Experience in anesthetic management of a combined heart and liver transplant (CHLT) surgery is limited. We describe the steps of management and problems encountered during this unique procedure. Use of a modification of cardiopulmonary bypass (CPB) for liver transplant is described.

Clinical Features: “Consent to use information for medical educational purpose was obtained preoperatively”. CHLT is a viable option for candidates who require the combined transplantation, with outcomes comparable to those of single-organ recipients. These patients are also reported to maintain good graft function, with lesser immunosuppressant dose requirements(1). Conventionally, liver transplantation is done after weaning from CPB. Reports of successful CHLT with use of CPB for both heart and liver transplant have also been described(2).

We present a case of 66 year man diagnosed with familial amyloidosis and posted for CHLT surgery. His cardiac involvement resulted in cardiomegaly, plus features of congestive heart failure, postural hypotension and increasing fatigue, especially over the past 3 years. Liver was severely involved with amyloid deposits. However, features of decompensation were absent. He had mild ascites treatable with diuretics. Anesthesia was induced with Midazolam, Fentanyl, Ketamine and Rocuronium. Nitric oxide (20ppm) and Milrinone (0.125 mics/kg/min) were used to reduce pulmonary artery pressures. Heart transplant was first performed on a CPB under heparinisation (ACT>450). Isoproterenol (2 mics/min) was used to support the naïve beating heart. For liver transplant, heparinisation was not reversed (ACT>200 sufficient). Veno-venous bypass (VVB) was used to divert blood from portal and femoral venous cannulae to right atrium. This prevented hemodynamic compromise from IVC clamping, while maintaining venous return, good coronary perfusion and cardiac outflow. Liver was successfully transplanted and venous anastomosis achieved. However, at the time of arterial anastomosis, nearly 8 hours into the surgery, the patient became coagulopathic (Platelets 30,000 X 10⁹/L, PTT 66, INR 2.3, Fibrinogen 1.08). We suspected the cause to be hypothermia (core body temperature 34.1 degree Celsius), in addition to the effect of CPB on platelets. Unlike a single organ transplant, a large body surface is exposed to heat loss during this surgery because of the open chest and large abdominal incision. Total twelve units of RBCs, sixteen units of fresh frozen plasma, two units of pooled platelets, one unit of cryoprecipitate and 5 mg of Factor VIIa were transfused to combat coagulopathy. Fluid warmers and forced-warm air blankets were used to bring up the temperature to 36.4 degree Celsius. Surgery proceeded uneventfully and patient was shifted to cardiac intensive care unit. He was weaned off the ventilator on post operative day 1 and showed signs of good recovery.

Conclusion: A combined CPB-VVB technique is effective in saving bypass time and anticoagulation problems, while also maintaining hemodynamic stability. Hypothermia with resultant coagulopathy can be a major problem.