Role of Coronary Computed Tomography Angiography Derived RECTOR Score in Prediction of Difficulty and Outcome of Chronic Total Occlusion Percutaneous Coronary Intervention

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Abstract

*Background: **Successful percutaneous coronary intervention (PCI) for chronic complete occlusion (CTO) is linked to a decrease in CABG procedures, an improvement in long-term mortality, and better clinical outcomes.***

*Aim: **To assess the predictive power of the CT-RECTOR score in terms of final procedure success and guidewire (GW) crossing efficiency through a CTO.***

*Patients and Methods: **This study was performed at the National Heart Institute, Giza, and conducted on 40 patients who will undergo CCTA before attempting PCI to a CTO. A 30-minute window for a successful GW crossing was the initial endpoint. The second endpoint was the procedure's ultimate success.***

*Results: **In 40% and 82.5% of lesions, respectively, the first and second objectives were reached. First endpoint: The sensitivity was found to be 0.798 and 0.954, respectively, when the AUC (area under the curve) for the CT-RECTOR score was compared to the J-CTO score, specificity, PPV and NPV for the CT-RECTOR score are 87.5, 95.83, 93.3 and 92; respectively and for J-CTO score 81.25, 66.67, 61.9 and 84.2; respectively. Second endpoint: AUC for CT-RECTOR score compared with the J-CTO score found 0.842 and 0.810, respectively, while sensitivity, specificity, PPV, and NPV for CT-RECTOR score are 75.76, 85.71,96.2 and 42.9; respectively and for J-CTO score 60.61, 85.71, 95.2 and 31.6; respectively.***

*Conclusion: **A helpful tool for estimating the complexity and time-efficiency of (GW) crossing in CTO and the success of the procedure overall is the CT-RECTOR score. In terms of GW crossing times and procedure success, the CT-RECTOR score fared better than the J-CTO Score.***

Keywords: CCTA; CT-RECTOR; J-CTO; Guidewire

1. Introduction

Effective percutaneous coronary intervention (PCI) for chronic total occlusion (CTO) is linked to enhanced clinical results, decreased need for bypass procedures, and improved long-term survival.[1]

However, most patients with chronic total occlusion (CTO) are still being treated with medication or being recommended for bypass surgery. This is because there is uncertainty about the effectiveness of the treatment and the time it takes, which is the biggest obstacle to doing percutaneous coronary intervention (PCI) in CTO cases.[2]

The suggested CCTA score can be specifically utilized to assess the requirement for additional CTO devices or specialized revascularization procedures in lesions with higher levels of complexity. Moreover, the remarkable precision of lesions identified by a low CT-RECTOR score guarantees a high rate of successful treatment using GW in the hands of trained operators. Consequently, it might be utilized for educating less-experienced interventionalists.[2]

These findings indicate that evaluating the difficulty of chronic total occlusion (CTO) before percutaneous coronary intervention (PCI) using the CT-RECTOR score can assist in determining subsequent recanalization techniques, resource allocation, and treatment scheduling, especially in cases involving complex CTO lesions.[3]

The objective of this study was to assess the predictive capability of the CT-RECTOR score in determining the level of difficulty and time efficiency in crossing through a chronic complete occlusion (CTO), as well as the overall success of the surgery.

2. Patients and methods

This prospective study included 40 patients who had undergone CCTA at the National Heart Institute, Giza, and the Islamic Cardiac Center Al-Azhar University, Cairo, before attempting PCI to a CTO at the National Heart Institute, Giza. They were admitted in the period from August 2022 till October 2023.Informed consent with an explanation of the study and its benefits and its related effects to all patients participating in the study

Inclusion criteria: Patients who had CTO (based on previous coronary angiography) planned for the elective trial of PCI on the basis of objective evidence of ischemia or persistent ischemic symptoms thought to be due to the target artery supplying an area of viable myocardium despite optimal medical therapy.

Exclusion criteria: Individuals meeting any one or more of the following criteria: severe left ventricular (LV) dysfunction (EF<30%), unpredictable CCTA due to poor image quality, the incidence of major adverse cardiac events (MACEs) between CCTA and PCI, and renal insufficiency with estimated GFR<30 ml/min/1.73 m2.

The primary endpoint is defined as the amount of time that passes between the GW's insertion into the vessel and its successful passage through the lesion, and it must occur within 30 minutes of the procedure time.

The secondary endpoint is characterized by a successful GW crossing through the CTO at any time, with flow restored, residual diameter stenosis of less than 50%, and TIMI flow grades 2 to 3.

Operational design:

The initial assessment includes complete history taking, clinical examination focusing on general examination, and BMI and cardiology examination.

Laboratory study: Complete blood picture (CBC), renal function test, and lipid profile. ECG: 12-lead ECG to obtain rhythm and ischemic changes. Standard resting transthorathic echocardiography (TTE). Multislice CT coronary angiography includes patient preparation, prediction, and technique.

Coronary angiography and PCI: Every patient underwent a routine coronary angiography. Preparation for PCI involves loading a dose of 300 mg of clopidogrel, maintaining a daily dose of 75 mg, and drinking enough water. A thorough examination of the CTO-PCI and CCTA data was conducted.

CT coronary angiography analysis: The CT-RECTOR system combines baseline clinical and CCTA characteristics into a 6-point rating system. Each of the following variables is worth one point and is linked to a decreased chance of a successful Guidewire crossing in under thirty minutes: multiple occlusions, the lack of a tapered stump at the entry site, the presence of calcium at any site in the occlusion route that covers more than 50% of the vessel's cross-sectional area, bending greater than 45 degrees at any site in the occlusion route, a PCI that has previously failed at the CTO, and a CTO that has lasted longer than 12 months or is unknown.[2]

Angiographic analysis: An angiography-based 5-point rating system called the J-CTO system is used to gauge how difficult a CTO crossing is. Each of the following variables linked to a decreased likelihood of a successful GW crossing within 30 minutes is worth one point: A blunt stump at the entrance site, any visible calcification seen in the CTO segment, lesion bending more than 45 degrees, an occlusion length more than 20 mm, and a history of unsuccessful attempts to revascularize the CTO.[2,4] Every lesion will be divided into the following groups: Simple (score of 0), medium (score of 1), challenging (score of 2), and extremely challenging (score ≥3).

3. Results

Group A: Results regarding successful and failed GW crossing within 30 min.

Table 1. Comparison between patients with successful and failed GW crossing within 30 minutes regarding Demographic Data, Co-morbidities, ECG, LV EF (%), Calcium score, Target vessels and Segment.

		TOTAL	SGW WITHIN 30 MINUTES	FGW WITHIN 30 MINUTES	TEST VALUE	P-VALUE	SIG.
		No.=40	No.=16	No =24			
AGE	Mean±SD	54.88±9.56	55.94±9.84	54.17±9.51	0.569•	0.573	NS
	Range	36-75	40-71	36-75			
SEX	Female	5(12.5%)	4(25.0%)	1(4.2%)	3.810*	0.051	NS
	Male	35(87.5%)	12(75.0%)	23(95.8%)			
BMI	Mean±SD	29.83±2.35	29.44±2.68	30.08±2.12	-0.848•	0.402	NS
	Range	24-36	24-32	26-36			
DIABETES		17 (42.5%)	3 (18.8%)	14 (58.3%)	6.155	0.013	S
HYPERTENSION		21 (52.5%)	10 (62.5%)	11 (45.8%)	1.069	0.301	NS
CURRENT SMOKER		14 (35.0%)	5 (31.3%)	9 (37.5%)	0.165	0.685	NS
FAMILY HISTORY OF CAD		4 (10.0%)	0 (0.0%)	4 (16.7%)	2.963	0.085	NS

PREVIOUS MI		4 (10.0%)	1 (6.3%)	3 (12.5%)	0.417	0.519	NS
PREVIOUS CABG		18 (45.0%)	4 (25.0%)	14 (58.3%)	4.310	0.038	S
PREVIOUS PCI		17 (42.5%)	7 (43.8%)	10 (41.7%)	0.017	0.896	NS
PREVIOUS STOKE OR TIA		0 (0.0%)	0 (0.0%)	0 (0.0%)	NA	NA	NA
RENAL DISEASE		0 (0.0%)	0 (0.0%)	0 (0.0%)	NA	NA	NA
CHEST PAIN		40 (100.0%)	16 (100.0%)	24 (100.0%)	NA	NA	NA
HYPERLIPIDEMIA		13 (32.5%)	4 (25.0%)	9 (37.5%)	0.684	0.408	NS
ECG	No sig. cheanes	25(62.5%)	11 (68.8%)	14 (58.3%)	0.444*	0.505	NS
	Ischemic change	15 (37.5%)	5 (31.3%)	10 (41.7%)			
LV EF (%)	Mean±SD	54.78±10.34	52.31±10.83	56.42±9.89	-1.238•	0.223	NS
	Range	30-79	30-68	40-79			
CALCIUM SCORE	Median (IQR)	2(0-33)	2 (1-321.5)	6.1 (0-33)	-0.202≠	0.840	NS
	Range	0-641	0-641	0-143			
TARGET VESSEL	LAD	17 (42.5%)	8 (50.0%)	9 (37.5%)	1.081*	0.582	NS
	LCX	4 (10.0%)	2 (12.5%)	2 (8.3%)			
	RCA	19 (47.5%)	6 (37.5%)	13 (54.2%)			
SEGMENT	Mid	16 (40.0%)	10 (62.5%)	6 (25.0%)	6.875*	0.032	S
	Proximal	20 (50.0%)	6 (37.5%)	14 (58.3%)			
	Osteal	4 (10.0%)	0 (0.0%)	4 (16.7%)			

P-value>0.05:Non-significant (NS);   P-value<0.05:Significant (S);   P-value< 0.01:highly significant (HS)
*:Chi-square test;   •:Independent t-test;   ≠:Mann-Whitney test.   SGW:successful guidewire crossing before 30 min. FGW:failure for guidewire to cross before 30 min

There was statistically significant increase in Diabetic patients and History of previous CABG in FGW within 30 minutes group with p-value=0.013 and 0.038; respectively. Also, there was statistically significant increase in the percentage of patients with proximal and osteal segments lesion in patients with FGW within 30 minutes with p-value=0.032.

Table 2. Comparison between patients with successful and failed GW crossing within 30 minutes regarding CT-RECTOR Score parameters.

CT RECTORE Score		Total	SGW Within 30 minutes	FGW within 30 minutes	Test value	P-value	Sig.
		No.=40	No.=16	No.=24			
Calcification >50%	No	32 (80.0%)	16 (100.0%)	16 (66.7%)	6.667*	0.010	S
	Yes	8 (20.0%)	0 (0.0%)	8 (33.3%)			
Blunt stump	No	29 (72.5%)	14 (87.5%)	15 (62.5%)	3.009*	0.083	NS
	Yes	11 (27.5%)	2 (12.5%)	9 (37.5%)			
Bending angel>45°	No	39 (97.5%)	16 (100.0%)	23 (95.8%)	0.684*	0.408	NS
	Yes	1 (2.5%)	0 (0.0%)	1 (4.2%)			
Second attempt	No	27 (67.5%)	15 (93.8%)	12 (50.0%)	8.376*	0.004	HS
	Yes	13 (32.5%)	1 (6.3%)	12 (50.0%)			
Multiple occlusion	No	29 (72.5%)	14 (87.5%)	15 (62.5%)	3.009*	0.083	NS
	Yes	11 (27.5%)	2 (12.5%)	9 (37.5%)			
Duration of CTO.>12 month	No	4 (10.0%)	4 (25.0%)	0 (0.0%)	6.667*	0.010	S
	Yes	36 (90.0%)	12 (75.0%)	24 (100.0%)			
CT RECTOR score	Median (IQR)	2 (1-3)	1 (1-1)	3 (2-3)	-5.051≠	0.000	HS
	Range	0-4	0-2	1-4			
CT RECTOR score classifications	Easy	1 (2.5%)	1 (6.3%)	0 (0.0%)	29.313*	0.000	HS
	Intermediate	14 (35.0%)	13 (81.3%)	1 (4.2%)			
	Difficult	11 (27.5%)	2 (12.5%)	9 (37.5%)			
	Very difficult	14 (35.0%)	0 (0.0%)	14 (58.3%)			

P-value>0.05:Non significant (NS);   P-value<0.05:Significant (S);   P-value<0.01:highly significant (HS)
*:Chi-square test;   ≠:Mann Whitney test

There was statistically significant increase in the percentage of patients with calcification>50%, second attempt and duration of CTO>12 months in patient with FGW within 30 minutes with p-value=0.01, 0.004 and 0.01; respectively. Also, there was statistically significant increase in the median CT RECTOR score and CT RECTOR score classification which found higher in patients with FGW.

Table 3. Comparison between patients with successful and failed GW crossing within 30 minutes regarding J-CTO Score parameters.

| J CTO score		Total	SGW Within 30 minutes	FGW within 30 minutes	Test value	P-value	Sig.
		No.=40	No.=16	No=24			
Blunt stump	No	30 (75.0%)	15 (93.8%)	15 (62.5%)	5.000*	0.025	S
	Yes	10 (25.0%)	1 (6.2%)	9 (37.5%)			
Heavy calcium	No	31 (77.5%)	14 (87.5%)	17 (70.8%)	1.529*	0.216	NS
	Yes	9 (22.5%)	2 (12.5%)	7 (29.2%)			
Bending angel>45°	No	39 (97.5%)	16 (100.0%)	23 (95.8%)	0.684*	0.408	NS
	Yes	1 (2.5%)	0 (0.0%)	1 (4.2%)			
Length>20mm	No	17 (42.5%)	11 (68.8%)	6 (25.0%)	7.519*	0.006	HS
	Yes	23 (57.5%)	5 (31.3%)	18 (75.0%)			
Second attempt	No	28 (70.0%)	12 (75.0%)	16 (66.7%)	0.317*	0.573	NS
	Yes	12 (30.0%)	4 (25.0%)	8 (33.3%)			
J CTO Score	Median (IQR)	1 (1-2)	1 (0-1)	2 (1-2)	-3.300≠	0.001	HS
	Range	0-3	0-2	03			
J-CTO Score classifications	Easy	9 (22.5%)	7 (43.8%)	2 (8.3%)	11.197*	0.011	S
	Intermediate	12 (30.0%)	6 (37.5%)	6 (25.0%)			
	Difficult	14 (35.0%)	3 (18.8%)	11 (45.8%)			
	Very difficult	5 (12.5%)	0 (0.0%)	5 (20.8%)			

P-value>0.05:Non-significant (NS);   P-value<0.05:Significant (S);   P-value<0.01: highly significant (HS)
*:Chi-square test;   ‡:Mann Whitney test

There was statistically significant increase in the percentage of patients with blunt stump, length of the lesion>20mm in patients with FGW within 30 minutes with p-value=0.025 and 0.006; respectively. Also there was statistically significant increase median J CTO score and J CTO score classification which found higher in patients with FGW.

Table 4. Comparison between patients with successful and failed GW crossing within 30 minutes regarding outcome.

		Total No.=40	Within 30 minutes No.=16	After 30 minutes No.=24	Test value	P-value	Sig.
TIMI flow II to III	No	7(17.5%)	0 (0.0%)	7 (29.2%)	5.657*	0.017	S
	Yes	33(82.5%)	16 (100.0%)	17 (70.8%)			
number of wires	Median (IQR)	3(2-5)	3 (2-3.5)	4 (2-6)	-2.112‡	0.035	S
	Range	1-7	1-5	2-7			
Result	Successful	33 (82.5%)	16 (100.0%)	17 (70.8%)	5.657*	0.017	S
	Failure	7(17.5%)	0 (0.0%)	7 (29.2%)			

P-value>0.05:Non significant (NS);   P-value<0.05:Significant (S);   P-value<0.01:highly significant (HS)
*:Chi-square test;   ‡:Mann Whitney test
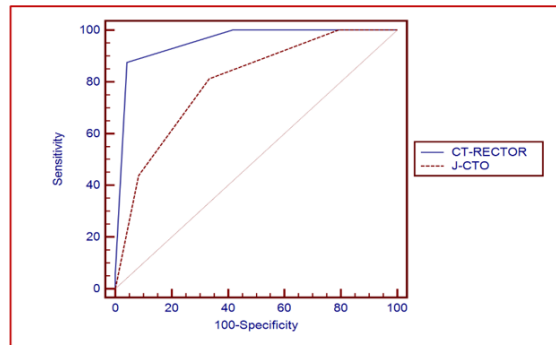
Parameter	AUC	Cut of Point	Sensitivity	Specificity	PPV	NPV
CT-RECTOR	0.954	<=1	87.5	95.83	93.3	92.0
J-CTO	0.798	<=1	81.25	66.67	61.9	84.2

Figure 1. Receiver operating characteristic curve (ROC) for CT-RECTOR and J-CTO scores as a predictor to differentiate between patients with SGW within 30 minutes and patients with FGW within 30 minutes.

The CT-RECTOR score can differentiate between the two studied groups at the cutoff point≤1 with sensitivity of 87.5%, specificity of 95.83% and AUC of 0.954 while the J-CTO score can differentiate between the two studied groups at the cutoff point≤1 with sensitivity of 81.25%, specificity of 66.67% and AUC of 0.798. So, CT-RECTOR Score has higher sensitivity and specificity for prediction of successful GW crossing within 30 minutes than J-CTO score.

Group (B) :results regarding final procedure success.

Table 5. Relation between outcome of the studied patients and CT-RECTOR score parameters.

CT RECTOR score		Successful No.=33	Failure No.=7	Test value	P-value	Sig.
Calcification>50%	No	26 (78.8%)	5 (71.4%)	0.179*	0.672	NS
	Yes	7 (21.2%)	2 (28.6%)			
Blunt stump	No	25 (75.8%)	4 (57.1%)	1.004*	0.316	NS
	Yes	8 (24.2%)	3 (42.9%)			
Bending angel>45°	No	33 (100.0%)	6 (85.7%)	4.835*	0.028	S
	Yes	0 (0.0%)	1 (14.3%)			
Second attempt	No	25 (75.8%)	2 (28.6%)	5.861*	0.015	S
	Yes	8 (24.2%)	5 (71.4%)			
Multiple occlusion	No	25 (75.8%)	4 (57.1%)	1.004*	0.316	NS
	Yes	8 (24.2%)	3 (42.9%)			
Duration of CTO.>12 month	No	3 (9.1%)	0 (0.0%)	0.688*	0.407	NS
	Yes	30 (90.9%)	7 (100.0%)			
CT-RECTOR score	Median (IQR)	2 (1-2)	3 (3-3)	-2.958≠	0.003	HS
	Range	1-4	2-4			
CT-RECTOR score classifications	Easy	0 (0.0%)	0 (0.0%)	9.903*	0.007	HS
	Intermediate	14 (42.4%)	0 (0.0%)			
	Difficult	11 (33.3%)	1 (14.3%)			
	Very difficult	8 (24.2%)	6 (85.7%)			

P-value>0.05:Non-significant (NS);   P-value<0.05:Significant (S);   P-value<0.01:highly significant (HS)
*:Chi-square test;   •:Independent t-test;   ‡:Mann-Whitney tes

There was statistically significant increase in the percentage of patients with bending angel>45o and

patients with second attempt in failure group than successful group with p-value=0.028 and 0.015; respectively. Also, there was statistically significant increase in the median CT RECTOR score in failure group than successful group.

Table 6. Relation between outcome of the studied patients and J CTO score parameters.

J CTO Score		Successful No.=33	Failure No.=7	Test value	P-value	Sig.
Blunt stump	No	26 (78.8%)	4 (57.1%)	1.443*	0.230	NS
	Yes	7 (21.2%)	3 (42.9%)			
Heavy calcium	No	26 (78.8%)	5 (71.4%)	0.179*	0.672	NS
	Yes	7 (21.2%)	2 (28.6%)			
Bending angel>45°	No	32 (97.0%)	7 (100.0%)	0.218*	0.641	NS
	Yes	1 (3.0%)	0 (0.0%)			
Length>20mm	No	17 (51.5%)	0 (0.0%)	6.271*	0.012	HS
	Yes	16 (48.5%)	7 (100.0%)			
Second attempt	No	25 (75.8%)	3 (42.9%)	2.977*	0.084	NS
	Yes	8 (24.2%)	4 (57.1%)			
J-CTO Score	Median (IQR)	1 (0-2)	2 (2-3)	-2.657≠	0.008	HS
	Range	0-3	1-3			
J-CTO Score classifications	Easy	9 (27.3%)	0 (0.0%)	9.013*	0.029	S
	Intermediate	11 (33.3%)	1 (14.3%)			
	Difficult	11 (33.3%)	3 (42.9%)			
	Very difficult	2 (6.1%)	3 (42.9%)			

P-value>0.05:Non-significant (NS);   P-value<0.05:Significant (S);   P-value<0.01:highly significant (HS)
*:Chi-square test;   ‡:Mann Whitney test

There was statistically significant increase in the percentage of patients with length>20 mm in failure group than successful group with p-value=0.012. also the median J CTO score and J CTO score classification was found higher in failure group
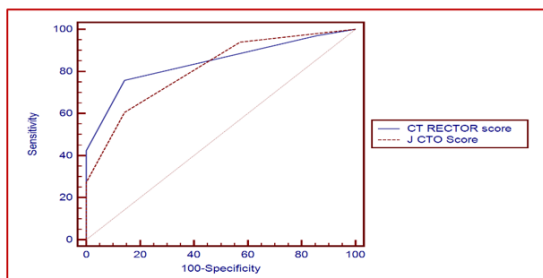
Parameter	Cut of Point	AUC	Sensitivity	Specificity	PPV	NPV
CT-RECTOR	<=2	0.842	75.76	85.71	96.2	42.9
J-CTO	<=1	0.810	60.61	85.71	95.2	31.6

Figure 2. Receiver operating characteristic curve (ROC) for CT-RECTOR and J-CTO as a predictor to differentiate between successful and failure patients

The previous ROC curve shows that the CT-RECTOR score can differentiate between successful and failure patients at the cutoff point≤2 with sensitivity of 75.76%, specificity of 85.71% and AUC of 0.842 while the J-CTO score can differentiate between successful and failure patients at the cutoff point≤1 with sensitivity of 54.55%, specificity of 85.71% and AUC of 0.740. So, CT-RECTOR Score has higher sensitivity and specificity for prediction of outcome and final procedure success of CTO revascularization than J-CTO score.

4. Discussion

According to the results of our study, there was no statistically significant difference between the two groups examined in terms of the patient's demographic information, ECG, LVEF percentage, and calcium score Tan et al.,[3]

Furthermore, we discovered that there was no statistically significant variation in the target vessel distribution between the two groups under study, which is consistent with Tan et al.,[3]

Additionally, we discovered that, after 30 minutes, there was a statistically significant rise (p-value=0.032) in the proportion of patients with proximal and osteal segments among patients with FGW.

Regarding CO morbidities, our research indicates that FGW passing through a CTO within 30 minutes is substantially correlated with diabetic patients and prior coronary artery bypass grafting (CABG).

The study found no statistically significant relationship between the time-efficient GW crossing and other parameters, but it did find a statistically significant increase in the percentage of patients with severe calcification, second attempt, and duration of CTO more than 12 months in the FGW group compared to the SGW within the 30-minute group regarding the CT-RECTOR score. Additionally, the CT-RECTOR categorization indicated higher difficulty in the FGW within the 30-minute group, and the median CT-RECTOR score showed a statistically significant increase.

Compared with Tan et al.,[3] and Opolski et al., [2] which found that, according to the CT-RECTOR

scoring system, the group that had a failed GW crossing had a higher likelihood of having multiple occlusions, a blunt stump, bending more than 45°, calcification involving at least 50% of the cross-sectional area in any route of the CTO lesion, as determined by CCTA, and a retry following a failed PCI.

A statistically significant increase in the proportion of patients with blunt stumps and lesion lengths greater than 20 mm in the FGW within the 30-minute group was observed in the current study with respect to the J-CTO score. No statistically significant relationship was found between the time-efficient GW crossing and other parameters. The median J-CTO score and J-CTO score categorization increased in the FGW within the 30-minute group in a statistically significant way as well. This discovery aligns with Tan et al.,[3] in blunt stump and lesion length more than 20 mm and discordant in other J-CTO parameters.

CT-RECTOR score has higher sensitivity and specificity for prediction of successful GW crossing within 30 minutes than the J-CTO score, and this is concordant with what was found in Tan et al.,[3] and Opolski et al.,[2] which revealed that the CT-RECTOR score had a larger significance than the J-CTO score in predicting a successful GW crossing in less than 30 minutes.

Within the result groups of our study, there was no significant difference in the following variables: calcium score, left ventricular ejection fraction (LV EF%), electrocardiogram (ECG), demographic data, and co-morbidities. However, the failure group had a greater level of previous CABG.[4] In line with previous research, our analysis demonstrates that no statistically significant relationship was discovered between the patients' outcomes and their blood vessels Sapontis et al.,[5]

In our study, there was a statistically significant increase in the percentage of patients with lesion length greater than 20 mm. However, no statistically significant relationship was found between the outcome and other J-CTO score parameters, and this is compared to the reported by Sapontis et al.,[5] that showed failed CTO lesions were more likely to have a length of lesion more than 20 mm, bending angel and blunt stump and no difference found between successful and failed group regarding second attempt and severe calcification.

Also, we found higher median J-CTO score and J-CTO score classification in patients with FGW, which is concordant with Sapontis et al.,[5]

With respect to final procedure success, the ROC curve indicated that the CT-RECTOR score can distinguish between successful and unsuccessful patients at the cutoff point≤2 with a sensitivity of 75.76%, specificity of 85.71%,

and AUC of 0.842, while the J-CTO score can distinguish between successful and unsuccessful patients at the cutoff point≤1 with a sensitivity of 54.55%, specificity of 85.71%, and AUC of 0.740.

This is concordant with Nombela-Franco et al.,[6] The CT-RECTOR Score has higher sensitivity and specificity for predicting the outcome and final procedure success of CTO revascularization than the J-CTO score, which is consistent with their findings that the J-CTO score did not predict the ultimate success rate Tan et al.,[3]

4. Conclusion

When it comes to chronic complete occlusions (CTOs), the CT-RECTOR score is a helpful tool for forecasting the procedure's final success as well as the length and difficulty of GW crossing. For GW crossing times (both short and long) and operation success, the CT-RECTOR score fared better than the J-CTO algorithm. According to these findings, risk assessment and the planning of procedures for CTO intervention may benefit from the use of the CT-RECTOR score.

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