

EXPANDED USE OF ALTERNATIVE ROUTES OF VASCULAR ACCESS: A MOVEMENT TOWARD PERFORMING MORE COMPLEX INTERVENTIONS IN YOUNGER CHILDREN

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BACKGROUND

Complex interventional catheterizations may be required in children with limited vascular access, vascular constraints relative to size, limitations in the therapeutic approach of different anatomical structures and hemodynamic instability.

OBJECTIVE

This report examines a nearly decade long, single institution experience with a variety of alternative routes of vascular access used to perform a wide array of transcatheter interventions in an assortment of clinical settings.

METHODS

Alternative route of vascular access (ARVA) pertains to any vessel excluding femoral, jugular/subclavian veins, or umbilical access. A retrospective review performed on patients with an intervention utilizing ARVA between January 2006 and December 2016 was performed. Patients were divided by clinical status: critically ill/emergent (A) and elective cases (B). Procedural success was based on previously published criteria.

RESULTS

One-hundred-ten interventions were performed in 104 patients using ARVA. ARVA utilized: axillary arteries (N=29), median weight and age 6.1 kg and 8 months; carotid arteries (N=48), median weight and age 3.15 kg and 25 days; hepatic veins (N=15), median weight and age 4.4 kg and 6 months; and transthoracic (N=18), median weight and age 3,3 kg and 12 days. ARVA provided successful access to target lesions. Interventions included stents (N=40), valvuloplasty (N=20), angioplasty (N=16), vascular/septal occlusion (N=8), one melody valve implantation and one radiofrequency ablation. Group A patients were smaller ($p < 0.0001$) and younger ($p < 0.0001$) than group B patients. The majority (73%) of carotid arterial approaches and open chest/direct cardiac (95%) access were performed in group A. Eighty-one (95%) interventions were successful. There were four complications, neither resulted in long-term sequelae.

CONCLUSIONS

ARVA may provide a strategic advantage that may be safely applied to a variety of interventions regardless of patient size or degree of illness. Use of these techniques may improve the results of selected complex interventional procedures in children.