Medical advances over the last 50 years have dramatically improved maternal and fetal outcomes in women with cardiopulmonary disease. However, pulmonary hypertension remains one of the most lethal conditions complicating pregnancy. We present the first case of a patient with severe pulmonary hypertension who was placed on cardiopulmonary bypass support for a cesarean delivery with rapidly deteriorating maternal and fetal status.

**Case report**

A 23-year-old woman, gravida 2, para 0, abortions 1, with complete situs inversus underwent correction of a congenital atrial septal defect and pulmonary stenosis at the age of 6 years. Pulmonary and tricuspid regurgitation with worsening pulmonary hypertension subsequently developed. Approximately 5 months after conception, an echocardiogram estimated pulmonary artery pressures of 50 mm Hg.

At 26 weeks’ gestation she was electively admitted to the hospital for bed rest and observation. On hospital day 2 she had acute shortness of breath with nausea and vomiting. An echocardiogram estimated the pulmonary artery pressure as 62 mm Hg with severe tricuspid and moderate pulmonary regurgitation. Pulmonary embolus was ruled out. Over the ensuing 12 hours, the patient had worsening dyspnea, orthopnea, and hypoxia. Simultaneously, she began labor with moderate to severe variable fetal heart rate decelerations.

In accordance with the patient’s requests, the decision was made to proceed with a cesarean delivery. The decision was made by the obstetric and cardiothoracic surgery teams to use cardiopulmonary bypass circulatory support during surgery to improve the patient’s chances for survival.

The abdomen and groin were prepped and draped with the patient sitting at a 45° angle. While the patient was under local anesthesia, the left femoral artery and vein were isolated and cannulated, and partial cardiopulmonary bypass was initiated with flows of 4 to 6 L/min. The PO2 increased to >400 mm Hg with a dramatic improvement in symptoms. She was then able to be placed in a supine position for induction of general anesthesia.

A classic cesarean delivery was rapidly performed with delivery of a 733-g female infant with normal blood gas values and Apgar scores. A Swan-Ganz catheter measured pulmonary artery pressure as high as 120 mm Hg, ultimately stabilizing at 70 to 80 mm Hg. The blood volume was reduced to normal by use of ultrafiltration, and she was removed from bypass after a total of 31 minutes.

She was extubated in the immediate postoperative period and steadily improved. By postoperative day 7 she no longer required supplemental oxygen and had returned to her prepregnancy level of functioning (New York Heart Association class III). Unfortunately, she died of cardiorespiratory decompensation 14 months later. The child is currently doing well without any sequelae of prematurity noted.

**Comment**

This is the first report of an emergency cesarean delivery while a patient was on cardiopulmonary bypass support with worsening pulmonary hypertension.1 Cardiopulmonary bypass support for emergency cesarean delivery in a patient with severe pulmonary hypertension Stephe
diopulmonary bypass accomplishes the following physiologic goals in a patient with acute decompensation and pulmonary hypertension: (1) It immediately unloads the pulmonary circulation and right ventricle; (2) it provides immediate oxygenation for both mother and fetus; (3) it allows control of the maternal circulating blood volume during and after delivery.

Cardiopulmonary bypass has been used successfully for many years to conduct cardiac surgery that is necessary during pregnancy.2 In this case bypass allowed a cesarean delivery to be performed safely with dramatic improvement in the patient’s oxygenation even after bypass was discontinued.

REFERENCES