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Short Communication

Salvage of infected implant-based breast reconstructions in morbidly obese patients with explantation and replacement with an autologous muscle-sparing latissimus dorsi flap

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ABSTRACT

Morbidly obese patients who undergo reconstruction with implants after mastectomy are at higher risk of reconstructive failure. Prosthetic infection historically required explantation with plans for delayed implant-based reconstruction or conversion to autologous tissue. Loss of the skin envelope in the delayed setting often leads to poor aesthetic outcomes. Recently, several different approaches for salvage of infected implant-based reconstructions with immediate prosthetic replacement have been described. While these strategies have proven useful in many patients, we find a prohibitive risk of failure of this approach in the morbidly obese, especially in those undergoing chemotherapy or who have been radiated. Instead, we have offered these patients salvage of their reconstructions with explantation and immediate autologous conversion to a muscle-sparing latissimus dorsi flap. Here, we report on 11 morbidly obese patients where this strategy was utilized.

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Introduction

Implant infection after post-mastectomy reconstruction requires immediate attention to avoid reconstructive failure.¹ In the past, these patients had their implants removed and were placed on antibiotics with plans for delayed reconstruction after the acute infection and inflammation resolved. Delayed reconstruction usually requires tissue expansion followed by additional surgery for implant placement while autologous reconstruction often requires skin replacement with significant challenge to obtain symmetry.² This approach leaves women without a breast for several months, decreasing patient satisfaction with many abandoning reconstruction altogether.³ Recently, strategies have been described to salvage implant reconstructions that involve debridement and washout of the mastectomy cavity and immediate replacement of the prosthetic with tailored antibiotic therapy.⁴ We have found these approaches unreliable in the morbidly obese with even higher failure rates in those undergoing chemotherapy or with a history of radiotherapy (unpublished results).

In order to extend the benefits of reconstructive salvage to these patients, we felt that explantation and immediate conversion to a completely autologous reconstruction would be necessary to avoid reconstructive failure. Here, we present 11 consecutive morbidly obese (body mass index (BMI) ≥ 40 kg/m²) patients with infected breast implants who underwent immediate explantation and replacement with an autologous muscle-sparing latissimus dorsi (MSLD) flap.

Methods

We conducted a retrospective review of 11 consecutive morbidly obese patients who presented with infected breast implants after post-mastectomy reconstruction who underwent explantation and immediate replacement with an MSLD flap. Morbidly obese patients with clinical evidence of implant infection (Figs. 1a and 2a) after post-mastectomy reconstruction underwent 48 h of intravenous antibiotics. Those patients who failed antibiotic therapy were offered implant removal and immediate replacement with an MSLD flap.⁵ Intraoperatively, wound edges were debrided and the implant was removed. Necrotic tissue was excised as was any non-integrated acellular dermal matrix. The mastectomy cavity underwent pulse lavage followed by capsulotomy to accommodate the flap. The presence of frank pus was not a contraindication to reconstructive salvage. Post-operatively, patients were maintained on antibiotics based on culture results until all clinical evidence of infection had resolved and then discharged on antibiotics per the infectious diseases service.

Results

Eleven morbidly obese patients with a mean age of 54.7 years (range, 33–72 years) and mean BMI of 43.7 kg/m² (range, 40.1–55.2 kg/m²) underwent salvage of ten unilateral and one bilateral (12 total) pre-pectoral implant reconstruction with implant removal and immediate MSLD replacement with an average follow-up of 13.2 months (range 4–16 months). Five flaps were performed on patients undergoing chemotherapy and two had a history of radiotherapy. Unilateral surgery took on average 141 min (range, 106–186 min) while the one bilateral surgery took 309 min to perform. No organisms were cultured in three cases, while nine breasts yielded positive culture results demonstrating *Staphylococcus aureus* and *Pseudomonas aeruginosa* in six and three patients, respectively. The average length of stay was 7.5 days (range, 4–12 days). There were no instances of recurrent infection or cellulitis. There were no flap-related complications requiring surgical intervention. Three patients suffered wound breakdown (one of which was at the donor site) requiring outpatient wound care, two of which were undergoing chemotherapy. These three patients healed within eight weeks of their explantation and MSLD surgery. One patient has requested revision of her MSLD reconstruction for improved symmetry.

Discussion

Implant infection after post-mastectomy reconstruction historically required implant removal followed by a prolonged waiting period to allow for resolution of the infection and inflammation before



Fig. 1. 59 year-old female status post bilateral mastectomy and immediate direct to implant prepectoral reconstruction for 10 cm of left breast ductal carcinoma *in situ*. Four weeks postoperatively she presents with bilateral breast infections with complex fluid collections and *Staphylococcus aureus* cultured from both breasts (Fig. 1A). She has a history of breast reduction and abdominoplasty. She is morbidly obese with a BMI of 46. We feel she is a poor candidate for immediate salvage of her breast implants with a prosthetic approach. Given her history of abdominoplasty, she is not a candidate for abdominal free tissue transfer. After 48 h of intravenous antibiotics, we proceed with removal of her implants, debridement and washout of her mastectomy cavity with removal of non-incorporated ADM followed by immediate placement of bilateral MSLD flaps. She remains in the hospital for five days after surgery for continued antibiotic therapy and is discharged when all signs and symptoms of infection have resolved. She is shown here six months postoperative from her flap salvage surgery (Fig. 1B). She is satisfied with her reconstructive result and requires no further surgery.

attempting another reconstruction.⁴ Recently, several protocols have been developed to immediately salvage the infected breast implant, which involve sterilization of the mastectomy pocket and immediate implant removal and replacement.⁴ In our experience, these approaches are not reliable in morbidly obese patients. These patients are high risk for prosthetic-related complications⁶ and those with an active infection are likely at prohibitive risk for failure in attempting implant salvage. These risks are further compounded in those undergoing chemotherapy or with a history of radiotherapy. After experiencing multiple failures at implant salvage in this population, we realized, based on work of others, that implant removal and immediate replacement with autologous tissue might be feasible.

There are three previous publications describing immediate replacement of an exposed or infected implant with an autologous flap.^{7–9} Two reports described the use of an abdominal microvascular reconstruction^{7,8} while one included just three patients undergoing pedicled abdominal or latissimus dorsi flaps. These reports excluded the morbidly obese, a group of patients at very high risk for complications after implant-based reconstruction.⁶ In order to provide these difficult patients a simpler and safer immediate autologous option for reconstructive salvage, we reasoned that a latissimus-based flap might have fewer complications than abdominal free tissue transfer as previously shown for the obese in the non-salvage setting¹⁰ (Fig. 2A and B). Given these patients extreme obesity, the MSLD can reliably provide a definitive reconstruction without an implant or additional fat transfer. In patients undergoing chemotherapy, the discussion of removal of the implant with immediate MSLD replacement was approved by the supervising oncologist. Of note, the delay in restarting chemotherapy in

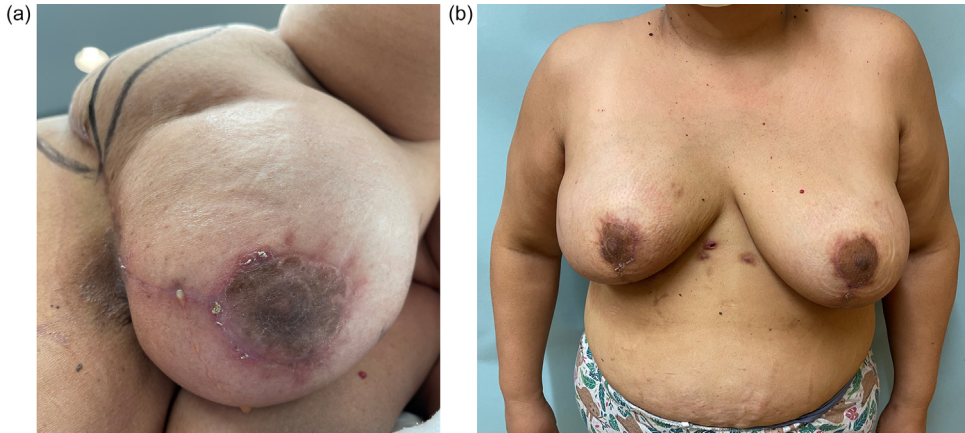


Fig. 2. 43 year-old female with a history of right breast cancer 3 years prior status post right partial mastectomy, Wise-pattern mammoplasty reconstruction and contralateral reduction. She also undergoes right breast radiotherapy. She now elects to proceed with bilateral prophylactic mastectomy and immediate reconstruction. Given her obesity (BMI=42.7), diabetes and history of radiotherapy, we recommend an autologous reconstruction which she refuses. We proceed with bilateral mastectomy and immediate direct to implant prepectoral reconstruction. Six weeks post-operatively, she develops an infected right breast seroma (Fig. 2A). Here, she is in lateral decubitus position in the operating room in preparation for reconstructive salvage. Given her obesity and diabetes, we feel that attempting salvage of her reconstruction with immediate replacement of her implant is ill advised. She undergoes removal of her right breast implant, debridement and washout of her mastectomy cavity with immediate replacement with an MSLD flap. She heals without incident. She is shown 3 months after her salvage surgery (Fig. 2B).

patients undergoing just implant removal was not significantly shorter than those undergoing removal and immediate replacement with an MSLD (unpublished results).

The MSLD may help treat residual infection after implant removal by providing autologous tissue with blood flow and immunity.⁸ This approach provides the morbidly obese a safer option for immediate reconstructive salvage after implant exposure or infection, allowing them to avoid a prolonged waiting period without a breast mound, decreasing the risk of abandonment of the reconstructive process and the need for multiple surgeries with poorer aesthetic outcomes. The majority of our patients undergoing immediate MSLD salvage do not require revision of their reconstructions when the contralateral breast has not been operated on or has undergone prepectoral implant-based post-mastectomy reconstruction. The MSLD provides a safe, minimally invasive, quickly dissected, completely autologous option and is our preferred operative approach in morbidly obese patients who desire reconstructive salvage of their acutely infected implant-based breast reconstructions. This approach is uniquely appropriate to the morbidly obese patient population who have enough excess fatty tissues along their sides and back for a definitive autologous reconstruction.

Declaration of Competing Interest

The author has no conflicts of interest in relation to the content of this article.

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Ethical approval

Not required.

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