Percutaneous revascularization in a patient with anomalous origin of left main coronary artery

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Anomalous origin of the coronary artery from opposite coronary sinus is infrequently observed during coronary angiography. Percutaneous coronary intervention (PCI) of anomalous coronary artery is technically difficult and challenging. It requires appropriate selection of guide catheters for adequate stability, coaxial alignment and backup support during the intervention. We hereby report a rare case of anomalous origin of left main coronary artery (LM) from the right coronary sinus, in which successful PCI of the left anterior descending (LAD) artery was performed. A long term 5-year follow-up of favorable clinical outcome and coronary arterial imaging is also demonstrated.

CASE REPORT

In August 2006, a 59-year-old male presented to the out-
patient department with a history of chest pain, which first occurred 4 d previously during morning hours. He was a non-smoker, non-diabetic and had normal blood pressure. An ECG done by a local physician showed left bundle branch block (LBBB). A repeat ECG at our institute was within normal limits. His general physical and systemic examinations were unremarkable. His routine biochemistry was normal. Fasting lipid profile revealed total cholesterol 198 mg%, HDL 42 mg%, LDL 110 mg%, and triglycerides 236 mg%. Two-dimensional echocardiogram showed a left ventricular ejection fraction of 0.60, no regional wall motion abnormality and no mitral regurgitation. He underwent coronary angiography by transfemoral route. The right coronary artery (RCA), which was cannulated with a Judkins Right 4, 6F catheter, was a normal and dominant vessel. The LM could not be visualized in the left coronary sinus with the Judkins Left 4, 6F catheter. Subsequently, it was found to be arising from the right coronary sinus. Both RCA and LM were arising from separate ostia. The LM had a retro-aortic course from the right coronary sinus before its bifurcation into LAD and left circumflex (LCx) arteries (Figure 1A and B). The LAD showed two type B lesions in proximal (Figure 1B) and distal segments (Figure 1C). The LCx, which was a non-dominant vessel, showed insignificant stenosis in the distal segment. A left ventriculogram showed an ejection fraction of 0.60 and no regional wall motion abnormality.

Following a written informed consent for percutaneous revascularization, the patient was subjected to PCI of the LAD artery, in a second stage after 48 h. The anomalous LM was cannulated with an Eric Cohen Right (ECR) 4, 6F coronary guide catheter (an extra-backup support catheter for RCA from Medtronic, Inc., Minneapolis, Minnesota) and LAD lesions were crossed with an All Track Wire (ATW) coronary guide wire (Cordis Co., Miami, Florida). Both proximal and distal LAD lesions were pre-dilated with a 2.5 mm × 15 mm Sprinter balloon (Medtronic). The distal LAD lesion was stented with a 2.5 mm × 23 mm sirolimus-eluting Cypher stent (Cordis) (Figure 2A) and the proximal LAD lesion was stented with a 3 mm × 23 mm sirolimus-eluting Cypher stent (Cordis) (Figure 2B). He had an uneventful recovery and was discharged on day 2 of intervention with dual anti-platelet and statin therapy. He remained asymptomatic.
LCA, Hobbs RE. Coronary artery anomalies in September 26, 2009, Spaulding C, Bonnet N, Cador R, Monsegu coronary compression with inter-arterial course, slit-like erosclerotic stenosis is associated with angina, myocardial infarction and sudden cardiac death, even in the absence of significant atherosclerotic stenosis. The pathogenesis of these clinical manifestations can be multi-factorial including anomalous coronary compression with inter-arterial course, slit-like coronary orifice with dynamic obstruction, acute angle take off, and presence and length of intramural segments of anomalous coronary vessel.PCI of anomalous coronaries is difficult, technically challenging, and requires significant experience for successful intervention. However, a failed PCI and subsequent bypass surgery in an acute myocardial infarction situation with anomalous left main coronary artery has even been described. During the intervention, there is a need for coaxial alignment and adequate backup support of the guide catheter for successful outcome. Various authors have described different types of guide catheters, such as Amplatz Right, Amplatz Left, Multipurpose catheter, etc., for intervention in such situations. In the described case, we used an ECR guide catheter, which provided a good backup support and also coaxial alignment during intervention. Even though there are reports about PCI of anomalous LM with inter-arterial or septal course, only a single case report of PCI of LM with retro-aortic course has been published. To our knowledge, the case index is the second one in the published literature about PCI with regard to anomalous LM having a retro-aortic course.

The role of multi-detector computed tomography (MDCT) for detection of coronary stent patency and delineation of anomalous coronary origin, course and relation has been described in the literature. In the index case, MDCT has demonstrated the patency of the LAD drug-eluting stents and delineated the origin and course of anomalous LM. In conclusion, we hereby report a rare case of anomalous LM originating from the right coronary sinus and having a retro-aortic course, in which a successful coronary stenting of the LAD artery was performed. Follow-up MDCT imaging demonstrated the long term patency of drug-eluting stents, and also delineated the origin and course of anomalous LM.

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Vijayvergiya R et al. PCI in anomalous left main coronary artery

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