Explantation of 41-Year-Old Implants Following Primary Breast Augmentation

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Abstract: The long-term affects of primary breast augmentation is a topic of controversy. This case report will highlight the long-term outcome in a woman with Ivalon sponge breast implants and the reasons for explantation. The focus of the manuscript will include mammography, capsular contracture, and late hematoma.

Key Words: breast augmentation, Ivalon sponge, capsular contracture, late hematoma

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Medical devices for breast augmentation have been available since the 1950s. The past 15 years have been witness to significant controversy regarding the devices and the phenomenon of breast augmentation. Although recent scientific evidence has demonstrated that the current devices are safe and effective, it has also been acknowledged that no device will last forever.[1] As a result, much of the current controversy is focused on the long-term effects of breast augmentation because this is an area in which there are fewer data available for analysis.

This case report will highlight a woman who had bilateral breast augmentation using Ivalon sponge devices. These original implants were retained for 41 years prior to explantation. The salient features of this case will serve as the foundation for a discussion on the long-term effects of breast augmentation.

Case

This 74-year-old woman had primary bilateral breast augmentation in 1961 at the age of 33. The specific type of implant used was not recalled, but it was mentioned that the original implants had been retained and had never been revised or exchanged. The reason for presenting at this time was because of progressive enlargement of the right breast over a 4-month period. Traumatic injury was denied. Prior to the enlargement, both breasts were firm, symmetric, and uncomfortable. Mammography had demonstrated capsular contracture without suspicious findings. Her past medical history was significant for diet-controlled diabetes mellitus, mild arthritis, and glaucoma. On examination, there was evidence of Baker 4 capsular contracture. The right breast was nearly twice the volume of the left (Fig. 1). The working differential diagnosis included malignancy, implant rupture, and fibrosis.

Imaging studies were obtained. Mammography demonstrated diffuse asymmetric enlargement of a prepectoral right breast implant, with severe capsular contracture and no suspicious findings of malignancy (Fig. 2). Due to the diffuse enlargement of the right breast, displacement techniques were not possible. Displacement techniques were possible on the left breast, demonstrating no findings suspicious for malignancy (Fig. 3). MRI of the right breast demonstrated a markedly deformed implant with a thick capsule and surrounding high-protein fluid content without evidence of rupture or suspicious lesions (Fig. 4A, B).

Operative findings of the right breast included an organized hematoma, serosanguineous fluid, and a thickened capsule approaching 1 cm in thickness (Fig. 5). A polyvinyl alcohol (Ivalon sponge) implant and its intact Silastic sheet envelope were removed (Fig. 6). Operative findings of the left breast include a thick fibrous capsule with an intact Silastic sheet and soft Ivalon sponge implant (Fig. 7). Following irrigation and total capsulectomy, the incisions were closed in an inverted "T" fashion on the right and a linear fashion on the left along the inframammary fold. Drainage tubes were inserted bilaterally. Pathology demonstrated marked fibrosis, chronic inflammation, and dystrophic calcification of the implant capsules bilaterally. No malignancy was identified.

Postoperatively, the patient did well. The drains were removed on postoperative day 6. The tissues were viable and the incisions were intact, without any signs of infection. The right breast demonstrated some skin distortion inferiorly. At 2-month follow-up, the breast contour had improved and the patient was pleased with the outcome (Fig. 8A–C).

DISCUSSION

There has been much debate and controversy over the safety and efficacy of long-term breast augmentation. Factors such as lack of adequate follow-up, capsular contracture, and interference with breast imaging are frequently cited by critics who claim that breast augmentation is harmful. It is recognized that the medical devices used for breast augmentation have

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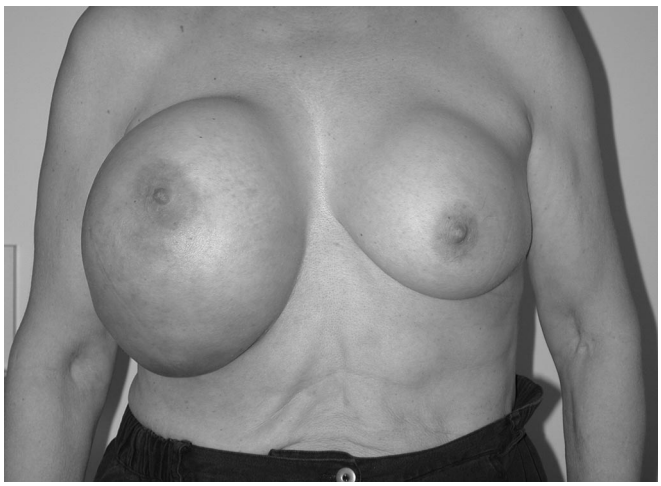

FIGURE 1. Preoperative photograph demonstrating enlargement of the right breast.

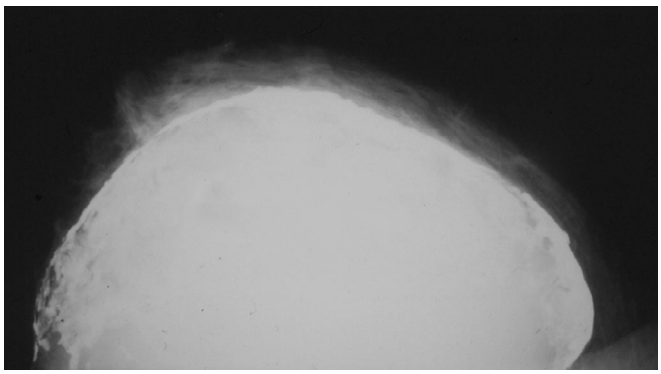

FIGURE 2. Nondisplaced mammographic view of the right breast demonstrating marked enlargement and scattered capsular calcification.

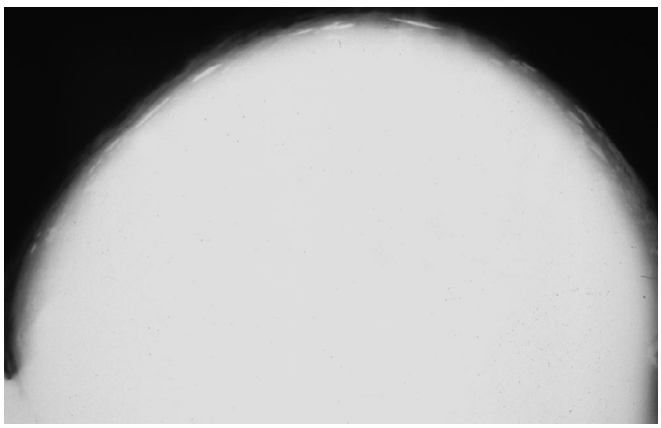

FIGURE 3. Displaced mammographic view of the left breast demonstrating severe capsular contracture without evidence of malignancy.

changed over the past 50 years; however, many of the sequelae of long-term breast augmentation are independent of the type of device. The focus of this discussion is to elaborate on specific

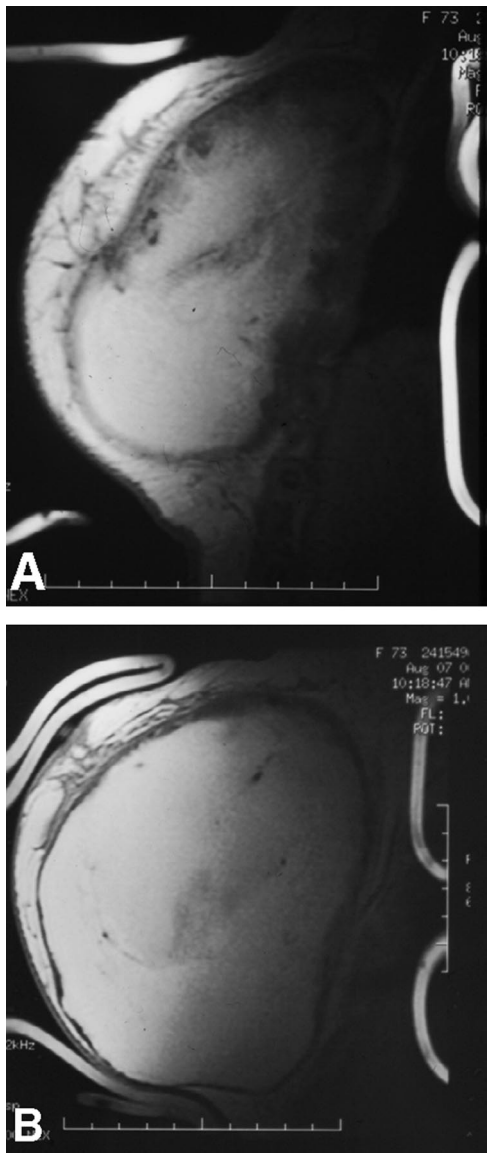

FIGURE 4. A, B, MRI of the right breast demonstrating a thick fibrous capsule with a grossly intact implant. A protein-rich exudates is seen surrounding the implant.

aspects of this patient's augmentation that allowed her to retain the original breast implants for 41 years.

Ivalon sponge breast implants were first introduced in the 1950s.[2] There have been several reports that have described the use of this implant.[3–5] The sponge is composed of polyvinyl alcohol and was sometimes wrapped in a plastic bag prior to insertion in the subglandular plane. Use of these implants gradually declined with increasing reports of capsular contracture and chemical instability, as well as the introduction of silicone gel devices.[2]

Despite the fact that this case represents the use of an Ivalon sponge device, there are several aspects of it that are important and relevant even in today's milieu. The first is that this case represents the longest continuous breast implantation followed by explantation that I am aware of.

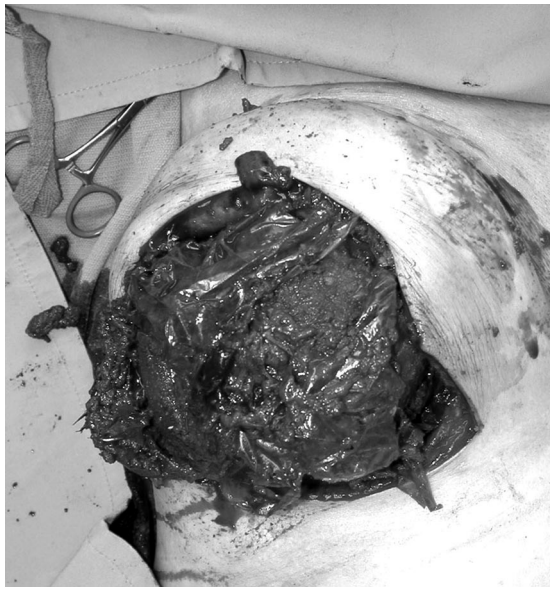

FIGURE 5. Intraoperative photograph of the right breast contents. There was a large amount of clot and serosanguineous fluid.

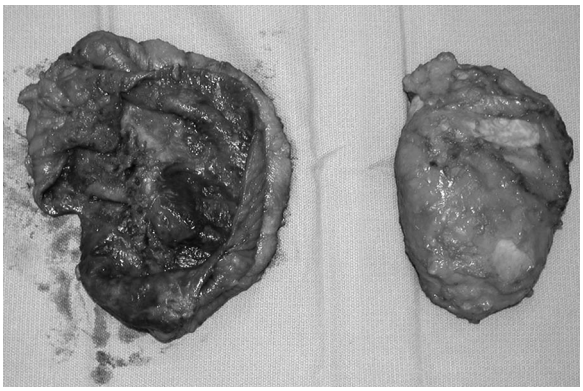

FIGURE 6. The fibrous capsule and the Silastic-covered Ivalon implant of the right breast are separated.

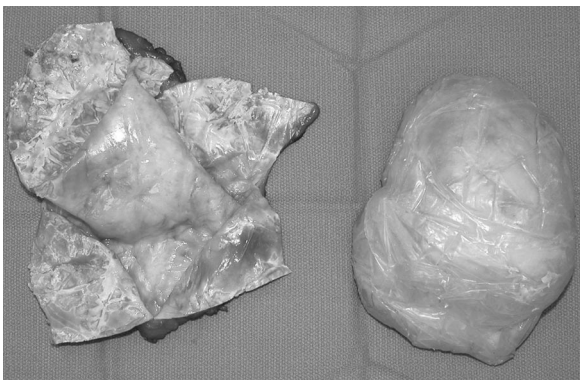

FIGURE 7. The fibrous and calcified capsule and the Ivalon implant of the left breast are separated.

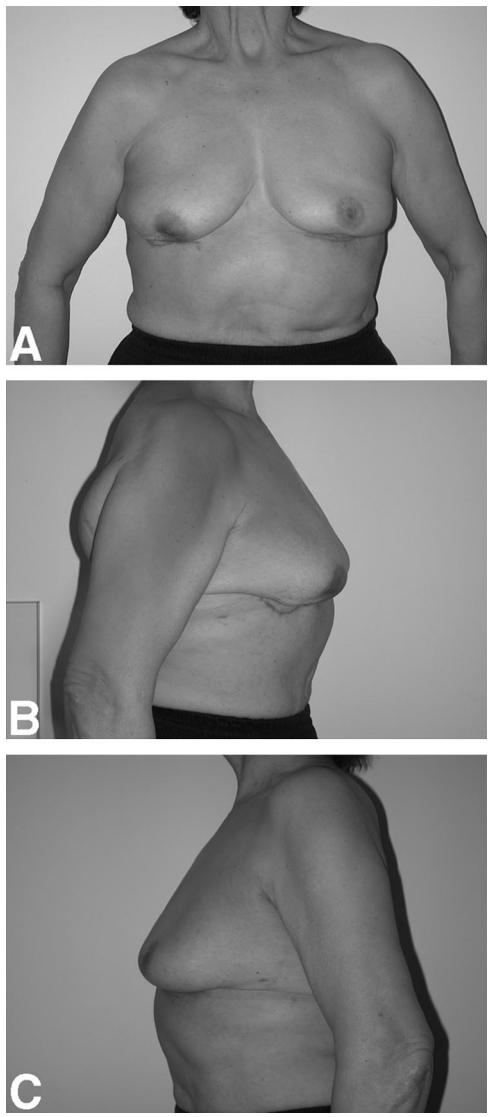

FIGURE 8. A–C, Postoperative views of the patient at 2-month follow-up. There is some contour asymmetry, and both breasts are soft and nonpainful.

T. J. Lindsey was the first woman to receive silicone gel breast implants in 1962 and has retained those original implants for 43 years, based on 2005 data.[6] The second aspect was that this woman was able to have mammograms despite a dense fibrous capsule. It was only after the hematoma developed that displacement techniques were not possible. Finally, despite severe capsular contracture and a large hematoma, the final outcome of the breasts following explantation was good and the patient was satisfied.

There were several reasons for removal of these implants; however, the principle reason was the late hematoma. The implants were not removed because of the capsular contracture or discomfort. Although the exact cause of the hematoma was uncertain, it was postulated that the calcified capsule caused the gradual erosion of an adjacent blood vessel. The phenomenon of a late hematoma is not new as

previous case studies have also reported its occurrence. In 3 separate reports, a late hematoma occurred at 9, 12, and 22 years following breast augmentation.[7–9] The exact etiology was never identified but possible explanations have included microhemorrhage of the surrounding vasculature due to microfracture of the calcified capsules, vascular erosion, osmotic effect, and inflammation.

The issue of capsular contracture has plagued all breast implants since they were introduced. Numerous modifications and insertion techniques have been introduced to minimize this occurrence.[10] Given that all breast implants are foreign bodies, all will illicit a foreign-body reaction when implanted. This is characterized by varying degrees of collagen deposition around the implant and ultimately a fibrous capsule. The degree of encapsulation is variable but will generally increase over time. Calcification of the capsule is sometimes observed, especially in women in whom the implants have been in place for greater than 10 years.[11] There have been several studies that have characterized the capsules surrounding the different types of implants following breast augmentation.[2,11–13] In all, the basic composition of the capsules was similar; however, the degree of encapsulation was principally related to implant duration.

The presence of a fibrous capsule in women with breast implants has been implicated as a source of difficulty and interference associated with mammography. Ecklund et al[14] had described the displacement technique in which the breast is pulled forward and the implant is pushed backward. Despite the fact that this technique has received widespread acceptance and approval, recent reports have highlighted some of the difficulties associated with mammography in the augmented breast.[15–17] Handel et al[15] have demonstrated that when the capsular contracture is none to mild, there is a 30% reduction in the area visualized, and when moderate to severe, a 50% reduction in the area visualized. In this case, there were no reported difficulties with the technique and accuracy of mammography, despite the presence of a dense fibrous capsule.

Summary

This case has illustrated that breast implants can sometimes last beyond expectations, long-term augmentation can be associated with capsular contracture and delayed hemorrhage, and that the esthetic result following explantation is acceptable. This case has also demonstrated that mammography is possible and reliable in a breast with capsular contracture. The occurrence of a hematoma 41 years following implantation was unusual but within the realm of possibility.

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