SUPPLEMENTARY DATA

Supplementary data 1: Angiography procedure and coronary collaterals grading

Severity of coronary artery disease(single, 2 or 3-vessel-disease) was defined as the presence of at least one significant(≥50%) stenosis in each of the 3 major coronary vessels. Anterograde blood flow was graded with the use of the TIMI classification. A complete coronary occlusion was defined as a 100% stenosis associated with a TIMI grade flow=0 or 1. In patients with more than one occluded coronary artery, one was randomly selected for further analysis of collateral vessels.

The flow in the collateral vessels was graded with the use of 2 previously validated semi-quantitative methods; the "Collateral flow grade" and the "Recipient filling grade"(also known as the modified Rentrop Classification) were chosen because they have been previously validated and are considered complementary[12]. The "Collateral flow grade" mainly appreciates the size of the collateral itself whereas the "Recipient filling grade" is more focused on the resulting flow in the occluded vessel[12].

1) Collateral flow grade : *0*=no flow in the collateral; *1*=the collateral is barely apparent; dye is not visible throughout the cardiac cycle but is present in at least 3 consecutive frames; *2*=the collateral is moderately opaque but is present throughout at 75% of the cardiac cycle; *3*=the collateral is well opacified and the column of dye is well defined but is <0.7 mm wide throughout the majority of its length; *4*=the collateral is well opacified, fills antegrade, and is very large, >0.7mm in diameter throughout its entire length. In patients with more than one collateral vessel, the collateral vessel with the highest "collateral flow grade" value was used for further analysis.

2) Recipient filling grade(Modified Rentrop Classification) : *0*=no angiographically apparent collaterals; *1*=apparent collaterals extend into a region of myocardium with no angiographically apparent recipient vessel; *2*=minimal recipient filling by collaterals is manifested by minor side branch filling and no epicardial artery or epicardial side branch filling; *3*=Moderate recipient filling by collaterals is manifested by

complete filling of epicardial side branches and partial filling of a major epicardial artery; *4*=there is complete filling of a major epicardial segment. In patients with more than one collateral vessel, the highest "recipient filling grade" value was used for further analysis.

Supplementary data 2: Isolation, culture and phenotyping of Colony forming unit endothelial cells

Peripheral blood mononuclear cells were isolated by ficoll density gradient centrifugation(Eurobio) from 20 mL blood sample and plated on fibronectin-coated six-well plates in EndoCult® Medium. After 48 hours, non-adherent cells were collected and plated in replicate fibronectin-coated 24-well plates. Colonies were quantified three days later. Endothelial phenotype was confirmed by immunofluorescent staining for endothelial specific markers(Von Willebrand factor and KDR), and typical uptake of 1,1'-dioctadecyl-3,3,3',3'-tetramethylindocarbocyanine perchlorate-acetylated low density lipoprotein(Dil-acLDL Biomedical Technology)[16]. Colony forming units endothelial cells(CFU-ECs) were counted as previously described[15]. Results were expressed as number of colonies/ mL. Measurement of VEGF concentration of supernatant was performed as previously described [17].

Supplementary data 3: Summary of previous studies investigating the impact of diabetes mellitus or metabolic syndrome on coronary collateral development in patients with chronic coronary artery disease

Author	Patients' selection	Total population (n)	Patients with coronary occlusion(n)	Data on duration of occlusion	Method of analysis of collaterals	Effect of Diabetes or Metabolic syndrome
Ilia[23]	Angiography	231	103	No	Angiography	D : No effect
Abaci[25]	Angiography	410	Unknown	No	Angiography	D : Decrease collaterals
Mélidonis[28]	Angiography	690	183	No	Angiography	D : Increase collaterals
Kilian[26]	Angiography	200	200	No	Angiography	D : Decrease collaterals
Kornowski[24]	Angiography	112	112	No	Angiography	D: No effect
Werner[27]	PTCA	90	90	Yes	Doppler wire	D: Decrease collaterals in some subgroups
Olijohek[7]	PTCA	227	24	No	Angiography	MS: No effect
Present study	Angiography	387	387	Yes	Angiography	MS : Decrease collaterals

D=Diabetes mellitus; MS=Metabolic syndrome