

OUTCOMES OF PERCUTANEOUS CORONARY INTERVENTIONS IN SYMPTOMATIC PATIENTS WITH CORONARY HEART DISEASE DETECTED BY COMPUTERIZED TOMOGRAPHY ANGIOGRAPHY

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Introduction

Coronary artery revascularization is the ultimate target of significant coronary artery disease (CAD). One of the most commonly used interventional methods is percutaneous coronary intervention (PCI) by stent implantation. Complications encompass stent thrombosis or in-stent restenosis (ISR); especially due to neoatherosclerosis. This may develop within months and years after stent implantation, whereas atherosclerosis in native arteries appears after decades. It may affect both bare metal and drug eluting stents.

With new generation scanners, coronary computerized tomography angiography (CCTA) can be an extremely helpful imaging tool not only in exclusion of patients who do not need cardiac catheterization, but also in assessment of ISR. Some artifacts such as beam-hardening and blooming distort the images thus limiting diagnostic accuracy. Using new dual-source CT systems, coronary stent lumen can be visualized with high diagnostic accuracy especially in stents with diameters of 3.0 mm or more; thus CCTA may offer an attractive alternative.

Aim of the work

The aim of this work was to assess the outcomes of PCI in symptomatic patients with coronary artery disease using CCTA.

Patients and Methods

PATIENTS: The present study included 51 patients who previously underwent PCI in 5 years period, having CCS symptoms.

Exclusion Criteria:

- PCI within less than one year or more than 5 years.
- CABG.

Any contraindication to CCTA.

METHODS: All 51 patients will be subjected to the following:

- 1- Patients' characteristics Sex, Age, past medical history including cardiovascular risk factors.
- 2-Laboratory data of kidney function tests.
- 3-Trans-thoracic echocardiographic assessment if available with the patient's documents.

4- Previous CA and PCI including type of used stent(s).

- Multi-slice coronary CT (MSCT) angiography:

- Any major adverse cardiac event is recorded within the study duration.

-Target vessel revascularization (TVR), non-TVR, Target lesion revascularization (TLR), and non-TLR.

- Stenosis severity is visually estimated by comparing the luminal diameter at the narrowing with (relatively) non-diseased locations immediately proximal and / or distal to the lesion.

-In patients with obstructive lesions on CT, ICA will be repeated to confirm outcomes.

Results

Table 1: Relation between In-stent restenosis coronary angiography (CA) and In-stent restenosis CCTA (n = 51)

In-stent restenosis CCTA	In-stent restenosis CA				χ^2	FEp
	No		Yes			
	(n = 46)		(n = 5)			
	No.	%	No.	%	24.864*	<0.001*
No	44	95.7	1	20.0		
Yes	2	4.3	4	80.0		

χ^2 : Chi square test

FE: Fisher Exact

p: p value for comparing between In-stent restenosis CA and In-stent restenosis CT

*: Statistically significant at $p \leq 0.05$

Table 2: Relation between In-stent restenosis coronary angiography (CA) and In-stent restenosis CCTA (n = 51)

In-stent restenosis CCTA	In-stent restenosis CA				Sensitivity	Specificity	PPV	NPV	Accuracy
	No (n = 46)		Yes (n = 5)						
	No.	%	No.	%					
No	44	95.7	1	20.0	80.0	95.65	66.67	97.78	94.12
Yes	2	4.3	4	80.0					

PPV: Positive predictive value

NPV: Negative predictive value

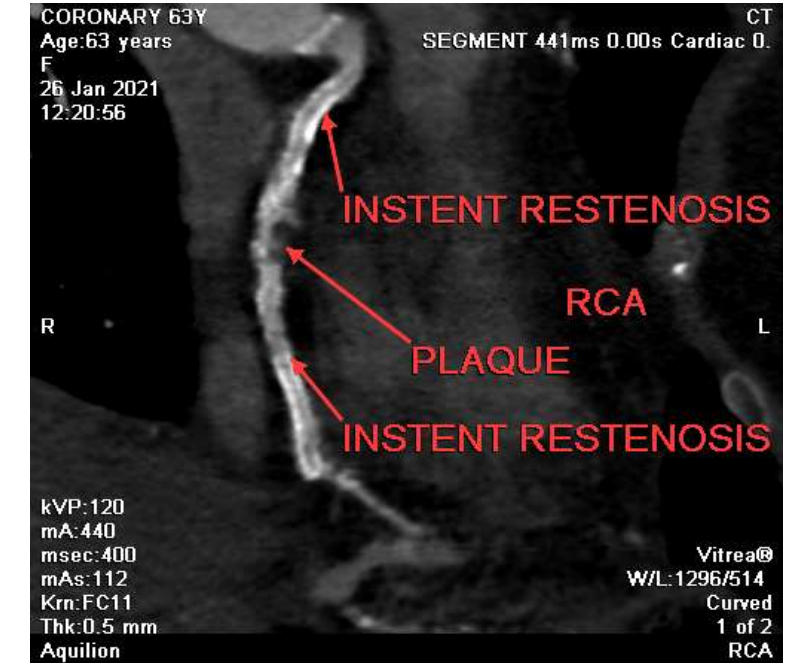


Figure: ISR in proximal RCA followed by a non-occlusive plaque, then an ISR in a distal stent.

Conclusion

- Coronary computed tomography angiography using new generation CT scanners seems to be safe for ruling out ISR, as detecting ISR to a lesser extent, in particular in patients with larger stent diameter > 3.0 mm and normal BMI. The majority of patients does not need further testing.
- Using CCTA, it is possible to avoid unnecessary invasive procedures.
- CCTA is also reliably capable of detecting native coronary lesions.