

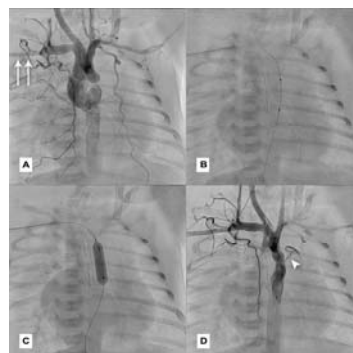
Balloon angioplasty of aortic coarctation in critically-ill new-borns using axillary artery access

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Introduction: Standard treatment for new-borns with native aortic coarctation is surgery. In selected cases balloon angioplasty may be performed, to stabilize neonates unsuitable for immediate surgery. The aim of this paper is to describe our experience in percutaneous treatment of aortic coarctation via axillary artery access, an alternative option to the traditional femoral and carotid artery routes.

Case series: Ten consecutive patients were treated with urgent balloon angioplasty for aortic coarctation between 2012 and 2018. In eight of them the procedure was performed via axillary artery access. Pre-procedural data are summarized in Table 1. They were all cases of native aortic coarctation, with the exception of a patient already treated with patch aortoplasty for a hypoplastic aortic arch who presented with recurrent stenosis at repair site (case 5). All but this latter patient were critically ill infants, with clinical signs of low cardiac output, left ventricular dilation and dysfunction and lactic acidosis. Femoral pulses were non-palpable. Patients were therefore scheduled for urgent balloon angioplasty. In every patient right axillary artery was accessed and cannulated with a 4-F sheath. A 5-20-65 mm Tyshak-Mini balloon was advanced over a 0.014" floppy guide-wire across coarctation and inflated twice. Angiographic and pressure gradient control demonstrated effective angioplasty in five patients. In case 4 two additional inflations were carried out with balloons of progressive greater diameter. Haemostasis was always effectively achieved with digital compression at the puncture site for 60 minutes. A brief episode of bradycardia, immediately resolved with atropine, was the only minor complication reported (case 6). All patients are alive. Follow-up data are summarized in Table 2.

Conclusion: Axillary artery access may be considered a feasible, safe and effective alternative approach to the traditional artery access routes, even in smaller critical newborns with concomitant low cardiac output, as it displays some technical advantages. Axillary pulse is easier to feel in smaller patients, especially in premature new-borns and in presence of critical aortic coarctation, when femoral pulses are not palpable. Axillary artery is not an end-artery and thus, when cannulated, arm perfusion is still guaranteed by the second intercostal artery and the acromial artery.



	Sex/Age	Weight at procedure (kg)	Aortic arch hypoplasia	Concomitant CHD
C 1	F/2 mo	3.6	No	None
C 2	F/1 mo	2.3	No	BAV
C 3	F/4 mo	4.7	No	None
C 4	F/10 d	2.9	No	VSD+MS
C 5	M/4 mo	5.6	Yes	Bov Arch
C 6	M/13 mo	5.5	Yes	BAV
C 7	M/2 d	2.4	No	None
C 8	F/1 mo	1.8	No	None

	FUP (y)	Late complications	Further procedures
C 1	5	None	None
C 2	5	None	Aortic valvuloplasty (2 mo)
C 3	5	None	None
C 4	4.6	None	None
C 5	3.5	None	None
C 6	2.6	Re-CoA	Patch aortoplasty (2 m)
C 7	0.8	Re-CoA; Local aneurysm	Patch aortoplasty (2 m)
C 8	0.6	None	None