Can we do without routine fenestration in extracardiac total cavopulmonary connections? Report on 84 consecutive patients.

Abstract:
Fenestration is still widely used in right heart bypass operations. Our study was conducted to assess its need in the most recent modification, the completion of a total cavopulmonary connection with an extracardiac tube. The extracardiac approach was introduced at our institution in January, 1999. Since June of 2000, no patient had a fenestration. If more than 1 risk factor amongst ventricular function being more than moderately impaired, atrioventricular valvar regurgitation more than moderate, mean pulmonary arterial pressure more than 15 millimetres of mercury, mean atrial pressure higher than 12 millimetres of mercury, pulmonary arterial distortion, or other than sinus rhythm was present preoperatively, the patient was considered a "high risk" candidate. Postoperatively elevated pulmonary arterial pressure higher than 16 millimetres of mercury, prolonged effusions and requirement for drainage longer than 7 days, and death were considered endpoints in the statistical analysis. Our study group included 84 patients who underwent surgery up to August, 2004. A previous bidirectional cavopulmonary anastomosis had been accomplished in 73 patients at a mean age of 27.01 plus or minus 32.60 months, with a median of 11.5 months, without creating an additional source of flow of blood to the lungs. At the time of the total cavopulmonary connection, the mean age was 66.4 plus or minus...
60.1 months, with a median of 37.1 months, and a range from 17.3 to 251.2 months, with 50 patients being younger than 48 months. We deemed 16 patients to be at "high risk". These patients were older at the time of bidirectional cavopulmonary anastomosis (p smaller than 0.016), at the time of completion (p smaller than 0.019), and also differed in size at time of completion (p smaller than 0.020). They required a longer time on cardiopulmonary bypass (p smaller than 0.015), and reached higher early postoperative pulmonary arterial pressures after completion (p smaller than 0.025). There were no differences between groups of patients having up to 1 or more risk factors in regard to need for intubation (p smaller than 0.511), pulmonary arterial pressures after extubation (p smaller than 0.817), and duration of chest drainage (p smaller than 0.650). Three patients died, one in the group deemed at high risk. There was no death in the last 38 patients. We conclude that a total cavopulmonary connection with an extracardiac tube can be performed without fenestration, even if the patients are deemed to be at increased risk. Early staging of patients with functionally univentricular physiology might be one of the keys for these findings.