

Primary Percutaneous Coronary Intervention through Right Trans-Ulnar Access in a Case of Arteria Lusoria: Feasibility Stamped

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Abstract

We report a case of primary coronary angioplasty of left coronary artery through right upper ulnar access with acute lusoria angle due to aberrant right subclavian artery. Although it is very tedious and challenging job to deploy stent in left coronary artery by upper arm access in Arteria lusoria. Hence we propose that PCI is feasible in a case of arteria lusoria by upper right arm access if done with great experience and skill.

Keywords: Arteria lusoria; Right ulnar access; Coronary angioplasty

Introduction

Coronary angiography by upper arm access is usually a comfortable procedure for radial/ulnar operators but in occasional cases of arterial loops, tortuosity of subclavian and brachiocephalic trunk and aberrant origin of right subclavian artery, right upper arm access gets hindrance. The most common congenital abnormality of the aortic arch is arteria lusoria (aberrant origin of right subclavian artery). The most commonly reported symptoms related to compression of adjacent structures by aberrant right subclavian artery are dysphagia (71.2%), dyspnea (18.7%), retrosternal pain (17.0%), cough (7.6%) and weight loss greater than 10 kg over a 6-month period (5.9%).

Case History

A 43-year old diabetic male patient presented with history of three hours of chest pain and diagnosed as anterior wall myocardial infarction. General physical examination revealed pulse rate 123/minute, BP 100/70 mm of Hg and respiratory rate 20/minute. Examination of respiratory system was normal and cardiovascular system revealed soft first heart sound and fourth heart sound. The electrocardiogram showed ST segment elevation of >2 mm in precordial leads. Two dimensional echocardiography revealed hypokinetic left anterior descending artery territory with left ventricular ejection fraction - 42%.

Procedure

Patient's wrist hyper-extended and abducted, the ulnar artery puncture was made at lower one-fourth of forearm between transverse creases at wrist 1.5 cm proximal to the pisiform bone, using a needle with a 20-gauge Jelco polyethylene catheter. We used default ulnar access as ulnar artery was good volume and easily palpable.

Subsequently, a 0.021-inch guide-wire was advanced, followed by a small skin incision performed with a 11 number scalpel, through which a short 6-French (10 cm) introducer sheath was inserted. Spasmolytic cocktail solution containing 5000 IU of heparin, 10 microgram of nitro-glycerine and 5 mg diltiazem was injected through

the introducer sheath. It was difficult to pass Terumo wire into ascending aorta due to acute lusoria angle. Passing a guide catheter via arteria lusoria was difficult as the routine Terumo wire was repeatedly entering to the descending aorta, So a stiffer wire (J wire) was taken and with careful advancement making a balance between respiratory movement and position of guiding catheter tip, so that tip reached left aortic arch to enter into the ascending aorta. This was the most difficult and time consuming step.

We initially used routine extra backup catheter 3.0 (EBU 3.0) for the hooking of left main ostium but were not able to do so due to the longer distance covered by the catheter and repeated dehooking. So we replaced the EBU 3 with a larger size catheter (EBU 3.5) for better stability and co-axiality.

Next procedure of balloon inflation followed by stent deployment was successfully completed with little challenge. The final result was satisfactory, with TIMI-3 flow, total pain relief, and resolution of ST-segment elevation. Once the procedure ended, the introducer sheath was removed and hemostasis was achieved by using a compressive dressing with a porous elastic adhesive bandage for four hours [1-6].

Discussion

Before discussing the Arteria lusoria, we would like to state that during right upper arm access angiography, the angle made between proximal right subclavian artery and the part of aortic arch – approximately 140-160 degree which is relatively favorable for coronary angiography and coronary angioplasty in routine normal vascular relations.

In our case 'The Lusoria angle' - angle made between proximal part of aberrant right subclavian artery and part of aortic arch or distal aorta is dramatically acute approximately 65-70 degree. In routine, the guide wire enters directly in ascending aorta after crossing the thyro-cervical trunk but in this case, repeated passage of the guide-wire into the descending aorta produced difficulty for access to the coronary ostia. So, we want to establish that more distal is the origin of right subclavian, more acute will be the lusoria angle. Larger is the lusoria angle easier will be passage of guide wire into ascending aorta and vice – versa (Figure 1).

Many times it will be possible to hook coronary Ostia with support of routine Terumo guide wire.

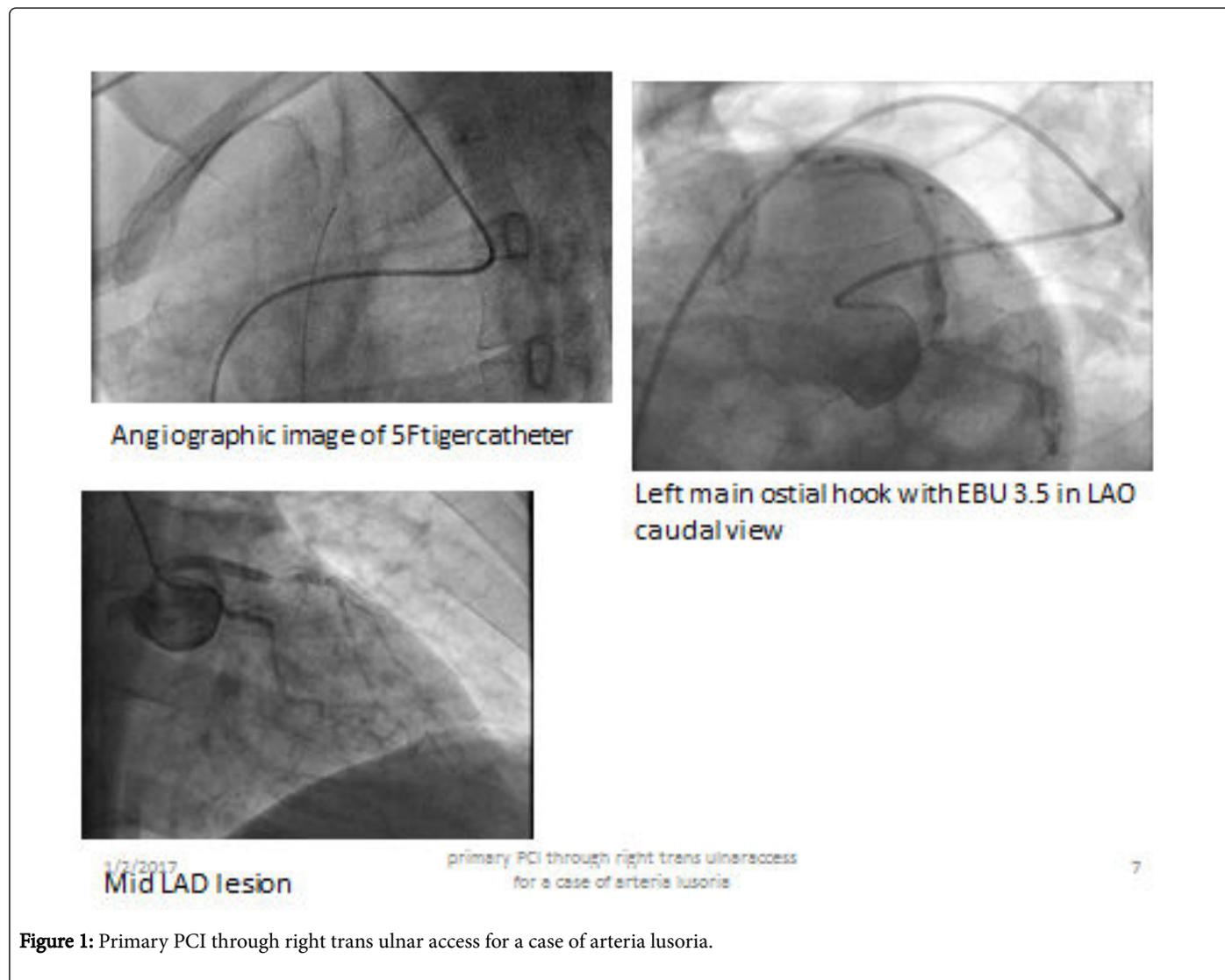


Figure 1: Primary PCI through right trans ulnar access for a case of arteria lusoria.

Conclusions

Arteria lusoria is rare vascular abnormality of aortic arch but its mere presence creates relative difficult coronary angiography procedure. The grading of difficulty depends on relative acuteness of lusoria angle, and wider the lusoria angle, easier will be coronary ostial engagement. So with greater experience with appropriate use of hardware and technical skill feasibility of coronary angioplasty with right upper arm access even in acute lusoria angle has stamped.

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