

Antegrade (transvenous) approach for coarctation ballooning in a neonate with VSD and severe coarctation of aorta

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Abstract: Coarctation of the aorta (CoA) is a relatively common defect that accounts for 5-8% of all congenital heart defects. Although coarctation ballooning has been done by many cardiologists retrogradely or via subclavian artery antegradely, yet we had one unique idea of doing it via venous approach through VSD, thus helping to avoid carotid/ subclavian puncture unnecessarily. We present a case of severe neonatal juxtaductal coarctation with VSD, 2 day 2.6kg baby. With the help of BMW 0.04 wire we tried the usual method to cross the tight coarctation but failed. Then instead of crossing the wire via subclavian artery puncture, we took the coronary wire antegradely through the IVC to RV, RA, VSD and then the Aortic valve to reach the coarctation site, where we could easily cross the wire and later dilated the coarctation with 4mmx2cm coronary balloon followed by Mini Tyshaq II 5mmx2cm and achieved our goal. Post balloon angiography showed a well open arch with no significant gradient and no aortic dissection.

Keywords: Coarctation of the aorta; Balloon angioplasty; Right atrium, Right ventricle, Ventricular septal defect; atrial septal defect.

1. INTRODUCTION

Coarctation of the aorta (CoA) is a relatively common defect that accounts for 5-8% of all congenital heart defects. Coarctation of Aorta (CoA) is a congenital abnormality of the heart producing obstruction to blood flow through the aorta; it consists of a constricted aortic segment comprising localized medial thickening with some infolding of the media and superimposed neointimal tissue. It may be a shelf-like structure or a membranous structure with an eccentric or a central opening. Most commonly it is located at the junction of the ductus arteriosus with the aortic arch, just distal to the left subclavian artery. Rarely, the coarcted segment is present in the lower thoracic or abdominal aorta. Coarctation of the aorta may occur as an isolated defect or in association with various other lesions, most commonly bicuspid aortic valve and ventricular septal defect. Balloon angioplasty of native or postoperative coarctation of the aorta has been recommended as an alternative method to surgical treatment. On use of the retrograde approach via the femoral artery, after introduction of the catheter into a vessel of narrow lumen, sometimes the wire or the catheter does not cross due to tight stenosis or injury may also occur. This overview summarizes our experience primarily on use of antegrade balloon angioplasty for coarctation of the aorta via inferior vena cava (IVC) approach through the VSD.

2. METHOD

We had a case of severe neonatal coarctation with VSD, 2 day 2.6kg baby. With the help of BMW 0.04 wire we tried the usual method to cross the tight coarctation but failed. Carotid or subclavian artery puncture is usually done in such cases, but in our case we had a subaortic VSD associated with coarctation. Then instead of crossing the wire via subclavian artery puncture, we took the coronary wire antegradely through the IVC to RV, RA, VSD, Aortic valve to reach the coarctation site, where we could easily cross the wire. After crossing the wire the coronary balloon was advanced over the wire gently and thus dilated the coarctation site with 4mmx2cm coronary balloon followed by Mini Tyshaq II 5mmx2cm. Post balloon angiography showed a well open arch with no significant gradient and no aortic dissection.

3. CONCLUSION

Although coarctation ballooning has been done by many cardiologists retrogradely or via subclavian artery antegradely or via the ASD antegradely through IVC, yet we had one unique idea of doing it via venous approach through VSD, thus helping to avoid carotid/ subclavian puncture unnecessarily. So whenever we have any case of coarctation associated with VSD, we should go with an idea to try transvenous approach thus avoiding unnecessary arterial puncture.

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