Safety and efficacy of cutting balloon angioplasty for patients with congenital heart diseases

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Background: Cutting balloon angioplasty (CBA) is performed for difficult vascular stenoses that are resistant to standard balloon angioplasty. In this study we investigate the safety and efficacy of CBA performed at our institute in the past 5 years. Methods: Forty-seven patients underwent a CBA. The most common diagnosis was pulmonary atresia with ventricular septal defect: 59.6%, followed by Williams-Beuren syndrome: 10.6%). The median age was 3.3 years (range 1.5-46.4) and the median weight 12 kg (range 4-88). All procedures were performed under sedation. The CBA was performed in 35 patients in pulmonary artery stenoses, in 5 patients in major aortopulmonary collateral arteries, in 3 patients in the superior caval vein, in 1 in a Pott’s shunt, in 1 in an iliac artery and in 1 in a renal artery. The size of the cutting balloons used was 3.5 to 8 mm. Results: The procedure was successful in 36 patients (76.6%), measured as a) a significant reduction of gradient across the stenosis and/or reduction in right ventricular pressure (20 patients), b) increased oxygen saturation in cyanotic patients (9 patients), or c) recruitment of new small vessels (7 patients). Postprocedural thrombosis occurred in 3 patients (successfully treated with lysis and subsequent balloon angioplasty). Conclusion: CBA is a safe and effective treatment for resistant stenosis and can be performed without significant complications.