

Bilateral Reduction Mammoplasty after Heart Transplantation

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ABSTRACT

We report a bilateral reduction mammoplasty in a 15 year old female who suffered increasing back and shoulder pain and chest wall discomfort associated with bilateral breast enlargement during a 17 month period following heart transplantation. Cardiologic evaluation confirmed a structurally normal heart with good systolic and diastolic function, and ejection fraction of 80%. We performed a bilateral mammoplasty using dermal suspension flap in vertical-scar reduction. The patient recovered satisfactorily without incident, and breast morphology was excellent at the 2 year 9 month follow-up, with no recurrence of her previous symptoms or further hyperplasia.

INTRODUCTION

Since Christian Barnard performed the first successful cardiac transplantation on a patient with end-stage heart failure in 1967, improvements in heart transplantation techniques and the introduction of immunosuppressants over the past decades have led to prolonged survival rates of heart transplant recipients in recent years, and the prevalence of heart transplant recipients with various comorbidities has also increased. These patients may seek out the services of any number of medical specialties, including plastic and reconstructive surgery. In this report, we present our experience in successfully performing bilateral reduction mammoplasty on a patient 17 months after cardiac transplantation.

CASE REPORT

A 15 year old girl with a history of hypertrophic cardiomyopathy underwent cadaveric heart transplantation at our hospital in December 2004. Interestingly, her mother had also received a heart transplant at our hospital. Postoperatively the patient was treated with triple immunosuppressant therapy, including

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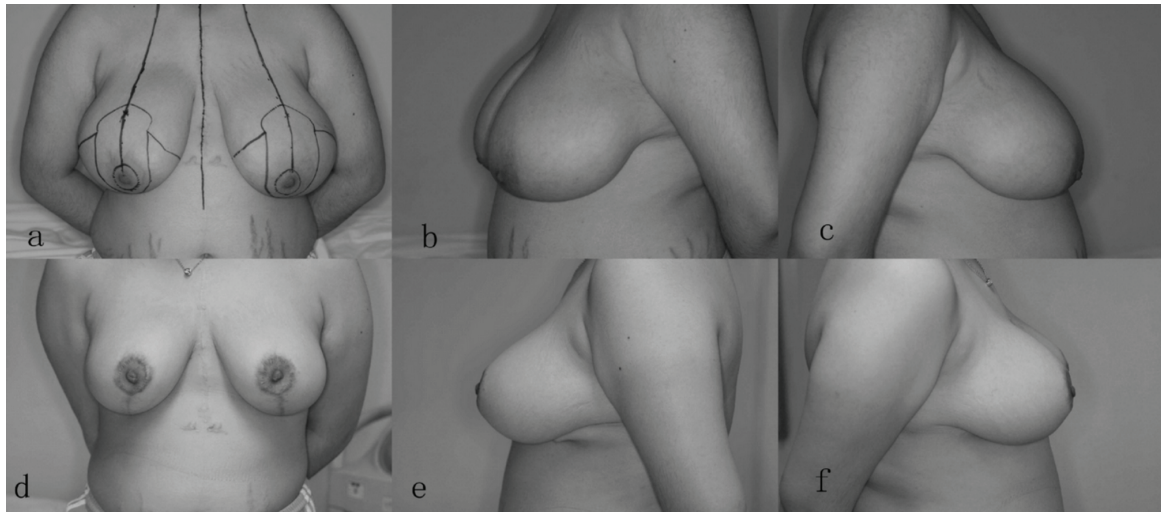
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cyclosporine A (CyA), prednisone (10 mg/d) and mycophenolate mofetil. Her serum CyA level was maintained at 100-300 µg/L. Following the operation the patient noticed progressive bilateral breast enlargement and increasing back and shoulder pain as well as chest wall discomfort. She was socially shy and began avoiding going to school. The patient was referred to us 17 months after receiving her heart transplant.

A detailed cardiologic evaluation, including echocardiography, was performed jointly by a cardiologist and a plastic surgeon, confirming a structurally normal heart with good systolic and diastolic function. Ejection fraction was 80%. Her blood hormone levels were within normal limits: prolactin 9.45 ng/ml; estrogen 275 pg/ml; FSH 1.99 mIU/ml; LH 1.18 IU/L; and testosterone 0.07 ng/ml. Bleeding time, liver and renal function tests were also normal. Third generation cephalosporins and metronidazole were prescribed one day before surgery and continued for 5 days after the operation. Under general anesthesia, bilateral mammoplasty, using dermal suspension flap in vertical-scar reduction, was performed in September 2006. Immunosuppressive therapy was continued following the operation, and the patient recovered without incident. Sutures were removed 9 days post-operation. The patient was followed up at 2 years, 9 months after the operation. (Figure). The morphology of the breasts on follow-up was excellent; in addition, she had experienced none of her previous symptoms or further hyperplasia, and had subsequently returned to school.

DISCUSSION

The first description of breast lumps appearing in a patient receiving allotransplantation under CyA treatment was made by Rolles and Calne in the early 1980s. Since then, other cases have been reported, and the relationship between CyA-based treatments and breast lumps has been demonstrated in kidney graft recipients [Baidam 1996]. Gigantomastia has been described in a kidney allograft patient and was attributed to CyA treatment [Cervelli 1999]. Fischereder and colleagues in 2002 in a cross-sectional study found 7 patients with gynecomastia among 142 male patients who had received renal or cardiac allografts [Fischereder 2002]. There have been other occasional reports of cosmetic surgeries in solid organ transplant recipients in the literature. Cizmeci reported on an



Bilateral vertical reduction mammoplasty. A, Pre-operative front view. B, pre-operative left-side view. C, Pre-operative right-side view. D, Front view 6 months after the operation. E, Left-side view 6 months after the operation. F, Right-side view 6 months after the operation.

abdominoplasty in a liver transplant patient [Cizmeci 2006] and Peled reported on a face-lift in a heart transplant patient [Peled 2008]. To our knowledge, this is the first report of bilateral breast reduction after cardiac transplantation.

The mechanism of action of the drugs in question and the pathophysiology of the clinical findings are not well understood, though many authors attribute breast lumps to CyA treatment. CyA may promote fibroadenomas through direct action on fibroblasts and may also alter LH secretion [Baildam 1996]. CyA also elevates prolactin blood levels through central and peripheral mechanisms that are not well understood [Larson 1985; Mayer 1987; Baildam 1996]. However, in our patient, prolactin and LH blood levels were within normal limits. Fischereder also found no significant difference in LH, FSH, and prolactin levels between patients with and without gynecomastia following solid organ transplantation. Increased sensitivity of mammary tissue to estrogen and other circulating hormones is thought to be associated with juvenile mammary hypertrophy [Arscott 2001].

The presentation of this patient raises both medical and ethical questions. Cosmetic surgery and reconstructive procedures are not absolutely necessary following heart transplantation; however, this patient experienced increasing back and shoulder pain as well as chest wall discomfort as a result of the gynecomastia. After discussing the risks and benefits with the patient, her parents and her cardiologist, we found no reason to deny her treatment. Our outlook is that heart transplant recipients have the same rights as other patients with regard to aesthetic and cosmetic treatments, as long as they are not placed at unnecessary risk [Cohen 1989]. However, cardiac transplant patients do carry unique challenges and risks with these procedures, including anesthesia risk, abnormal wound healing, depressed immune function and increased risk of infection [Manfred 2011; Zuckermann 2011].

In the current case, we found that detailed physical evaluation before surgery and careful perioperative metabolic monitoring and surgical care are critical for success. Blood CyA concentrations should be closely monitored to ensure that effective levels are maintained. Potential pathways of infection must be controlled pre- and postoperatively, and antibiotics must be given in the perioperative period. In addition, close attention should be paid to the course of anesthesia in the operating room. A transplanted heart is a denervated heart, with regulation of blood volume and pressure dependent on venous return – in other words, mediated only by the Frank-Starling mechanism [Tsirikos 2006]. Anesthesia protocol should include avoiding the use cardiac depressants and maintaining adequate oxygenation and coronary perfusion pressure.

Advances in surgical techniques and immunosuppressive drugs have improved survival of patients following heart transplantation. Enhanced survival has resulted in an increased number of patients who require medical and surgical management of comorbidities, including plastic surgery. Plastic surgery can be safely performed in these cardiac transplant recipients with good intermediate term results.

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