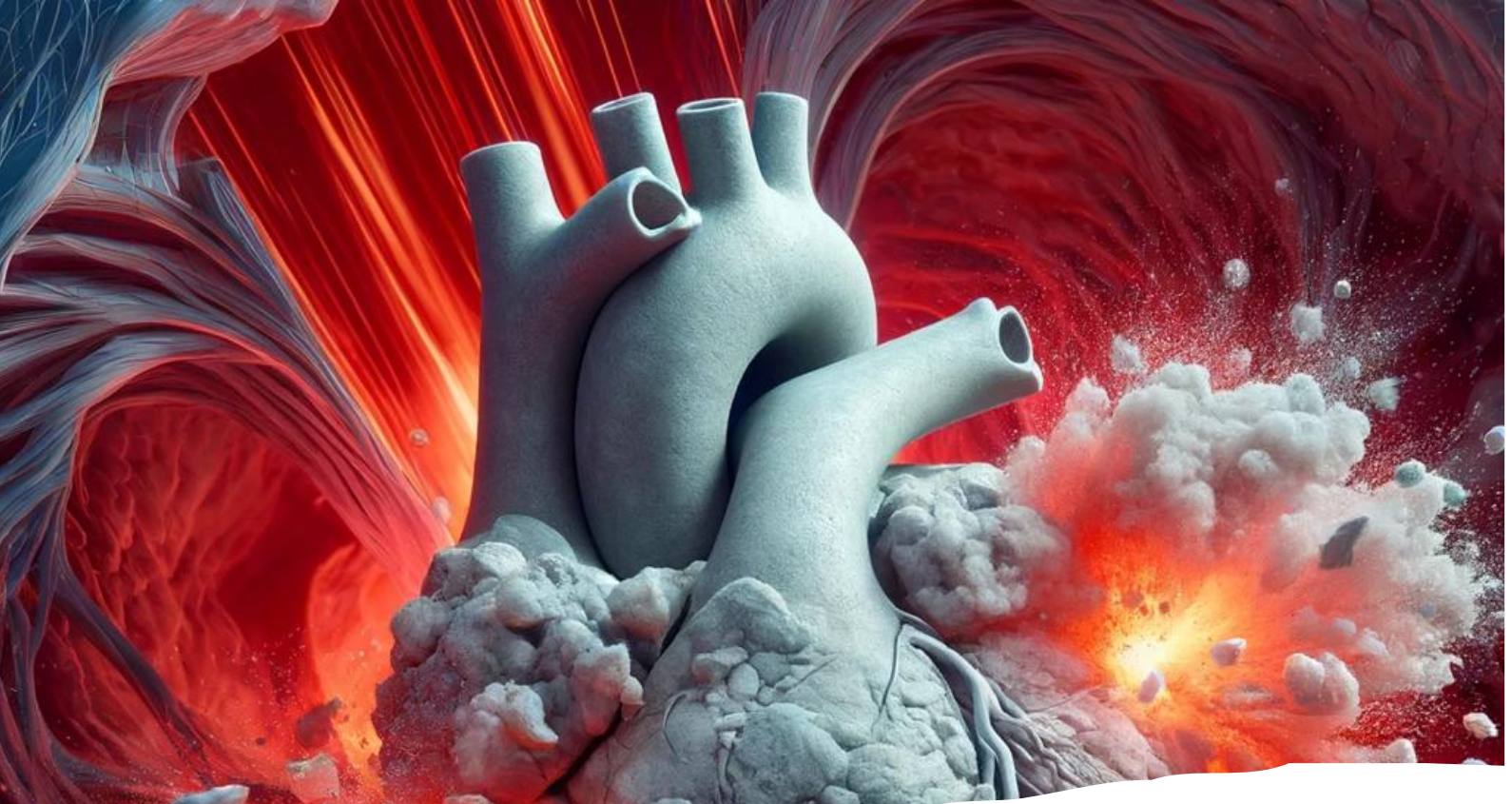
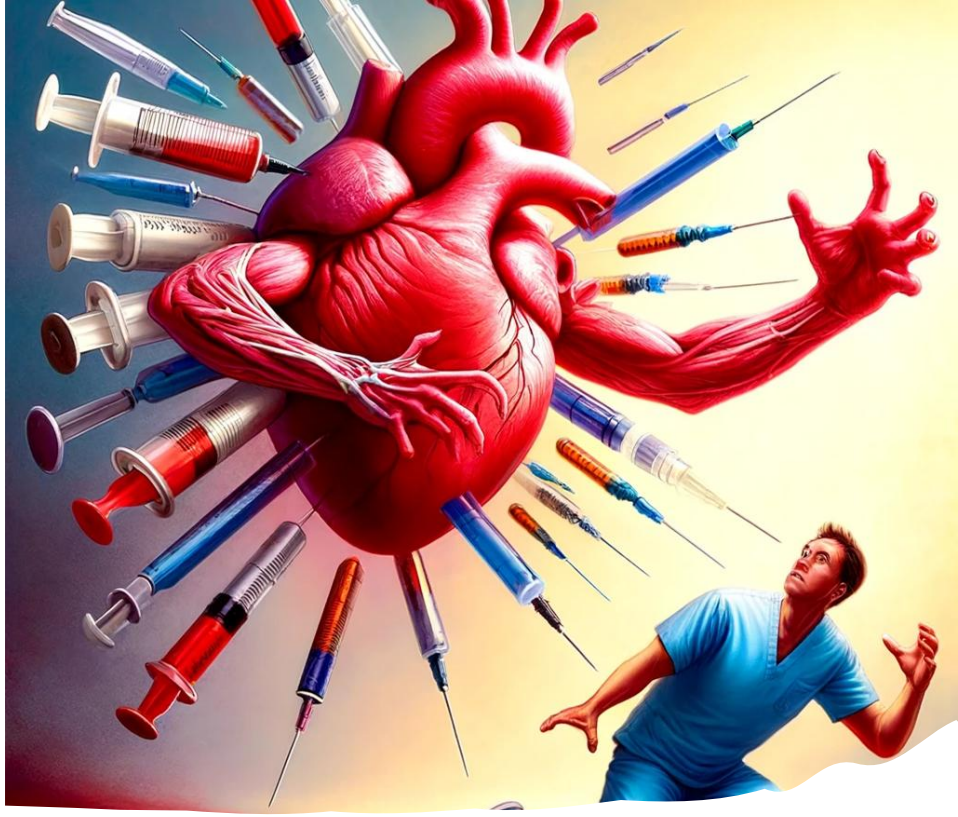




UNDER PRESSURE

CHIP a koronární kalcifikace

Vojtěch Novotný

Chippin‘ around,

kick my brains 'round the floor

CHIP

Complex

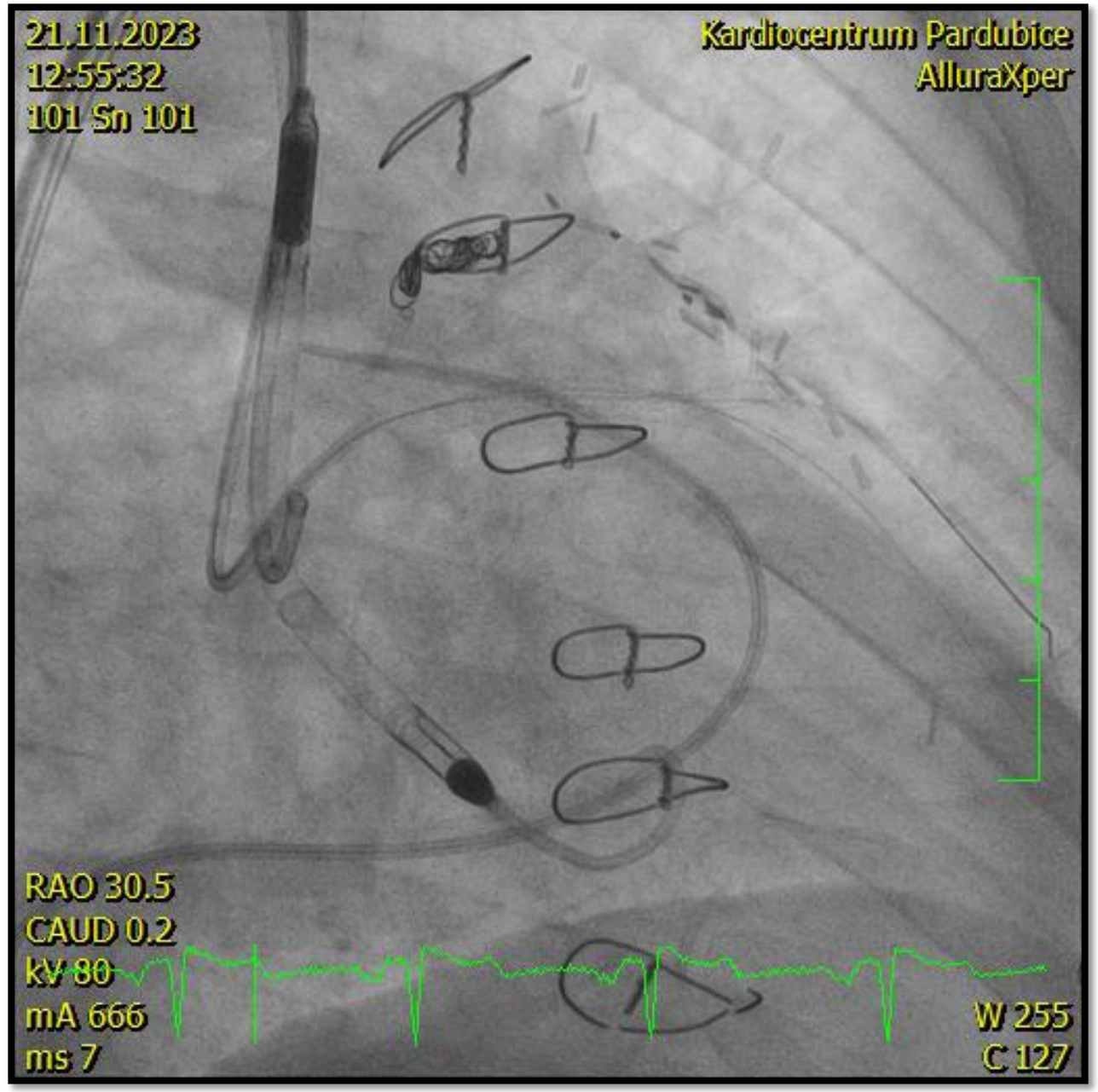
High Risk

&

Indicated

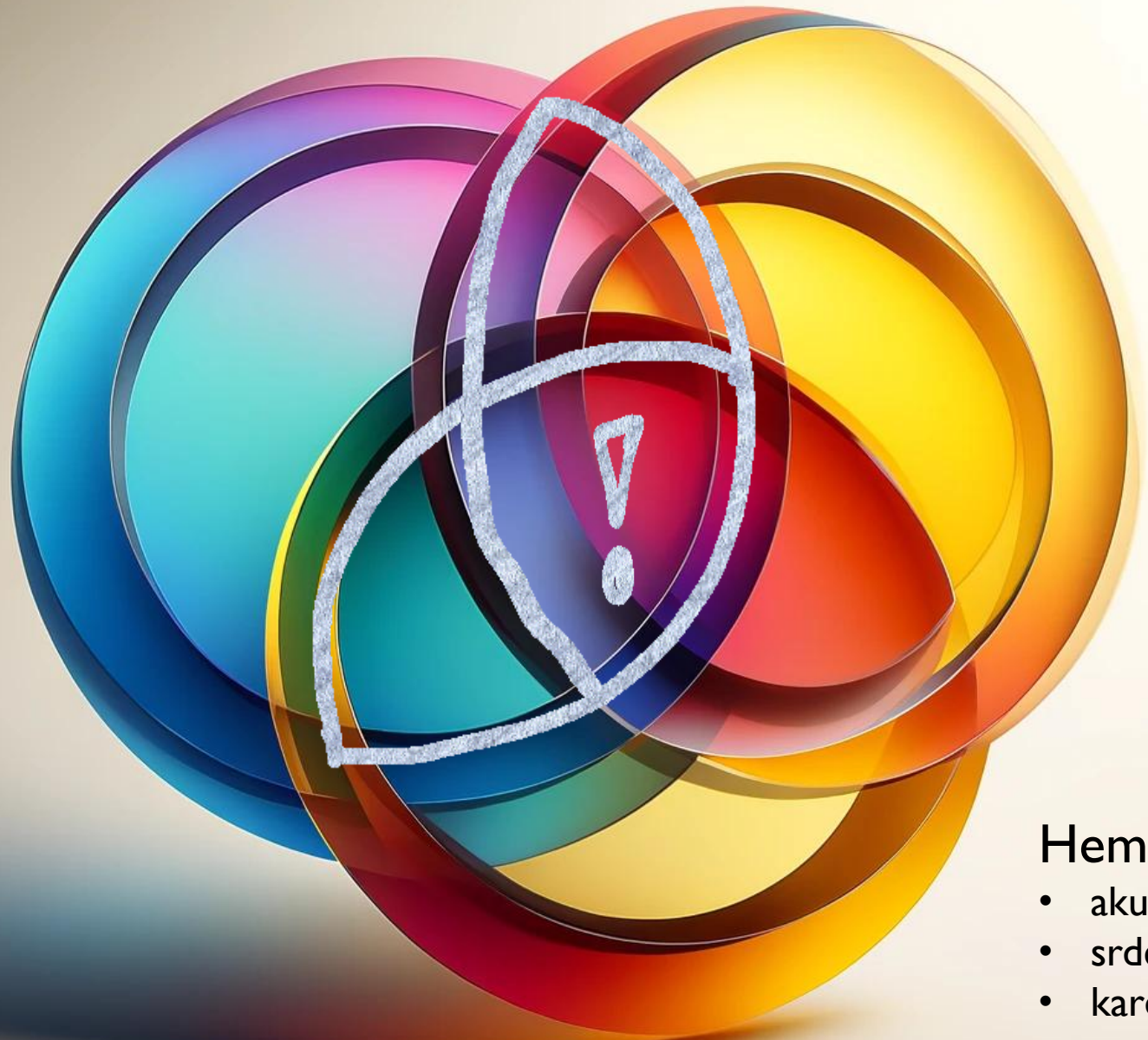
PCI


CTO
MSP
Ca++
Kmen
Difuzní
Bifurkace
Více tepen
Dlouhé léze
FFR, IVUS, OCT
vodič-balón-stent


21.11.2023
12:55:32
101 Sn 101
Kardiocentrum Pardubice
AlluraXper
RAO 30.5
CAUD 0.2
kV 80
mA 666
ms 7
W 255
C 127

Komplexní PCI

- CTO
- distální kmen
- MVD
- kalcium
- dlouhé léze
- difuzní postižení
- bifurkace
- postCABG

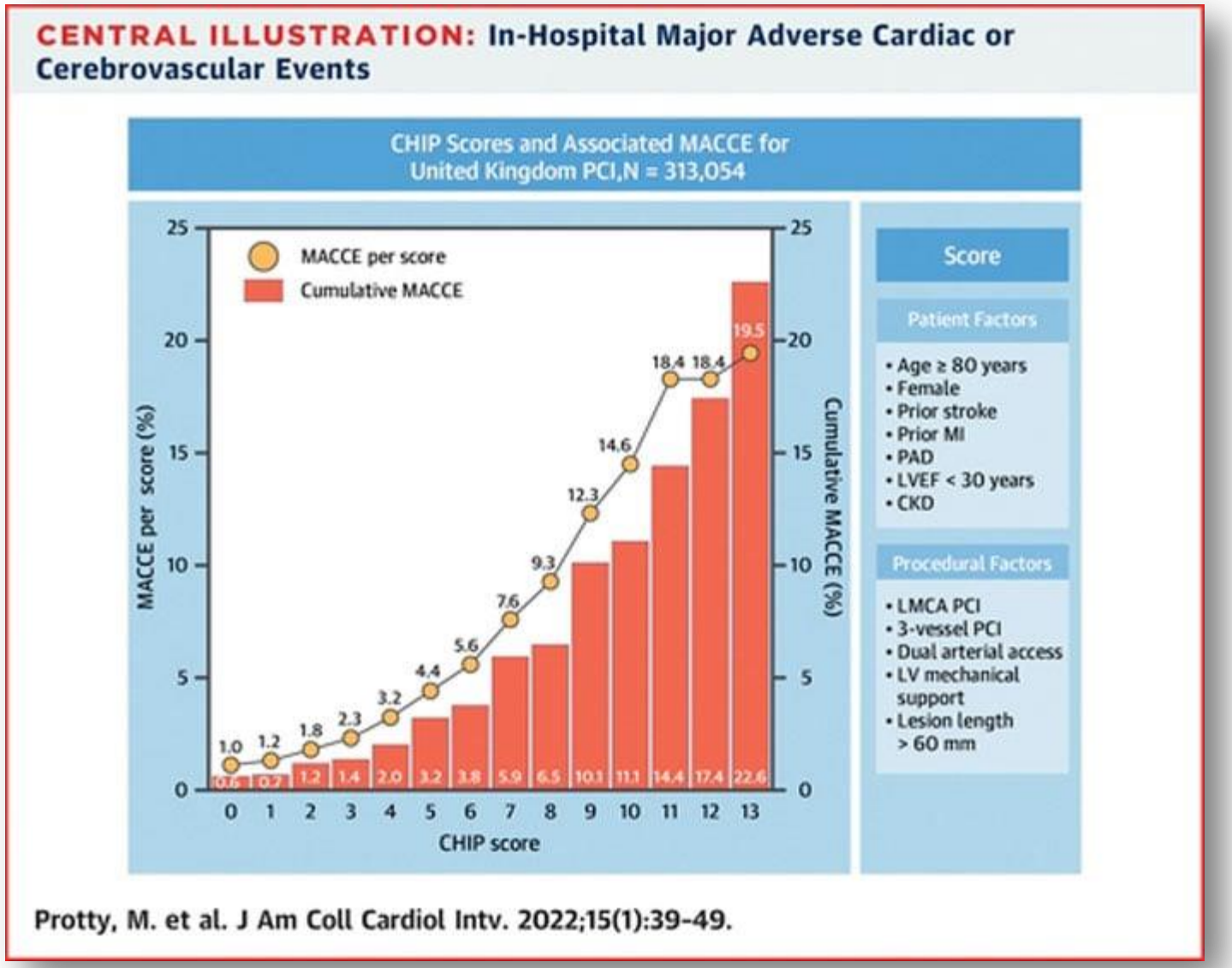


Rizikový pacient

- věk
- křehkost
- riziko krvácení
- kontraindikace KCH
- komorbidity (CKD, DM)

Hemodynamický stav

- akutní koronární syndrom
- srdeční selhání
- kardiogenní šok
- arytmie
- chlopenní vady



Průměrné CHIP score (2006-2016)

1,06 → 1,58

CHIP score ≥ 5 (2006-2016)

2,5 % → 5,3 %

Nemocniční MACCE

CHIP score = 0 0,6 %

CHIP score > 0 1,2 %

exponenciální nárůst

Kumulativní MACCE

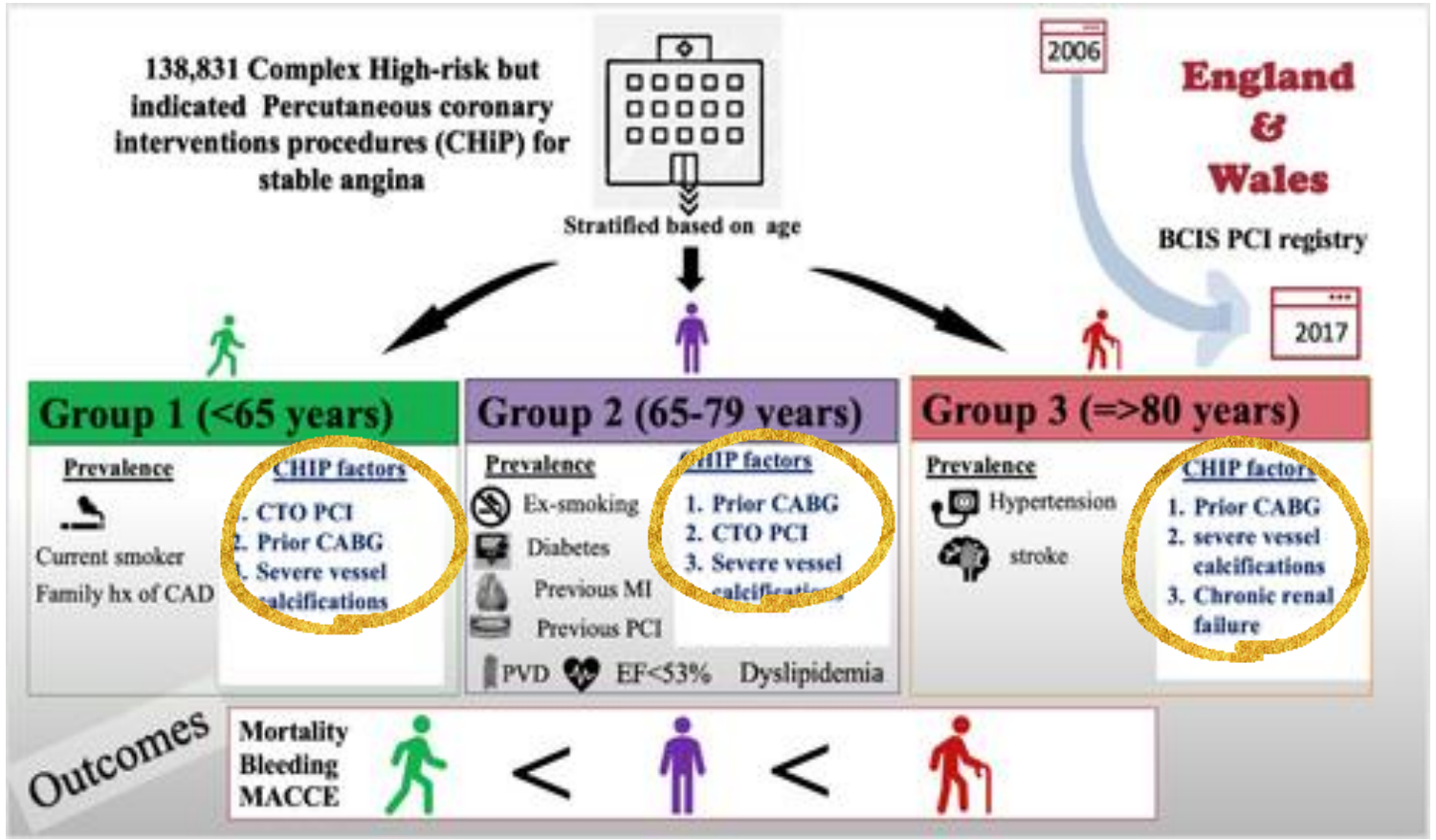
CHIP score ≥ 4 3,2 %

CHIP score ≥ 5 4,4 %

…

- EF LK ≤ 30%
- po CABG
- kreatinin ≥ 200umol/l

- kmen
- CTO
- Ca – rota, IVL, cutting
- MCS



Warkaa Shamkhani et al. *J Am Coll Cardiol* 2022; 79:855-855.

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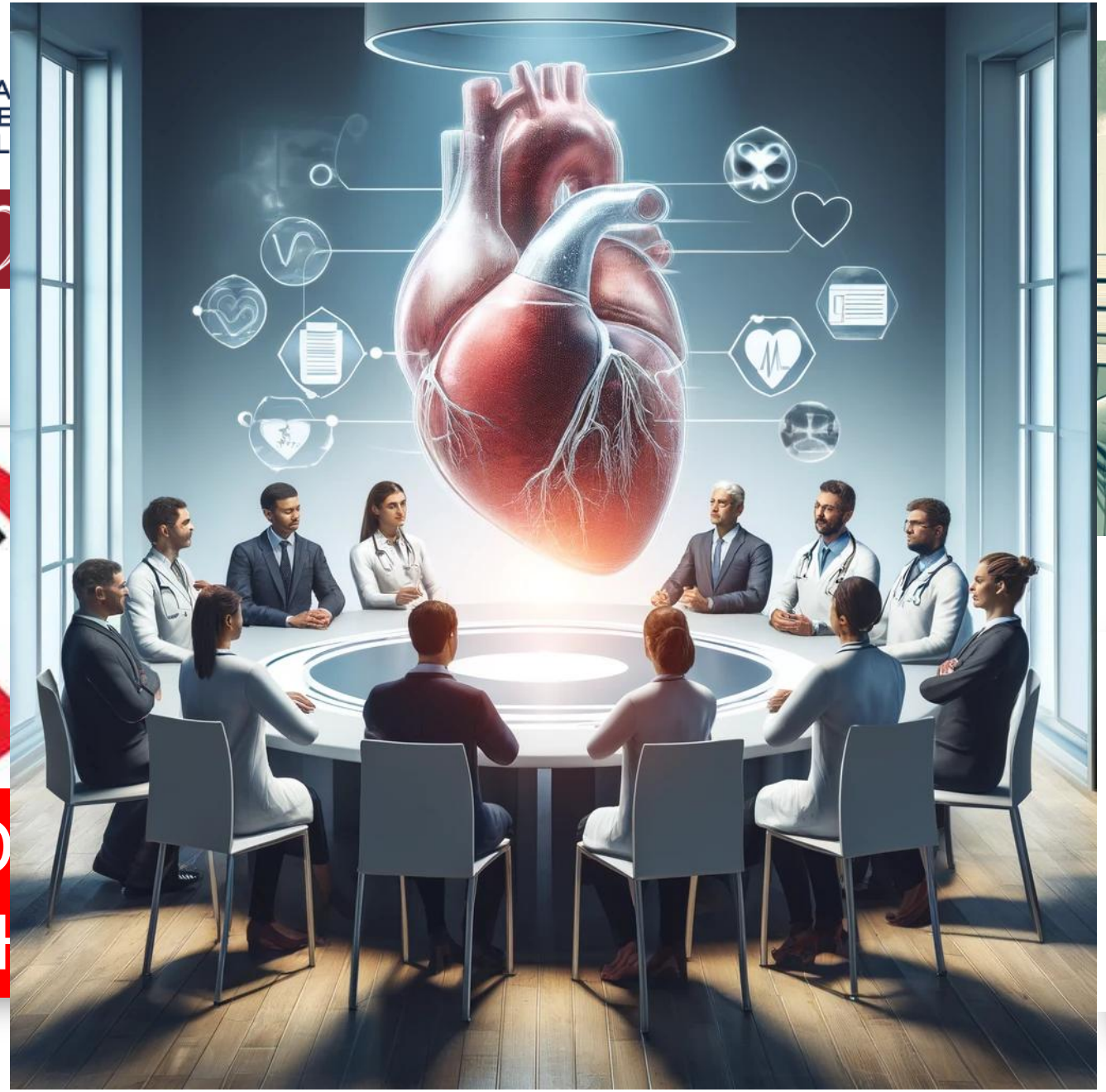
AMERICA
COLLEGE
CARDIOL

ESC
European Society
of Cardiology



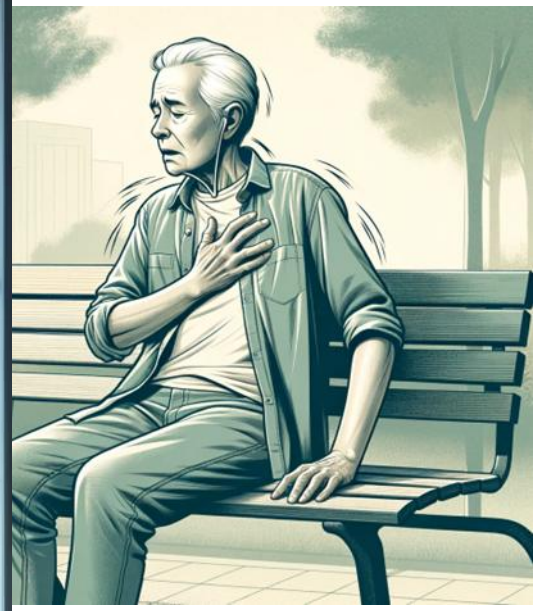


TABLE 1. CHIP OPERATOR PROFICIENCIES AND TOOLBOX	
Arterial access	▪ Large-bore sheaths ▪ Radial access ▪ Bilateral femoral access ▪ Advanced techniques (percutaneous axillary/transcaval)
CTO	▪ Antegrade wire escalation ▪ Antegrade dissection reentry ▪ Retrograde
Left main	▪ One-stent/provisional strategies ▪ Two-stent techniques (double-kissing crush/culotte)
Advanced imaging	▪ Proficiency with IVUS/OCT
Calcific disease	▪ Rotational atherectomy/orbital atherectomy
Hemodynamic support	▪ Impella 2.5/CP for protected PCI treatment of cardiogenic shock ▪ Intra-aortic balloon counterpulsation ▪ Extracorporeal membrane oxygenation
Complication management	▪ Coronary perforation management techniques (covered stents, coils, embolization) ▪ Access site complications (peripheral skills/covered stent deployment) ▪ Repair of coronary dissection ▪ Emergency pericardiocentesis

Essentials for a CHIP Program

A comprehensive CHIP program requires a true heart team approach, specialized operator skills and training, and institutional support and resources.

By Justin Levisay, MD

Cardiac Interventions TODAY

- tzv. „surgical turndown“
- vysoce riziková populace
- málo dat
- studie OPTIMUM

726 pacientů
(MVD či kmen)

celková mortalita
5,6% po 30 dnech
12,3% po 6 měsících

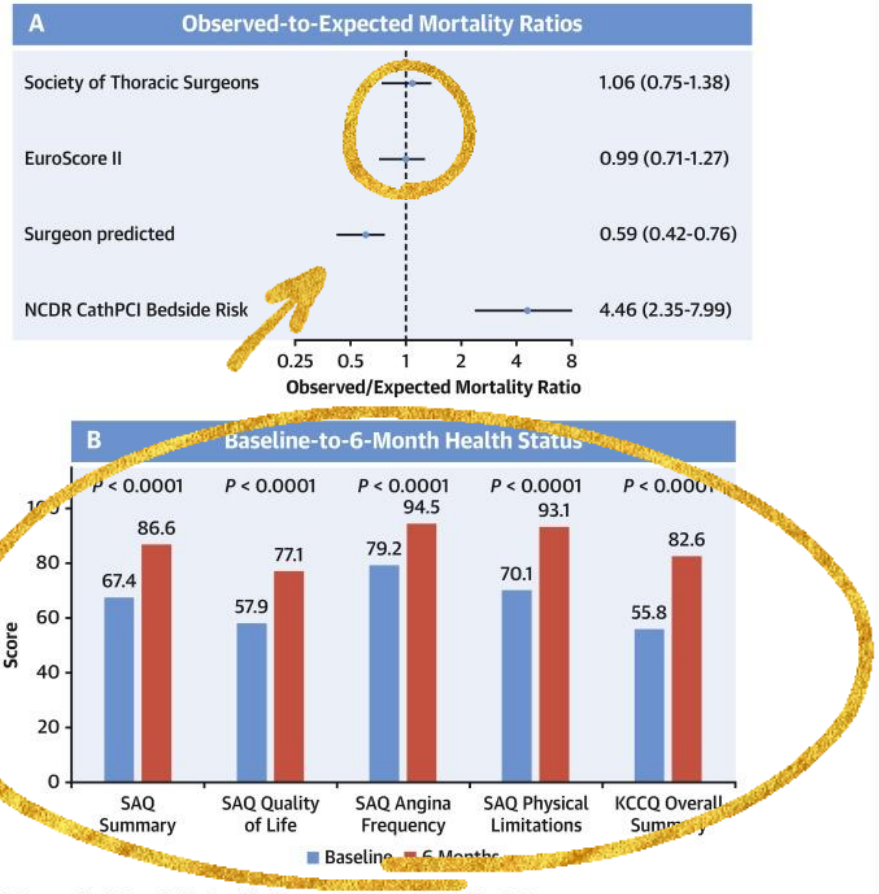
Outcomes of Medical Therapy Plus PCI for Multivessel or Left Main CAD Ineligible for Surgery

Adam C. Salisbury MD, MSc [a b], J. Aaron Grantham MD [a b], W. Morris Brown MD [c], William L. Ballard MD [c], Keith B. Allen MD [a b], Ajay J. Kirtane MD, SM [d], Michael Argenziano MD [d], Robert W. Yeh MD, MSc [e], Kamal Khabbaz MD [e], John Lasala MD [f], Puja Kachroo MD [f], Dimitri Karmpaliotis MD [d], Jeffrey Moses MD [d], William L. Lombardi MD [g], Karen Nugent RRT [a], Ziad Ali MD [d], Kensey L. Gosch MS [a], John A. Spertus MD, MPH [a b], David E. Kandzari MD [c], OPTIMUM Investigators

JACC Cardiovascular Interventions

CENTRAL ILLUSTRATION: Study Overview and Main Results

PCI Outcomes and Mortality Risk Scores for Surgically Ineligible Patients With Left Main or Multivessel CAD (N = 726)



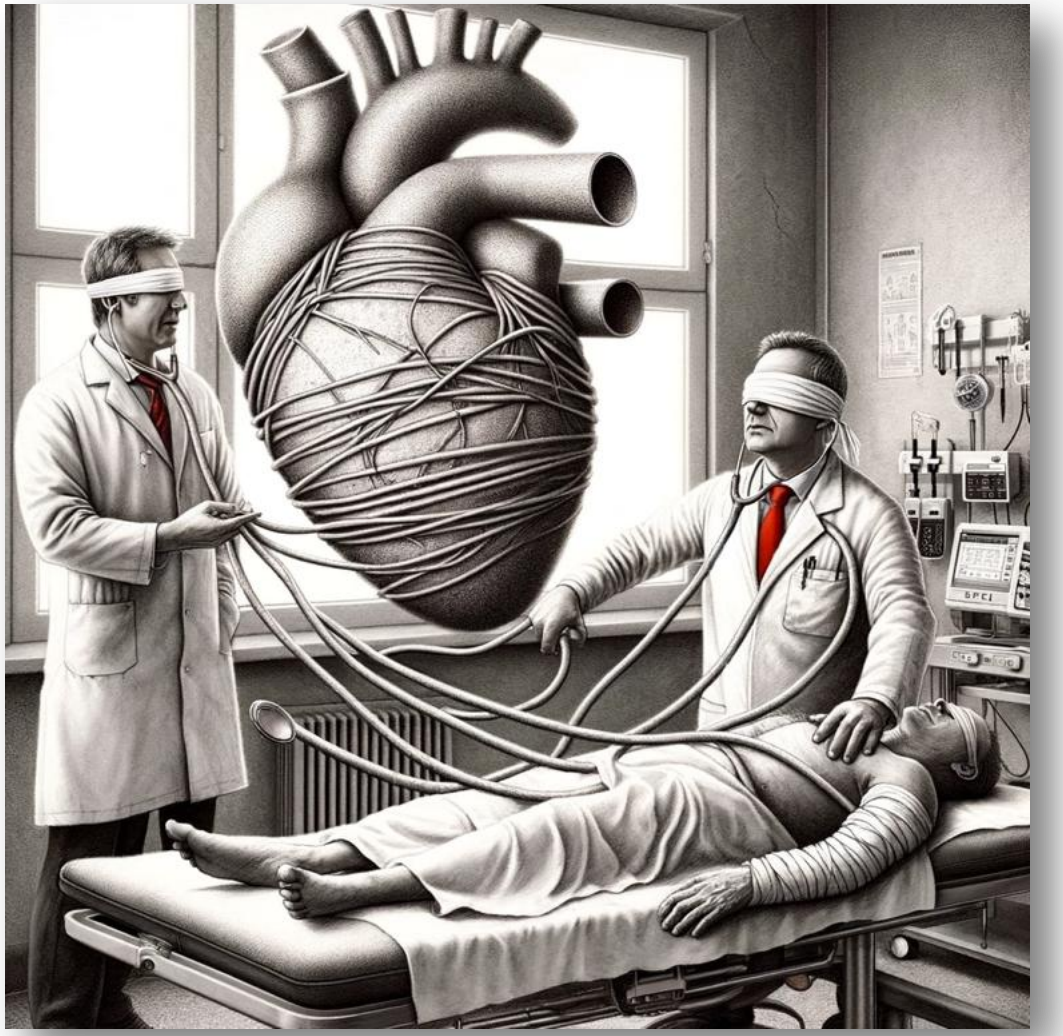
Salisbury AC, et al. J Am Coll Cardiol Intv. 2023;16(3):261-273.

Bohemia CHIPs

	2021	2022	2023
PCI	22141	22586	21990
CTO	766	814	780
Rota	190	249	246
IVL	x	x	267
OCT	485	469	420
IVUS	838	1233	1410
DEB	666	1030	1471

Turned away from it all like

a blind man



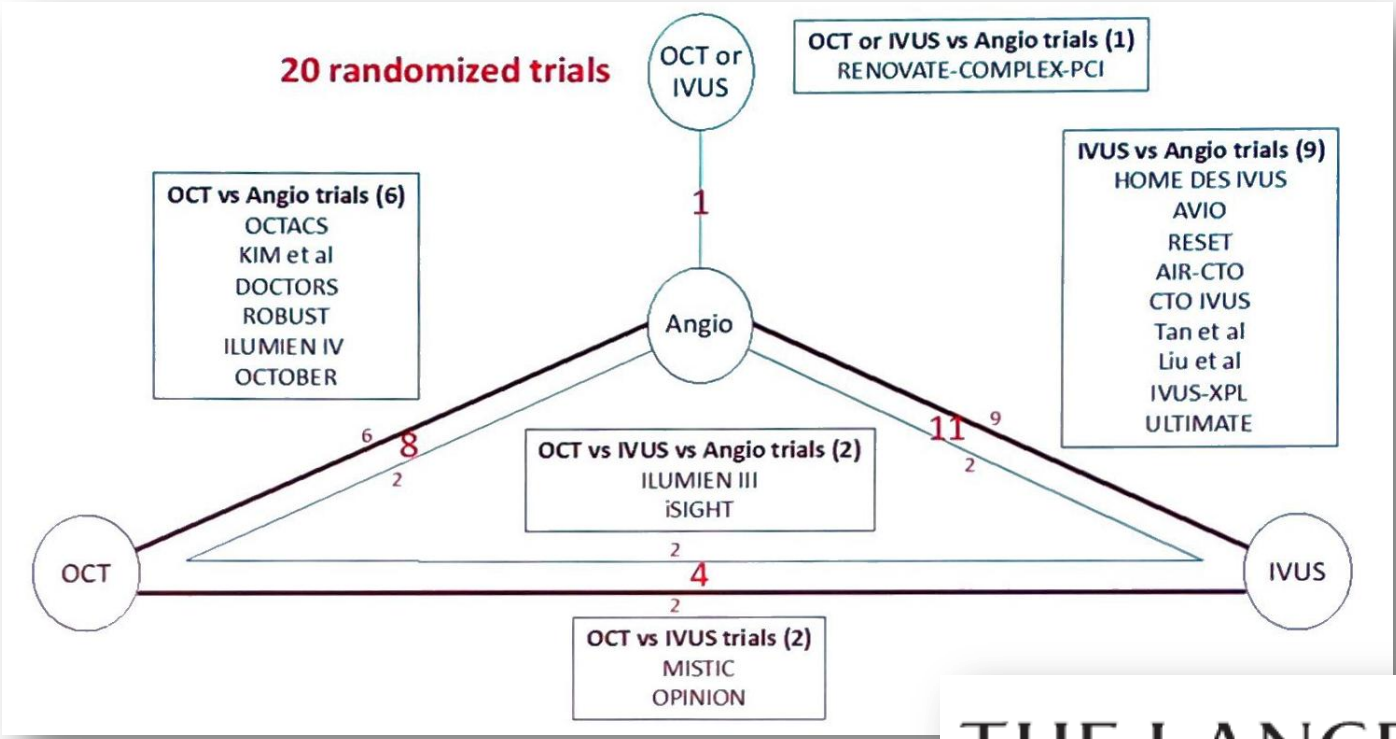
Intravascular imaging-guided coronary drug-eluting stent implantation: an updated network meta-analysis

Prof Gregg W Stone MD [a], Evald H Christiansen MD [b], Prof Ziad A Ali MD DPhil [c], Lene N Andreasen MD [b], Prof Akiko Maehara MD [d e], Yousif Ahmad PhD [f], Prof Ulf Landmesser MD [g h], Niels R Holm MD [b]

12,428 pacientů

IVI-vedená PCI proti angio-vedené snižuje:

- TLF 31%
  - kardiální úmrtí 46%
  - TV-MI 20%
  - TLR 29%
- trombózu stentu 52%
- všechny MI 18%
- všechna úmrtí 25%

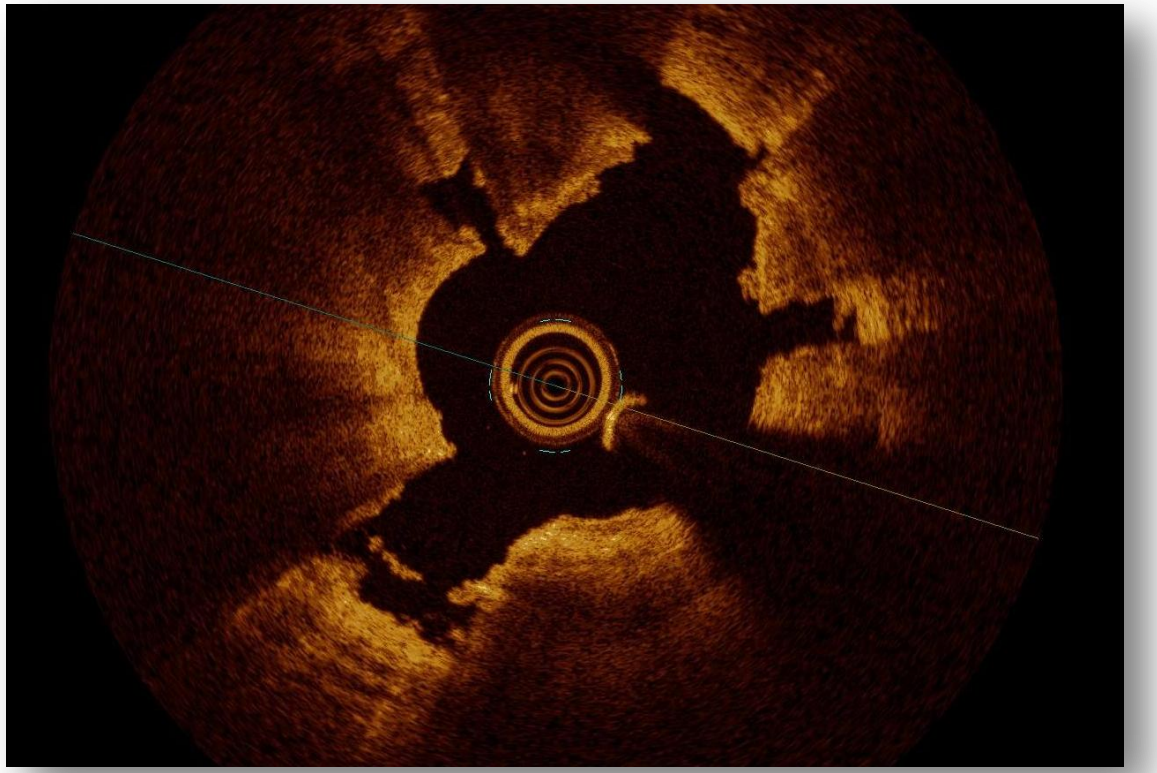


THE LANCET

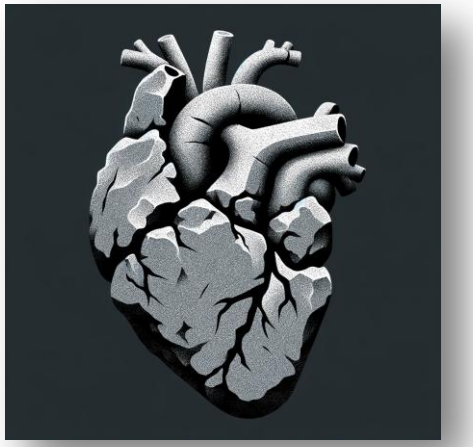
Insanity laughs

under pressure

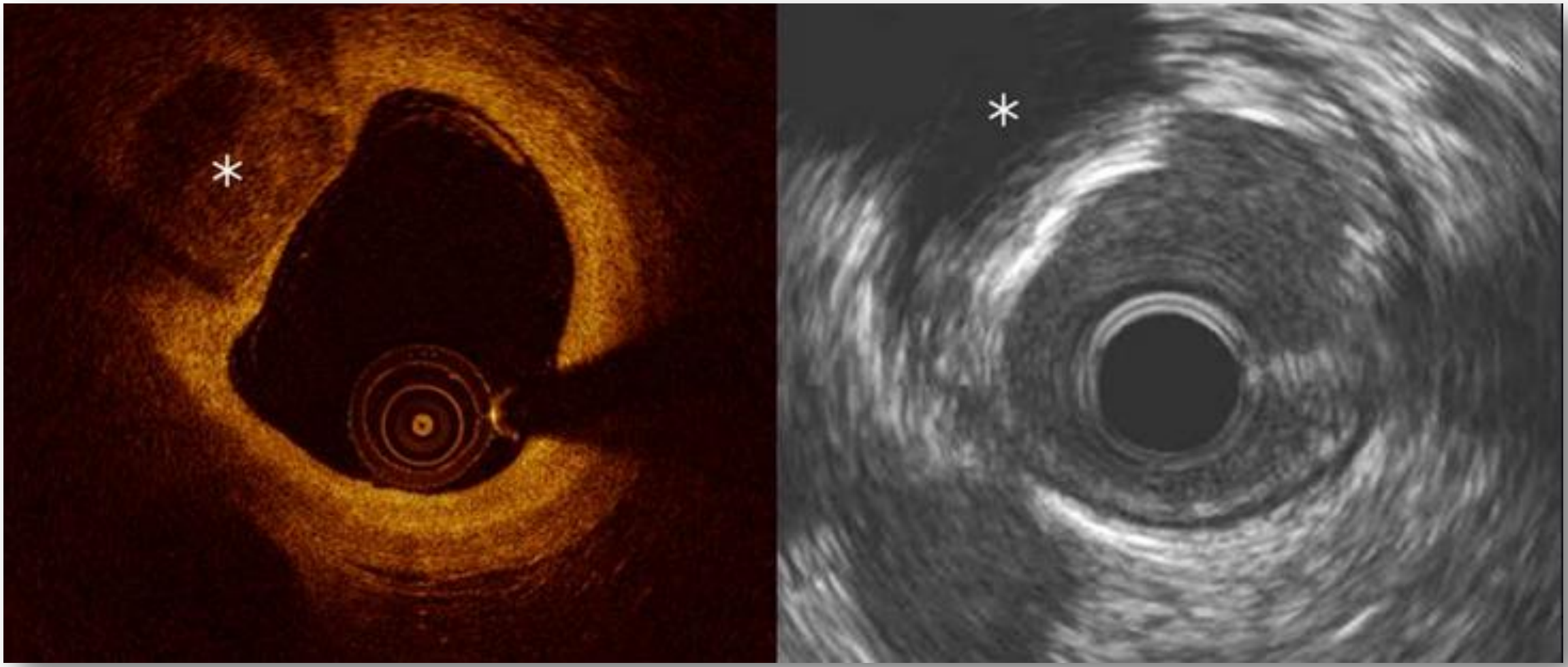
we're breaking



Koronární kalcifikované léze

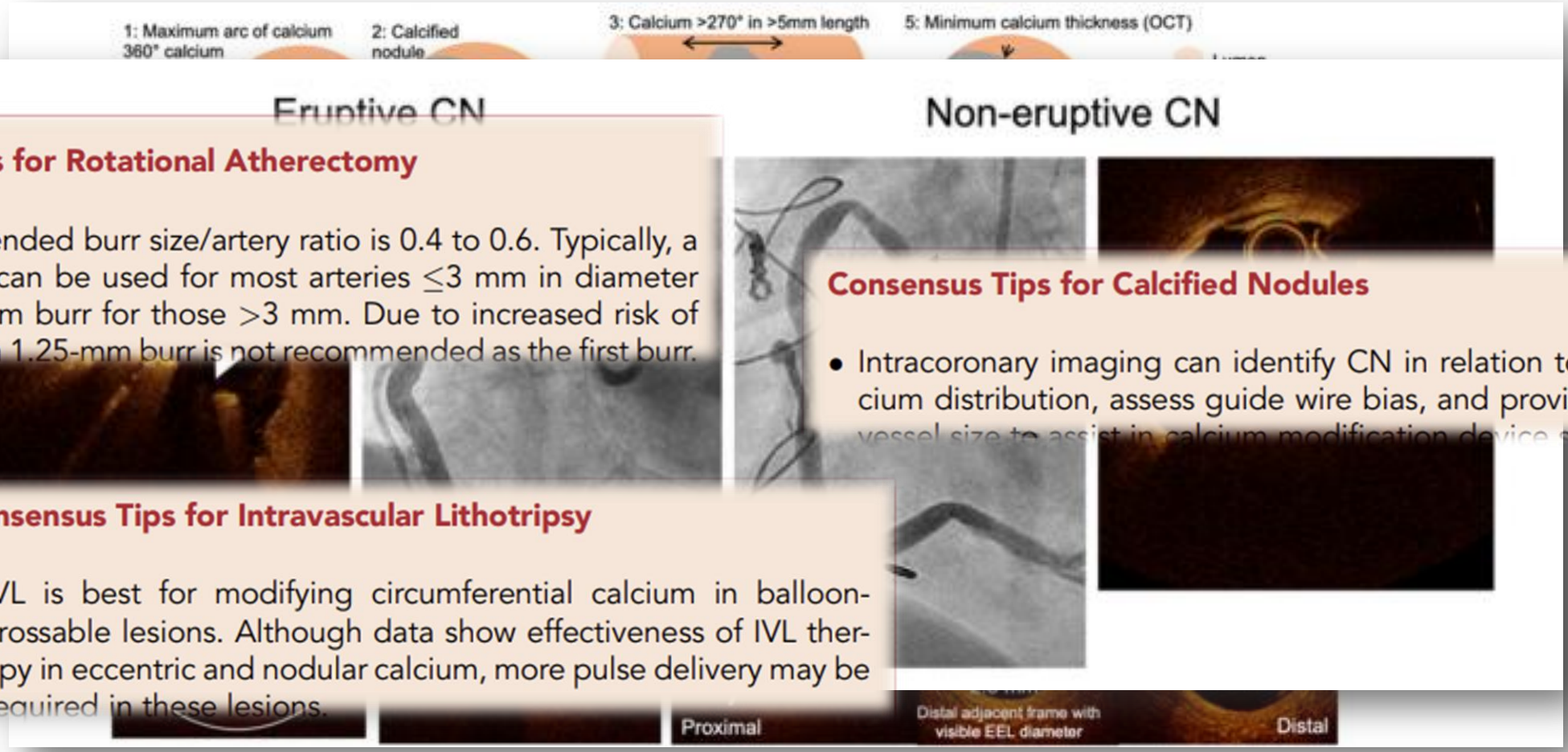


- přítomné u cca 1/3 PCI
- prevalence stoupá
- rizikové faktory – věk, diabetes, CKD, hypertenze, kouření, obezita, zánět
- snižuje úspěšnost PCI
  - malapozice, under-expanze → in-stent restenóza a trombóza
  - periprocedurální komplikace (edge-disekce, ruptura, …)
- rozsah kalcifikací koreluje s výskytem MACE



SCAI Expert Consensus Statement on the Management of Calcified Coronary Lesions

Robert F. Riley, MD, FSCAI • Mitul P. Patel, MD, FSCAI • J. Dawn Abbott, MD, FSCAI • ...
Jennifer A. Rymer, MD, FSCAI • Nadia R. Sutton, MD, FSCAI • Binita Shah, MD, MS, FSCAI •



Consensus Tips for Rotational Atherectomy

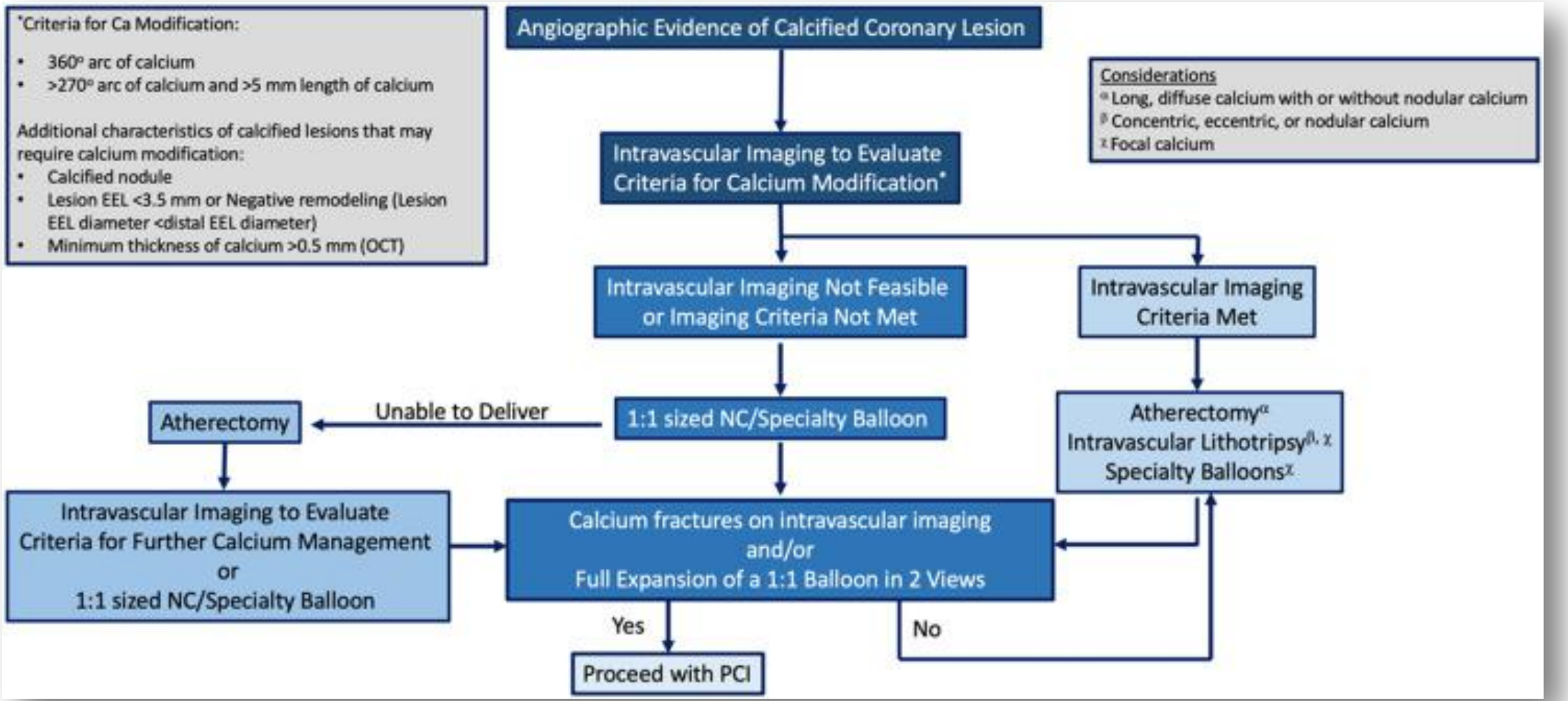
- The recommended burr size/artery ratio is 0.4 to 0.6. Typically, a 1.5-mm burr can be used for most arteries ≤3 mm in diameter and a 1.75-mm burr for those >3 mm. Due to increased risk of entrapment, a 1.25-mm burr is not recommended as the first burr.

Consensus Tips for Calcified Nodules

- Intracoronary imaging can identify CN in relation to overall calcium distribution, assess guide wire bias, and provide reference vessel size to assist in calcium modification device selection.

Consensus Tips for Intravascular Lithotripsy

- IVL is best for modifying circumferential calcium in balloon-crossable lesions. Although data show effectiveness of IVL therapy in eccentric and nodular calcium, more pulse delivery may be required in these lesions.



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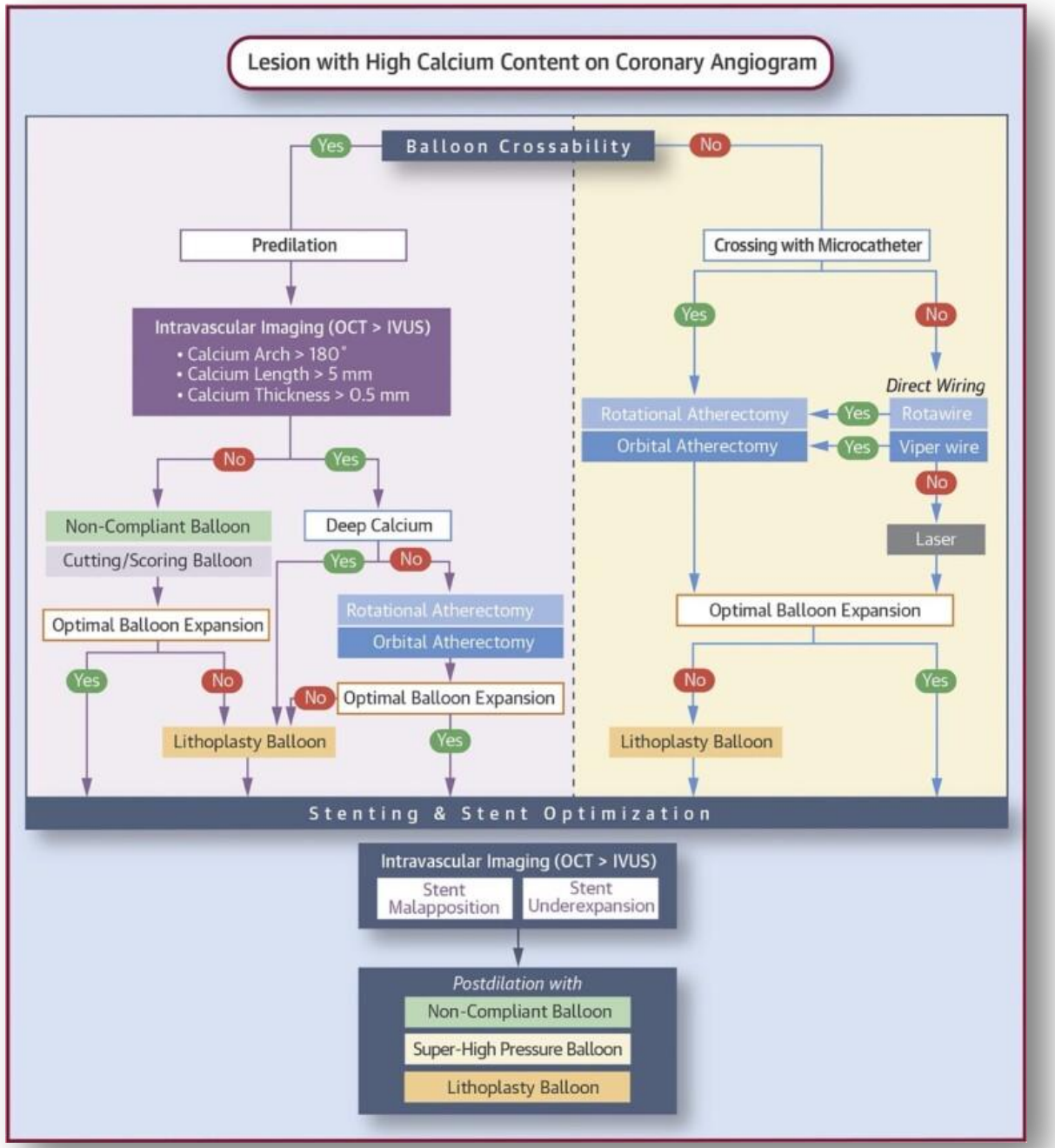
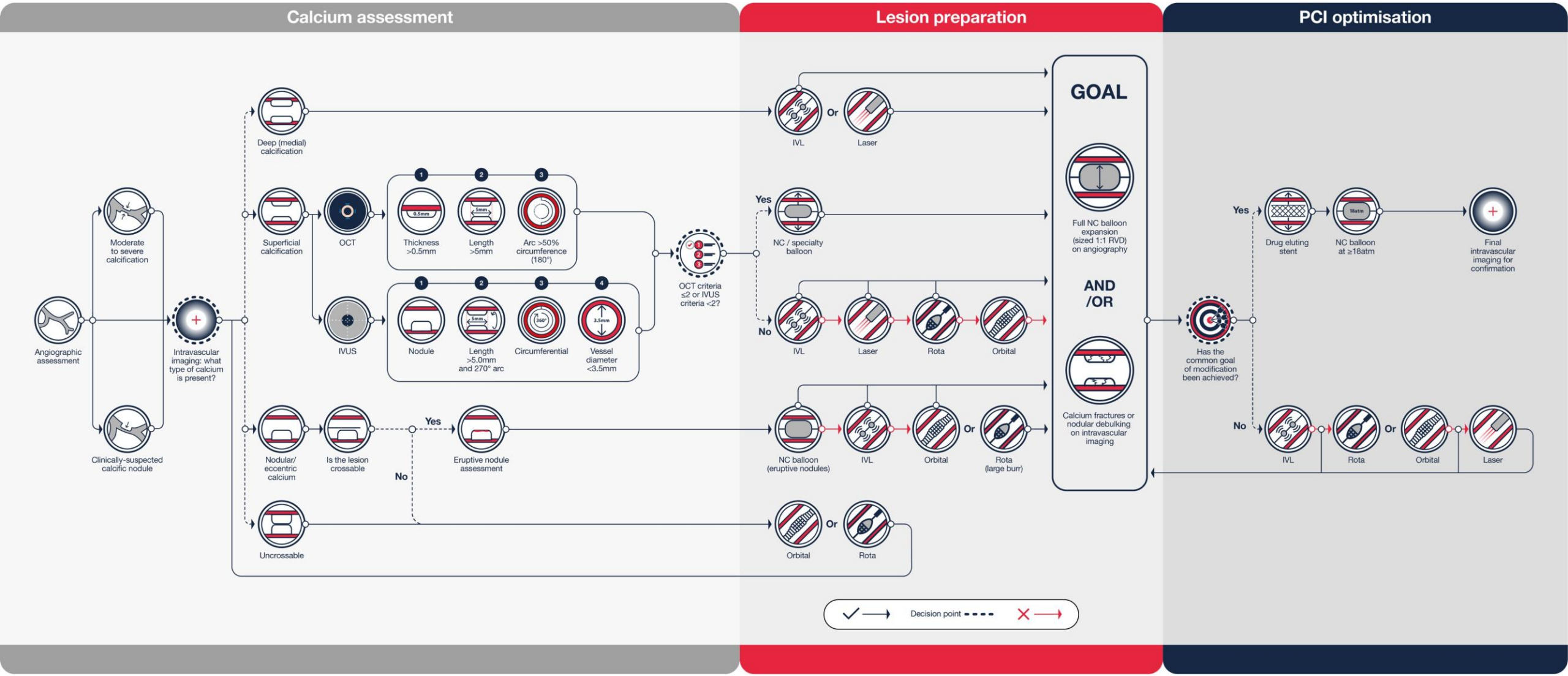
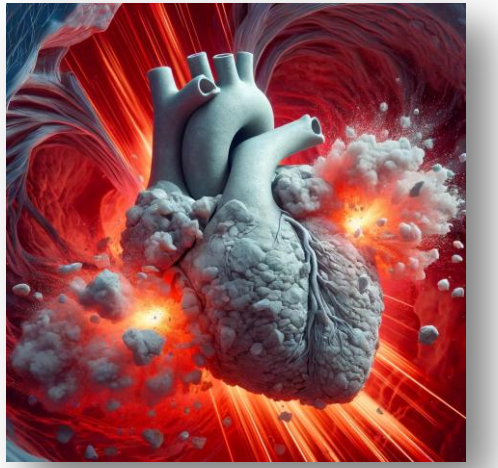


Management of Calcific Coronary Artery Lesions: Is it Time to Change Our Interventional Therapeutic Approach?

Giovanni Luigi De Maria [1], Roberto Scarsini [1], Adrian P Banning [2]


Calcium assessment
Lesion preparation
PCI optimisation
Angiographic assessment
Moderate to severe calcification
Clinically-suspected calcific nodule
Intravascular imaging: what type of calcium is present?
Deep (medial) calcification
Superficial calcification
OCT
Thickness >0.5mm
Length >5mm
Arc >50% circumference (180°)
IVUS
Nodule
Length >5.0mm and 270° arc
Circumferential
Vessel diameter <3.5mm
OCT criteria ≤2 or IVUS criteria <2?
Nodular/ eccentric calcium
Is the lesion crossable
Yes
No
Eruptive nodule assessment
Uncrossable
IVL
Or
Laser
Yes
NC / specialty balloon
No
IVL
Laser
Rota
Orbital
NC balloon (eruptive nodules)
IVL
Orbital
Or
Rota (large burr)
Orbital
Or
Rota
GOAL
Full NC balloon expansion (sized 1:1 RVD) on angiography
AND /OR
Calcium fractures or nodular debulking on intravascular imaging
Has the common goal of modification been achieved?
Yes
Drug eluting stent
NC balloon at ≥18atm
Final intravascular imaging for confirmation
No
IVL
Rota
Or
Orbital
Laser
Decision point

Co mají společného?

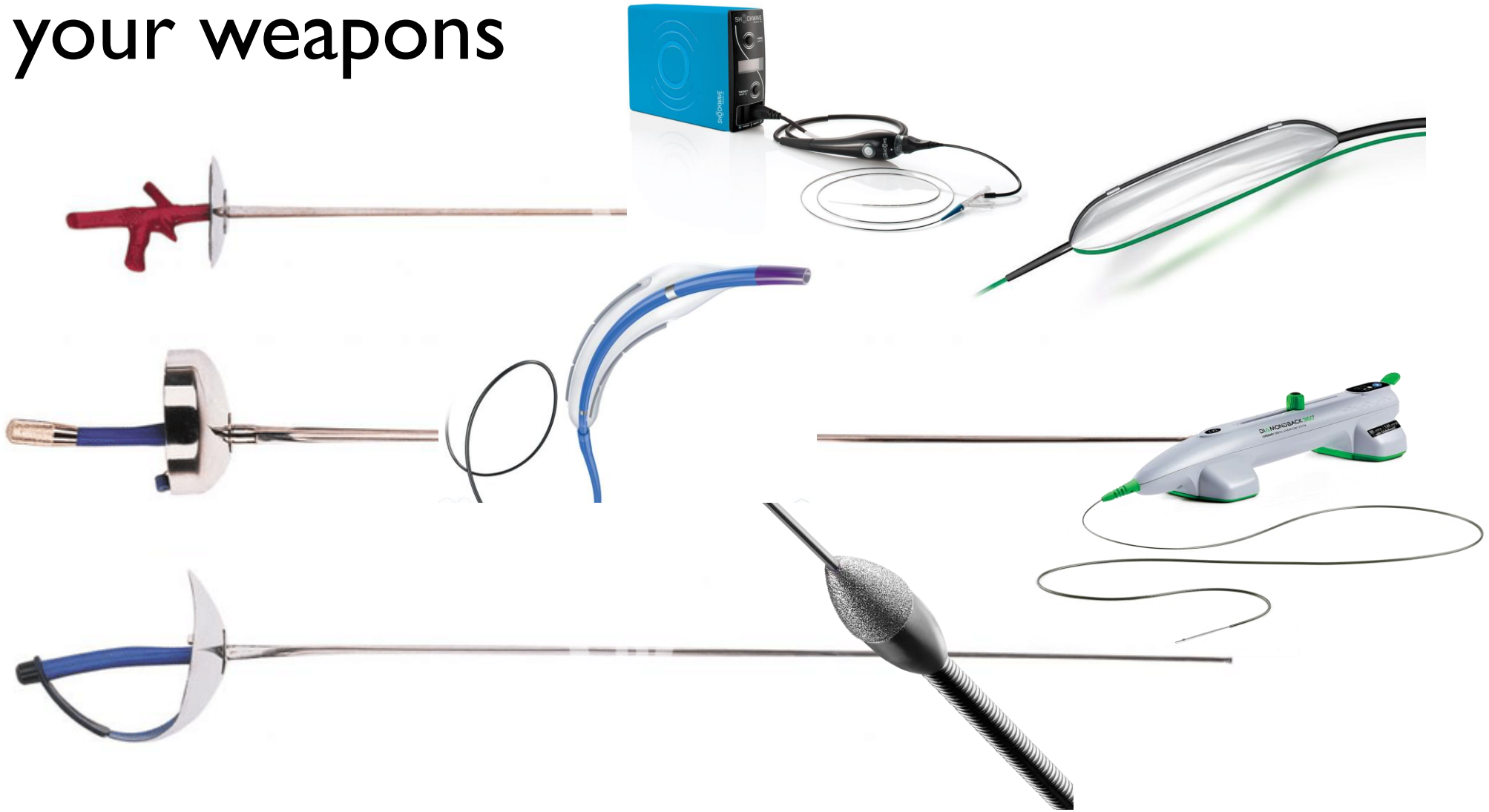


- intravaskulární imaging (IVI)
  ≥ 50% obvodu, ≥ 5mm délka, ≥ 0,5mm tloušťka, nodulus

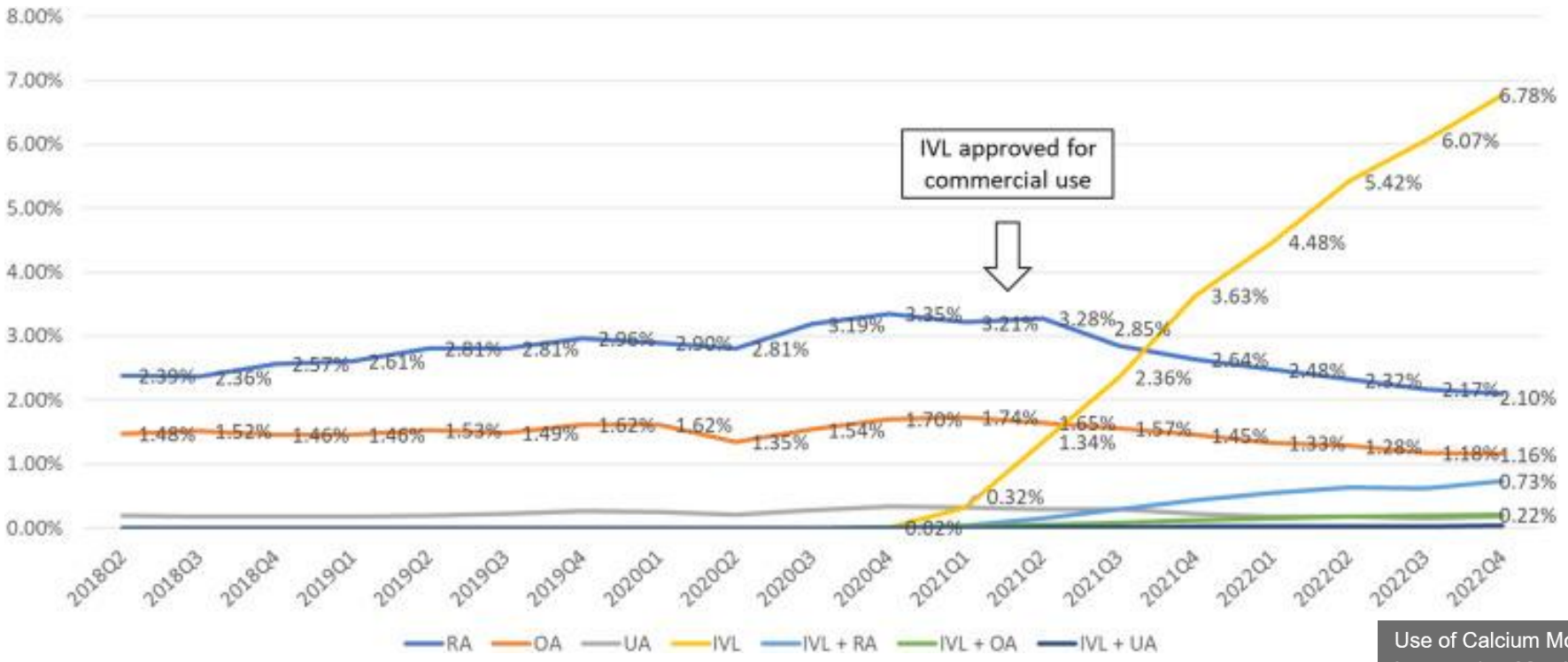
- „uncrossable“ léze vyžadují ablační techniky

- kritéria přípravy
  expanze 1:1 NC balónu a/nebo průkaz fraktury Ca/debulking nodulu na IVI

Know your weapons



Rotablace vs. IVL

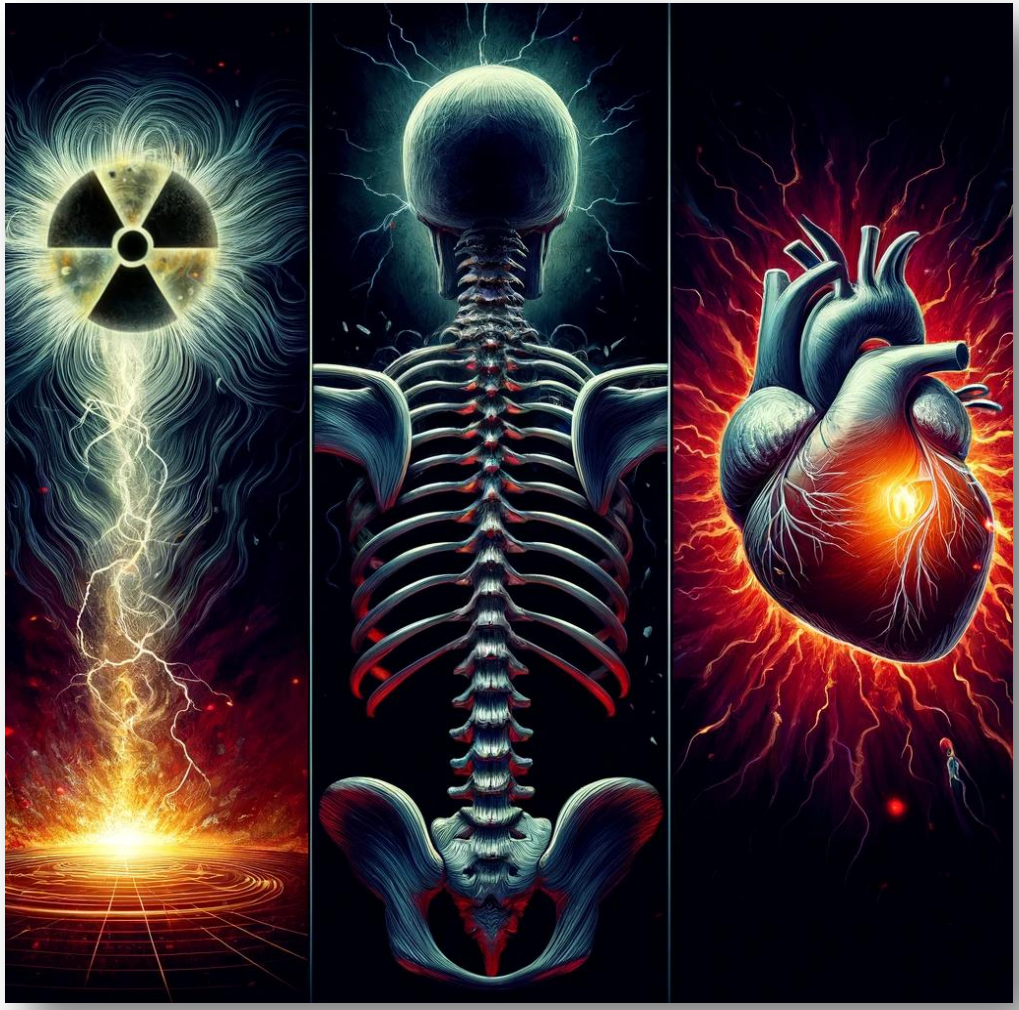


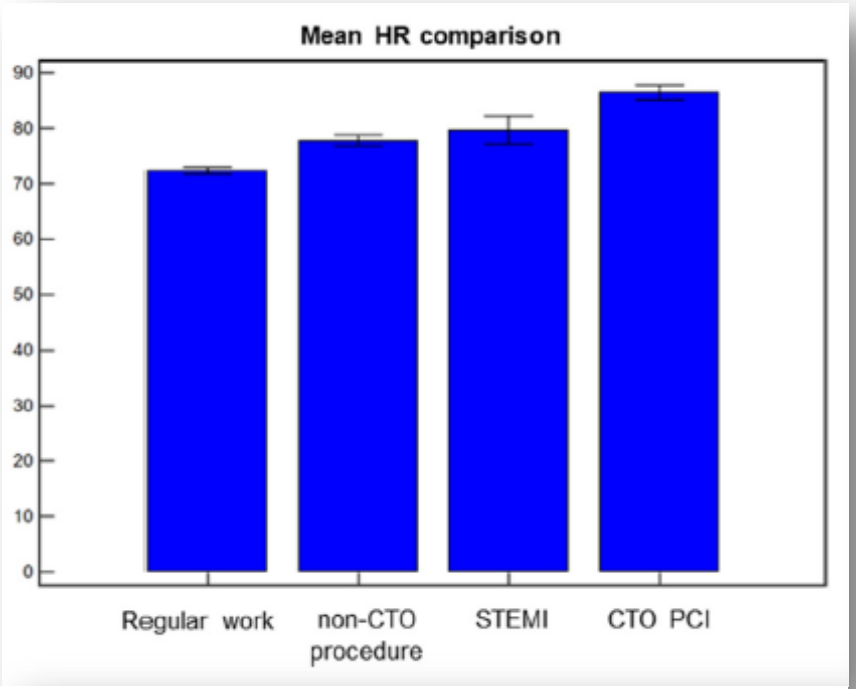
Use of Calcium Modification During Percutaneous Coronary Intervention After Introduction of Coronary Intravascular Lithotripsy

Neel M. Butala, MD, MBA • Stephen W. Waldo, MD • Eric A. Secemsky, MD, MSc • ... Sunil V. Rao, MD • John C. Messenger, MD • Robert W. Yeh, MD, MSc • Show all authors

Caring

about ourselves
This is our last dance
This is ourselves
Under pressure





Changes in Operator's Heart Rate and Blood Pressure During Chronic Total Occlusion Percutaneous Coronary Intervention

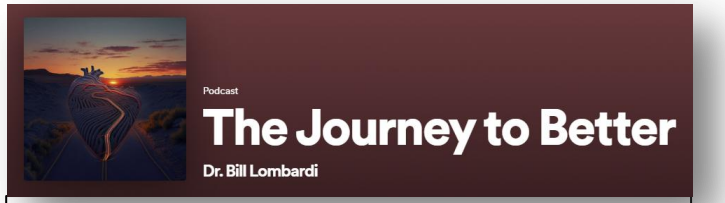
Maksymilian P. Opolski MD, Umberto Barbero MD, Antoni Zyśk MD, Wojciech Skorupski MD, Vojtech Novotny MD, Mihajlo Kovacic MD, Rafał Wolny MD, Artur Dębski MD, Katarzyna Paschalis-Purtak MD, Andrzej Januszewicz MD †, Adam Witkowski MD †

JACC Cardiovascular Interventions

tctMD

Occupational Hazard? CTO Cases Drive Up Operators' BP, Heart Rates

Interventionalists who perform complex procedures face stress that's particularly acute, with the potential for long-term harms.



"Be open to the fact that this is taking a toll on you and you need to find safe ways to voice that, and then learn how to handle it."

CTO 20. 11. / 21. 11. / 2023 & CHIP

Pardubická výza 2023

CTO&
CHIP

23. 2. 2024

Nemocnice AGEL Třinec-Podlesí