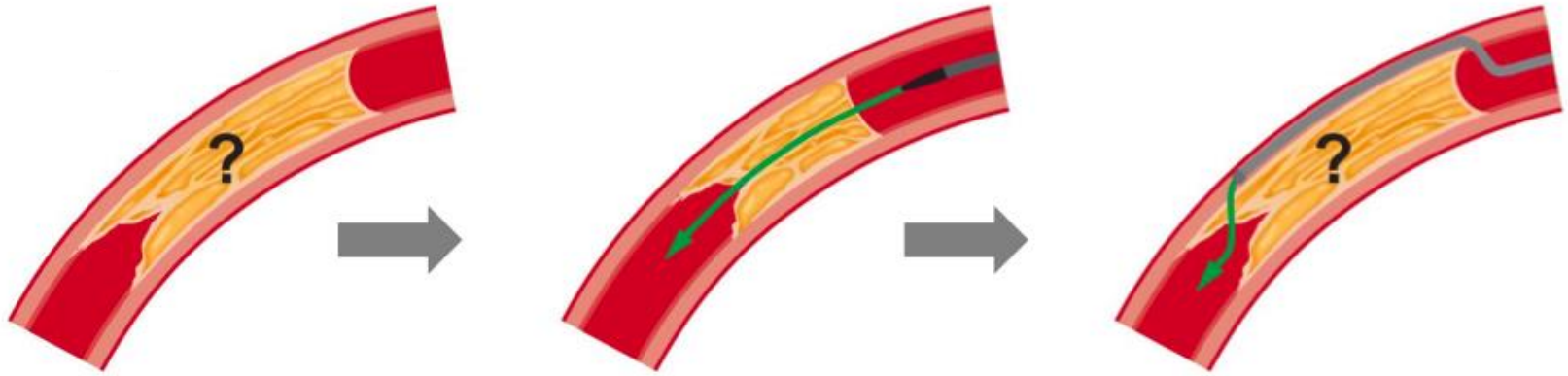
Tratamiento Percutáneo de Lesiones Coronarias Complejas: CTO

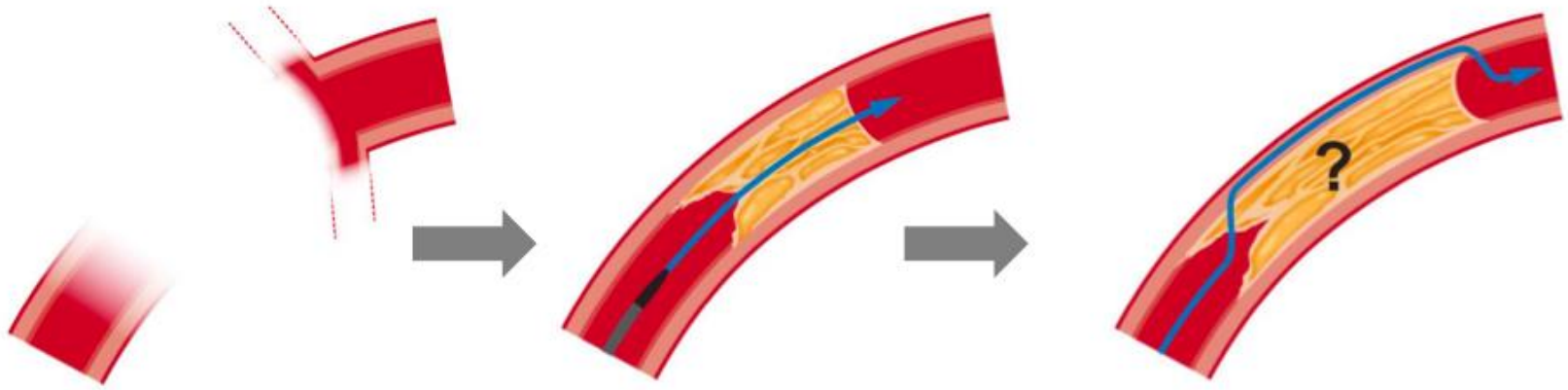
Dr Carlos Macaya

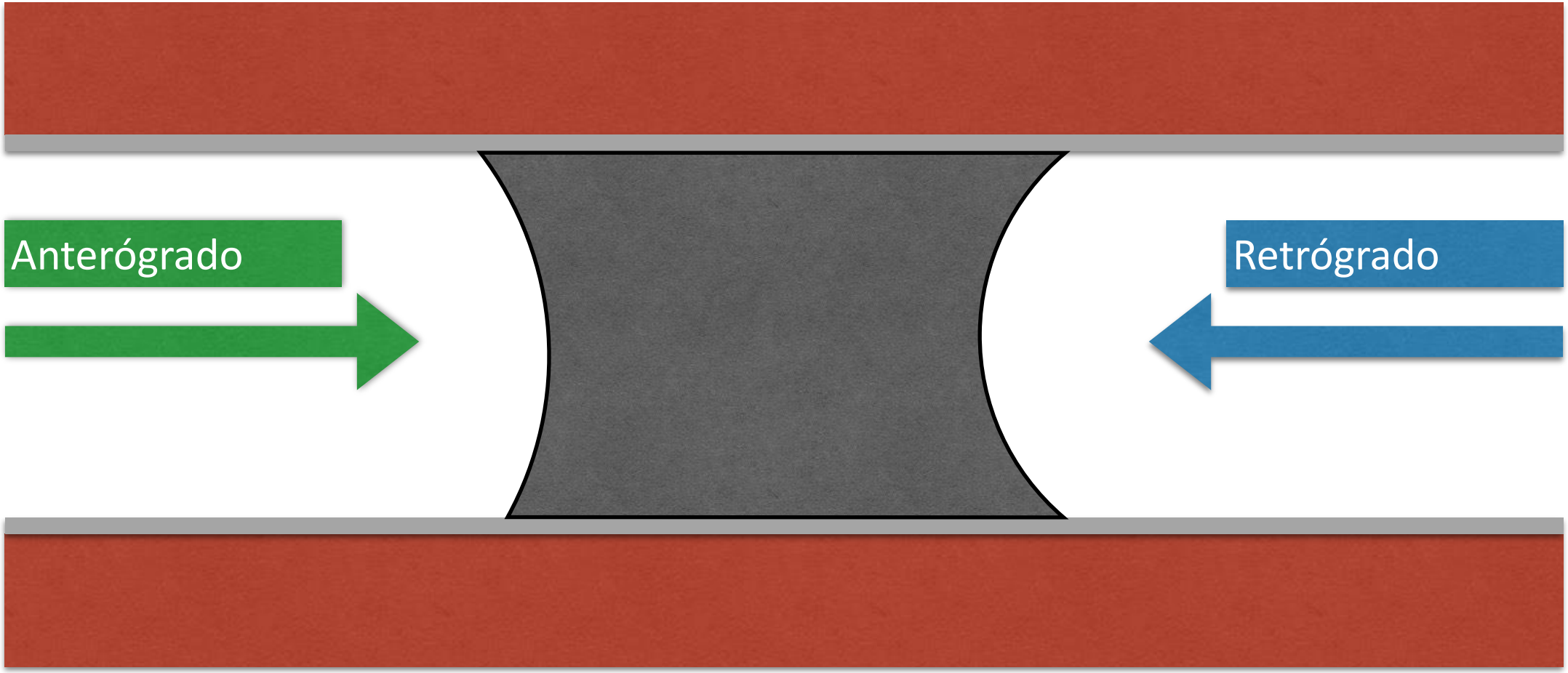
Estrategias

Anterógrado



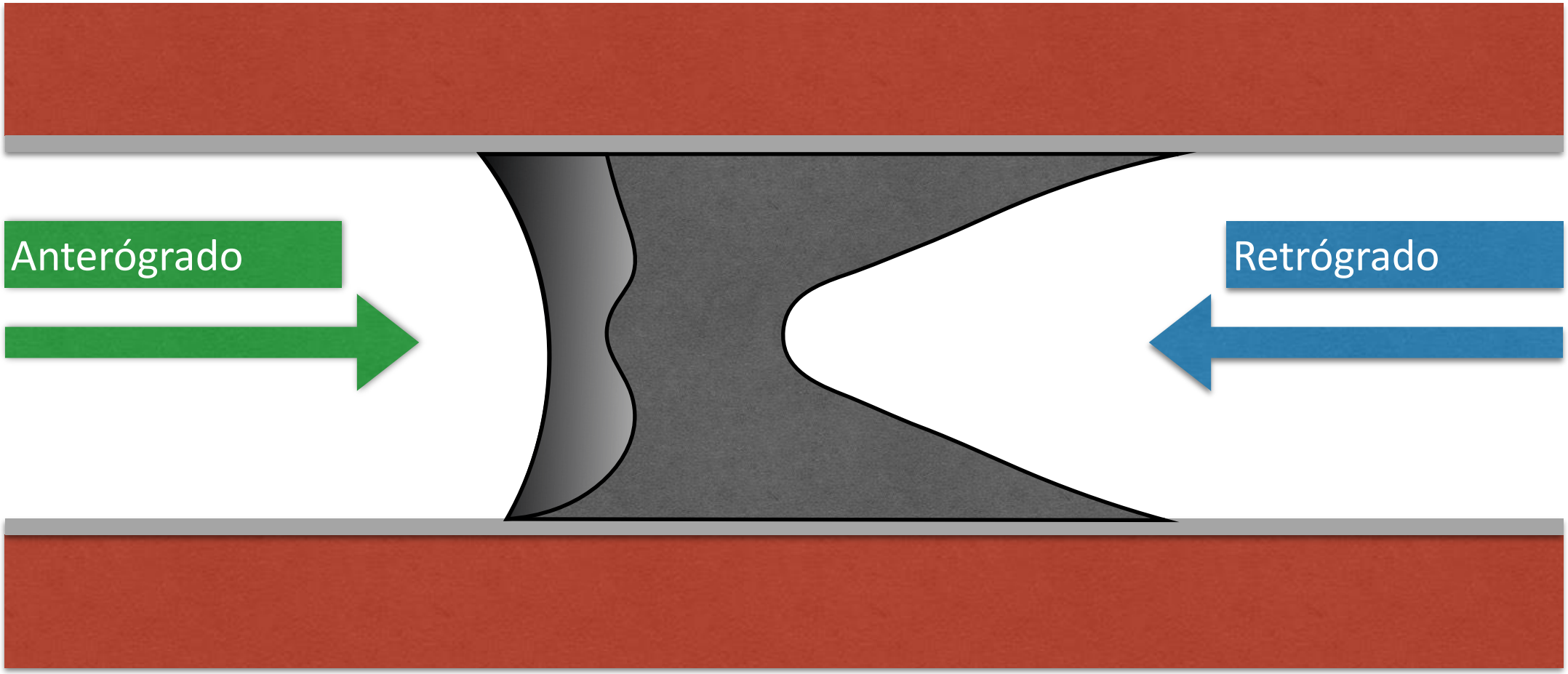
Retrógrado





Proximal

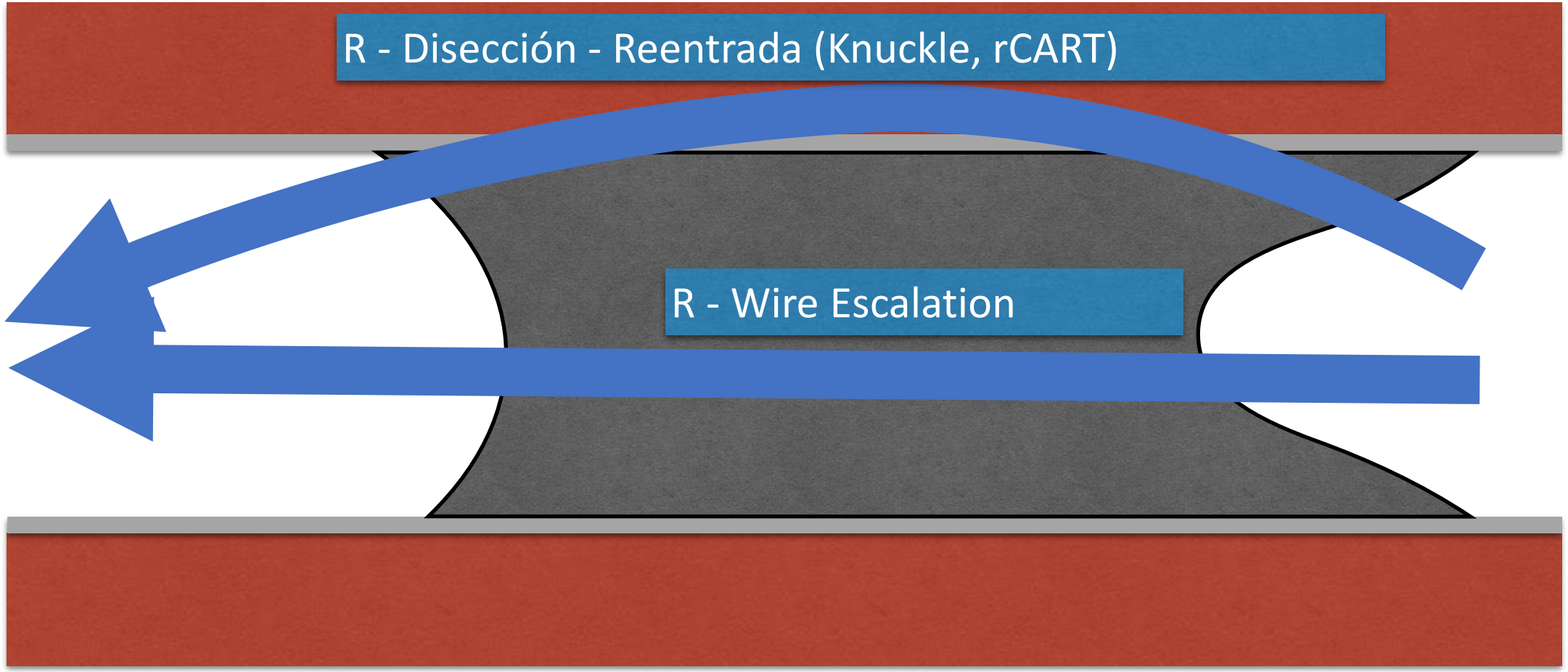
Distal



Proximal

Distal

RWE

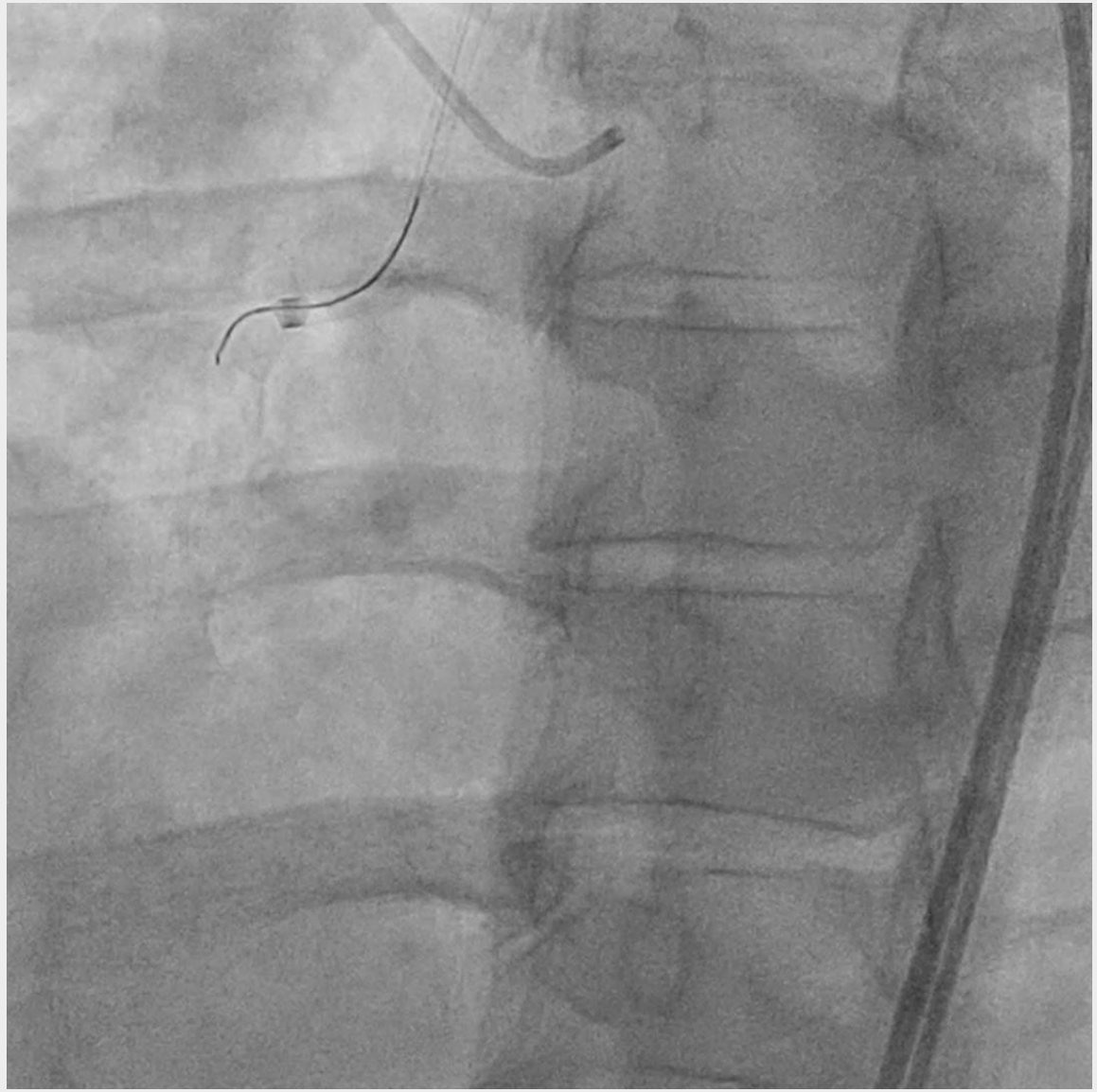


Proximal

Distal

¿Cuándo elegir vía retrógrada?

- Ambigüedad en *proximal cap*
- *Landing zone* distal
  - enfermo o mal visualizado
  - próximo a bifurcación
- CTO Aorto ostial (o anomalía cor)
- Colaterales aptas para intervencionismo



Retos en vía retrógrada

- Necesidad de **habilidades** específicas
- Necesidad de **material** específico
- Incremento de contraste y **duración** del caso
- Mayor riesgo y variedad de **complicaciones**

- Técnica estándar y entrenable
- Distal cap es más accesible:
  - más bland
  - más frecuentemente *tapered*
- Gran soporte una vez hecho la externalización
- En 1 de 4 casos es el medio más seguro y eficaz !

CTO scores

J-CTO SCORE SHEET

Version 1.0

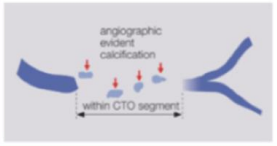
Variables and definitions

Tapered **Blunt**

Entry with any tapered tip or dimple indicating direction of true lumen is categorized as "tapered".

Entry shape
☐ Tapered (0)
☐ Blunt (1)
point

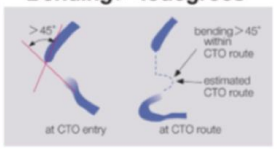
Calcification



Regardless of severity, 1 point is assigned if any evident calcification is detected within the CTO segment.

Calcification
☐ Absence (0)
☐ Presence (1)
point

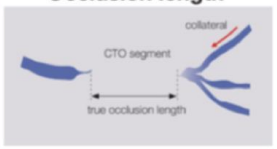
Bending >45degrees



One point is assigned if bending > 45 degrees is detected within the CTO segment. Any tortuosity separated from the CTO segment is excluded from this assessment.

Bending >45°
☐ Absence (0)
☐ Presence (1)
point

Occlusion length



Using good collateral images, try to measure "true" distance of occulusion, which tends to be shorter than the first impression.

Occl.Length
☐ <20mm (0)
☐ ≥20mm (1)
point

Re-try lesion

Is this Re-try (2nd attempt) lesion ? (previously attempted but failed)

Re-try lesion
☐ No (0)
☐ Yes (1)
point

Category of difficulty (total point)
☐ easy (0) ☐ Intermediate (1)

Total
points

Morino JACC Intv 2011

CABG history

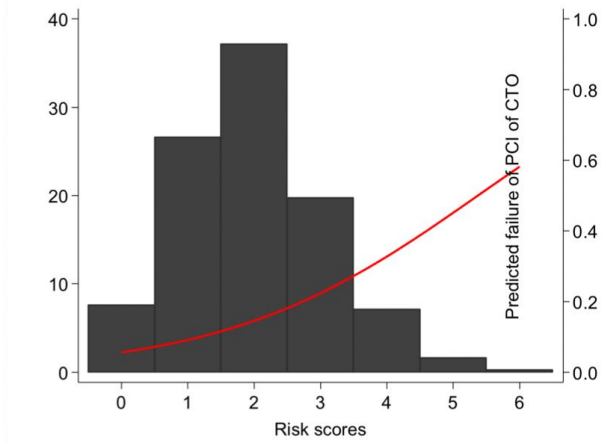
Age (≥70yrs)

Stump anatomy (blunt or invisible)

Tortuosity degree (severe or unseen)

Length of occlusion (≥20 mm) and

Extent of calcification (severe)



CASTLE

Szijgyarto et al (Euro CTOgroup), J Am Coll Cardiol Intv 2019

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SaludMadrid

Scores: what do we look at ?

SCORE CATEGORIES	CASTLE (0 to 6)	J-CTO (0 to 5)	PROGRESS CTO (0 to 4)	CL Score (0 to 8 by 0.5)
CABG history	CABG history (yes)			CABG history‡ (yes)
MI history				MI history (yes)
Age	≥70			
Stump	Blunt or invisible	Blunt	Poor cap visualization or non-tapered stump	Blunt
Tortuosity	Severe (≥2 bends >90º or 1 bend >120º) or unseen	1 Bending >45º	Moderate or Severe (2 bends>70º or 1 bend>90º)	
Long lesion	≥20 mm (visual estimation)	≥20 mm (visual estimation)		≥20 mm† (visual estimation)
Calcification	Severe (≥50% CTO segment)	Presence of any calcification		Severe‡ (out of 3 categories)
Redo		Yes		
Interventional collaterals			Absence	
CTO Location			Circumflex	Non-LAD

Salinas P on behalf of REBECO investigators. PLoS ONE 16(4): e0245898

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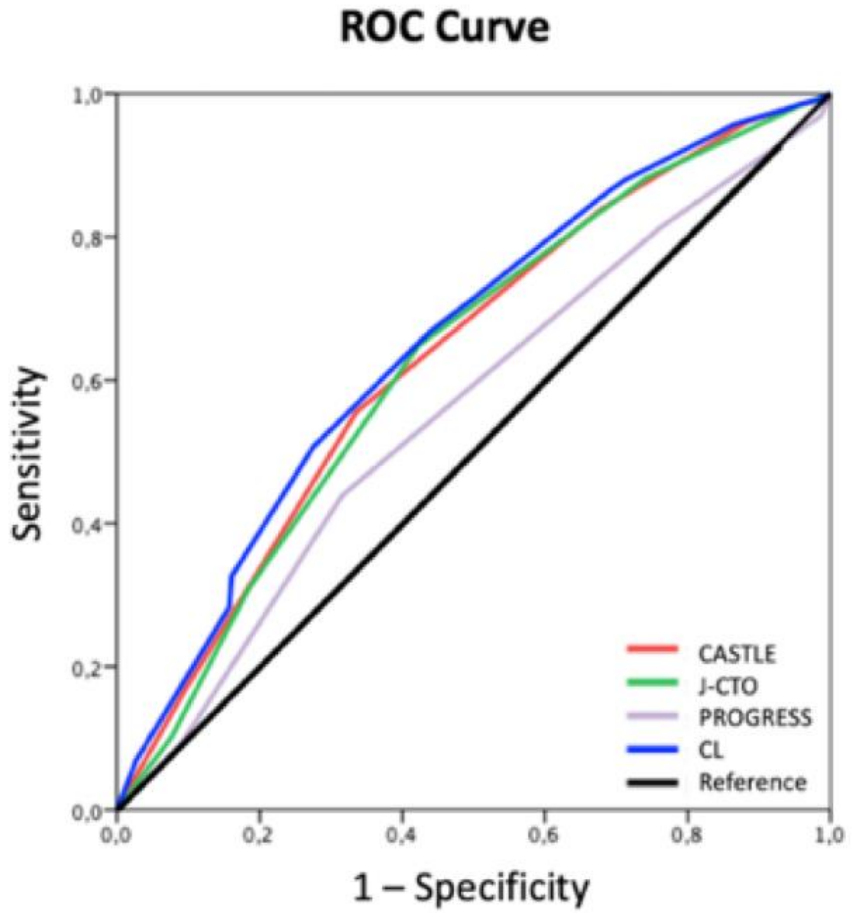
Scores for CTO PCI success comparison



	AUC	AUC CI	Δ vs. CASTLE	P (Bonferroni)
CASTLE	0.633	0.60 – 0.67	Reference	–
J-CTO	0.628	0.59 – 0.67	– 0.005	1
PROGRESS	0.557	0.52 – 0.59	– 0.076	0.001
CL	0.652	0.62 – 0.69	+ 0.019	0.294

Salinas P on behalf of REBECO investigators. PLoS ONE 16(4): e0245898

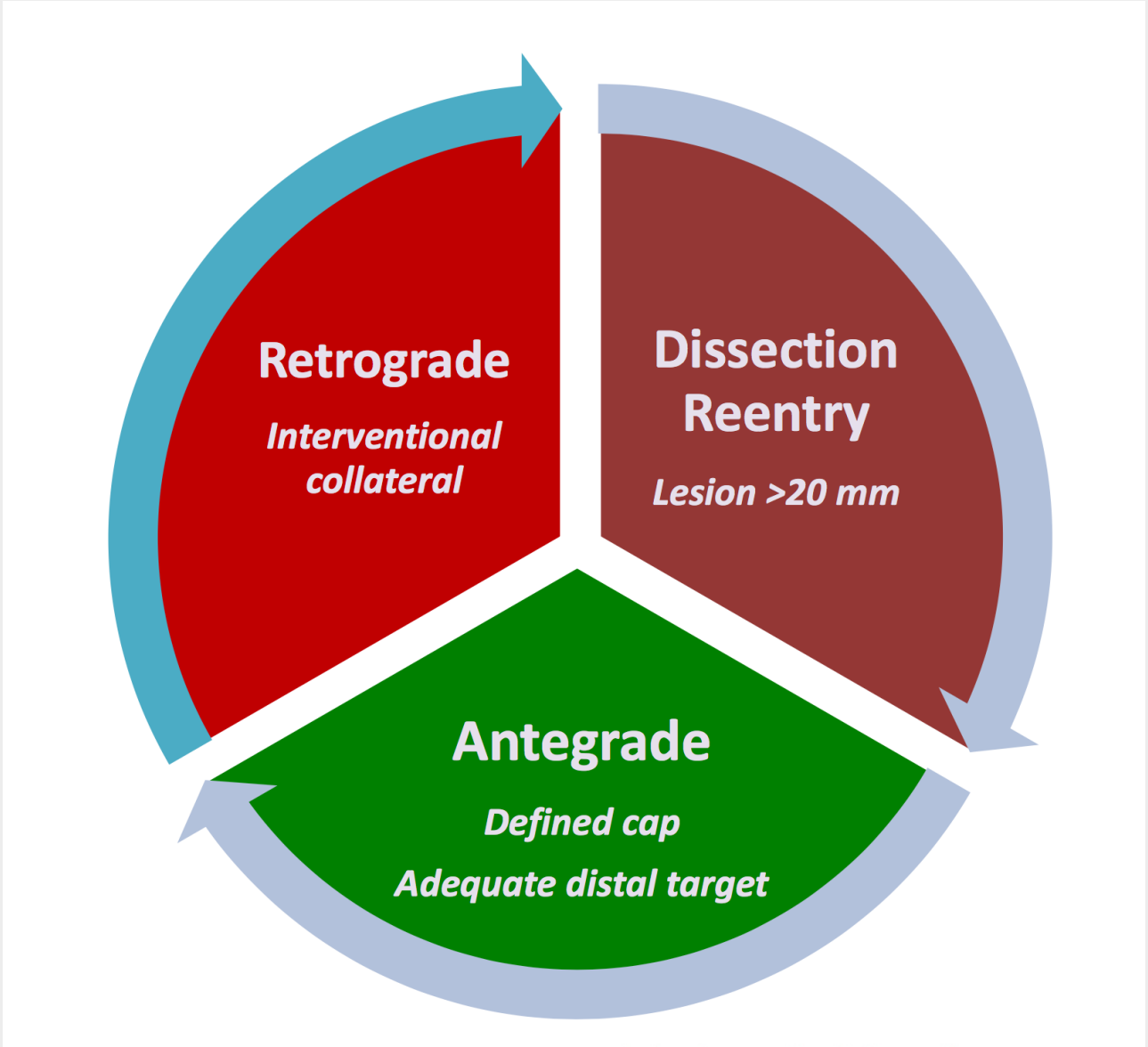
Key points

- Use scores mainly for
  - standardized assessment
  - procedural planning
  - discussion with the patient

- Go beyond the CTO score into an individualized CHIP assessment

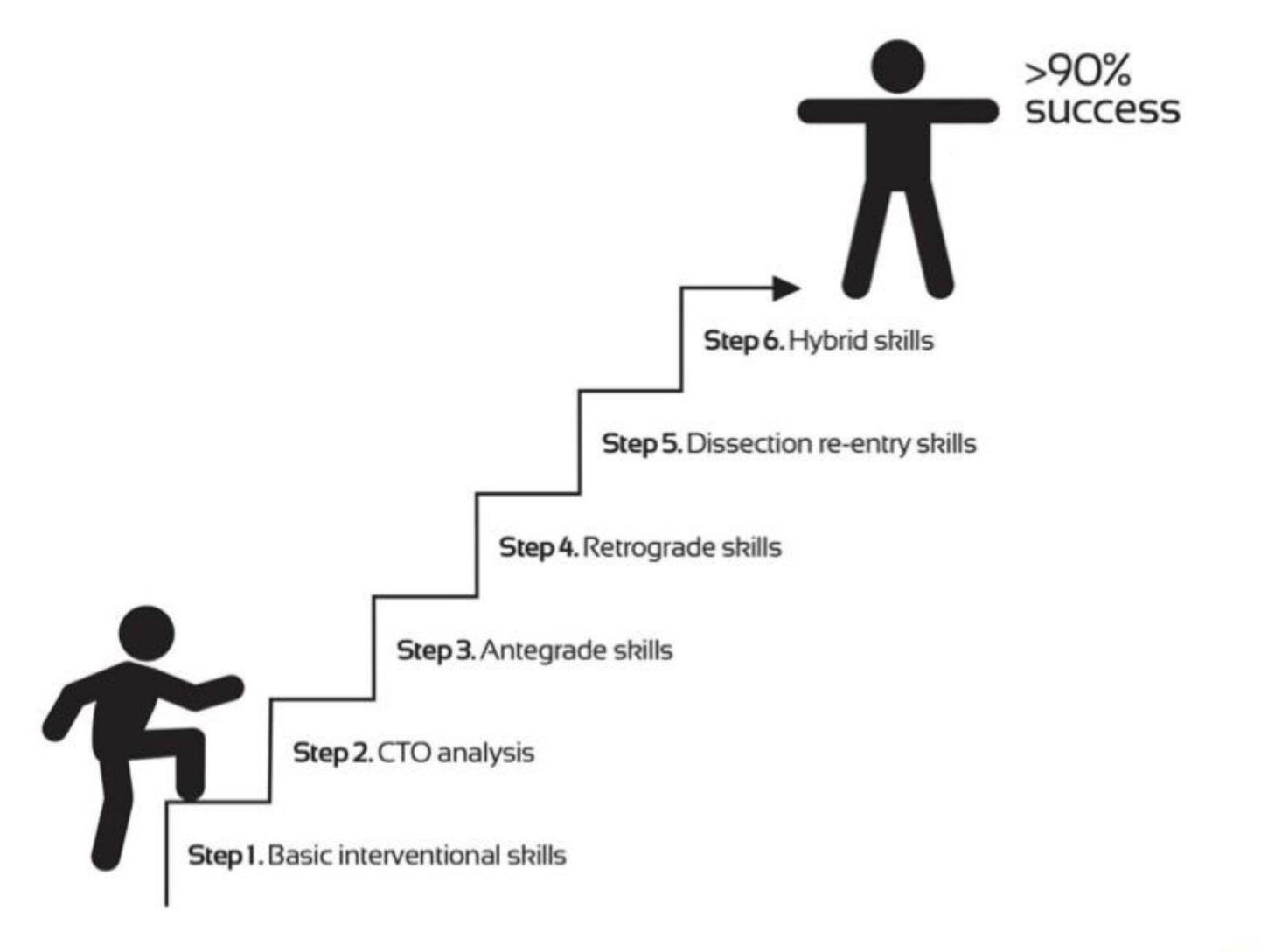
- Keep learning: add pieces to your algorythm

seamless transition: algoritmos híbridos



Indicación clínica sólida de recanalización de CTO

Curva de aprendizaje

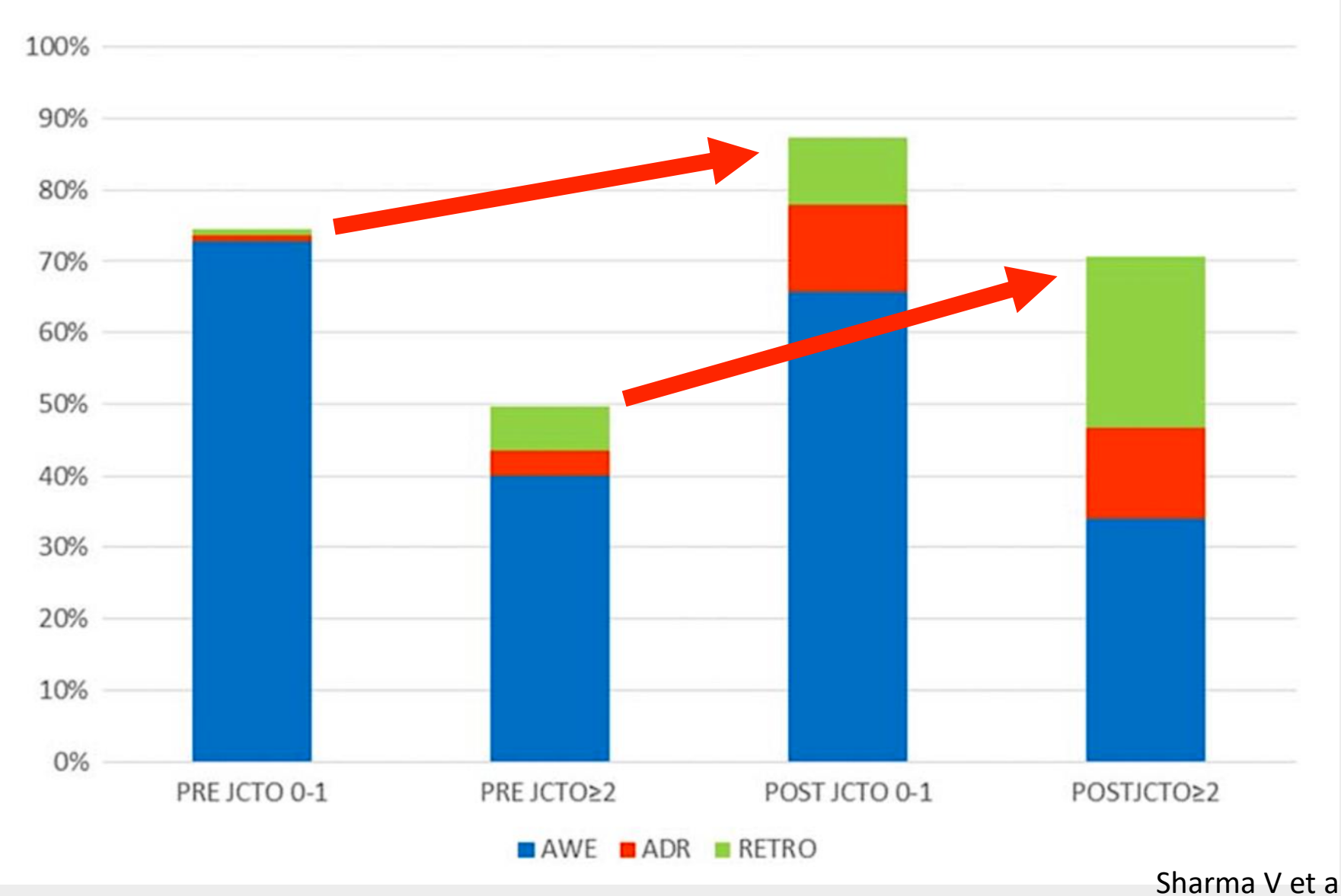


PROCTORING

LITERATURA ESPECÍFICA

CURSOS ESPECÍFICOS

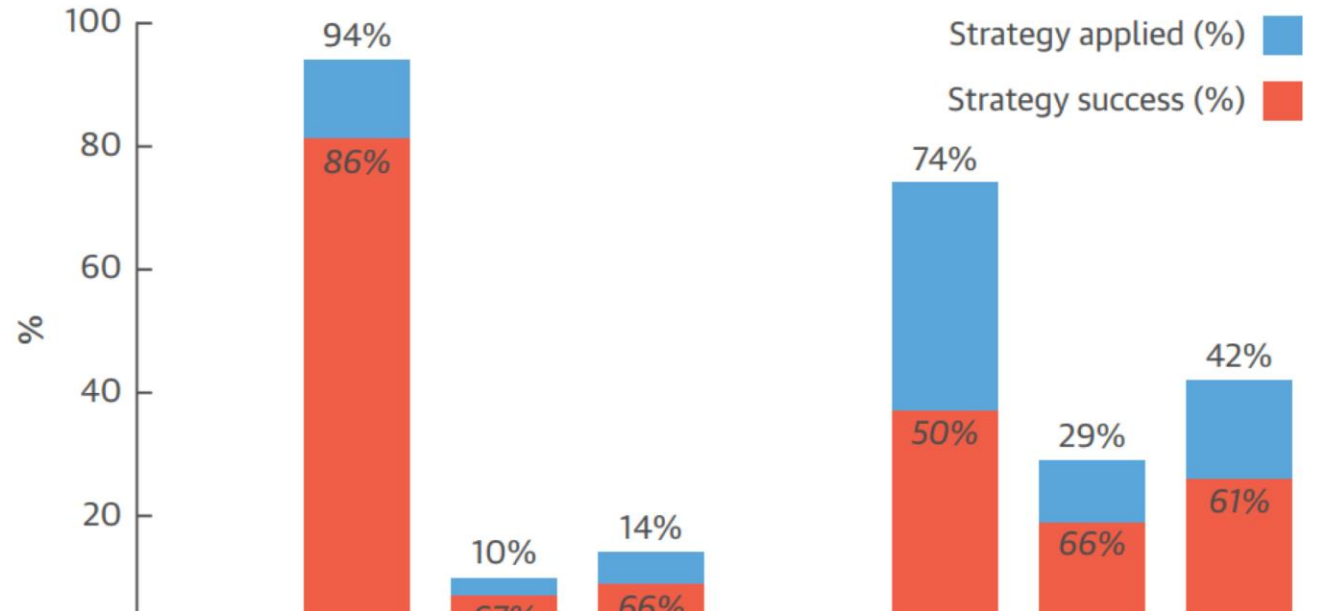
Proctoring



Sharma V et al. Open Heart 2015

Evidencia contemporánea: Recharge

FIGURE 2 Application and Outcomes of the Hybrid Techniques According to the J-CTO Lesion Complexity



	J-CTO ≤ 1 (N=365)			J-CTO ≥ 2 (N=888)		
	AWE	ADR	RETRO	AWE	ADR	RETRO
Strategy applied (n)	343	36	50	654	256	371
Strategy successful (n)	295	24	33	328	168	227

RECHARGE Registry. JACC 2016

Complicaciones

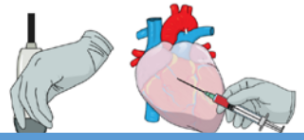
1-Collateral channel perforation

Prevention

1. Careful manipulation of the wire
2. Confirm true lumen position before advancing microcatheter
3. Never dilate epicardial collaterals

Treatment

1. Inflate balloon immediately to prevent pericardial bleeding
2. Pericardiocentesis if needed



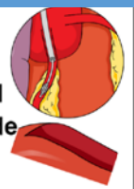
3. Seal both the antegrade and retrograde sides of epicardial collaterals

4. Septal hematomas are usually benign
5. Reverse anticoagulation only after removing all coronary equipment

2-Donor vessel complications

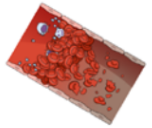
Guide-induced dissection

1. Keep a workhorse wire in the donor vessel
2. Disengage retrograde guide during antegrade equipment delivery



Donor vessel thrombosis

Frequent ACT checks with goal >350 seconds



3-Periprocedural MI

Loss of side branches

Avoid dissection reentery techniques near a side branch

Prolonged occlusion of the collateral channel by microcatheters

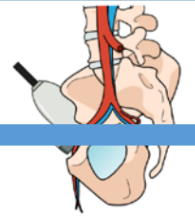
1. Continuous monitoring

2. Treatment of Ischemia

3. Consider an alternative CC if the one used is causing significant ischemia

4-Vascular access complications

Safe femoral access technique with ultrasound guidance



Use of radial access (bi-radial or radial/femoral)

Karmpaliotis et al. Circ Int. 2016

Indicación de ICP en CTO

La indicación es equivalente a las lesiones sin oclusión (teniendo en cuenta una tasa menor de éxito -90%- y mayor de complicaciones -3%-)

Recommendations	Class[a]	Level[b]
Percutaneous revascularization of CTOs should be considered in patients with angina resistant to medical therapy or with a large area of documented ischaemia in the territory of the occluded vessel.[629,659–663]	IIa	B

Mensajes finales

- Buena selección clínica de casos
- Formación, formación, formación
- Paso a paso: MC para relleno distal, *kissing wires*
- Comenzar por casos sencillos ‘electivos’
- Proctoring en casos complejos
- Dos operadores, doble vigilancia
- Material de solución de complicaciones

Karmpaliotis et al. Circ Int. 2016