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TOTAL ARTIFICIAL HEART: A LIFE-SAVING DEVICE
FOR END STAGE HEART FAILURE

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The total artificial heart (TAH) is a mechanical circulatory support device that performs the function of the heart. It is designed to pump blood throughout the body and provide support for patients with end-stage heart failure who are not eligible for heart transplantation. However, TAH failure remains a significant concern, with potential complications such as device malfunction, thromboembolic events, bleeding, and infection. Therefore, early identification and treatment of TAH failure are critical for patient survival, and strategies for prevention and management are essential for improving outcomes.

Several approaches have been proposed to prevent and manage TAH failure. Anticoagulation therapy is a crucial component of TAH management to prevent thromboembolic events. Optimizing device settings, including stroke volume, heart rate, and pump speed, can reduce the risk of complications such as thrombosis and device malfunction. Infection control measures, including appropriate prophylactic antibiotics, aseptic surgical technique, and strict hand hygiene, are essential to reduce the risk of device infections.

Bridge-to-transplant (BTT) options, including temporary ventricular assist devices (VADs), have been used to support patients with TAH failure until a suitable donor heart becomes available for transplant. The use of temporary VADs as a bridge to transplant has been associated with improved survival rates and decreased morbidity in patients with TAH failure.

Additionally, new TAH devices that incorporate advanced sensors and monitoring systems may improve outcomes by allowing earlier detection of complications and faster intervention. Despite the success of TAH implantation, ongoing research efforts are necessary to enhance TAH outcomes further. This article aims to provide an overview of TAH technology, complications, efficiency and future direction.