Management of infants with congenital diaphragmatic hernias (CDH) presents unique challenges to anesthesia providers. We present a 4-day-old patient with a left congenital diaphragmatic hernia who presented for open repair with primary closure. Ventilation strategies included low tidal volume settings (3 mL/kg) with permissive hypercapnia using an ICU ventilator. A total intravenous anesthesia (TIVA) was performed via an umbilical vein catheter. Intraoperative goals included avoiding increases in pulmonary vascular resistance by avoiding acidosis, increased sympathetic stimulation (pain control), hypothermia, excessive hypercarbia, and hypoxia. The literature discusses the use of fetal surgery and ECMO as possible resources to manage infants with severe manifestations of CDH. Fetal Endoscopic Tracheal Occlusion (FETO) has shown improved long-term survival with reduced pulmonary hypertension and ECMO use. ECMO, however, remains a valuable tool to manage infants with CDH before, during, and after surgery.