Breast Prothesis Leakage and Malignant Changes of the Breast

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Abstract

A breast implant is a prosthesis used to enhance the size of a woman's breasts. Silicon implants are most commonly used, but as with all surgical implants it has some complications. The question is weather it can induce breast cancer? During the last year, a case of reconstructed breast with prosthesis which leaked was presented. The aim of this report is to review current literature to evaluate whether there are reported correlations between breast cancer and breast implants. The conclusion derived from this report is that there is no available evidence directly correlating breast cancer to breast implants.

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Silicon implants have several short term complications, the long term complications in most studies link prosthesis leakage to connective tissue disorder. However, this theory is not well documented as it has not been proven by any study. However, there is an increase in breast cancer incidents in patients with breast implants. Last year, a case of breast reconstructed with prosthesis which leaked and resulted in malignant changes was presented at the breast clinic, Muscat Private Hospital.

The aim of this report, is to review the existing literature to assess whether there is a correlation between prosthesis leakage and malignancy of the breast.

This report reviews the different types of prosthesis, their durability and the other different options of reconstruction available.

A 57 year old German female was presented with a right periareolar swelling and pain. The patient had bilateral breast augmentation with silicon implants performed in Germany over 25 years ago. The patient did not undergo accurate follow up procedures. The patient had two children; she had the first child at the age of 18 years, but the child died at birth and the second child died in an accident at the age of 19 years. The patient was not diabetic or hypertensive but had bilateral salphingectomy for peritonitis post appendectomy at the age of 28 years. The patient had never taken oral contraceptive pills but experienced menopause at the age of 45 years. The patient was a smoker for 30 years (20 cigarettes per day) but had no family history of breast cancer.

Clinical examination and Ultrasonography diagnosed a breast abscess. The patient underwent percutaneous drainage of the abscess. Post drainage, the patient developed softening of the prosthesis and redness in the infra mammary area of the breast suggestive of implant leakage. She was advised to remove the implant. Both the implants were removed at the same time.

Pre-operation, the dissection of the left implant was easier, while the right one was very adherent and was difficult to dissect. The two capsules were sent for histopathological examination.

The right side was reported as - invasive lobular carcinoma with extensive in situ component pT1Nx, silicon granuloma and abscess. The left breast showed "fibrosis with calcification" but no tumor.

The patient underwent mastectomy with sentinel lymph node biopsy of the right breast, which confirmed the invasive lobular and in situ carcinoma (multi focal) but there was no lymph node metastasis.

Trucut biopsies of the left breast were negative for malignancy and a chest x-ray was normal, while an ultrasound of the abdomen and pelvis showed a lobulated lesion at porta hepatic.

A CT scan of the abdomen and bone showed no metastasis

Estrogen and progesteron receptors – strongly positive, Herg 2 positive were observed.

The patient underwent Radiotherapy on the right chest wall and then started chemotherapy, followed by hormonal therapy.

The patient recovered and reported no reccurring events.

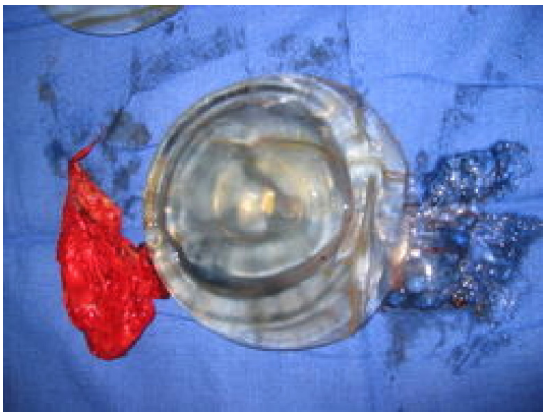

Figure1: Leaking Prosthesis.

Breast Implants

Breast Augmentation or enlargement is performed either by enlargement mammoplasty or augmentation mammoplasty with prosthesis or with flaps. Augmentation is performed for either clinical reasons such as the reconstruction of the breasts following mastectomy, to correct genetic deformities or for cosmetic reasons which is mainly to increase the size of normal breasts.

Since 1962, around 2-3 million women in the US have undergone breast augmentation with implants. About 80% of them were cosmetic augmentations and the rest were for reconstruction after mastectomy due to breast cancer.

A breast implant is a prosthesis used to enlarge the size of a woman's breasts (Figure 1).

There are two common types of breast prosthesis used:

1. Saline filled (with silicon elastomeric cover) requires smaller incision and, have silicon shells or covers (Figure 2).

Figure 2: Saline filled prosthesis

The disadvantages of saline prosthesis are that they are mainly used for cosmetic purposes and they present a high prevalence for leakages.

2. The silicon filled prosthesis (with viscous silicon gel), was first used in 1961 in the United States by Thomas Cronin and Frank Gerow working with Dow Corning (Figure 3).

The recent generation of prosthesis are semisolid gels which are highly cohesive.

Figure 3: Silicon filled prosthesis

3. Others- polypropylene sling (soy oil)

Complications of prosthesis

Post operatively immediate complications included; bleeding, seroma, infection, altered nipple sensation, interference with breast feeding, wrinkling, asymmetry, thinning of the breast tissue and surrounding tissue contraction.[1]

The silicon implants rarely deflate spontaneously, but after breakage the contents can leak out or migrate into the tissue spaces around the implant (intra capsular or extra capsular) and cause capsular contractures, granulomas, and axillary lymphadenitis. Capsule rupture has different effects which can be local, from just a tear to complete disintegration and immigration of contents to the surrounding areas like the axilla. It is important to consider the duration of the implant, as age of the implant is an important factor which can cause implant rupture.[1-5] In addition to rupture, another phenomenon is silicon leakage (bleed) which occurs without observing any tears or gross holes.[6-8] This type of bleeding can cause the gel to migrate from the breast, to the axillary lymph nodes, arm, fingers and groin.[7,9-15]

There are equivocal reports of antibody response to silicon, with the development of an immunoglobulin G (IgG) antibody to polydime thylsiloxane (silicone), which is found in high levels in women with breast implants.[16] However, antibodies have also been reported in women without breast implants. The ubiquitous occurrence of this antibody is attributed to the widespread use of silicone in a variety of settings.[17] Generally there is no definitive association between silicon implant leakage and connective tissue disorders.[18]

The highest level of anti-silicone antibodies have been found in women with ruptured silicone gel breast implants.[16] Collectively, the studies have failed to find an association, however, the sample size of the studies was large enough to rule out some small effects.[1] Other studies proved that the presence of breast implants makes radiological detection of cancer more difficult, resulting in late stage diagnosis of cancer.[17,19-22] Information on the overall risk of breast implants is insufficient. Thus no epidemiologic study has indicated that the rate of well-defined connective tissue disease or breast cancer has significantly increased in women with silicone breast implants, yet no studies have ruled out a moderately increased risk for the disease as a result of implants. On the other hand no studies have adequately addressed the crucial issue of local complications such as rupture and capsular contracture, although evidence increasingly points to a higher risk for rupture as implants age.[23,24]

Research from cancer centers around the world indicate that there is no increased risk of recurrence if there is immediate

reconstruction with implant and there is no decreased ability to monitor recurrence. Currently, there is no solid evidence to suggest that breast implants alter the risk of breast malignancies. However, patients with breast implants should continue to be monitored for long term risks and to assess whether the risk of cancer varies among individual patients or is influenced by the characteristics of the implant.[25]

There is evidence however, to suggest that implants leak and migrate particularly in implants inserted immediately after or prior to radiation therapy, as there is thinning and loss of elasticity of the skin after radiation. Nevertheless, there are no definite reports on chances of recurrence after immediate implant reconstruction.

Currently there is no evidence available relating directly to the increased recurrence rate to immediate implant reconstruction by saline or gel filled prosthesis, since much of the reviewed literature suggests that there is no correlation that prosthesis leakage induce cancer. The current available data is insufficient to support the conclusion that silicone implants predispose patients to cancer. There are no definite reports of breast cancer due to silicone prosthesis leakage. However, provided the circumstances of the patient presented in this case report, it is possible that the patient developed the disease due to prolonged use of the prosthesis consistently for over 25 years without complying to proper follow up approaches.

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