

Fetal aortic valvuloplasty for critical aortic stenosis: postnatal outcomes

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Objective

We aimed to report our experience on fetal aortic valvuloplasty (FAV) for critical aortic stenosis focusing on postnatal evolution of the patients.

Methods

All fetuses with critical aortic stenosis who underwent FAV in a single center were included. FAV were performed under ultrasound guidance. Technical success was based upon balloon inflation across the aortic valve and amelioration of the antegrade aortic flow across aortic valve. At birth, biventricular circulation (BVC) strategy was decided when the left ventricular systolic and diastolic function appeared to be good enough to ensure systemic circulation.

Results

Sixty-three FAV were performed on 58 fetuses at 24.6 [21.4-32.4] weeks of gestation. The procedure was successful in 52/58(89.6%) fetuses. There were 11/58(19%) in utero demises and 9/58(15.5%) termination of pregnancy. There was no liveborn patients after unsuccessful procedure. 38/58(65.5%) infants were delivered at a median gestational age of 38.1[29-40.6] weeks and 21/38(55.3%) of them required prostaglandin. 28/58(48.3%) children had BVC at birth. Among them, 20 required a treatment at birth (11 balloon valvuloplasty, 9 surgical valvuloplasty) and 8 did not require a treatment at birth but 5/8 underwent surgical valvuloplasty at 39[26-1200] days of life. 11 infants with BVC at birth required a second intervention and four of them required a third intervention. Two infants with BVC at birth underwent a conversion to univentricular circulation (UVC). None of the surviving children with BVC developed pulmonary hypertension. Global survival rate in case of BVC was 22/28(78.6%) at 23.3[8-112] months of life. 10 patients had UVC at birth and 3 patients were still alive at the latest assessment (48 [22-102] months).

Conclusion

FAV for critical aortic stenosis led to antegrade aortic flow in 89.6% of the fetuses, with BVC at birth in 48.3% (73.7% of the live born). Among patients with BVC at birth, rate of re-intervention is high but long-term survival is satisfactory.