

**Building contingency: emergency cardiac surgery following interventional treatment of congenital heart disease.**

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Introduction and objectives: Interventional catheter based management has transformed management of congenital heart but carries the risk of significant complications requiring surgical intervention. Our objectives were to review our experience of emergency cardiac surgery following interventional treatment of congenital heart disease (CHD) and identify common themes.

Methods: A retrospective review of all unit data submitted to the externally validated national congenital cardiac audit database between April 2001 and September 2018 was performed to identify patients who underwent unplanned surgery within 24 hours of catheter intervention. The data was cleaned to identify only those patients who underwent unplanned surgery because of (i) a complication or (ii) unsuccessful intervention but no complication.

Results: There were 3824 interventional catheter procedures of which 20 required unplanned surgery within 24 hours. The median age was 0.27 years (range 0-47.6) and median weight 4.3 kg (range 2.5-56). There were 14 in group (i) and 6 in group (ii). In group (i), 11 underwent immediate surgery and 3 had surgery the next day. In group (ii), 3 underwent immediate surgery and 3 had surgery the next day. Of group (i), 8 involved retrieval of a migrated or misplaced device (pulmonary outflow stent: n=3, percutaneous valve: n=2, duct, atrial septal or pulmonary artery occluder: n=3), 3 had tamponade after attempted radiofrequency perforation of the pulmonary valve, 1 patient had acute conduit obstruction post angioplasty, 1 had ASD device removal for tamponade and 1 had tricuspid valve repair after pulmonary valve dilatation. Of group (ii), 3 remained desaturated after pulmonary valve dilatation, 1 had a failed balloon septostomy, 1 had a one poor response to aortic valve dilatation and 1 had failed dilatation of aortic recoarctation. 2 patients died within 30 days, 1 from group (i) following migrated percutaneous valve and 1 from group (ii) following a Norwood procedure.

Conclusions: The need for unplanned cardiac surgery after congenital catheter intervention is rare, however a significant proportion require emergency surgery underlying the need for on-site cardiac surgical support. Common themes in our population were younger patient age and procedures to the right ventricular outflow tract.