

# Outcomes of Percutaneous Coronary Intervention for In-Stent Chronic Total Occlusions: Insights from the PROGRESS-CTO Registry

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## BACKGROUND

Percutaneous coronary intervention (PCI) of in-stent (IS) chronic total occlusions (CTOs) represents 5-25% of all CTO PCIs. IS-CTO-PCI has been associated with lower success rates in some studies.

## METHODS

We analyzed the clinical, angiographic and procedural characteristics of 5,667 CTO PCIs performed at 5,547 patients enrolled in the PROGRESS-CTO registry between 2012 and 2020 at 28 US and 4 international centers.

## RESULTS

A total of 913 IS-CTO PCIs (16% of total CTO PCIs) performed in 894 patients were included in the analysis. Mean J-CTO score was higher in the IS-CTO group (2.6 ±1.3 vs. 2.4 ±1.3, p= 0.0002). Retrograde crossing was used less often (16% vs. 21% p<0.0001) and intravascular ultrasound (IVUS, 50% vs. 39%, p<0.0001) and optical coherence tomography (OCT, 2.4% vs. 1.3%, p=0.026) more often in the IS-CTO group. Procedural and technical success and in-hospital MACE rates were similar between the two groups. The risk of perforation was lower in the IS-CTO group, although there was no difference in pericardiocentesis rates between the two groups (0.6% for IS-CTO vs. 0.9% for de novo CTOs, p=0.2)

## CONCLUSION

Radiation dose during CTO-PCI has been **decreasing** over time.

- Potential explanations include:
- the use of newer X-ray systems
  - Improvement in equipment and techniques
  - Increased operator expertise

# IS-CTOs represented 16% of total CTO PCIs in a multicenter, international CTO-PCI registry.

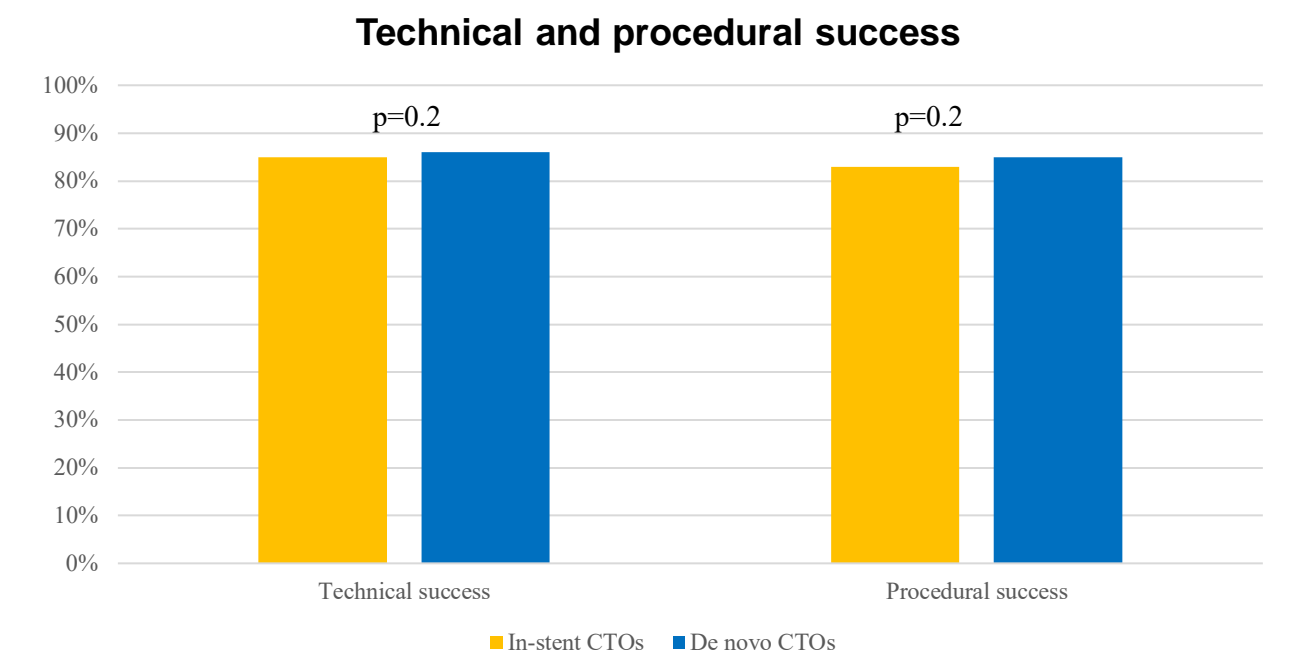
# Although IS-CTOs had higher J-CTO scores, they had similar success rates and in-hospital complication rates as de novo CTO PCIs.



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## FIGURE

	Patients with IS-CTO-PCIs n=894	Patients with de novo CTO-PCIs n=4,653	p-value
<b>BASELINE CHARACTERISTICS OF THE STUDY PATIENTS</b>			
Age (y)*	63.6±10	64.6±10	0.002
Male gender (%)	83	83	0.75
Diabetes mellitus (%)	49	42	0.0002
Dyslipidemia (%)	93	88	<0.0001
Hypertension (%)	95	90	<0.0001
Prior MI (%)	59	44	<0.0001
Prior CABG (%)	34	30	0.0233



	Patients with IS-CTO-PCIs n=894	Patients with de novo CTO-PCIs n=4,653	p-value
In-hospital MACE (%)	1.8	1.9	0.8
Perforation (%)	3.4	4.9	0.0397
-Ellis Class 1 (%)	9	19	0.43
-Ellis Class 2 (%)	57	41	
-Ellis Class 3 (%)	26	26	
-Ellis Class 4 (%)	9	14	

## LIMITATIONS

1. Observational, retrospective study
2. No long-term follow-up
3. No data was available on the type of stent (DES vs. BMS) that was occluded
4. No clinical event adjudication by a clinical events committee
5. Procedures performed in high volume, experienced centers

## DISCLOSURE INFORMATION

Evangelia Vemmou, MD: nothing to disclose  
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