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New protocol for treating breast implant infection: Case report

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Abstract

Introduction: Breast implant infection is the most common complication after breast reconstruction surgeries. A lot of different implant infection management protocols exist, and they are still debatable which is the best. We present the case of a patient with breast implant infection after risk-reducing bilateral mastectomy with immediate direct-to-implant reconstruction.

Case presentation: A 45-year-old woman underwent bilateral prophylactic mastectomy with immediate implant reconstruction. 31 days after the discharge she was administered to an emergency department with painful, erythematous non-healing wound in left breast. During the examination, a 2 cm wound covered with necrotic masses was observed. During the debridement surgery, a deeper implant-reaching necrosis was revealed. Immediate surgery involving debridement, lavage with antiseptics, defect closure was performed. A day after, the patient complained of left breast redness and enlargement. Despite no leukocytosis or elevated CRP, breast implant infection was diagnosed. Implant salvage procedure was indicated, during which partial capsulectomy and temporal explantation were performed, a swab for microbiological culture taken. The implant was irrigated with saline and povidone – iodine solution, then placed in a povidone – iodine-based solution with gentamicin (80.0 g) and cefazoline (1.0 g) 1.5 hours. After thorough debridement and implant pocket irrigation with 50 % povidone – iodine and antibiotic solution the same implant was reimplanted. Cefuroxime was administered and the drain was taken out after 5 days. 7 days after the surgery the patient was discharged without any signs of infection.

Conclusions: Breast implant infection remains one of the most dreaded complications after breast reconstruction surgery. We could not find any publication about the reimplantation of the same implant during the implant salvage procedure. Our case shows that a new breast implant salvage protocol could be used successfully in order to salvage the infected breast implant.

Keywords: Breast implant infection, breast reconstruction, implant salvage procedure.

1. INTRODUCTION

The majority of breast reconstruction procedures after mastectomy are implant based. It reaches up to 80% of all breast reconstructions(1). Every time a foreign body is implanted the risk of postoperative complication increases. There are many possible postoperative complications after breast reconstruction surgeries, but breast implant infection is one of the most common with mean rate reaching from 1% to 35%(2).

Many different implant infection management protocols have been discussed throughout history, yet there has never been an agreement which protocol is the best. Nevertheless, a general agreement exists that antibiotic therapy should be administered and any attempt in salvaging the breast implant should be made(3). Breast implant removal and systemic antibiotic administration followed by delayed new implant positioning within months has been the standard management of breast implant infection. However, this protocol has always been associated with multiple surgical procedures that have their own risks(4). Recently the new protocol was created for salvaging an infected breast implant, which not only allows to save the primary implant, but also increases women psychological satisfaction. This

new protocol has an increasing popularity as it potentially increases the rate of implant salvage.

In this paper we report one out of several successful cases of implant salvage procedure using new protocol and present the literature review of different methods used in salvaging infected breast implant.

2. CASE REPORT

A 45-year-old woman underwent a successful risk reducing bilateral nipple sparing mastectomy with immediate implant reconstruction. Because of BRCA1 gene mutation. In the past, cancer of her right breast was diagnosed and treated by oncologists-mammologists with quadrantectomy. Intravenous cefazoline (1g 3g/day) was administered before and after surgery. Epidermolysis had been seen on the lateral pole of the left breast; hence povidone - iodine solution applications were prescribed for treatment. Thirty – one days after the patient was discharged home, she was administered to an emergency department with painful erythematous non-healing wound in her left breast. On examination, a 2 cm wound, covered with necrotic tissue was observed and debridement procedure was indicated.

During the procedure, a deeper implant-reaching necrosis was diagnosed and immediate surgery involving necrectomy, antiseptic lavage and defect closure was chosen for treatment. Necrectomy was performed and the implant became exposed. Therefore, the pocket was irrigated with povidone – iodine solution and integrity of the implant was kept. Intravenous cefuroxime (3g) was administered. Next day, the patient started complaining about her left breast red, hot, and enlarged. Upon examination, there were typical clinical signs of breast implant infection, despite no leukocytosis and CRP being normal, and immediate implant salvage procedure was chosen for treatment.

During the surgery, partial capsulectomy and temporary explantation of the implant was performed, a swab for microbiological culture taken, although no pus has been detected macroscopically. Irrigation of the implant with saline and later with povidone – iodine solution followed, and the implant was placed in a povidone – iodine-based solution with gentamicin (80.0 g) and cefazoline (1.0 g) for 1.5 hours. Thorough necrectomy until no necrotic masses were seen and implant pocket irrigation with 50 % povidone – iodine and antibiotic solution were performed. The surgical field and sterile gloves were changed and reimplantation of the same implant followed. The wound was then closed in 3 layers, and active drain was placed. The microbiological analysis showed no bacterial growth. Cefuroxime (1.5 mg 3 times/daily) was prescribed and the drain was taken out 5 days after the surgery. 7 days after the surgery

the patient was discharged without any signs of infection and symptom – free.

3. DISCUSSION

Breast implant infection is one of the most dreaded complications after breast reconstruction surgery(2). It could manifest in the early postoperative period (up to first 6 weeks) or in late postoperative period (more than 6 weeks after surgery)(5). Most of the infections are caused by *Staphylococcus spp.* (more specifically *S. aureus*). Early complications (during first 6 weeks after the surgery) can cause fever, breast pain or discomfort, sense of tension feeling in the breast, erythema, or purulent discharge from the surgery wound. In the case we took for analysis, the woman presented with a typical clinical manifestation of the early postoperative infection of the breast(6,7). Even though infections can manifest differently, it is important to find and understand what bacteria could be involved in the pathogenesis of the infection to choose an optimal infection treatment plan.

The first breast implant infection treatment protocol was proposed by Courtiss et al and involved tissue debridement and new implant replacement during the same surgery involving systemic antibiotic therapy and wound drainage(8). Later Weber et al suggested perioperative antibiotic therapy with wound irrigation and implant replacement(9). Several other groups have introduced implant pocket irrigation with saline solution combined with antibiotic therapy and implant exchange with or without capsulectomy(10).

In 2004 Spear et al introduced an implant salvage algorithm, which has become a gold standard for treating implant related infections. He categorized patients into 7 groups depending on the severity of infection and implant exposure risk. The first group included patients with a mild infection without the risk of implant exposure whereas the seventh group included patients with severe infection and breast implant exposure. During the salvage procedure capsulectomy, implant pocket curettage, pulse lavage, new implant placement and closure was performed. Success ratio reached 95%(11).

Adams Jr. et al researched the effectiveness of triple antibiotic solution (50,000 U bacitracin, 80 mg gentamicin, 1 g cefazolin in 500 mL normal saline) in breast implant infection management. The infection rate was 9.5% in comparison to a higher rate of other methods that have been used in history. In addition, they proposed alternatives for allergic patients(12). Yalanis et al found the povidone – iodine solution to be effective in reducing risk of capsule contractures(13).

In 2016 during “London breast meeting” conference Adams W. Jr. introduced a technique that involved Reimplantation of the same implant after preparation of the implant mound and implant itself for the reimplantation. During the procedure, if pus was present around the implant, explantation and delayed implantation of a new implant was chosen. If pus was not present around the implant, poor quality skin was removed, a swab for microbiological culture was taken and implant temporarily removed. The removed implant was

cleaned and placed in triple antibiotic solution. Further steps included granulation curettage, saline irrigation, triple antibiotic (betadine containing) irrigation, implant reimplantation, layered closure, closed suction drain placement and postoperative antibiotic therapy for 1 – 2 weeks. This method was also used for our patient. As we can see, using this method the implant was salvaged and no postoperative complications were seen. There is no literature describing this new method and its success rate.

Even though there are many different implant infection management protocols in the literature, there has never been an agreement which protocol is the best. In recent years we are faced with the increasing necessity to preserve the initial implant not only because it is cost effective, but also reduces the rate of future infections. Although the new protocol seems to have wonderful results, further investigations and clinical trials should be performed to identify the breast implant salvage rate using the new method.

4. CONCLUSIONS

Breast implant infection remains one of the most dreaded complication after breast reconstruction surgery. Even though there are many different possible protocols for breast implant salvage, there is none in which the same implant could be saved and reimplanted. Our case shows that a new breast implant salvage protocol could be used in cases when no pus is not visible around the implant during the surgery. Nevertheless, further research involving this

method should be conducted to identify the rate of breast implant salvage.

5. DECLARATION

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