Chapter 26 Heart Transplantation: Surgical Techniques and Postoperative Concerns

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ABSTRACT

Orthotopic heart transplantation (OHT) has evolved as the "gold standard" therapy for end stage cardiomyopathy, Advances in the fields of immunosuppression, infection prophylaxis and treatment, surgical techniques as well as intensice care management have transformed heart transplantation from what was once considered an experimental intervention into a standard therapy. This chapter focuses on the standard care for OHT including surgical techniques, perioperative management and management of common postoperative complications.

INTRODUCTION

Orthotopic heart transplantation (OHT) has evolved as the "gold standard" therapy for end stage cardiomyopathy, with median survival exceeding 10 years. Advances in the fields of immunosuppression, infection prophylaxis and treatment, as well as surgical techniques have transformed heart transplantation from what was once considered an experimental intervention into a standard therapy. Despite these advances, the annual number of transplants in most countries has been relatively static, or declining, over the last two decades due to paucity of donors. The lack of donors has led to increased use of marginal hearts from donors with traditional contraindications to heart donation, such as left ventricular hypertrophy, prolonged cardiac arrest, age > 60 years, active infections, amongst others. The paucity of donors has also lead to longer waiting times and widespread use of ventricular assist devices to bridge patients to transplant. Additionally, the successes of transplantation have led to expansion of the therapy to several

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high risk recipient groups, who were previously not regarded as candidates for transplantation, such as patients aged > 70 years, patients with multiple prior operations and patients with multiple comorbidities. The net result has been that despite advances in therapy, patients coming to the intensive care unit after heart transplantation are paradoxically sicker than they were few decades ago and present unique challenge. The recipients tend to be more complex, the surgeries more complicated and the donor heart function less predictable.

This chapter focuses on the standard care for OHT including surgical techniques, perioperative management and management of common postoperative complications.

BACKGROUND

In the past decade, recipient demographics have shown dramatic changes. Because of advances in care of acute myocardial infarction, the leading indication for heart transplant shifted from ischemic cardiomyopathy to non-ischemic cardiomyopathy. Although the median age of an adult heart transplant recipient remained relatively static (about 54 years), a higher proportion of patients in their 60s and 70s have received a heart transplant during the last decade, compared to previous decades. The proportion of recipients with major comorbidities and patients sensitized to human leucocyte antigen (HLA) continue to increase. The number of patients bridged to transplant with mechanical circulatory support (MCS) devices has increased to more than 30%, and in some centers, such as the authors' over 90% of recipients are bridged with mechanical devices. In addition the paucity of donors has resulted in a universal trend toward transplanting urgent status recipients. It is becoming increasingly infrequent in many centers to transplant stable ambulatory patients who are not dependent on inotropes or mechanical devices. Also, the incidence of multiorgan transplantation, including heart–lung, heart–kidney and heart–liver, has risen steadily over the years (Taylor et al., 2008).

Subsequently, we are facing a complex heterogeneous heart transplant population with more challenging peri-transplant management necessitating involvement of a multidisciplinary team who are trained to handle general cardiac surgery patients with particular interest in OHT in order to achieve an excellent outcome.

Patient survival rate has improved to 93% at 3 months, 88% at 1 year, 73% at 5 years and 55% at 10 years. The median survival is currently 11 years. During the first year, graft failure, surgical complications, infection and acute rejection are the leading causes of death. After 5 years, malignancy and allograft vasculopathy are the leading causes (Stehlik et al., 2012).

PRETRANSPLANT MANAGEMENT

Indications for Cardiac Transplantation

Cardiac transplantation is reserved primarily for the treatment of patients with end-stage heart disease who have a reduced one-year expected survival despite optimal medical therapy. Patients should lack significant co-morbidities that might limit post-transplant survival. 22 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

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