A complete understanding of Fontan physiology is essential in administering a safe and optimal anesthetic. Maintenance of effective pulmonary blood flow and cardiac output are determined by the pressure gradient between the CVP and atrial pressure. To maintain this gradient, hypovolemia, acidosis, hypoxia, and hypercarbia should be avoided. Induction of anesthesia can decrease cardiac output secondary to systemic vasodilation and myocardial depression. Cardiac depressants should be avoided and volatile agents should be kept less than 1.5 MAC. Mechanical ventilation may decrease venous return due to increased intrathoracic pressure. Low respiratory rates, short inspiratory times, low PEEP, and small tidal volumes can counteract this effect. Plastic bronchitis is a rare and potentially life threatening complication that can be seen in patients who have had a Fontan repair. It is characterized by the production of large bronchial casts that can cause significant obstruction in the tracheobronchial tree. Removal of these casts may largely improve oxygenation and ventilation. Treatment consists of continual removal of these casts, but overall prognosis is dismal.

REFERENCES