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Silicone Breast Implant and Automatic Implantable Cardioverter Defibrillator: Can They Coexist? A Case Report

Friedman Or, MD
Zaretski Arik, MD

Summary: We present a case of a silicone breast implant rupture after insertion of an automatic implantable cardioverter defibrillator (AICD). A 51-year-old woman presented to our plastic surgery clinic to exchange her silicone breast implants. The patient underwent cosmetic mastopexy and breast augmentation in 2008. Because of recurrent myocardial infarctions and chronic heart failure, she underwent an insertion of an AICD in 2014 in which the left breast implant was hit. In this report, we discuss the first case of an AICD insertion, disrupting a breast implant. This case report illustrates the rare but real possibility of breast implant rupture after even minor surgical manipulation of the breast area. *(Plast Reconstr Surg Glob Open 2016;4:e849; doi: 10.1097/GOX.0000000000000855; Published online 17 August 2016.)*

Approximately 279,143 cosmetic and 106,338 reconstructive breast implants and tissue expanders were placed in 2015 in the United States, which made these operations the most common cosmetic and sixth most common reconstructive procedures.[1] Although overall satisfaction among implant recipients is high,[2–6] a significant percentage of patients experience local complications,[7] and reoperation is not uncommon.[4,5,7–10]

It is imperative that careful planning and surgical technique be used to reduce iatrogenic damage of implants during primary placement and subsequent reoperation.[11]

CASE PRESENTATION

A 51-year-old woman presented to our plastic surgery clinic to exchange her breast implants. The patient underwent cosmetic mastopexy and breast augmentation with subglandular silicone implants in 2008. In 2014, she underwent insertion of a single-chamber automatic implantable cardioverter defibrillator (AICD) for primary prevention because of multiple myocardial infarctions and low ejection fraction of 35%. After the AICD implantation, she occasionally felt pain on the left side of her chest. On physical examination, the left breast was slightly larger than the right, and both breasts were supple. The AICD could be felt under the left breast skin in a superiomedial position.

Breast ultrasound demonstrated irregularity of the left breast implant.

Mammography demonstrated change in left breast implant shape, suggestive of rupture.

Electrocardiography demonstrated normal sinus rhythm with no signs of acute ischemia or pacing.

Echocardiography demonstrated an ejection fraction of 35%, and no change in cardiac function was noted compared with the previous test.

She had an extensive family history of cardiac malformations, infarctions before the age of 30, and premature death.

After cardiological workup, the patient was cleared by the anesthesiologist for elective surgery to remove both implants. Dual antiplatelet therapy was not stopped because of high cardiac risk, and an electrocardiologist was scheduled to be present at surgery. AICD therapies were deactivated by the electrocardiologist soon after intubation. After carefully opening the implant pocket through the previous inframammary scar, an intact right breast implant was removed from its subglandular position, followed by saline irrigation of the cavity. On incision of the left inframammary scar and careful opening of the implant pocket, the AICD was identified floating in medical grade silicone within a ruptured silicone shell (Fig. 1). After careful removal of the implant, the AICD was extracted from the implant, preserving wire connections (Fig. 2). Copious saline irrigation of the AICD, the pocket,

From the Department of Plastic and Reconstructive Surgery, Tel Aviv Sourasky Medical Center, Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel.

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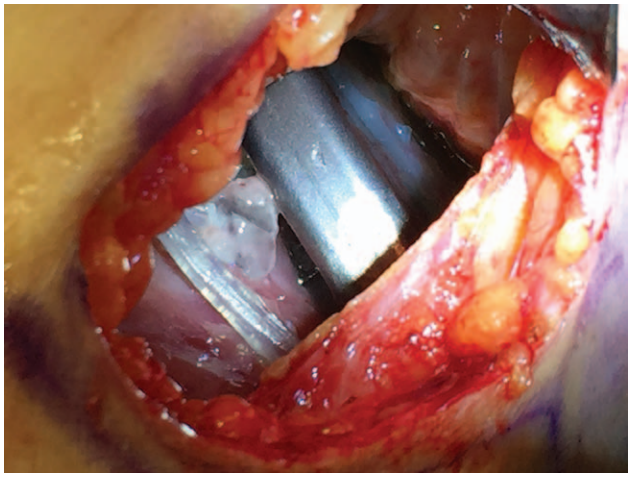

Fig. 1. On incision of the left inframammary scar and careful opening or the implant pocket, the AICD was identified floating in medical grade silicone within a ruptured silicone shell.

and skin was performed. Because of the high cardiac risk and full antiplatelet therapy, a decision was made to avoid further pectoral dissection to create a new pocket for the AICD, and thus, bleeding risk and operating time were reduced. The breast was closed using Monocryl 4-0 sutures over a Jackson-Pratt drain with the intention of leaving it in place for a longer period of time, ensuring tight skin draping over the device and no seroma evolution. The AICD was reactivated and checked before extubation by the electrocardiologist. Sequential ECGs were done daily, and the patient was discharged on postoperative day 7.

DISCUSSION

This report presents the first documented case of a breast implant rupture after insertion of an AICD. US-based manufacturers routinely perform analyses of explanted devices to characterize the causes of failure. Data collected in device-retrieval studies for MemoryGel (Mentor Worldwide LLC, Santa Barbara, Calif.) and Natrelle (Allergan, Inc., Irvine, Calif.) round silicone-gel breast implants reveal that the most frequent mode of failure is surgical instrument damage (51%–64%), followed by unidentified opening without indication as to the cause (35%–37%).[12,13] Shell failure caused by surgical instrument damage is easily distinguishable from fatigue wear.

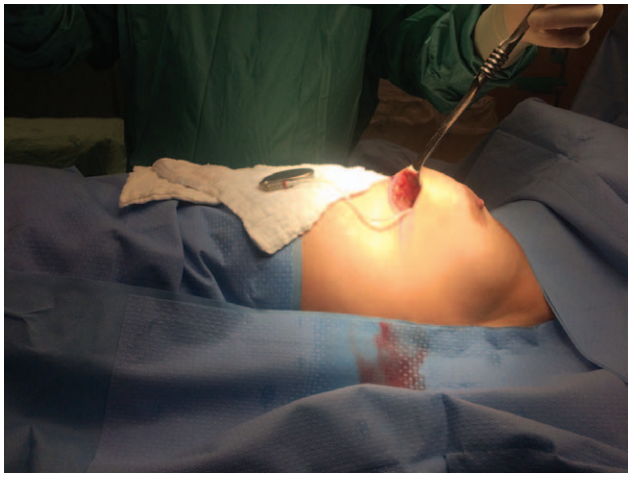

Fig. 2. AICD extracted from the implant, preserving wire connections.

Risk factors for rupture include excessive force to the chest, for example, seat belt contusion injury, blunt trauma, or compression during mammography imaging. Case reports of implant damage as a consequence of mammography were associated primarily with thinner shell and, previous second-generation devices.[14]

According to the National Cardiovascular Data Registry, between January 2006 and December 2009, 38,912 initial patients (25% women) received single- or dual-chamber AICDs for primary prevention in the United States.[15]

During AICD implantation, a subcutaneous pocket directly above the pectoralis muscle is created into which the AICD is inserted. The device is connected to its leads, which are sutured to the muscle. Thus, the device can slightly move within the pocket.

Main complications within 30 days include (a) pneumothorax requiring chest tube, (b) hematoma requiring blood transfusion or evacuation, (c) cardiac tamponade, or (d) death. Complications within 90 days include (a) mechanical complications requiring reoperation for system, generator, or lead revision; (b) device-related infection; or (c) recurrent AICD implant at 90 days.[15]

This case highlights a need for higher index of suspicion of rupture in patients with breast implants after even minor surgical interventions on or in vicinity to the breast.

CONCLUSIONS

Because of the prevalence of breast implants in cosmetic and reconstructive breast surgery and the natural aging of the population, more cases of female patients with silicone breast implants in need of an AICD may be encountered in the future. This case report illustrates the rare but real possibility of breast implant rupture after minor surgical breast manipulations, such as a routine AICD insertion. We suggest keeping in mind the option of breast implants in female AICD candidates, consulting medical and surgical records to validate the plane in which the breast implants are placed, and in case the implants are placed subglandularly with thin soft-tissue coverage, the implant location should be preoperatively marked and careful blunt dissection used in creating the AICD pocket well above the preoperative mark. Inversely, when performing breast augmentation on a patient with an AICD in place, we suggest that in addition to consulting with the patient's electrocardiologist, the skin quality above and around the device should be assessed, the AICD pocket preoperatively marked, and a subpectoral pocket preferred to reduce the chance of the AICD pocket violation.

Friedman Or, MD
Department of Plastic and Reconstructive Surgery
Tel-Aviv Sourasky Medical Center
6 Weizman Street
Tel-Aviv, Israel 64239
E-mail: or.friedman@gmail.com

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