Malaysian Journal of Medical Sciences, Vol. 6, No. 2, July 1999 (26-29)

CASE REPORT

BREAST CANCER AFTER AUGMENTATION MAMMOPLASTY WITH SILICONE GEL-FILLED IMPLANT: A CASE REPORT

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A 47 year old Chinese housewife with a silicone gel-filled implant mammoplasty carried out 10 years ago presented with a palpable painless lump in the right breast. Excision biopsy revealed infiltrating ductal carcinoma. Right simple mastectomy and axillary sampling was done followed by chemotherapy and radiotherapy. The history, safety, potential complications of silicone breast implants are reviewed and discussed.

***Key Words**: silicone implants, breast cancer*

Introduction

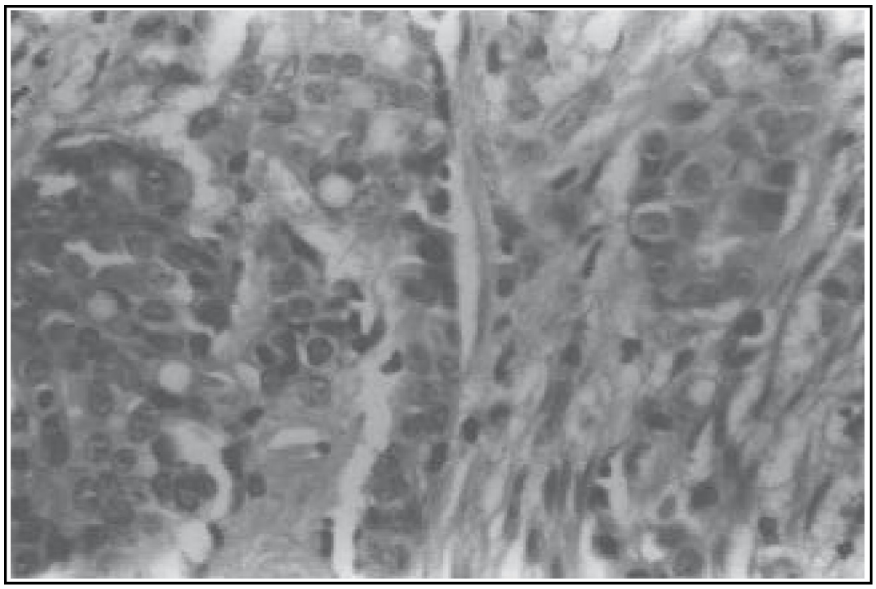
Since the introduction of modern silicone gel-filled prostheses in 1962, more than 2 million women have undergone prosthetic augmentation mammoplasty (1). Speculation that silicone implants may be linked to increased incidence of breast cancer, other cancers and connective tissue diseases particularly systemic sclerosis is a current cause of concern to the medical profession and media-orientated public alike. Adequate data to demonstrate the safety and effectiveness of these devices do not exist. Even though the high incidence of breast cancer after silicone implant mammoplasty is not proven, yet compared to non-augmented women, the augmented women presented with more advanced disease resulting in a poorer prognosis (2-3).

We report a case with breast cancer in a patient after silicone implant mammoplasty.

Case Report

A 47-year old Chinese housewife presented at a private medical center in Penang for a lump in the lower and outer quadrant of the right breast. It was painless and noted accidentally 10 days prior to consultation. She had silicone gel-filled augmented mammoplasty at a private hospital in Penang 10 years ago without any untoward problem. Because of the breast implant, fine needle aspiration cytology was not attempted and excision biopsy was performed. Histopathology of the excised 2.0cm lump revealed infiltrating ductal carcinoma with involvement of the surgical margins (Fig.1).

Fig.1: Malignant tumour arranged in the form of small nests and infiltrating the stroma (H&E, x400)



She was immediately referred to Hospital Universiti Sains Malaysia in October 1997. On physical examination, she was found to be healthy with good nutritional status. There was no cervical lymphadenopathy. The chest examination for heart and lungs was normal. Abdominal examination showed no free fluid or hepatomegaly. Both breasts and axillae were normal except for a 2.0 cm indurated lumpectomy scar in the lower and outer quadrant of the right breast. Full blood picture, liver function tests, chest x-ray, ultrasound of the abdomen and bone scan results were normal. Right simple mastectomy and axillary sampling were performed. Subglandular silicone gel-filled prosthesis with intact capsule was discovered and removed (Fig.2 and 3). Histopathology indicated a residual foci of intraductal carcinoma at the lumpectomy site with clear surgical margins of the mastectomy. Axillary lymph nodes were not involved.

The patient recovered well and was treated by the oncology team with 6 cycles of cyclophosphamide, methotrexate and 5 flurouracil. She also underwent 20 courses of radiotherapy. Repeat bone scan in October 1998 was normal. The patient was on a regular follow up in the surgical and oncology clinics of Hospital Universiti Sains Malaysia. Oral tamoxifen 20mg daily was started since one year after the operation up till now. Three years after treatment by surgery, chemotherapy, radiotherapy and continued tamoxifen, she was well and had no sign of tumour recurrence.

Fig.2: Bisected specimen shows a well formed thick fibrous capsule (C) and the reflected elastomer of the prosthesis (M)

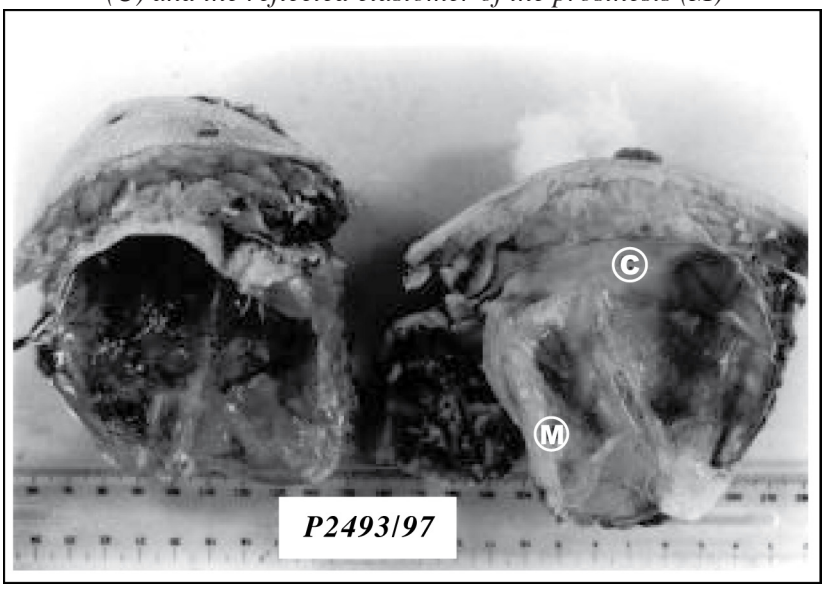
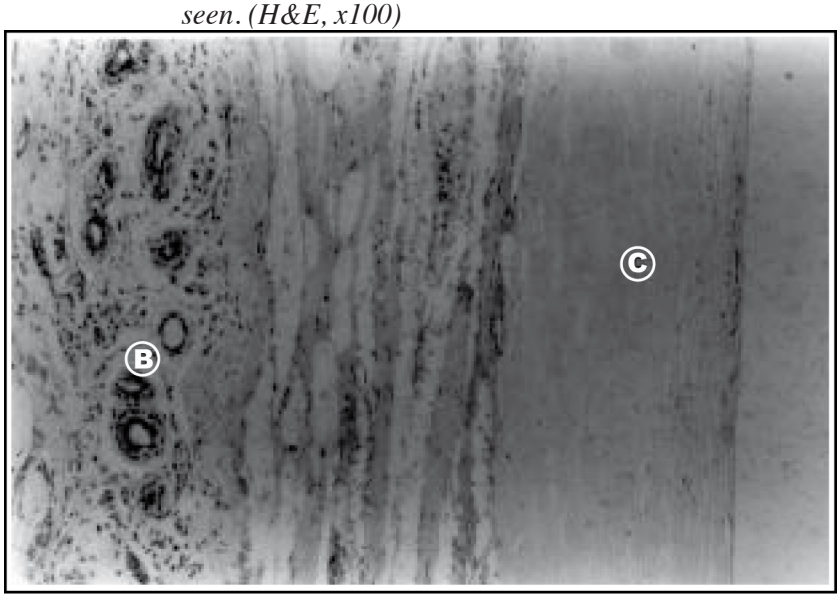


Fig.3: Capsule (C) is formed by thick hyalinised fibrous tissue. Compressed breast lobules (B) are also seen. (H&E, x100)



Discussion

Silicon exists in nature as silica, a solid crystalline material as the major component of sand and quartz. Silica is silicon dioxide and silicones are a family of silicon oxide polymers that vary in viscosity based on the length of the polymer. The fluid and gel used in medicine is an inorganic polymer known as polydimethylsilosane. When silicone was first used , it was regarded as inert and biostable (4). Initially it was used as waterproof dressing to the skin wounds in plastic surgery (5). Later it was used in medical devices such as intravenous tubings, indwelling catheters, cardiac pacemakers and artificial heart valves.

Cronin and Gerow, working with Dow Corning, Midland, Michigan, inserted the first gel-filled silicone breast implant in 1962 (6).

Advantage of using implants in breast reconstruction is that they can be inserted with less than an additional hour of operative time. However they carry a continued risk of implant failure secondary to infection, rupture, extrusion and capsular contracture. Furthermore the controversial risk of relationship to connective tissue diseases and breast cancer is the subject of continued debate. A thorough search of medical literature showed no definitive epidemiologic data establishing a direct link between silicone prosthetic augmentation mammoplasty and development of breast cancer (1,7-8).

Mammography is the best available tool for early diagnosis of breast cancer and it was reported that the radio-opaque silicone prosthesis obscures 22% to 83% of glandular tissue (9). Silicone droplets passing through the semi permeable elastomer membrane of the prosthesis (gel penetration) into the capsular tissue surrounding the implant and migration to the local lymph nodes are well documented (10-11).

Scar tissue (capsular contracture) forms to various degrees around all implants and this may limit self examination and physician examination. Compared to the non-augmented women, augmented patients with silicone mammoplasty presented with a higher percentage of invasive lesions which involved axillary lymph nodes resulting in a poorer prognosis (2,3).

In 1982, connective tissue disease associated with silicone gel implant was first reported in Australia (12). It was followed by other reports suggestive of an association with connective tissue diseases (10,13). But the controversy continued due to lack of reliable epidemiologic data. In 1992, United States Food and Drug Administration (FDA) banned the use of implants for cosmetic purposes except for use in controlled clinical trials of breast reconstruction after cancer surgery (14). FDA Commissioner David Kessler carefully pointed out that it was not because the implants had been found to be dangerous, but because they had not been proven safe. Many women returned to their plastic surgeons for removal of their implants. Within two years after 1992, Dow Corning, the major manufacturer of breast implants became the target of 20,000 lawsuits. The remaining 3 large manufacturers - Baxter, Bristol-Meyers Squibb and 3M were also involved in the claims (15). In contrast, no association with 12 connective tissue diseases was reported by Mayo Clinic's first observational epidemiologic retrospective cohort study (16). It was further supported by other reports from nation-wide cohort studies in Harvard, Scotland and Sweden (17-19). The controversy over the safety of silicone breast implants is still not resolved after nearly a decade.

In summary, the silicone implants are not inert and silicone does not fulfill the characteristics of an ideal prosthesis (20). Very careful detailed informed consent should be taken from the patient considering a silicone breast implant.

The difficulty of mammography in early detection of breast cancer, local and systemic complications and possible relationship to connective tissue diseases should be explained to the patient. It seems prudent not to recommend augmentation mammoplasty in high risk patients: for example those with strong family history of breast cancer, patients with previous contralateral breast cancer, and patients with previous breast biopsy showing significant epithelial hyperplasia. In the light of recent advances in autogenous tissue reconstruction and the anxiety of silicone implant controversy, latissimus dorsi or transverse rectus abdominis musculocutaneous (TRAM) flaps should be considered as an alternative procedure (21).

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