Cardiopulmonary bypass circuit

Cardiopulmonary bypass circuit

Once the circuit is connected (Figure 59.1) the CPB machine (‘pump’) gradually takes over circulation and ventilation. Once - tion or full flow is established (the required cardiac output depends on many factors, including the patient’s body surface area and temperature), the ventilator is stopped and the heart can be - culation and stopped. Blood is isolated from the rest of the cir drained from the heart to the venous reservoir using a siphon e ff ect (gravity) as it is usually placed 50–70 /uni00A0 cm below the level of the heart and oxygenated using an oxygenator that allows gas exchange across its membrane. Oxygenated blood is then pumped back to the patient by the bypass machine via the aortic cannula. The patient’s core temperature can be lowered if needed by passing the returning blood through a heat exchanger, - reducing the metabolic demands of the tissues. The degree of cooling is managed according to the severity and complexity of the surgical procedure as well as the surgeon’s preference. Suction pumps can be used to keep the operative field clear. V ents, which are small cannulae that are inserted during sur - gery and connected to the CPB circuit, are used to keep the heart empty by draining any blood that accumulates inside the heart during surgery .

Figure 59.1 The cardiopulmonary bypass circuit shown here in use during ‘on-pump’ cardiac surgery.

Revision #1
Created 2025-12-31 15:22:06 UTC by Omar Ayman
Updated 2025-12-31 15:22:06 UTC by Omar Ayman