Pediatric Circulatory Support

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Background:
Mechanical circulatory support in infants and small children is still a crucial issue. Until recently technological advances have been limited to the adult population.

Methods:
Between February 1994 and December 1996, 553 infants or children underwent operation at our institution. Ten of them were treated with cardiac assist systems. Their ages ranged from 4 days to 8 years (median 5 month). In 8 patients we used a pulsatile circulatory support system available in 6 sizes (9, 10, 22.5, 25, 54, and 60 mL). A centrifugal pump was used in 2 additional infants. In 3 children cardiac assist was considered as a bridge to transplantation; in the remaining patients postcardiotomy failure or cardiogenic shock led to mechanical support.

Results:
Median duration of assist was 4 days (range 8 hours to 17 days). In all cases we could observe recovery of renal, hepatic, and cardiac function in the immediate postimplantation period. Six patients survived and could be discharged either after successful transplantation or after myocardical recovery from postcardiotomy failure. The cause of death in 4 cases was bleeding and multiorgan failure. No technical failures occured with either system.

Conclusion:
The pulsatile circulatory support system seems to be feasible and effective for pediatric extracorporeal support. If the anatomic situation does not permit implantation, centrifugal pumps are an alternative.

J Heart Lung Transplant 1998; 17:1172-1176