

The Impact of Obesity on Survival in Fontan Conversion Patients

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Introduction: The negative cardiovascular effects of obesity are well described in adult patients. By increasing both pulmonary and systemic vascular resistance, we hypothesized that obesity would be particularly deleterious in the setting of single ventricle physiology. Our aim was to assess the impact of obesity on mid-term survival in patients following Fontan conversion to extracardiac total cavopulmonary connections.

Methods: We analyzed the pre-operative body mass index (BMI) of consecutive patients undergoing Fontan conversion at our institution from 1994-2012. Raw BMI values were converted to standardized percentiles and Z-scores to enable comparison to published norms. Overweight and obese were defined as BMI >85thile and >95thile for patients <20 years, and BMI 25-30 kg/m² and ≥30 kg/m² for patients ≥20 years. Transplant-free survival at most recent follow-up was assessed with Kaplan-Meier analyses.

Results: We evaluated 139 patients with a median age of 24.1 years (3-47) at the time of Fontan conversion surgery. In 49 patients <20 years of age, mean BMI was significantly lower compared to the normal population with a Z-score of -0.5 (p-value 0.02). In the 90 patients ≥20 years, mean BMI was significantly elevated with a Z-score of +0.4 (p-value <0.001). The prevalence of overweight or obese patients rose from 29% among patients <20 years to 40% among those ≥20 years. At median follow-up of 7.6 years following surgery (age 31.8 years), obese patients had significantly lower transplant free-survival compared to non-obese patients (p-value 0.006).

Conclusion: During mid-term follow-up of patients following Fontan conversion, obesity is associated with significantly shorter transplant-free survival. While this study is retrospective, it offers a strong negative association between obesity and mortality in single ventricle survivors and underscores the importance of weight management in these patients.