

TRANS RADIAL PERCUTANEOUS CORONARY INTERVENTION IN A PATIENT WITH BOVINE AORTIC ARCH

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ABSTRACT

Bovine arch pattern is most common variant of aortic arch anomaly and its presence poses difficulty during percutaneous carotid and coronary intervention. We present a successful coronary bifurcation revascularisation with V stenting in bovine arch with proper guide catheter stabilization in a patient with inferior wall ST elevated myocardial infarction (STEMI).

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INTRODUCTION

One of the most widely used misnomers in the medical literature is that of the “bovine aortic arch” in humans. This term refers to a common anatomic configuration of the aortic arch. By its name, the bovine aortic arch in humans would presumably resemble the aortic arch branching pattern found in the family of ruminant animals, including cattle and buffalo. However, the bovine aortic arch configuration ascribed to the most common human aortic arch variants bears no resemblance to the aortic arch branching pattern found in cattle (Layton *et al.*, 2006).

Bovine arch is the most frequent variant of anomalous aortic arch branching pattern with prevalence of 7-10% in general population (Lippert *et al.*, 1985). In this variant a single brachiocephalic trunk gives rise to the left and right common carotid artery as well as the right subclavian artery, whereas left subclavian artery arises separately from aortic arch (Spacek *et al.*, 2012). At times, this anomalous branching pattern of aortic arch poses difficulty during percutaneous coronary intervention through right trans radial vascular access (Karur *et al.*, 2013). We present a successful coronary bifurcation revascularisation with V stenting in bovine arch with proper guide catheter stabilization in a patient with inferior wall ST elevated myocardial infarction (STEMI).

CASE

We present a case of 53 year-old diabetic male presenting with acute inferior wall STEMI. During coronary angiography, tiger catheter was seen to traverse an anomalous route towards the left for which aortic arch angiogram was done which revealed bovine arch with right brachiocephalic trunk and left common carotid artery originating from a single trunk from the aortic arch while left subclavian artery had a separate origin. Xtra Backup guiding catheter (XB 6F 3.5) was to engage the left main coronary artery and a BMW wire was parked in LAD for guide catheter stabilisation. Lesion in OM₂ was crossed with 0.014 inch Fielder FC guide wire, predilated with 2 × 10 mm semi compliant balloon and the lesion in LCX was crossed with another Fielder FC guide wire with 1.5×8 mm semi compliant balloon support, predilated with 2×10 mm semi compliant balloon and V stenting was done to LCX and OM₂ with Drug Eluting Stents (DES). Post revascularisation LCX and OM₂ revealed TIMI III flow and patient was discharged next day with anti-ischemic medications. In spite of the bovine arch, guide catheter was stable

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through out the procedure with three guide wires in LAD, LCX and OM₂. Aortic arch anomaly poses difficulty in guide catheter stabilisation which can be achieved by parking another guide wire in normal coronary vessel to keep the procedure simple and safe (KISS) and finishing the procedure without hiccups.



Figure 1: Bovine arch with common origin of right brachiocephalic trunk and left common carotid artery.

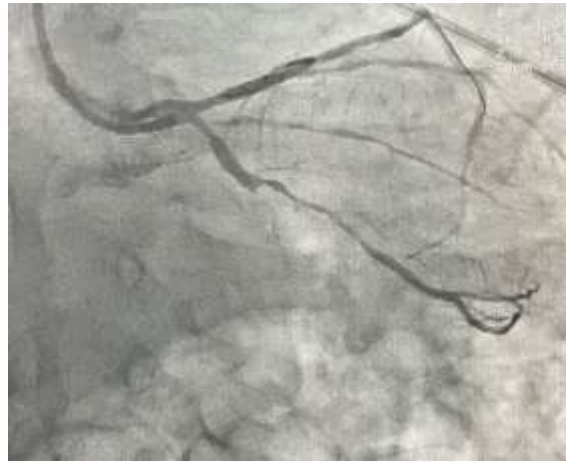


Figure 2: Coronary angiogram revealing total occlusion of LCX and 90% diffuse lesion in OM₂, BMW wire in LAD for guide catheter support



Figure 3: Drug Eluting Stent (2.5× 28 mm) parked in LCX

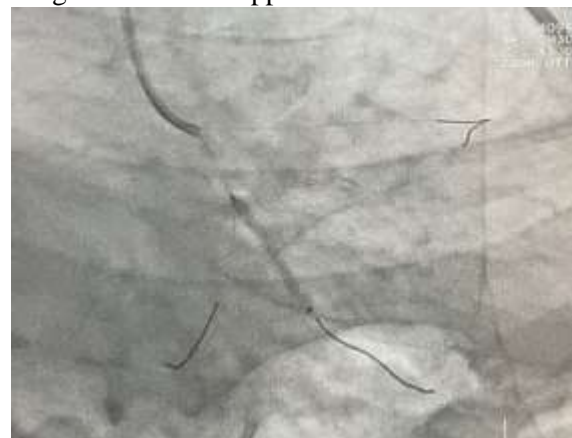


Figure 4: Drug Eluting Stent (2.25× 30 mm) parked in OM₂

DISCUSSION

Coronary intervention in bovine arch is challenging due to issue of guide catheter stability (Miljas *et al.*, 2018). Use of Amplatz left (AL1) guide catheter, deep engagement of the guide catheter, wire in a normal branch for extra support, balloon anchoring technique are the maneuvers to ensure guide catheter stability in anomalies of aortic arch. Our case is unique in maintaining the guide catheter stability by putting three wires in LAD, LCX and OM₂ for which we were able to revascularise the total occlusion of LCX and near total occlusion of OM₂ with V stenting. Maintaining guide catheter stability in aortic arch anomaly is of utmost importance for successful revascularisation of multi vessel disease including total occlusion.

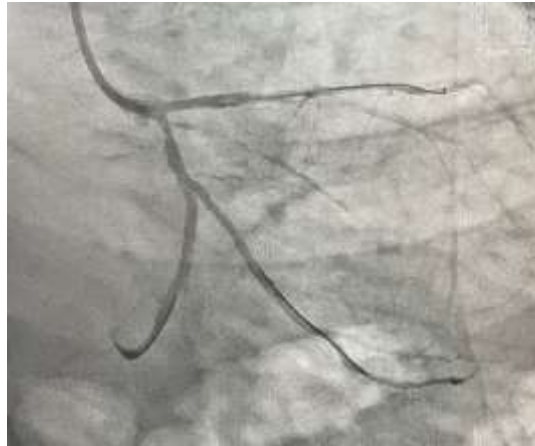


Figure 5: Post V stenting of LCX and OM₂ with TIMI III flow

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