SUPPLEMENTAL MATERIAL

Table S1. Characteristics of the included studies.

Study	Design	Inclusion Criteria	Exclusion Criteria	Primary Endpoint	Number of CTs included
Precise Percutaneous Coronary Intervention Plan Study	Prospective Multicentre study	Patients with evidence of myocardial ischemia, an invasive FFR ≤0.80 amenable to PCI	Severely calcified lesion, Bifurcation lesions, Ostial lesions, Left main disease, Severe vessel tortuosity, Chronic obstructive pulmonary disease, Contraindication to adenosine, NYHA class III or IV, or last known left ventricular ejection fraction <30%, Uncontrolled or recurrent ventricular tachycardia, Atrial fibrillation, flutter or arrhythmia History of recent stroke (≤90 days), History of acute coronary syndrome (≤90 days), Prior myocardial infarction History of ischemic stroke (>90 days),	Agreement between invasive and non-invasive FFR pullbacks pre and post PCI.	129

			History of any hemorrhagic stroke, Previous revascularization, Active liver disease or hepatic dysfunction defined as AST or ALT > 3 times the ULN, Severe renal dysfunction, defined as an eGFR <30 mL/min/1.73 m2, BMI>35 kg/m2, Nitrate intolerance, Contra-indication to heart rate lowering drugs,		
Precise Procedural and PCI Plan	Multicentre, randomized trial with a non-inferiority design	Patients with stable CAD or stabilized ACS with epicardial lesion at CCTA ≥70% stenosis, FFRCT≤0.80	STEMI, Uncontrolled or recurrent ventricular tachycardia, Hemodynamic instability, Severe renal dysfunction defined as an eGFR ≤30 mL/min/1.73 m2, Atrial fibrillation, flutter, or arrhythmias, Previous PCI in the target vessel or CABG.	Major adverse cardiovascular events (cardiac death, target vessel myocardial infarction and ischemia driven target vessel revascularization) at 12 months follow-up	484

			Target lesion in the left main coronary artery, BMI ≥35 kg/m2, Insufficient CT quality assessed by the Core lab, Comorbidity with life expectancy ≤ 2 years, Inability to take DAPT for 12 months, Planned major cardiac or non-cardiac surgery within 24 months after the index procedure, The subject has received a solid organ transplant that is functioning or is active on a waiting list for any solid organ transplants with expected transplantation within 24 months, The subject receives immunosuppressant therapy or has known immunosuppressive or severe autoimmune disease that requires chronic immunosuppressive therapy,		

			The subject has previously received or is scheduled to receive radiotherapy to a coronary artery or the chest/mediastinum, Subject has a platelet count <100,000 cells/mm3 or >700,000 cells/mm3, The subject has a documented or suspected hepatic disorder as defined as cirrhosis or Child-Pugh ≥ Class B, The subject has a history of bleeding diathesis or coagulopathy or has had a significant gastro-intestinal or significant urinary bleed within the past six months, The subject has had a cerebrovascular accident or transient ischemic neurological attack within the past six months, or any prior intracranial bleed permanent neurologic		

			defect, or any known intracranial pathology Subject is currently participating in another investigational drug or device clinical study, Pregnant or nursing subjects and those who plan pregnancy in the period up to 2 years following index procedure		
Pullback Pressure Gradient Global Registry	Prospective Multicentre Cohort Study	Patients with stable CAD or stabilized ACS and invasive FFR measurement ≤0.80 intended to be treated with PCI	Patients with acute myocardial infarction, Left ventricular Ejection fraction < 30%, Estimated glomerular filtration rate < 30 mL/min/1.73 m2, Aorto-ostial lesions, severe vessel tortuosity, Planned two-stent bifurcation PCI	Predictive capacity of the Pullback pressure gradient index for post-PCI FFR	293
INSIGHTFUL-FFR	Multicentre, randomized, open-label trial	Stable angina or ACS with a moderate coronary stenoses (30%-90%)	STEMI, Significant contraindication to adenosine administration,	Composite of major adverse cardiovascular events (all-cause death, myocardial infarction, and unplanned revascularization)	23

			Uncontrolled or recurrent ventricular tachycardia, Hemodynamic instability, Severe valvular disease	between pressure microcatheter or pressure wire guided strategies at 12-month follow-up	
Eurocraft	Prospective, multicentre, international registry	Stable patients with non-obstructive epicardial coronary arteries on invasive coronary angiography (diameter stenosis of less than 50%) with an FFR >0.80	Hemodynamic instability. Ongoing chest pain Previous CABG Moderate to severe valvular heart disease Uncontrolled or recurrent ventricular tachycardia Active liver disease or hepatic dysfunction, defined as AST or ALT >3 times the ULN	Major adverse cardiac and Cerebrovascular events at one year (cardiovascular death, myocardial infarction, revascularization, angina and heart failure-related hospitalizations, and stroke) between patients with and without coronary microvascular disease based on MRR at 1 year follow-up	19

CCTA; Coronary CT Angiography, FFR; Fractional flow reserve, PCI; Percutaneous coronary intervention, NYHA; New York heart association, CABG; Coronary artery bypass graft, ULT; Upper limit of normal, GFR; Glomerular filtration rate, BMI; Body mass index, STEMI; ST-elevation myocardial infarction, CAD; Coronary artery disease, ACS; Acute coronary syndrome, RVD; Reference vessel diameter, DAPT; Dual antiplatelet treatment.

Table S2. List of sites with number of recruited patients.

CT acquisition per site	City, Country	Number of Included Patients
OLVZ	Aalst, Belgium	232
Centro Cardiologico Monzino	Milan, Italy	119
Hartcentrum ZNA	Antwerp, Belgium	109
Gifu Heart Center	Gifu, Japan	96
Aarhus University Hospital	Aarhus, Denmark	90
UZ Brussel	Brussels, Belgium	44
Aichi Medical University	Aichi, Japan	42
Showa Univerity	Tokyo, Japan	38
Semmelweis University	Budapest, Hungary	35
Monash Cardiovascular Research Centre	Melbourne, Australia	33
Righospitalet	Copenhagen, Denmark	23
Ospedale Galeazzi Sant Ambrogio	Milan, Italy	17
Kobe University	Kobe, Japan	13
Gentofte Hospital	Copenhagen, Denmark	12
Seoul National Centre	Seoul, Korea	10
Humanitas Research Hospital	Italy	9
Fondazione Policlinico Universitario A. Gemelli, IRCCS	Rome, Italy	4
La Princesca Madrid	Madrid, Spain	4
Stanford University	Stanford, USA	4
Catharina Ziekenhuis Endhoven	Endhoven, Netherlands	2
Aalborg University Hospital	North Denmark Region, Denmark	1
Basildon Hospital Essex	Essex, UK	1
D-Tower Tokyo	Tokyo, Japan	1
Dr Jurasz University Hospital No. 1	Bydgoszcz, Poland	1
Guy's and St. Thomas' NHS Foundation Trust	London, UK	1
Herzzcentrum Lahr	Lahr, Germany	1
CHUV	Lausanne, Switzerland	1
National Cardial Institute	Warsaw, Poland	1
Sidney Univerity	Sidney, Australia	1
University of Ferrara	Ferrara University	1
University of Texas	Texas, USA	1
University La Sapienza	Rome, Italy	1

Table S3. CCTA acquisition characteristics.

CT scanner*	
Aquilion (Toshiba), n	100
Cardiograph (GE), n	24
Revolution (GE), n	184
Naeotom Alpha (Siemens), n	8
SOMATOM Force (Siemens), n	133
CT radiation dose (mGy·cm), mean (±SD)	298.2 (220.3)
Contrast used (ml), mean (±SD)	67.8 (27.7)
Heart rate during CT acquisition (bpm), mean (±SD)	58.3 (15.7)
Beta- blockers used†, n (%)	369/547 (67.2)
Administration of beta-blockers	
Intravenous, n (%) Oral, n (%)	208 (73.7) 74 (26.2)
Type of b-blocker‡	
Atenolol, n (%) Metoprolol, n (%)	17 (6.0) 265 (94)
Nitrates used§, n (%)	473/550 (86.0)
Type of Nitrates‖	
Spray, n (%) Sublingual, n (%)	246/442 (52.0) 196/442 (41.4)

Values are n (%) or mean ± SD.

*Available data for 447 that underwent CT

†Available data for 547 patients that underwent CT

‡ Available data for 282 out of 547 patients that received beta blockers before CT

§ Available data for 550 patients that underwent CT

‖ Of the 550 patients who received Nitrates before CT, data is available for 442 patients

Table S4. Univariate and multivariable analysis of the relationship between LV mass and clinical characteristics.

Predictor Variables	Univariate Analysis		Multivariable Analysis	
	Coefficient	p-value	Coefficient	p-value
Age	-0.99	<0.001	-0.53	<0.001
BMI	3.36	<0.001	2.90	<0.001
Male	43.9	<0.001	39.8	<0.001
Hypertension	7.75	0.02	7.78	<0.001
Dyslipidemia	3.15	0.46		
Diabetes	60.23	0.13		
Caucasian	12.4	<0.001	2.47	0.42

BMI; Body mass index. In the Multivariable linear regression analysis, all statistically significant variables from univariate analysis were included. Based on backward stepwise selection process and the Alkaike selection criterion the best fit Multivariable model included Age, BMI, Male and Hypertension.

Table S5. Distribution of LV mass and vessel-specific LV mass based on ethnicity.

	Asians N=202	**Caucasians N=463**	**p-value**
LV Mass (grams)	130.0 (104.4, 154.6)	143.9 (118.9, 166.7)	<0.001
Left Dominance, n (%)	15 (7.4)	64 (24.4)	0.02
LM Trifurcation, n (%)	64 (31.7)	113 (24.4)	0.06
	Median %LV Mass		
LAD n	42.6 (37.2, 47.5) 202	42.7 (38.0, 48.4) 463	0.627
LCX n	26.9 (20.3, 34.1) 202	29.8 (22.2, 36.9) 463	0.009
RCA n	28.3 (22.3, 33.9) 188	26.1 (20.6, 31.0) 425	<0.001
Ramus Intermediate n	8.5 (4.6, 13.4) 57	10.5 (6.4, 18.3) 105	0.035
Diagonals, (n)	414	942	
Diagonal 1 n	6.9 (3.9, 11.5) 185	7.3 (4.3, 11.4) 440	0.29
Diagonal 2 n	6.5 (3.7, 10.2) 151	6.4 (3.5, 9.9) 335	0.57
Diagonal 3 n	3.1 (2.0, 4.8) 69	41 (2.5, 6.8) 141	0.015
Diagonal 4 n	2.5 (2.0, 32) 9	3.0 (2.2, 6.0) 26	0.49
Septals, (n)	248	609	
Septal 1 n	8.8 (5.9, 11.1) 164	9.0 (6.4, 11.3) 392	0.436
Septal 2 n	4.7 (1.9, 6.4) 67	3.7 (2.2, 6.7) 171	0.755
Septal 3 n	2.0 (1.5, 5.4) 15	3.1 (1.6, 4.8) 38	0.737
Septal 4 n	3.8 (3.2, 4.3) 2	3.0 (2.2, 4.1) 8	0.602
Obtuse Marginals, (n)	311	666	
OM1 n	9.1 (4.9, 14.6) 166	9.7 (4.9, 17.4) 402	0.152
OM2 n	9.8 (4.5, 13.6) 103	10.4 (6.0, 16.3) 203	0.067
OM3 n	10.7 (5.7, 14.0) 36	9.2 (5.7, 13.6) 55	0.65
OM4 n	6.1 (4.8, 6.4) 6	8.4 (6.9, 9.8) 6	0.5
PLB n	13.3 (9.5, 18.1) 167	10.7 (7.5, 15.0) 417	<0.001
PDA n	13.1 (10.1, 16.4) 171	13.1 (10.0, 16.5) 421	0.99

Values are presented as Median (IQR). LM; Left Main, OM; Obtuse Marginal, PLB; Posterior Descending branch, PDA; Posterior Descending Artery.

Table S6. Comparison of vessel specific LV mass based on coronary circulation dominance.

Vessel	Right Dominance N=845	Left Dominance N=103	p-value
	%LV Mass		
LAD n	42.2 (37.6, 47.6) 845	46.5 (41.6, 50.9) 103	<0.001
LCX n	27.7 (21.1, 33.7) 845	47.5 (39.4, 52.6) 103	<0.001
RCA n	26.6 (21.6, 32.1) 845	12.5 (4.9, 17.6) * 26	<0.001
Ramus Intermediate n	9.9 (5.2, 17.6) 220	10.3 (5.4, 18.4) 26	0.45
Diagonal 1 n	8.1 (4.5, 12.3) 795	7.1 (4.3, 11.1) 98	0.18
Diagonal 2 n	6.1 (3.5, 9.6) 588	6.7 (3.5, 10.2) 75	0.50
Diagonal 3 n	3.6 (2.4, 6.0) 251	1.5 (2.4, 8.1) 34	0.10
Diagonal 4 n	2.8 (2.3, 4.4) 37	2.3 (1.8, 8.5) 7	0.96
Septal 1 n	8.9 (6.4, 11.2) 707	9.8 (6.2, 11.5) 93	0.32
Septal 2 n	3.7 (2.0, 5.9) 291	4.0 (2.2, 6.5) 40	0.68
Septal 3 n	3.0 (1.8, 5.0) 60	2.1 (2.1, 2.6) 5	0.45
Septal 4 n	3.9 (2.7, 4.9) 9	2.9 (2.7, 3.1) 2	0.48
OM1 n	10.3 (5.1, 17.0) 729	9.7 (5.2, 14.7) 91	0.29
OM2 n	10.3 (5.7, 15.7) 406	7.2 (3.3, 15.7) 48	0.09
OM3 n	9.5 (6.0, 14.5) 114	8.5 (6.3, 11.0) 21	0.26
OM4 n	7.3 (5.2, 11.6) 12	6.4 (6.4, 6.4) 1	1.0
PLB n	11.8 (8.3, 16.0) 755	8.4 (5.0, 12.5) 91	<0.001
PDA n	12.9 (10.0 16.2) 754	13.8 (10.3, 17.6) 96	0.08

LV; Left Ventricle, LM; Left Main, OM; Obtuse Marginal, PLB; Posterior Descending branch, PDA; Posterior Descending Artery.

*RCA did not subtend any part of LV mass in 77 out of 103 patients with Left Dominance.

Table S7. Median values with percentiles 5%- 95% of LV mass and vessel-specific myocardial mass.

Variable	N (%)	LV mass (grams) Median (5%, 95%)	Percent of LV mass Median (5%, 95%)
LV	948	141 (89, 212)	
LAD	948	59 (34, 101)	42.6 (31.2, 56.8)
LCX	948	40 (14, 81)	28.8 (10.6, 50.2)
RCA	871	37 (16, 63)	26.4 (12.4, 41.2)
Ramus Intermediate	247	15 (3, 39)	10.0 (2.2, 26.1)
Diagonal 1	893	11 (3, 30)	8.0 (2.0, 18.6)
Diagonal 2	663	9 (2, 22)	6.3 (1.6, 14.8)
Diagonal 3	285	5 (2, 18)	3.7 (1.4, 10.6)
Diagonal 4	44	5 (2, 10)	2.8 (1.1, 7.9)
Diagonal 5	3	2 (1, 5)	1.6 (1.1, 2.2)
Septal 1	800	13 (4, 24)	9.0 (2.6, 15.1)
Septal 2	331	5 (1, 15)	3.7 (1.1, 10.3)
Septal 3	65	4 (1, 14)	2.9 (1.3, 8.0)
Septal 4	11	5 (2, 9)	3.3 (1.3, 5.9)
Septal 5	1	4 (4, 4)	4.5 (4.5, 4.5)
OM1	820	14 (3, 39)	10.2 (2.0, 24.9)
OM2	454	13 (3, 38)	10.1 (2.2, 21.7)
OM3	135	13 (4, 30)	9.5 (2.9, 19.7)
OM4	13	11 (5, 25)	6.4 (3.6, 14.4)
PLB	846	16 (5, 34)	11.4 (4.1, 23.3)
PDA	850	18 (9, 35)	13.1 (7.0, 21.9)

LV; Left Ventricle, LM; Left Main, OM; Obtuse Marginal, PLB; Posterior Descending branch, PDA; Posterior Descending Artery.

Figure S1. Study Flowchart.

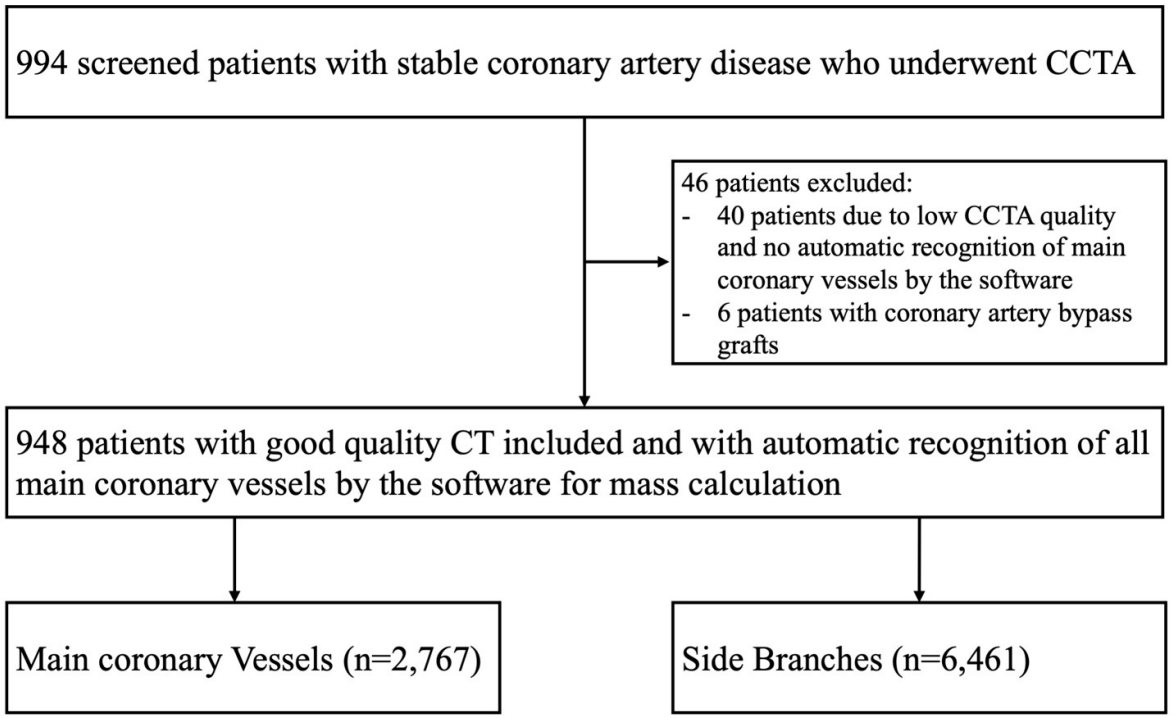


Figure S2. Calculation of Vessel Specific Myocardial Mass.

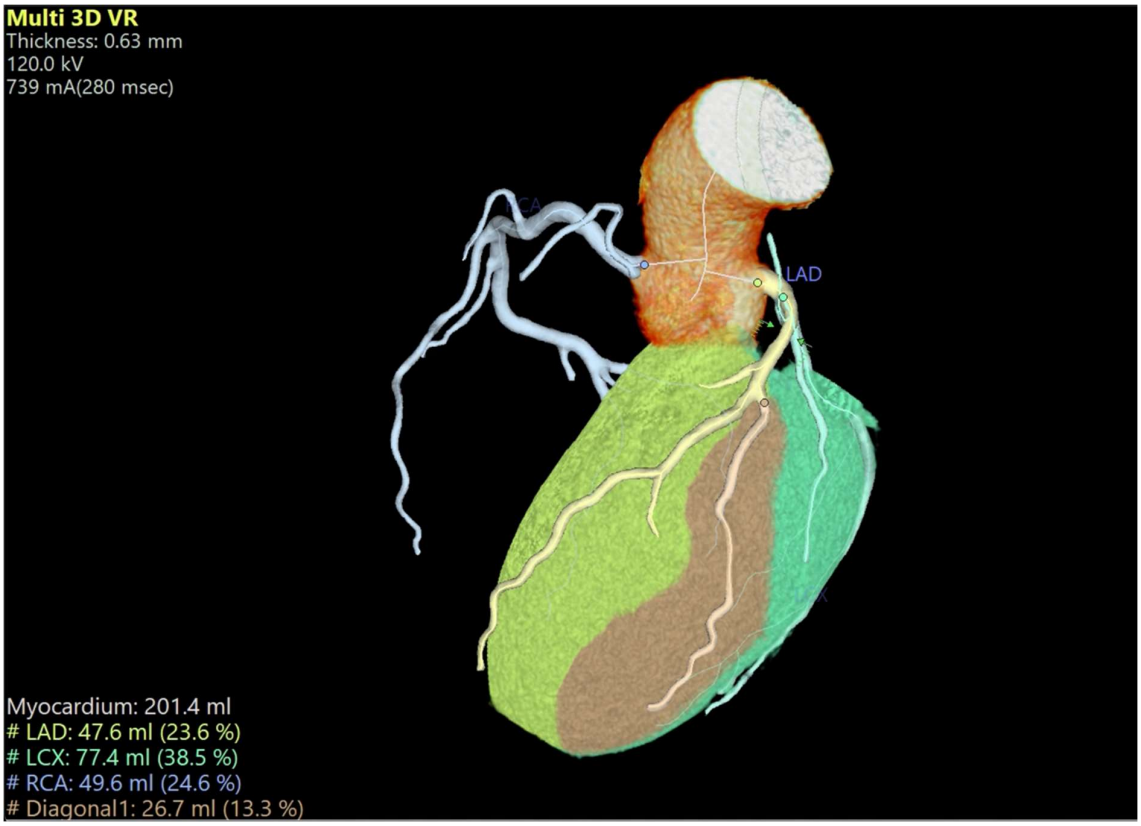
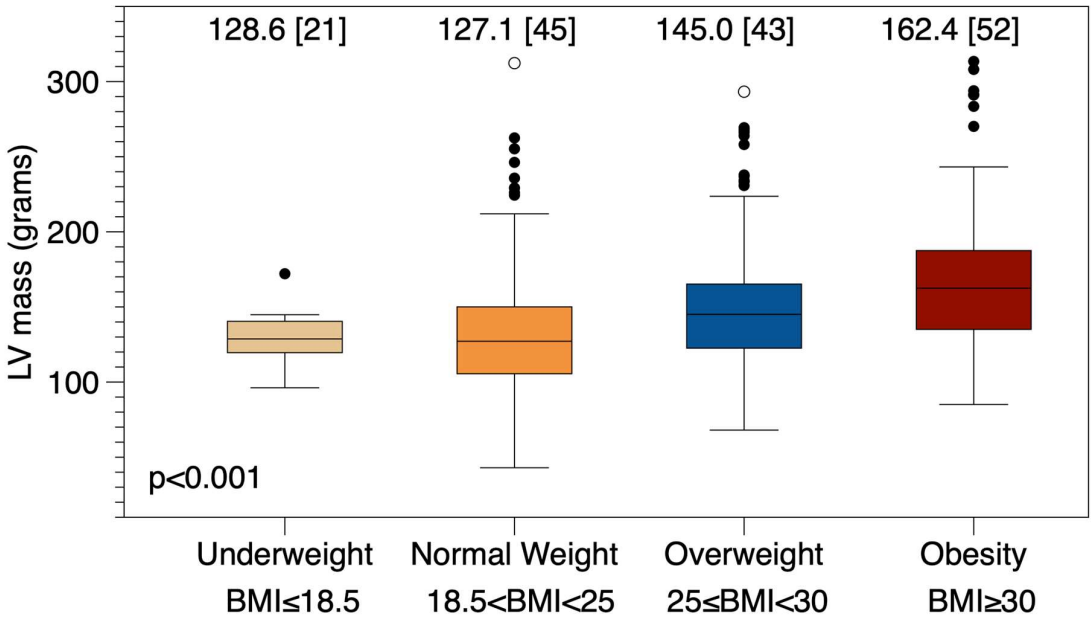
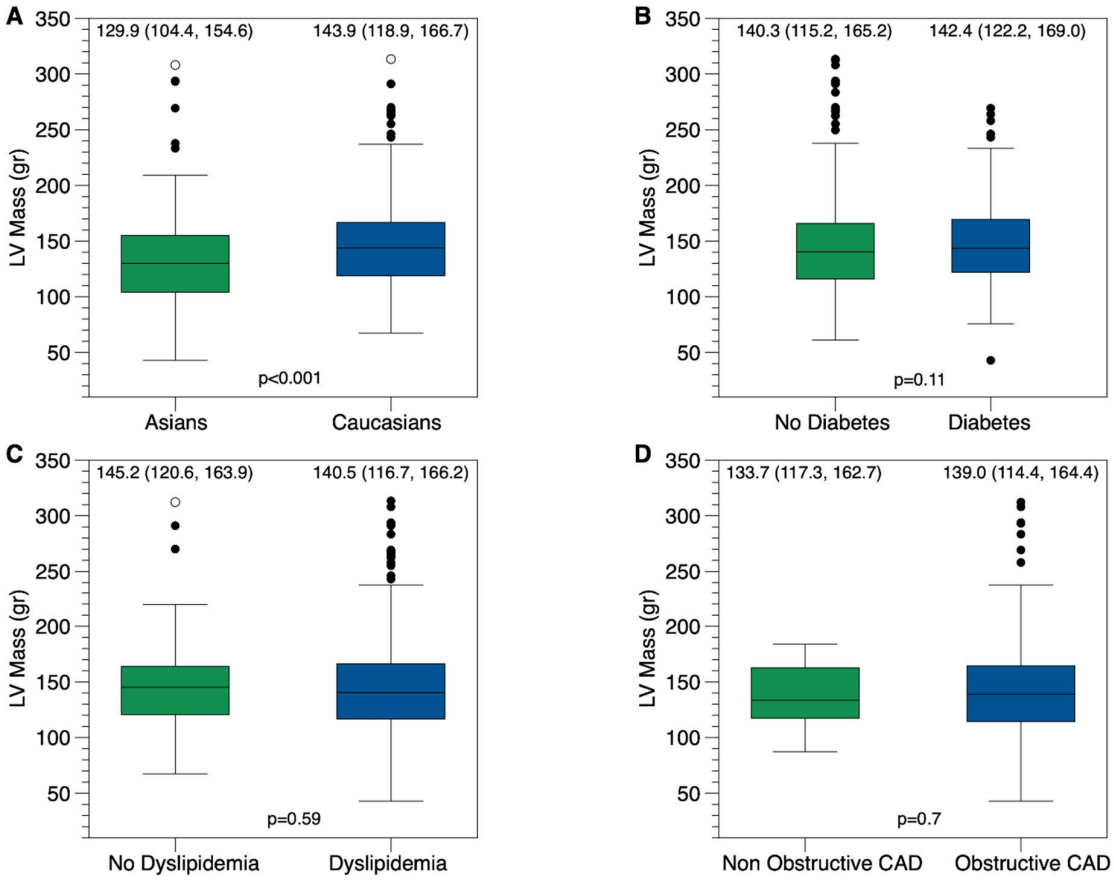


Figure S3. Comparison of LV mass across different BMI categories.



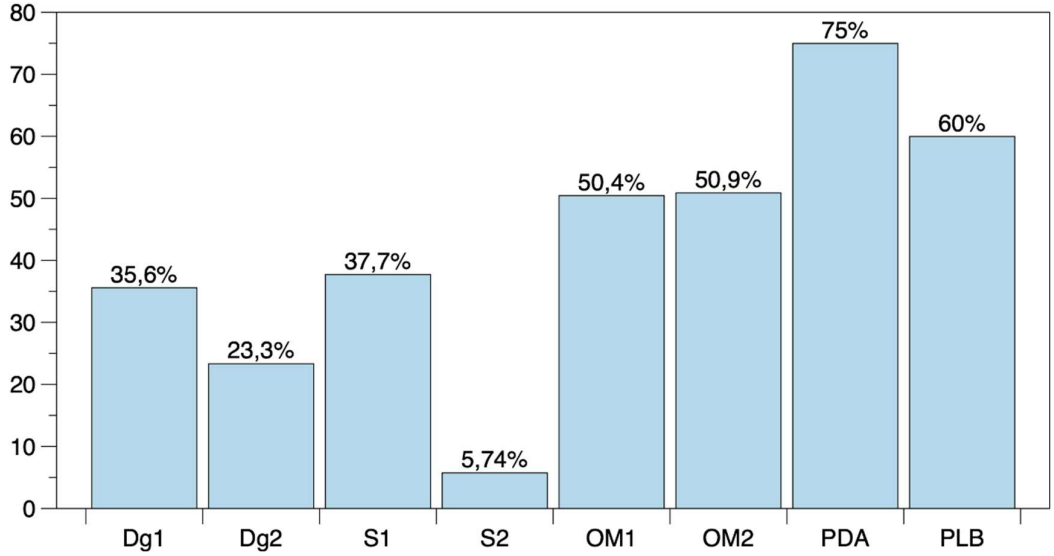
BMI; Body mass index, p-values were calculated by ANOVA.

Figure S4. Comparison of LV mass in different clinical groups.



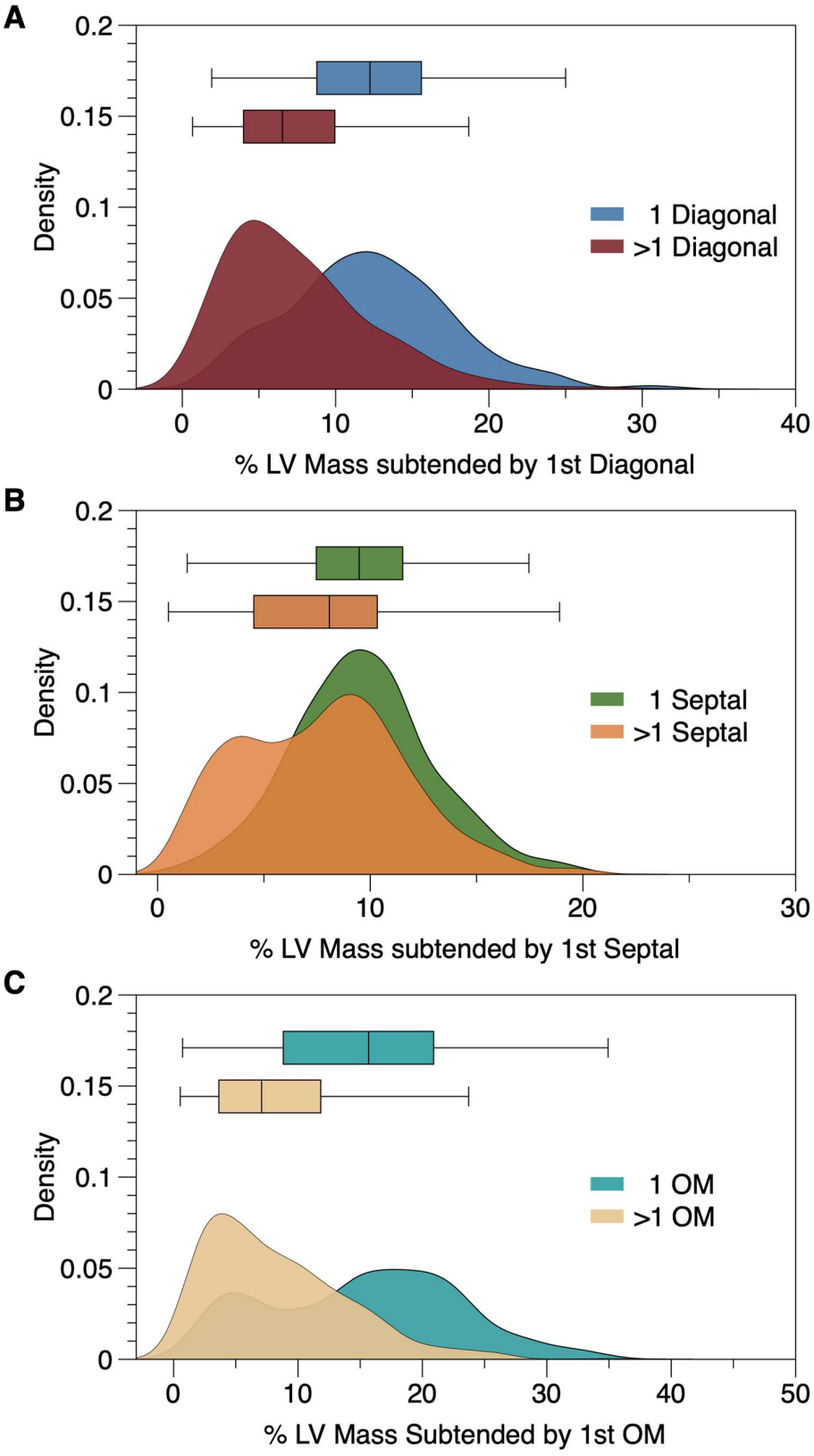
(**A**) Correlation between LV mass according to ethnicity; (**B**) Comparison of LV mass based on diabetes status; (**C**) Comparison of LV mass based on dyslipidaemia; (**D**) Comparison of LV mass between patients with coronary artery disease (CAD) vs non obstructive CAD. Obstructive CAD was defined based on visual assessment of diameter stenosis ≥ 50% at least in one main coronary artery.

Figure S5. Prevalence of coronary side branches subtending greater than 10% of LV mass.



Dg1; Diagonal 1, Dg2; Diagonal 2, S1; Septal 1, S2; Septal 2, OM1; Obtuse Marginal 1, OM2; Obtuse Marginal 2, PDA; Posterior descending artery, PLB; Posterolateral branches.

Figure S6. Percent LV mass % subtended by different side branches in different scenarios.



(**A**) Percent myocardial mass % subtended by 1st diagonal in case of 1 diagonal and multiple diagonals; (**B**) Percent myocardial mass % subtended by 1st septal branch in case of 1 septal and multiple septals; (**C**) Percent LV mass % subtended by 1st obtuse marginal (OM) branch in case of one OM and multiple OM.

Movie S1. Quantification of vessel specific myocardial mass using Fuji Software.
This video demonstrates how the Fuji software automatically calculates the left ventricular (LV) volume (in milliliters) associated with each main coronary vessel. The software also provides the percentage of the total LV volume subtended by each of these main vessels. For side branches, the process involves the operator placing a seed point at the ostium of the branch. Once the seed point is positioned, the software calculates and displays both the volume and the corresponding percentage of the LV that the side branch subtends.