered in $P2Y_{12}$-inhibitor naïve patients undergoing PCI.[673]	IIb A
GP IIb/IIIa inhibitors for PCI in $P2Y_{12}$-inhibitor naïve patients with ACS undergoing PCI	Cangrelor	Bolus of 30 µg/kg i.v. followed by 4 µg/kg/min infusion for at least 2 h or duration of procedure, whichever is longer.
Dabigatran 150-mg dose preferred over 110-mg dose when combined with single antiplatelet therapy after PCI		
De-escalation of $P2Y_{12}$ inhibitor guided by platelet function testing in ACS patients		
Routine revascularization of non-IRA lesions in myocardial infarction with cardiogenic shock	GP IIb/IIIa antagonists may be considered in $P2Y_{12}$-inhibitor naïve patients undergoing PCI.	IIb C
Current generation BRS for clinical use outside clinical studies		

New recommendations in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization

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Routine revascularization of non-IRA lesions in myocardial infarction with cardiogenic shock		
Current generation BRS for clinical use outside clinical studies		

When dabigatran is used in combination with aspirin or clopidogrel, a dose of 150 mg b.i.d. may be preferred over a dose of 110 mg b.i.d.[757]	IIb	B

N Engl J Med. 2017 Oct 19;377(16):1513-1524. doi: 10.1056/NEJMoa1708454. Epub 2017 Aug 27.

Dual Antithrombotic Therapy with Dabigatran after PCI in Atrial Fibrillation.

Cannon CP[1], Bhatt DL[1], Oldgren J[1], Lip GYH[1], Ellis SG[1], Kimura T[1], Maeng M[1], Merkely B[1], Zeymer U[1], Gropper S[1], Nordaby M[1], Kleine E[1], Harper R[1], Manassie J[1], Januzzi JL[1], Ten Berg JM[1], Steg PG[1], Hohnloser SH[1]; RE-DUAL PCI Steering Committee and Investigators.

Collaborators (473)

Author information

Abstract

BACKGROUND: Triple **antithrombotic therapy** with warfarin plus two antiplatelet agents is the standard of care **after** percutaneous coronary intervention (**PCI**) for patients with **atrial fibrillation**, but this **therapy** is associated with a high risk of bleeding.

METHODS: In this multicenter trial, we randomly assigned 2725 patients with **atrial fibrillation** who had undergone **PCI** to triple **therapy** with warfarin plus a $P2Y_{12}$ inhibitor (clopidogrel or ticagrelor) and aspirin (for 1 to 3 months) (triple-**therapy** group) or **dual therapy** with **dabigatran** (110 mg or 150 mg twice daily) plus a $P2Y_{12}$ inhibitor (clopidogrel or ticagrelor) and no aspirin (110-mg and 150-mg **dual-therapy** groups). Outside the United States, elderly patients (≥80 years of age; ≥70 years of age in Japan) were randomly assigned to the 110-mg **dual-therapy** group or the triple-**therapy** group. The primary end point was a major or clinically relevant nonmajor bleeding event during follow-up (mean follow-up, 14 months). The trial also tested for the noninferiority of **dual therapy** with **dabigatran** (both doses combined) to triple **therapy** with warfarin with respect to the incidence of a composite efficacy end point of thromboembolic events (myocardial infarction, stroke, or systemic embolism), death, or unplanned revascularization.

RESULTS: The incidence of the primary end point was 15.4% in the 110-mg **dual-therapy** group as compared with 26.9% in the triple-**therapy** group (hazard ratio, 0.52; 95% confidence interval [CI], 0.42 to 0.63; P<0.001 for noninferiority; P<0.001 for superiority) and 20.2% in the 150-mg **dual-therapy** group as compared with 25.7% in the corresponding triple-**therapy** group, which did not include elderly patients outside the United States (hazard ratio, 0.72; 95% CI, 0.58 to 0.88; P<0.001 for noninferiority). The incidence of the composite efficacy end point was 13.7% in the two **dual-therapy** groups combined as compared with 13.4% in the triple-**therapy** group (hazard ratio, 1.04; 95% CI, 0.84 to 1.29; P=0.005 for noninferiority). The rate of serious adverse events did not differ significantly among the groups.

CONCLUSIONS: Among patients with **atrial fibrillation** who had undergone **PCI**, the risk of bleeding was lower among those who received **dual therapy** with **dabigatran** and a $P2Y_{12}$ inhibitor than among those who received triple **therapy** with warfarin, a $P2Y_{12}$ inhibitor, and aspirin. **Dual therapy** was noninferior to triple **therapy** with respect to the risk of thromboembolic events. (Funded by Boehringer Ingelheim; RE-**DUAL PCI** ClinicalTrials.gov number, NCT02164864 .).

New recommendations in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization

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De-escalation of $P2Y_{12}$ inhibitor guided by platelet function testing in ACS patients
Routine revascularization of non-IRA lesions in myocardial infarction with cardiogenic shock
Current generation BRS for clinical use outside clinical studies

De-escalation of $P2Y_{12}$ inhibitor treatment (e.g. with a switch from prasugrel or ticagrelor to clopidogrel) guided by platelet function testing may be considered as an alternative DAPT strategy, especially for ACS patients deemed unsuitable for 12-month potent platelet inhibition.[717]	IIb	B

Lancet. 2017 Oct 14;390(10104):1747-1757. doi: 10.1016/S0140-6736(17)32155-4. Epub 2017 Aug 28.

Guided de-escalation of antiplatelet treatment in patients with acute coronary syndrome undergoing percutaneous coronary intervention (TROPICAL-ACS): a randomised, open-label, multicentre trial.

Sibbing D[1], Aradi D[2], Jacobshagen C[3], Gross L[4], Trenk D[5], Geisler T[6], Orban M[4], Hadamitzky M[7], Merkely B[8], Kiss RG[9], Komócsi A[10], Dézsi CA[11], Holdt L[12], Felix SB[13], Parma R[14], Klopotowski M[15], Schwinger RHG[16], Rieber J[17], Huber K[18], Neumann FJ[5], Koltowski L[19], Mehilli J[20], Huczek Z[19], Massberg S[20]; TROPICAL-ACS Investigators.

⊕ Collaborators (90)

⊕ Author information

Abstract

BACKGROUND: Current guidelines recommend potent platelet inhibition with prasugrel or ticagrelor for 12 months after an **acute coronary syndrome** managed with **percutaneous coronary intervention** (PCI). However, the greatest anti-ischaemic benefit of potent **antiplatelet** drugs over the less potent clopidogrel occurs early, while most excess bleeding events arise during chronic **treatment**. Hence, a stage-adapted **treatment** with potent platelet inhibition in the **acute** phase and **de-escalation** to clopidogrel in the maintenance phase could be an alternative approach. We aimed to investigate the safety and efficacy of early **de-escalation** of **antiplatelet treatment** from prasugrel to clopidogrel **guided** by platelet function testing (PFT).

METHODS: In this investigator-initiated, randomised, open-label, assessor-blinded, multicentre trial (**TROPICAL-ACS**) done at 33 sites in Europe, **patients** were enrolled if they had biomarker-positive **acute coronary syndrome** with successful PCI and a planned duration of dual **antiplatelet treatment** of 12 months. Enrolled **patients** were randomly assigned (1:1) using an internet-based randomisation procedure with a computer-generated block randomisation with stratification across study sites to either standard **treatment** with prasugrel for 12 months (control group) or a step-down regimen (1 week prasugrel followed by 1 week clopidogrel and PFT-**guided** maintenance **therapy** with clopidogrel or prasugrel from day 14 after hospital discharge; **guided de-escalation** group). The assessors were masked to the **treatment** allocation. The primary endpoint was net clinical benefit (cardiovascular death, myocardial infarction, stroke or bleeding grade 2 or higher according to Bleeding Academic **Research** Consortium [BARC]) criteria) 1 year after randomisation (non-inferiority hypothesis; margin of 30%). Analysis was intention to treat. This study is registered with ClinicalTrials.gov, number NCT01959451, and EudraCT, 2013-001636-22.

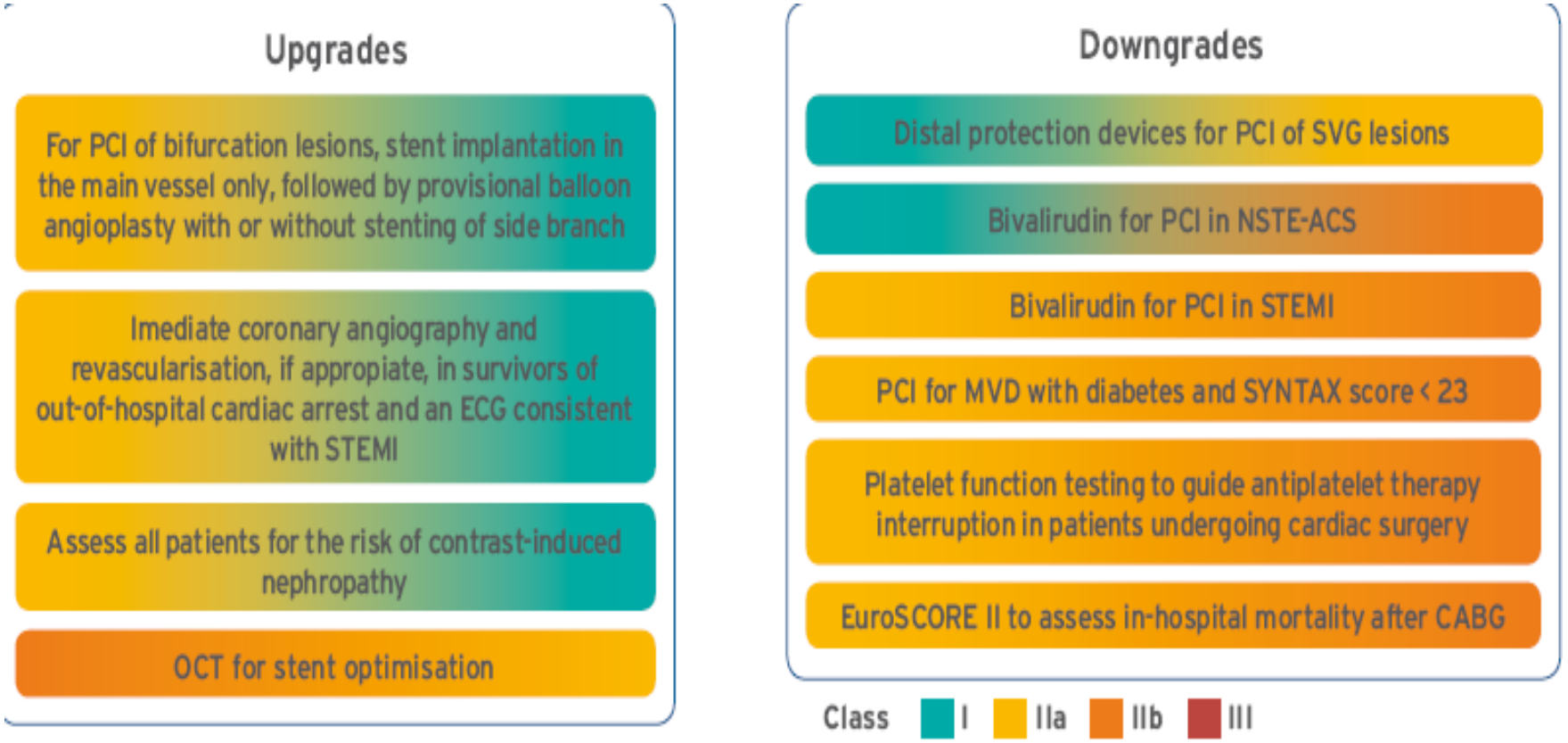
FINDINGS: Between Dec 2, 2013, and May 20, 2016, 2610 **patients** were assigned to study groups; 1304 to the **guided de-escalation** group and 1306 to the control group. The primary endpoint occurred in 95 **patients** (7%) in the **guided de-escalation** group and in 118 **patients** (9%) in the control group ($p_{non\text{-}inferiority}$=0·0004; hazard ratio [HR] 0·81 [95% CI 0·62-1·06], $p_{superiority}$=0·12). Despite early **de-escalation**, there was no increase in the combined risk of cardiovascular death, myocardial infarction, or stroke in the **de-escalation** group (32 **patients** [3%]) versus in the control group (42 **patients** [3%]; $p_{non\text{-}inferiority}$=0·0115). There were 64 BARC 2 or higher bleeding events (5%) in the **de-escalation** group versus 79 events (6%) in the control group (HR 0·82 [95% CI 0·59-1·13]; p=0·23).

INTERPRETATION: **Guided de-escalation** of **antiplatelet treatment** was non-inferior to standard **treatment** with prasugrel at 1 year after PCI in terms of net clinical benefit. Our trial shows that early **de-escalation** of **antiplatelet treatment** can be considered as an alternative approach in **patients** with **acute coronary syndrome** managed with PCI.

New recommendations in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization

Routine non-invasive imaging surveillance in high-risk patients 6 months after revascularization		
Double-kissing crush technique preferred over provisional T-stenting in true left main bifurcations.		
Cangrelor in $P2Y_{12}$-inhibitor naïve patients undergoing PCI		
GP IIb/IIIa inhibitors for PCI in $P2Y_{12}$-inhibitor naïve patients with ACS undergoing PCI		
Dabigatran 150-mg dose preferred over 110-mg dose when combined with single antiplatelet therapy after PCI		
De-escalation of $P2Y_{12}$ inhibitor guided by platelet function testing in ACS patients		
Routine revascularization of non-IRA lesions in myocardial infarction with cardiogenic shock	In cardiogenic shock, routine revascularization of non-IRA lesions is not recommended during primary PCI.[190]	III B
Current generation BRS for clinical use outside clinical studies	BRS are currently not recommended for clinical use outside of clinical studies.[642–650]	III C

Changes in class of recommendation in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization



Changes in class of recommendation in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization

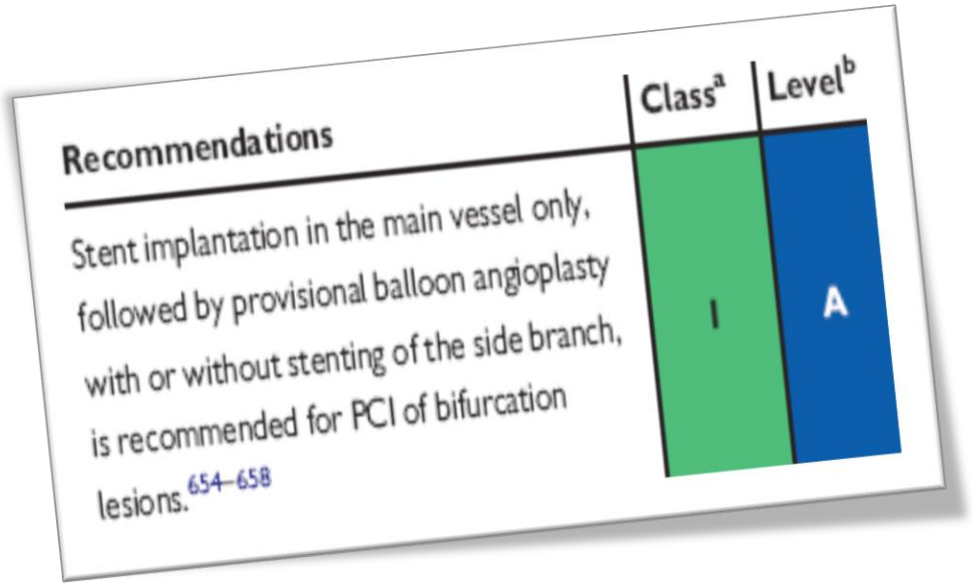
Upgrades

For PCI of bifurcation lesions, stent implantation in the main vessel only, followed by provisional balloon angioplasty with or without stenting of side branch

Imediate coronary angiography and revascularisation, if appropiate, in survivors of out-of-hospital cardiac arrest and an ECG consistent with STEMI

Assess all patients for the risk of contrast-induced nephropathy

OCT for stent optimisation



Recommendations	Class[a]	Level[b]
Stent implantation in the main vessel only, followed by provisional balloon angioplasty with or without stenting of the side branch, is recommended for PCI of bifurcation lesions.[654–658]	I	A

J Am Coll Cardiol. 2013 Jul 2;62(1):30-4. doi: 10.1016/j.jacc.2013.04.015. Epub 2013 May 1.

Long-term results after simple versus complex stenting of coronary artery bifurcation lesions: Nordic Bifurcation Study 5-year follow-up results.

Maeng M[1], Holm NR, Erglis A, Kumsars I, Niemelä M, Kervinen K, Jensen JS, Galløe A, Steigen TK, Wiseth R, Narbute I, Gunnes P, Mannsverk J, Meyerdierks O, Rotevatn S, Nikus K, Vikman S, Ravkilde J, James S, Aarøe J, Ylitalo A, Helqvist S, Sjögren I, Thayssen P, Virtanen K, Puhakka M, Airaksinen J, Christiansen EH, Lassen JF, Thuesen L; Nordic-Baltic Percutaneous Coronary Intervention Study Group.

⊕ Author information

Abstract

OBJECTIVES: This study sought to report the 5-year follow-up results of the Nordic Bifurcation Study.

BACKGROUND: Randomized clinical trials with short-term follow-up have indicated that coronary bifurcation lesions may be optimally treated using the optional side branch stenting strategy.

METHODS: A total of 413 patients with a coronary bifurcation lesion were randomly assigned to a simple stenting strategy of main vessel (MV) and optional stenting of side branch (SB) or to a complex stenting strategy, namely, stenting of both MV and SB.

RESULTS: Five-year clinical follow-up data were available for 404 (98%) patients. The combined safety and efficacy endpoint of cardiac death, non-procedure-related myocardial infarction, and target vessel revascularization were seen in 15.8% in the optional SB stenting group as compared to 21.8% in the MV and SB stenting group (p = 0.15). All-cause death was seen in 5.9% versus 10.4% (p = 0.16) and non-procedure-related myocardial infarction in 4% versus 7.9% (p = 0.09) in the optional SB stenting group versus the MV and SB stenting group, respectively. The rates of target vessel revascularization were 13.4% versus 18.3% (p = 0.14) and the rates of definite stent thrombosis were 3% versus 1.5% (p = 0.31) in the optional SB stenting group versus the MV and SB stenting group, respectively.

CONCLUSIONS: At 5-year follow-up in the Nordic Bifurcation Study, the clinical outcomes after simple optional side branch stenting remained at least equal to the more complex strategy of planned stenting of both the main vessel and the side branch.

Circulation. 2010 Mar 16;121(10):1235-43. doi: 10.1161/CIRCULATIONAHA.109.888297. Epub 2010 Mar 1.

Randomized trial of simple versus complex drug-eluting stenting for bifurcation lesions: the British Bifurcation Coronary Study: old, new, and evolving strategies.

Hildick-Smith D[1], de Belder AJ, Cooter N, Curzen NP, Clayton TC, Oldroyd KG, Bennett L, Holmberg S, Cotton JM, Glennon PE, Thomas MR, Maccarthy PA, Baumbach A, Mulvihill NT, Henderson RA, Redwood SR, Starkey IR, Stables RH.

⊕ Author information

Abstract

BACKGROUND: The optimal strategy for treating **coronary bifurcation lesions** remains a subject of debate. With bare-metal **stents**, single-stent approaches appear to be superior to systematic 2-stent strategies. **Drug-eluting stents**, however, have low rates of restenosis and might offer improved outcomes with **complex stenting** techniques.

METHODS AND RESULTS: Patients with significant **coronary bifurcation lesions** were **randomized** to either a **simple** or **complex stenting** strategy with **drug-eluting stents**. In the **simple** strategy, the main vessel was stented, followed by optional kissing balloon dilatation/T-stent. In the **complex** strategy, both vessels were systematically stented (culotte or crush techniques) with mandatory kissing balloon dilatation. Five hundred patients 64+/-10 years **old** were **randomized**; 77% were male. Eighty-two percent of **lesions** were true bifurcations (>50% narrowing in both vessels). In the **simple** group (n=250), 66 patients (26%) had kissing balloons in addition to main-vessel **stenting**, and 7 (3%) had T **stenting**. In the **complex** group (n=250), 89% of culotte (n=75) and 72% of crush (n=169) cases were completed successfully with final kissing balloon inflations. The primary end point (a composite at 9 months of death, myocardial infarction, and target-vessel failure) occurred in 8.0% of the **simple** group **versus** 15.2% of the **complex** group (hazard ratio 2.02, 95% confidence interval 1.17 to 3.47, P=0.009). Myocardial infarction occurred in 3.6% **versus** 11.2%, respectively (P=0.001), and in-hospital major adverse cardiovascular events occurred in 2.0% **versus** 8.0% (P=0.002), respectively. Procedure duration and x-ray dose favored the **simple** approach.

CONCLUSIONS: When **coronary bifurcation lesions** are treated, a systematic 2-stent technique results in higher rates of in-hospital and 9-month major adverse cardiovascular events. This difference is largely driven by periprocedural myocardial infarction. Procedure duration is longer, and x-ray dose is higher. The provisional technique should remain the preferred strategy in the majority of cases. **Clinical Trial** Registration Information- URL: http://www.clinicaltrials.gov. Unique identifier: NCT 00351260.

J Am Coll Cardiol. 2011 Feb 22;57(8):914-20. doi: 10.1016/j.jacc.2010.10.023.

A randomized clinical study comparing double kissing crush with p… treatment of coronary bifurcation lesions: results from the DKCR… versus Provisional Stenting Technique for Treatment of Coron…

Chen SL[1], Santoso T, Zhang JJ, Ye F, Xu YW, Fu Q, Kan J, Paiboon C, Zhou Y, Ding SQ, Kwa…

Author information

Abstract

OBJECTIVES: The present **study** aimed to investigate the difference in … **coronary bifurcation lesions** after **double kissing double crush** (…

BACKGROUND: **Provisional** side branch (SB) **stenting** is pref… It is unknown which strategy would provide the best **results** …

METHODS: From April 2007 to June 2009, 370 unselected patie… assigned to either the DK or the PS group. Additional SB **stenting** … was the occurrence of MACE at 12 months, including cardiac death, my… Secondary end point was the angiographic restenosis at 8 months.

RESULTS: There were 3 procedural occlusions of SB in the PS group. At 8 mont… were significantly different between the DK (3.8% and 4.9%) and the PS groups (9.… Additional SB **stenting** in the PS group was required in 28.6% of **lesions**. TVR was 6.5… than in the PS group (14.6%, p = 0.017). There were nonsignificant differences in MACE a… (10.3% and 2.2%) and PS groups (17.3%, and 0.5%, p = 0.070 and p = 0.372, respectively).

CONCLUSIONS: DK **crush** was associated with a significant reduction of TLR and TVR in this unse… was no significant difference in MACE between DK and the PS groups. (**Randomized Study** on DK **Cru… Stenting Technique** for **Coronary** Artery **Bifurcation Lesions**; ChicTR-TRC-00000015).

J Am Coll Cardiovasc Interv. 2009 Oct;2(5):409-15. doi: 10.1161/CIRCINTERVENTIONS.109.868091. Epub 2009 Sep 22.

Double versus single stenting for coronary bifurcation lesions: a meta-analysis.

Katritsis DG[1], Siontis GC, Ioannidis JP.

Author information

Abstract

BACKGROUND: Several trials have addressed whether **bifurcation lesions** require **stenting** of both the main vessel and side branch, but uncertainty remains on the benefits of such **double versus single stenting** of the main vessel only.

METHODS AND RESULTS: We have conducted a **meta-analysis** of randomized trials including patients with **coronary bifurcation lesions** who were randomly selected to undergo percutaneous **coronary** intervention by either **double** or **single stenting**. Six studies (n=1642 patients) were eligible. There was increased risk of myocardial infarction with **double stenting** (risk ratio, 1.78; P=0.001 by fixed effects; risk ratio, 1.49 with Bayesian **meta-analysis**). The summary point estimate suggested also an increased risk of stent thrombosis with **double stenting**, but the difference was not nominally significant given the sparse data (risk ratio, 1.09; P=0.67). No obvious difference was seen for death (risk ratio, 0.81; P=0.66) and target lesion revascularization (risk ratio, 1.05; P=0.19).

CONCLUSIONS: **Stenting** of both the main vessel and side branch in **bifurcation lesions** may increase myocardial infarction and stent thrombosis risk compared with **stenting** of the main vessel only.

Changes in class of recommendation in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization

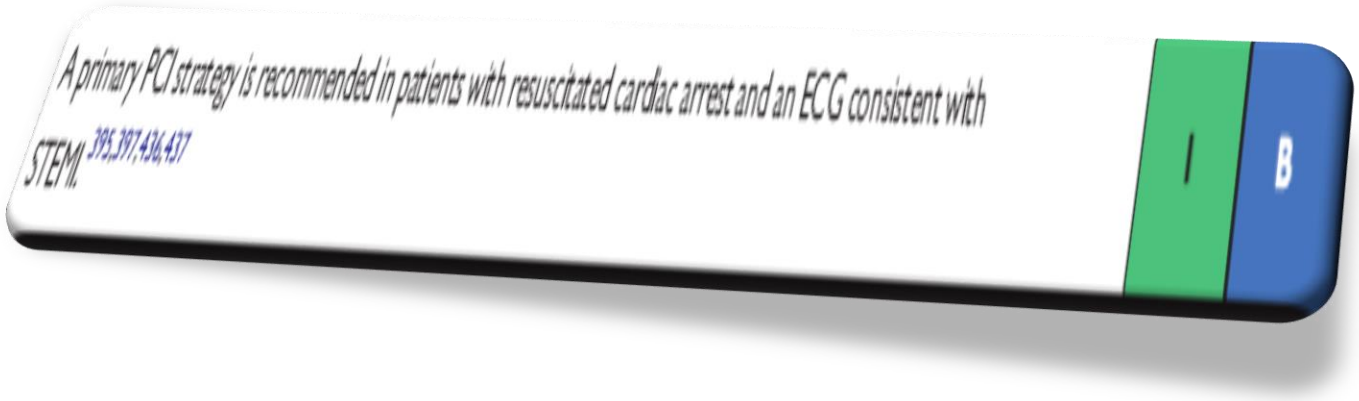
Upgrades

For PCI of bifurcation lesions, stent implantation in the main vessel only, followed by provisional balloon angioplasty with or without stenting of side branch

Imediate coronary angiography and revascularisation, if appropiate, in survivors of out-of-hospital cardiac arrest and an ECG consistent with STEMI

Assess all patients for the risk of contrast-induced nephropathy

OCT for stent optimisation



Almost one-quarter of patients, resuscitated from cardiac arrest but without ST-segment elevation, show a culprit lesion (either vessel occlusion or irregular lesion

ngiographic characteristics of coronary disease and postresuscitation electrocardiograms in atients with aborted cardiac arrest outside a hospital.

adsel P[1], Knafelj R, Kocjancic S, Noc M.

Author information

bstract

ostresuscitation electrocardiogram (ECG) in patients with aborted cardiac death may demonstrate ST-elevation myocardial infarction STEMI), ST-T changes, intraventricular conduction delay, or other nonspecific findings. In the present study, we compared ECG to urgent oronary angiogram in 158 consecutive patients with STEMI and 54 patients not fulfilling criteria for STEMI admitted to our hospital from anuary 1, 2003 through December 31, 2008. At least 1 obstructive lesion was present in 97% of patients with STEMI and in 59% of atients without STEMI with ≥1 occlusion in 82% and 39%, respectively (p <0.001). Obstructive lesion was considered acute in 89% of atients with STEMI and in 24% of patients without STEMI (p <0.001). An acute lesion in STEMI had a higher thrombus score (2.6 vs 1.3, p 0.05) and more often presented with Thrombolysis In Myocardial Infarction grade 0 to 1 flow (75% vs 36%, p <0.01). Percutaneous oronary intervention, which was attempted in 148 lesions in patients with STEMI and in 17 lesions in patients without STEMI, resulted in nal Thrombolysis In Myocardial Infarction grade 3 flow in 87% and 71%, respectively (p = 0.34). In conclusion, STEMI on postresuscitatio CG is usually associated with the presence of an acute culprit lesion. However, in the absence of STEMI, an acute culprit lesion is still resent in 1/4 of patients. An acute lesion in STEMI is more thrombotic and more often leads to complete occlusion. Urgent percutaneous oronary intervention is feasible and successful regardless of postresuscitation ECG.

2009 Feb;157(2):312-8. doi: 10.1016/j.ahj.2008.09.016. Epub 2008 Nov 6.

cute coronary angiographic findings in survivors of out-of-hospital cardiac arrest.

Anyfantakis ZA[1], Baron G, Aubry P, Himbert D, Feldman LJ, Juliard JM, Ricard-Hibon A, Burnod A, Cokkinos DV, Steg PG.

Author information

Abstract

BACKGROUND: Diagnosis of acute coronary artery disease in survivors of out-of-hospital cardiac arrest (OHCA) is difficult. The role of emergency coronary angiography and percutaneous coronary intervention (PCI) in this setting is debated. The objective of this study was to assess the prevalence of coronary lesions on emergency angiography in survivors of OHCA.

METHODS: Seventy-two consecutive OHCA survivors underwent systematic emergency coronary angiography. Patients with critical stenoses or occlusion underwent ad hoc PCI.

RESULTS: Most (63.9%) OHCA survivors had angiographic coronary artery disease (> or =1 lesion >50%), but only a minority (37.5%) had clinical or angiographic evidence of an acute coronary syndrome due to either an acute occlusion (16.7%) or an irregular lesion suggestive of ruptured plaque or thrombus (25.0%). A final diagnosis of myocardial infarction was assigned in 27 patients (37.5%). Percutaneous coronary intervention was attempted and successful in 33.3% of the total cohort (n = 24). Hospital survival was 48.6%. By multivariable analysis, use of PCI was not an independent correlate of survival. ST-segment elevation on admission was an independent correlate of acute myocardial infarction (odds ratio 64.2, 95% CI 7.6-544.2, P = .0001), with high positive (82.6%) and negative (83.7%) predictive values.

CONCLUSIONS: A minority of OHCA patients has angiographic evidence of an acute coronary syndrome and one-third undergo PCI, but PCI is not an independent correlate of survival. The presence of ST elevation on admission was a strong independent correlate of acute myocardial infarction and may be used to triage OHCA patients to emergency angiography with a view to PCI.

Large-scale observational studies have shown an impact on mortality of early angiography after out-of-hospital cardiac arrest

Circ Cardiovasc Interv. 2015 Oct;8(10). pii: e002321. doi: 10.1161/CIRCINTERVENTIONS.114.002321.

Early Coronary Angiography and Survival After Out-of-Hospital Cardiac Arrest.

Vyas A[1], Chan PS[2], Cram P[2], Nallamothu BK[2], McNally B[2], Girotra S[2].

Author information

Abstract

BACKGROUND: Although **out-of-hospital cardiac arrest** is common because of acute myocardial infarction, it is unknown whether **early coronary angiography** is associated with improved **survival** in these patients.

METHODS AND RESULTS: Using data from the **Cardiac Arrest** Registry to Enhance **Survival** (CARES), we identified 4029 adult patients admitted to 374 hospitals **after** successful resuscitation from **out-of-hospital cardiac arrest** because of ventricular fibrillation, pulseless ventricular tachycardia, or unknown shockable rhythm between January 2010 and December 2013. **Early coronary angiography** (occurring within one calendar day of **cardiac arrest**) was performed in 1953 (48.5%) patients, of whom 1253 (64.2%) received **coronary** revascularization. Patients who underwent **early coronary angiography** were younger (59.9 versus 62.0 years); more likely to be men (78.1% versus 64.3%), have a witnessed **arrest** (84.6% versus 77.4%), and have ST-segment-elevation myocardial infarction (32.7% versus 7.9%); and less likely to have known cardiovascular disease (22.8% versus 35.0%), diabetes mellitus (11.0% versus 17.0%), and renal disease (1.8% versus 5.8%; P<0.01 for all comparisons). In analysis of 1312 propensity score-matched pairs, **early coronary angiography** was associated with higher odds of **survival** to discharge (odds ratio 1.52 [95% confidence interval 1.28-1.80]; P<0.0001) and **survival** with favorable neurological outcome (odds ratio 1.47 [95% confidence interval 1.25-1.71]; P<0.0001). Further adjustment for **coronary** revascularization in our models significantly attenuated both odds ratios, suggesting that revascularization was a key mediator of the **survival** benefit.

CONCLUSIONS: Among initial survivors of **out-of-hospital cardiac arrest** caused by VF or pulseless VT, we found **early coronary angiography** was associated with higher odds of **survival** to discharge and favorable neurological outcome.

mmediate Percutaneous Coronary Intervention Is Associated With Improved Short- and Long-Term Survival After Out-of-Hospital Cardiac Arrest.

Beri G[1], Dumas F[1], Bougouin W[1], Varenne O[1], Daviaud F[1], Pène F[1], Lamhaut L[1], Chiche JD[1], Spaulding C[1], Mira JP[1], Empana JP[1], Cariou A[2].

Author information

Abstract

BACKGROUND: Whether to perform or not an **immediate percutaneous coronary intervention** (PCI) **after out-of-hospital cardiac** arrest s still debated. We aimed to evaluate the impact of PCI on **short**- and **long-term survival** in **out-of-hospital cardiac** arrest patients dmitted **after** successful resuscitation.

METHODS AND RESULTS: Between 2000 and 2013, all nontrauma **out-of-hospital cardiac** arrest patients admitted in a Parisian **cardiac** rrest center **after** return of spontaneous circulation were prospectively included. The association between **immediate** PCI and **short**- and **ong-term** mortality was analyzed using logistic regression and Cox multivariate analysis, respectively. Propensity score-matching method vas used to assess the influence of PCI on **short**- and **long-term survival**. During the study period, 1722 patients (71.5% male, median age 50 [49.6, 72.2] years) were analyzed: 628 (35.6%) without **coronary** angiography, 615 (35.7%) with **coronary** angiography without PCI, and 479 (27.8%) with both. Among these groups, day 30 and year-10 **survival** rates were 21% and 11.9%, 35% and 29%, 43% and 38%, espectively (P<0.01 for each). PCI as compared with no **coronary** angiography was **associated** with a lower day-30 and **long-term** ortality (adjORcoro with PCI versus no coro 0.71, 95% confidence interval [0.54, 0.92]; P=0.02 and adjHRcoro with PCI versus no coro).44, 95% confidence interval [0.27, 0.71]; P<0.01, respectively). PCI remained **associated** with a lower risk of **long-term** mortality (adjHR [illegible] P<0.01) in propensity score-matching analysis.

CONCLUSIONS: Immediate PCI **after out-of-hospital cardiac** arrest was **associated** with significant reduced risk of **short**- and **long-term** ortality. These findings should suggest physicians to consider **immediate coronary** angiography and PCI if indicated in these patients.

Changes in class of recommendation in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization

Upgrades

For PCI of bifurcation lesions, stent implantation in the main vessel only, followed by provisional balloon angioplasty with or without stenting of side branch

Imediate coronary angiography and revascularisation, if appropiate, in survivors of out-of-hospital cardiac arrest and an ECG consistent with STEMI

Assess all patients for the risk of contrast-induced nephropathy

OCT for stent optimisation

Patients undergoing coronary angiography or MSCT			
It is recommended that all patients are assessed for the risk of contrast-induced nephropathy.		I	C

Changes in class of recommendation in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization

Upgrades

For PCI of bifurcation lesions, stent implantation in the main vessel only, followed by provisional balloon angioplasty with or without stenting of side branch

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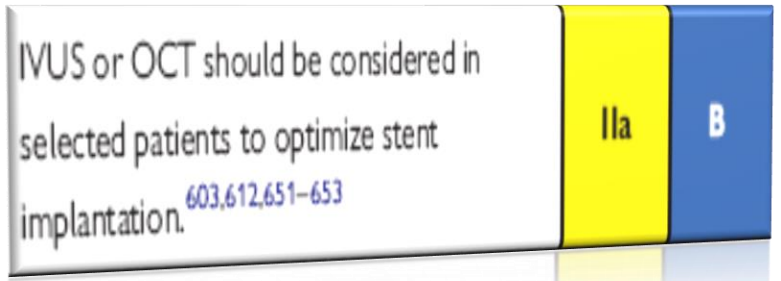
OCT for stent optimisation



Circulation. 2016 Sep 27;134(13):906-17. doi: 10.1161/CIRCULATIONAHA.116.024393. Epub 2016 Aug 29.

Optical Coherence Tomography to Optimize Results of Percutaneous Coronary Intervention in Patients with Non-ST-Elevation Acute Coronary Syndrome: Results of the Multicenter, Randomized DOCTORS Study (Does Optical Coherence Tomography Optimize Results of Stenting).

Meneveau N[1], Souteyrand G[2], Motreff P[2], Caussin C[2], Amabile N[2], Ohlmann P[2], Morel O[2], Lefrançois Y[2], Descotes-Genon V[2], Silvain J[2], Braik N[2], Chopard R[2], Chatot M[2], Ecarnot F[2], Tauzin H[2], Van Belle E[2], Belle L[2], Schiele F[2].

⊕ Author information

Abstract

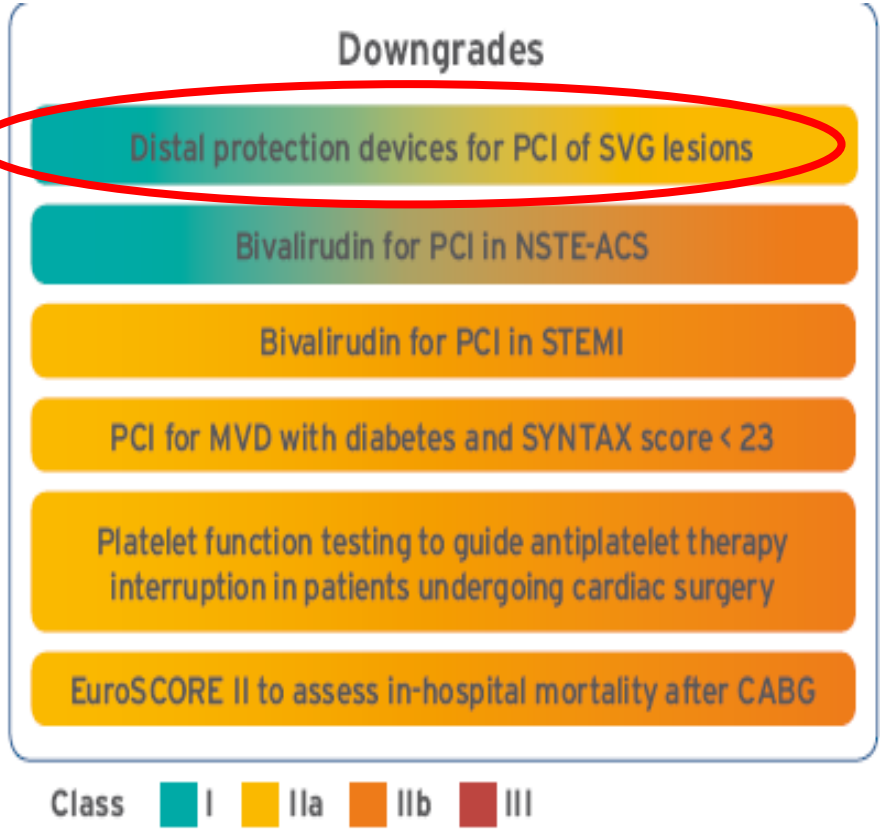
BACKGROUND: No **randomized study** has investigated the value of **optical coherence tomography** (OCT) in optimizing the **results** of **percutaneous coronary intervention** (PCI) for non-ST-segment elevation **acute coronary** syndromes.

METHODS: We conducted a **multicenter**, **randomized study** involving 240 **patients** with non-ST-segment elevation **acute coronary** syndromes to compare OCT-guided PCI (use of OCT pre- and post-PCI; OCT-guided group) to fluoroscopy-guided PCI (angiography-guided group). The primary end point was the functional result of PCI assessed by the measure of post PCI fractional flow reserve. Secondary end points included procedural complications and type 4a periprocedural myocardial infarction. Safety was assessed by the rate of **acute** kidney injury.

RESULTS: OCT use led to a change in procedural strategy in 50% of the **patients** in the OCT-guided group. The primary end point was improved in the OCT-guided group, with a significantly higher fractional flow reserve value (0.94±0.04 versus 0.92±0.05, P=0.005) compared with the angiography-guided group. There was no significant difference in the rate of type 4a myocardial infarction (33% in the OCT-group versus 40% in the angiography-guided group, P=0.28). The rates of procedural complications (5.8%) and **acute** kidney injury (1.6%) were identical in each group despite longer procedure time and use of more contrast medium in the OCT-guided group. Post-PCI OCT revealed stent underexpansion in 42% of **patients**, stent malapposition in 32%, incomplete lesion coverage in 20%, and edge dissection in 37.5%. This led to the more frequent use of poststent overdilation in the OCT-guided group versus the angiography-guided group (43% versus 12.5%, P<0.0001) with lower residual stenosis (7.0±4.3% versus 8.7±6.3%, P=0.01).

CONCLUSIONS: In **patients** with non-ST-segment elevation **acute coronary** syndromes, OCT-guided PCI is associated with higher postprocedure fractional flow reserve than PCI guided by angiography alone. OCT did not increase periprocedural complications, type 4a myocardial infarction, or **acute** kidney injury.

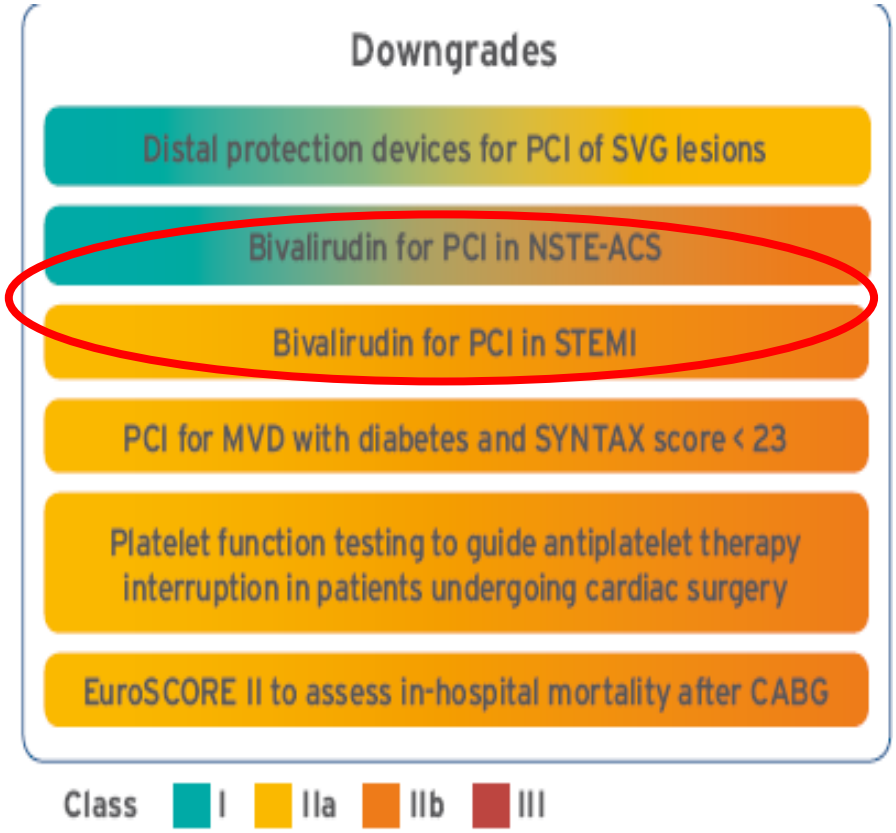
Changes in class of recommendationin the 2018 ESC/EACTS Guidelines on Myocardial Revascularization

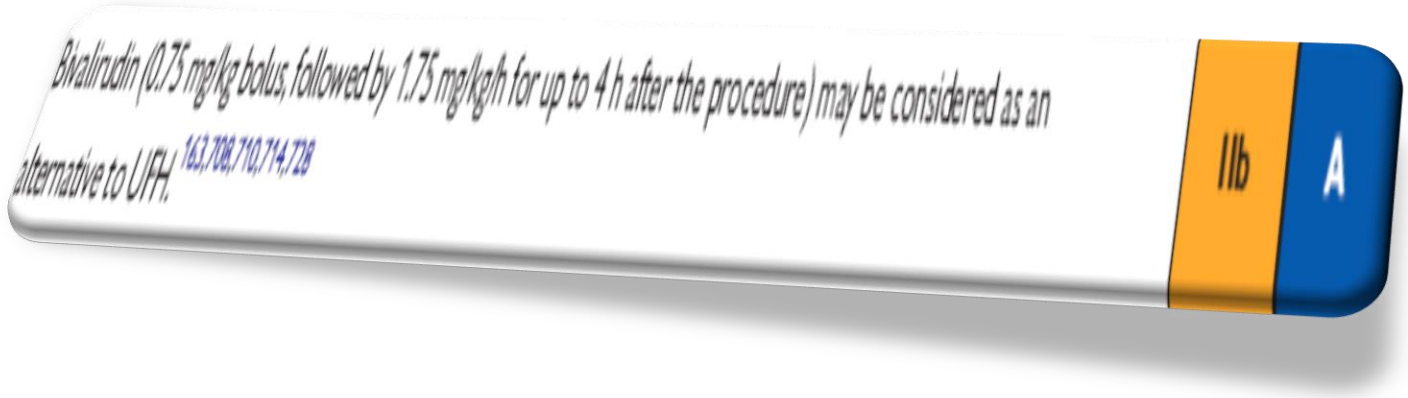


Distal protection devices should be considered for PCI of SVG lesions.[348,350,351]	IIa	B

Observational studies including data from large-scale registries are conflicting

Changes in class of recommendation in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization





N Engl J Med. 2017 Sep 21;377(12):1132-1142. doi: 10.1056/NEJMoa1706443. Epub 2017 Aug 27.

Bivalirudin versus Heparin Monotherapy in Myocardial Infarction.

Erlinge D[1], Omerovic E[1], Fröbert O[1], Linder R[1], Danielewicz M[1], Hamid M[1], Swahn E[1], Henareh L[1], Wagner H[1], Hårdhammar P[1], Sjögren I[1], Stewart J[1], Grimfjärd P[1], Jensen J[1], Aasa M[1], Robertsson L[1], Lindroos P[1], Haupt J[1], Wikström H[1], Ulvenstam A[1], Bhiladvala P[1], Lindvall B[1], Lundin A[1], Tödt T[1], Ioanes D[1], Råmunddal T[1], Kellerth T[1], Zagozdzon L[1], Götberg M[1], Andersson J[1], Angerås O[1], Östlund O[1], Lagerqvist B[1], Held C[1], Wallentin L[1], Scherstén F[1], Eriksson P[1], Koul S[1], James S[1].

⊕ **Author information**

Abstract

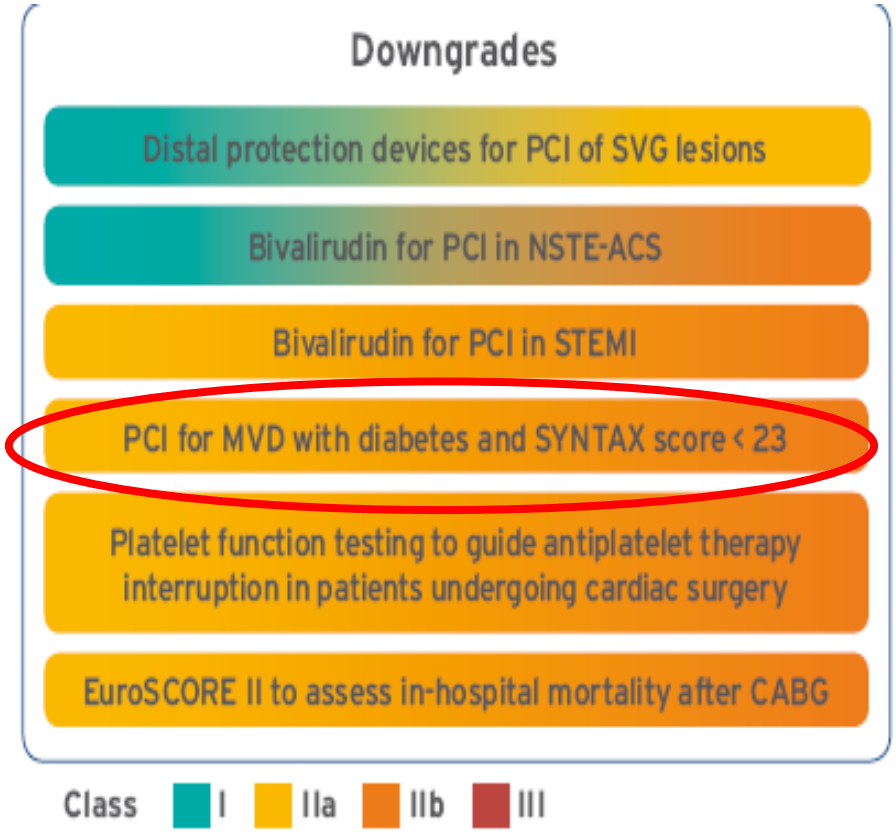
BACKGROUND: The comparative efficacy of various anticoagulation strategies has not been clearly established in patients with acute myocardial infarction who are undergoing percutaneous coronary intervention (PCI) according to current practice, which includes the use of radial-artery access for PCI and administration of potent $P2Y_{12}$ inhibitors without the planned use of glycoprotein IIb/IIIa inhibitors.

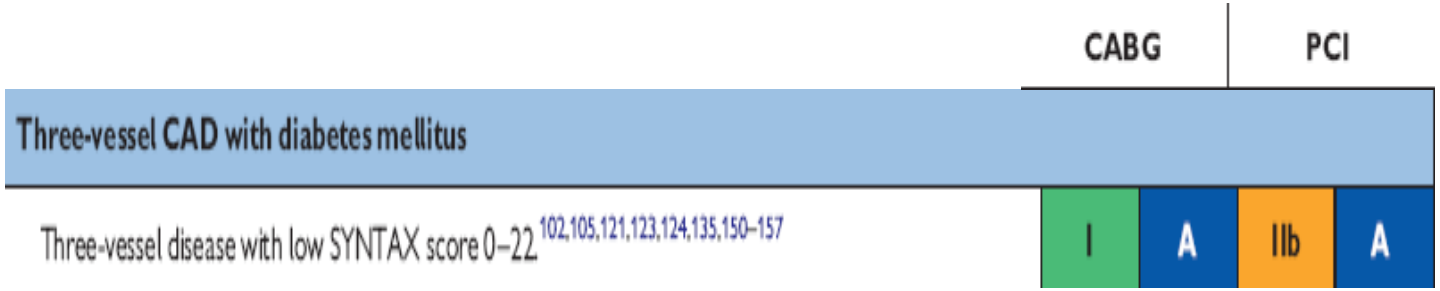
METHODS: In this multicenter, randomized, registry-based, open-label clinical trial, we enrolled patients with either ST-segment elevation myocardial infarction (STEMI) or non-STEMI (NSTEMI) who were undergoing PCI and receiving treatment with a potent $P2Y_{12}$ inhibitor (ticagrelor, prasugrel, or cangrelor) without the planned use of glycoprotein IIb/IIIa inhibitors. The patients were randomly assigned to receive bivalirudin or heparin during PCI, which was performed predominantly with the use of radial-artery access. The primary end point was a composite of death from any cause, myocardial infarction, or major bleeding during 180 days of follow-up.

RESULTS: A total of 6006 patients (3005 with STEMI and 3001 with NSTEMI) were enrolled in the trial. At 180 days, a primary end-point event had occurred in 12.3% of the patients (369 of 3004) in the bivalirudin group and in 12.8% (383 of 3002) in the heparin group (hazard ratio, 0.96; 95% confidence interval [CI], 0.83 to 1.10; P=0.54). The results were consistent between patients with STEMI and those with NSTEMI and across other major subgroups. Myocardial infarction occurred in 2.0% of the patients in the bivalirudin group and in 2.4% in the heparin group (hazard ratio, 0.84; 95% CI, 0.60 to 1.19; P=0.33), major bleeding in 8.6% and 8.6%, respectively (hazard ratio, 1.00; 95% CI, 0.84 to 1.19; P=0.98), definite stent thrombosis in 0.4% and 0.7%, respectively (hazard ratio, 0.54; 95% CI, 0.27 to 1.10; P=0.09), and death in 2.9% and 2.8%, respectively (hazard ratio, 1.05; 95% CI, 0.78 to 1.41; P=0.76).

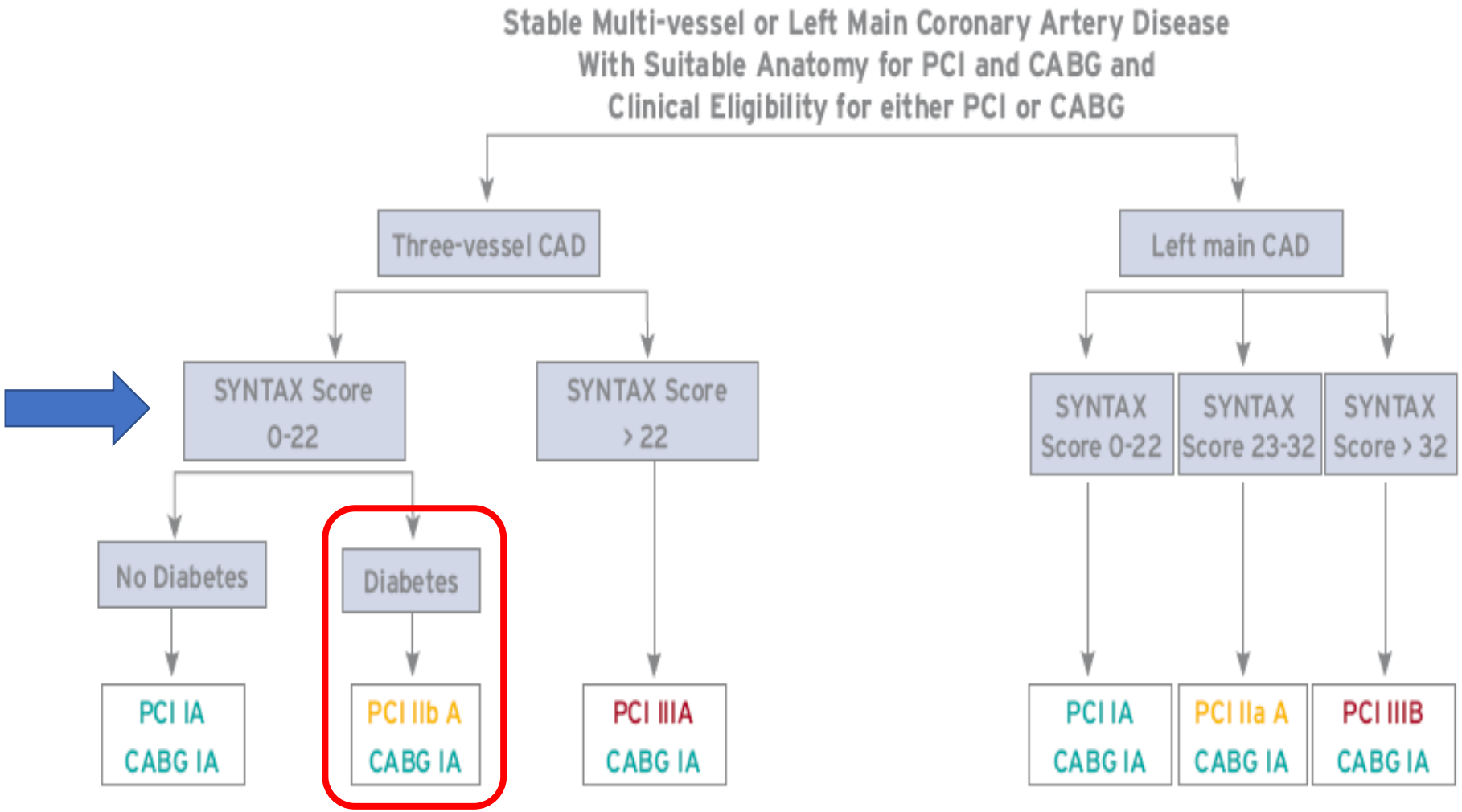
CONCLUSIONS: Among patients undergoing PCI for myocardial infarction, the rate of the composite of death from any cause, myocardial infarction, or major bleeding was not lower among those who received bivalirudin than among those who received heparin monotherapy.
(Funded by the Swedish Heart-Lung Foundation and others; VALIDATE-SWEDEHEART ClinicalTrialsRegister.eu number, 2012-005260-10 ; ClinicalTrials.gov number, NCT02311231 .).

Changes in class of recommendation in the 2018 ESC/EACTS Guidelines on Myocardial Revascularization





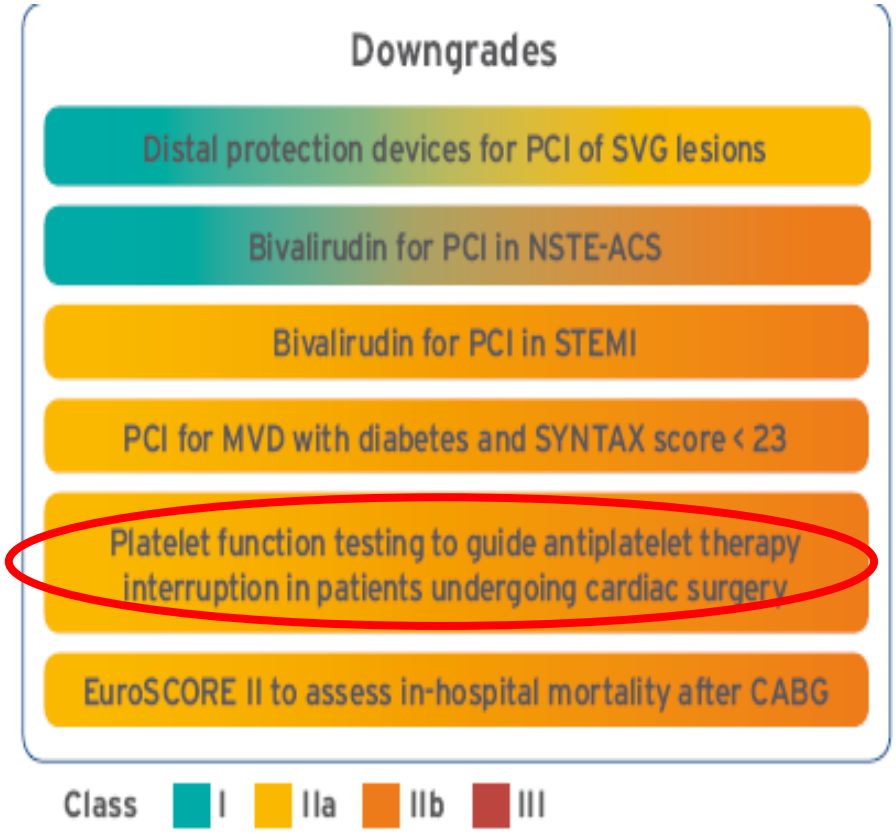
Algorithm to Guide the Choice of Revascularisation Procedure Across Major Categories in Patients With Multivessel or Left Main Coronary Artery Disease

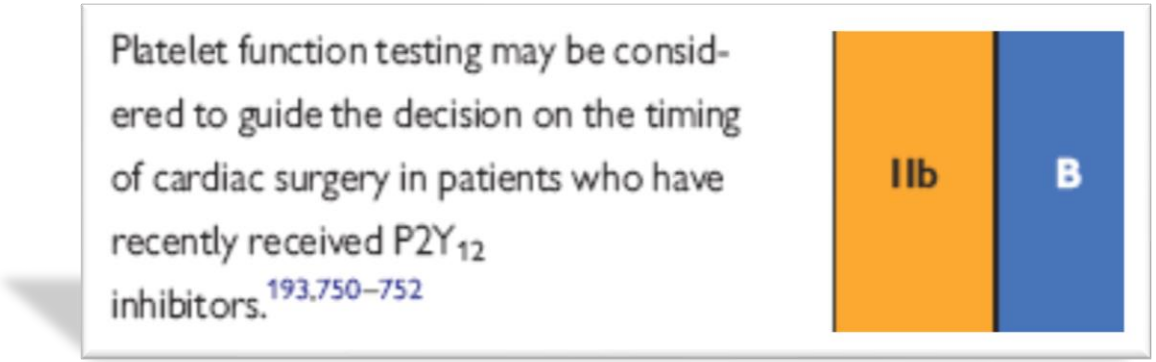


Aspects to be Considered by the Heart Team for Decision Making Between PCI and CABG Among Patients With Stable Multivessel and/or Left Main Coronary Artery Disease

	Favours PCI	Favours CABG
Clinical characteristics	- Presence of severe co-morbidity (not adequately reflected by scores) - Advanced age/frailty/ reduced life expectancy - Restricted mobility and conditions that affect the rehabilitation process	- Diabetes - Reduced LV function (EF ≤ 35%) - Contraindication to DAPT - Recurrent diffuse in-stent restenosis
Anatomical and technical aspects	- MVD with SYNTAX score 0–22 - Anatomy likely resulting in incomplete revascularisation with CABG due to poor quality or missing conduits - Severe chest deformation or scoliosis - Sequelae of chest radiation Porcelain aorta[a]	- MVD with SYNTAX score ≥ 23 - Anatomy likely resulting in incomplete revascularisation with PCI - Severely calcified coronary artery lesions limiting lesion expansion
Need for concomitant interventions		- Ascending aortic pathology with indication for surgery - Concomitant cardiac surgery

Changes in class of recommendationin the 2018 ESC/EACTS Guidelines on Myocardial Revascularization





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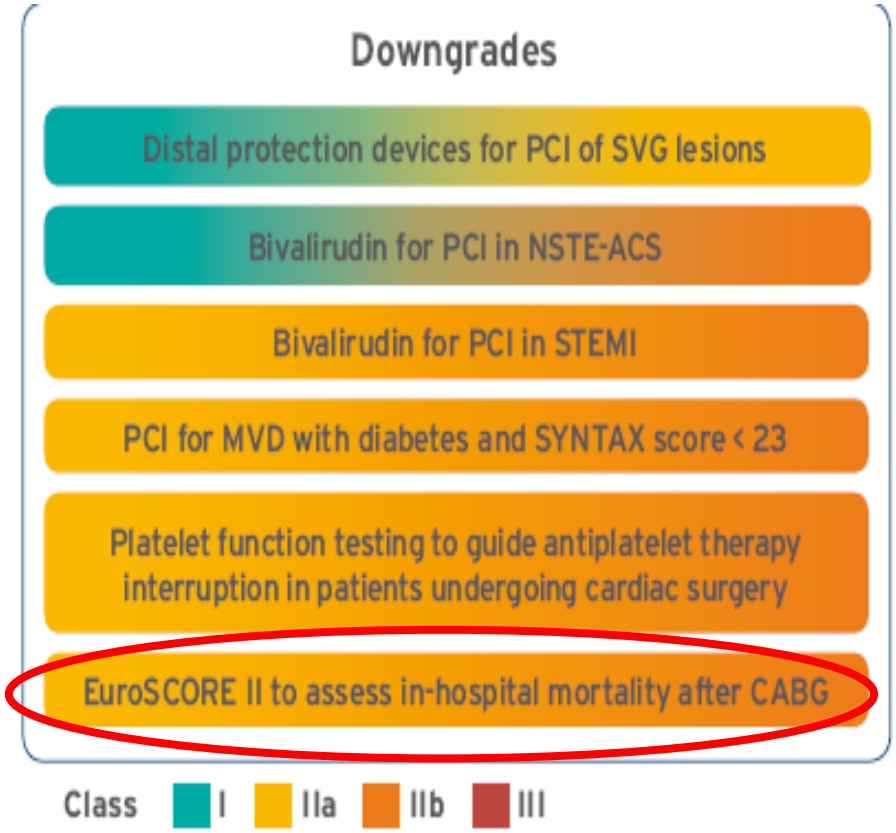

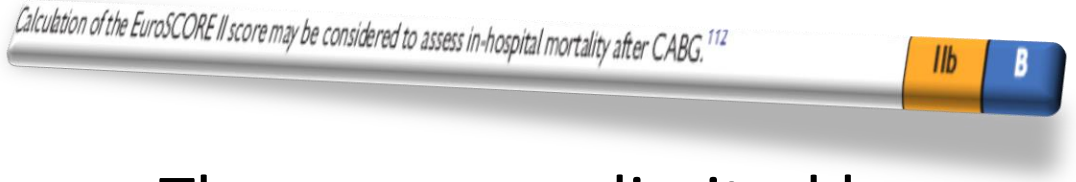

The scores are limited by

(i) the specific definitions used or the methodology applied
(ii) the absence of important variables such as frailty
(iii) the practicability of calculation
(iv) a failure to reflect all relevant mortality and morbidity endpoints
(v) limited external validation

Decision-making should not be solely dependent on risk scores.
These scores should be used as a **guide** within the multidisciplinary Heart Team discussion

Essential take home messages of the 2018 guidelines

- Decision making for stented percutaneous coronary intervention **(PCI)** or coronary artery bypass grafting **(CABG)** should be based on **combined evaluation of anatomy and physiology** (non-invasive or invasive testing; Table 4).

- Evaluation of the extent of coronary artery disease (CAD) by **SYNTAX** score (www.syntaxscore.com) is essential when choosing between revascularisation modalities (CABG or PCI).

Essential take home messages of the 2018 guidelines 2

- The presence of **diabetes** is an important decision modifier by itself.

- The probability of achieving **complete revascularisation** is of extreme prognostic importance

- **HEART TEAM**

ΕΥΧΑΡΙΣΤΩ!