

Bare-metal stenting in recurrent coarctation of the aorta below 12 kg of weight

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Introduction: Recurrent coarctation of the aorta (CoA) occurs relatively often after surgical correction. Surgical and interventional treatment for recurrent CoA in infants below 12 kg of weight has specific limitations. Stenting is a promising alternative and increasingly accepted in older children. Technical stent properties continue to improve. This study investigates bare-metal stenting as a treatment modality in recurrent CoA in small children.

Methods: In vitro study of expandability and breakage characteristics of the Cook Formula 418 (8 mm) and 535 (8 and 10 mm) stents was followed by clinical use in 14 patients. All patients below 12 kg undergoing treatment of native or recurrent CoA with a Cook Formula stent between November 2012 and October 2016 were included in this study. Patient and procedural characteristics were obtained as well as procedural success, complications and follow up. □

Results: In vitro testing of the 8 and 10 mm Cook Formula stents showed low profile when being downcrimped on smaller balloons and reached a wide diameter with favorable breaking characteristics and limited foreshortening. 14 patients underwent implantation of a Cook Formula stent during the study period. Median time interval between surgery and intervention was 4.2 months. Median age was 0.5 years and median weight 5.6 kg. Arterial sheath size ranged from 5 to 7 Fr. Stent diameters of 4.4 to 9.1 mm were obtained. A median residual gradient of 0 mm Hg was achieved. Intima stripping in 1 patient was adequately treated with no permanent damage. 2 redilatations due to somatic growth were performed after a median interval of 38 months. An “in stent” breaking procedure as proposed as the next step in this optimized workflow was not necessary yet.

Conclusions: This study is the first to report mid-term follow-up of stenting therapy in this population. This study is limited by its case study design, but does indicate that bare-metal stenting with Cook Formula stents is effective with minimal complication rates and might be used in children below 12 kg with recurrent CoA.

