

**When the culprit lesion is in an anomalous coronary artery:  
Management of patients with congenital coronary anomalies  
presenting with acute coronary syndromes**

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There are no conflicts of interest related to this manuscript.

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## Abstract

### Aim:

When the culprit lesion of an acute coronary syndrome is located in an anomalous coronary artery revascularization may be challenging. We evaluated the management and outcome of patients with congenital coronary anomalies presenting with acute coronary syndromes (ACS).

### Methods:

All coronary angiograms performed in our center between January 2000 and December 2016 were evaluated for ACS in the presence of congenital coronary artery anomalies. Demographic data, risk factors for coronary artery disease (CAD), patient management and major cardiovascular events at 1 year follow-up were analyzed.

### Results:

Out of 39'577 patients referred for coronary angiography 30 consecutive ACS patients with a culprit lesion located in an anomalous coronary artery were identified (prevalence 0.076%). The patients presented with ST-segment elevation myocardial infarction (STEMI) in 40%, Non-STEMI in 20% and unstable angina (UA) in 40%. Mean age at time of ACS was  $67\pm 11$  years and 77% of patients were males. Hypertension and hyperlipidemia represented the most frequent cardiovascular risk factors (77%), while a positive family history of CAD, a smoking history or diabetes were each present in one third of the patients. Ten percent of patients had a history of prior ACS and 17% had previously undergone percutaneous coronary intervention (PCI). The most common coronary anomaly was an anomalous coronary artery origin from the opposite aortic sinus (50%) followed by an atypical take-off of the right coronary artery (20%), a single coronary artery in 10%, double left main (LM) ostium in 10%, atypical LM take-off in 3.3% and LM origin from the non-coronary sinus in 3.3%. Half of patients underwent PCI (8 STEMI, 2 Non-STEMI and 5 UA), while in 11 patients (4 STEMI, 3 Non-STEMI and 4 UA) urgent coronary artery by-pass grafting (CABG) was performed without prior PCI attempts. Finally, 4 patients were treated medically (1 Non-STEMI and 3

UA). In the CABG group no major adverse cardiac events occurred within 1 year. However, in the PCI group one patient presented an occlusion of an anomalous right coronary artery during PCI of the circumflex artery and two bare-metal stent restenosis occurred within one-year follow-up (at 11 months and 8 months).

Conclusion:

Percutaneous revascularization of anomalous coronary arteries is challenging in the setting of acute myocardial infarction. If the origin or course of the anomalous coronary artery is not suitable for PCI or the extent of coronary disease precludes a percutaneous approach, prompt surgical revascularization is a valuable treatment strategy.