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Breast Conservation Surgery in Early Breast Carcinoma: Personal Experience with Preliminary Results

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ABSTRACT. More than one-third of recorded malignancies of women in the Arab countries are those of the breast. In the U.S.A., breast cancer is second to lung cancer as a cause of death from malignancy among women. Breast Conservation Therapy (BCT) provides survival equivalent to total mastectomy and preserves the breast. It is suitable for patients having a single clinical and mammographic lesion 4 cm or less (stages I and II) without signs of local advancement or extensive axillary nodal involvement. Patients with small breasts and those having central carcinoma are not suitable. In BCT the mass is excised with a safety margin and the axillary glands are removed. The entire breast tissue is irradiated using 4-6 MV linear accelerator of Co-60 units. The total dose is 50 Gy along five weeks. A total of 288 female patients have been subjected to BCT in the present study during the last four years. The lump was present in the right breast in 59% and in the left in 41%, respectively. In 78.6%, the lump was present in the lateral quadrants. Lump size was less than 4 cm in 95.5% of the cases. All patients passed a smooth postoperative course and all of them received postoperative radiotherapy and chemotherapy. Follow-up to 48 months was done to 106 patients and the results were tabulated and recorded. Two patients died of disseminated disease and 1 patient showed evidence of local recurrence.

Keywords: Breast cancer, Conservative surgery, Preliminary results.

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Introduction

Thirty-four percent of all recorded malignancies of women in Arab countries are those affecting the breast[1]. In the United States, breast cancer is second only to lung cancer as a cause of death from malignancy among women[2].

Controversy has recently emerged concerning the necessity of performing radical mastectomy for all operable cases. Radical mastectomy, first described by Halsted[3] in 1894 and by Mayer[4] in the same year, was based on their understanding of the biology of breast cancer at that time, namely, a localized disease that spreads in an orderly fashion to the lymph nodes via the lymphatics. Discontent with this operation as a curative procedure was evident after about 40 years[5] and continued even after Patey and Dyson[6] who described their modified operation in 1948 and pointed out that neither the removal of the pectoralis muscles nor the skin affected the survival of the patients after the operation. Their operation by the end of the 1970s almost replaced Halsted's procedure and, at the same time, other options were tried. In 1973, the first Milan trial[7] compared radical mastectomy to quadrantectomy and postoperative radiotherapy to the breast and axilla. Disease-free survival was the same in both.

The National Surgical Adjuvant Breast Project, working on 1,855 women, obtained favourable results with lumpectomy and axillary dissection without radiation therapy[8]. This study showed that this procedure is as effective as the modified radical mastectomy for stages I and II.

Fisher *et al*[9] proposed a new concept of tumour growth. Breast carcinoma should be considered as having a more "capricious" nature and may spread by blood before metastasizing to lymph nodes. Even in the latter stages, it does not spread in an orderly fashion as has been suggested by Halsted[3]. Therefore, breast carcinoma would be considered a systemic, rather than a local disease[5]. This view has been supported by the marvelous results obtained by instituting adjuvant chemotherapy after radical mastectomy in those having positive deposits in the lymph nodes[10].

The results of the Milan trial (1981) and the evolution of Fisher's new concept have demonstrated that much less aggressive surgical treatment of the primary lesion than before gives equivalent results and may preserve an acceptable cosmetic appearance. Similar results were obtained from the National Cancer Institute of America, the Institute Gustave-Roussy in Paris, the Oncology Unit at Guy's Hospital in London, and many other centres[5].

In 1981, Veronesi *et al*[7] had the credit of encouraging the use of breast conservation therapy in the U.K. and other parts of the world. In 1990, the National Institute of Health's Consensus Development Conference stated that "breast conservation treatment is an appropriate method of primary therapy for the majority of women with stages I and II breast cancer and preferable because it provides survival equivalent to total mastectomy and also preserves the breast".

The present work describes our experience in the management of early breast carcinoma in patients operated upon in both Jeddah and Cairo during; a total of 288 cases were studied. The results are discussed in relation to outcome and published reports on the subject.

Subjects and Methods

Two hundred and eighty-eight women were selected from the outpatient clinics at the Kasr-El-Eini Hospital and from the private practice of the authors in both Cairo and Jeddah from February 1992 to February 1996. They were randomly selected to be suitable for breast conservation according to criteria described by Dixon[11] and included patients having a single clinical and mammographic lesion measuring 4 cm or less, without signs of local advancement or extensive nodal involvement and without distant metastases. Patients with central carcinoma, exceptionally small breasts, or multicentric tumours were excluded from the study. All patients, included in the present study underwent routine investigations together with mammography, chest x-ray, fine needle aspiration, cytology, and frozen section examination. Bone scan and liver ultrasonography were done after the operation but prior to radiotherapy.

Operation: To gain the best cosmetic result, lumpectomy was done through a curvilinear incision running parallel to the areola. The mass was excised with a rim of normal tissue (1 cm or more) using sharp dissection by knife or scissors. Diathermy is better avoided (because it will char the margins, making pathological interpretation difficult). Breast tissue deep to the lump was also excised down to the pectoral fascia. The wound was then closed using subcutaneous and subcuticular Vicryl (000). In the first seven cases the resultant cavity was not drained while a drain was routinely inserted in the rest of the series.

The excised lump and breast tissue around were examined by frozen and paraffin sections. One to two days later, when the histopathology results were received, the axillary phase was done. The axilla was opened through a transverse incision. With good retraction, the axillary lymph nodes were all removed up to, but not including, the apical. There was no need to cut the pectoralis minor tendon. A drain was inserted and removed two days after.

After complete healing of the wounds, the patient was sent for radiotherapy. The irradiated volume should include the chest wall or the "entire breast tissue" together with the other draining nodes (internal, mammary, and supraclavicular groups). This is modified according to the clinical, pathological, and staging data. This is carried out via tangential partals to the chest wall and direct fields to the draining nodal stations using either 4-6 MV linear accelerator or Co-60 units. The total dose is 50 Gy over five weeks. In addition, a booster dose is given to the primary site (10-16 Gy/7-10 days).

Results

Among the 288 patients studied, 38 patients (13.2%) proved to be lobular in type and unsuitable for BCT. The ages of the patients ranged from 25 to 66 years. All the patients presented with a palpable painless lump discovered by them. This lump was present in the right breast in 170 patients (59%) and in the left in 118 patients (41%). Two patients had previous radical mastectomy on the contralateral side. The lesions were present in the lateral quadrants in the majority of patients (78.6%). Fine needle aspiration cytology yielded positive results in 262 cases. In 12 of the remaining cases, the results were false negative, while mammography was only doubtful in 22 of the cases. According to TNM (Tumour Lymph Node Meld Staging) staging, all patients were T_1 and T_2, N_0 and N_1, and all M_0. T_3 was present in 14 cases. The size of the mass measured before the operation and confirmed by the histopathologist was 4 cm or less in 95.5% of the cases and in 4.5% the mass was 4 cm clinically, but proved to be slightly more than that histopathologically.

Follow-up: Between December 1995 and February 1996, the patients available for follow-up were 101 out of 106 patients that were done in the private sector facilities. Five patients were lost, two because of disseminated disease and three from other unrelated conditions. The period of follow-up ranged from 4-8 months. Patients treated at Kasr-Al-Aini Hospital (182 patients) came irregularly for follow-up and their data were discarded from the study.

Discussion

With the widespread use of mammography and FNAC (Fig. 1), and with the increase in the number of patients presenting early for treatment, more women will be suitable for breast surgical conservation techniques. The psychological advantages of preserving the breast are well demonstrated in the work of McArdle *et al*[12]. They re-

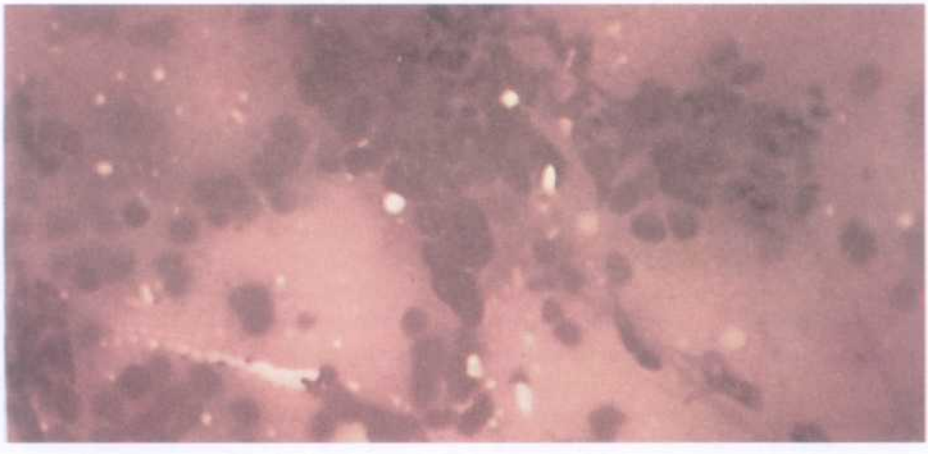

Fig. 1: Photomicrograph of + ve Results for Malignant cells in FNAC Sperimen.

ported a low incidence of depression and improved body image. Excellent cosmetic results can be obtained in about 82-90% of patients[13]. These results are appreciated by the patient more than any other person, including the treating doctor.

The primary objectives of breast conservation therapy are tumour control and acceptable appearance of the breast[5]. If one of these objectives is not achieved, the treatment has failed.

Numerous studies have shown that the disease-free interval and the overall survival rates are the same, both after breast conservation and after radical mastectomy. Local recurrence is probably slightly more common after breast conservation. Figures between 2-22% are given from different studies regarding the five-year local recurrence rate[14]. The majority of these recurrences occur in the vicinity of the scar of the initial excision. In the present series, there is only one local recurrence after 44 months in a patient who had particular features (Table 1). The short period of follow-up makes conclusions from this low figure unwise. The amount of normal tissue removed at the edges of the carcinoma appears to be strongly related to local recurrence rate[15]. High local recurrence rates have been reported when the tumour was present at the resection margins[16,17]. If, after breast conservation, histopathological examination showed EIC (Extensive In-Situ Carcinoma) (Fig. 2), a wider excision is needed in a second operation[2]. This explains the strong recommendation of the American National Cancer Institute of using paraffin section examination in all cases before resorting to breast conservation[11]. In the present series, care was always paid to have paraffin section examination for all patients; those who had EIC were not subjected to this type of treatment. Two exceptions were present where the patients refused mastectomy. One of them was a young and newly married woman and when recurrence occurred 3.6 years later, modified radical mastectomy was done. FNAC and frozen section proved to have limited value as they do not give detailed data about tumour factors that determine local recurrence such as cell differentiation, lymphatic vascular invasion, tumour necrosis, and mononuclear cell infiltration. Poorly differentiated tumours have the highest rate of local recurrence[14,17]. EIC is an important feature for predicting local recurrence [18]. In-situ disease is present in 44% of EIC positive cases compared to 3% in negative cases[19]. Positive EIC tumours were undoubtedly related to young age[11].

To do paraffin section in all cases, we followed the policy of doing surgery in two steps: excision biopsy and then definitive operation two days later. This two-step approach is also preferred by Giuliano[2] because patients can be given time to adjust to the diagnosis of cancer. They can also consider alternative forms of therapy and can seek a second opinion. Studies have shown no adverse effects from the short delay of the two-step procedure. Wide local excision is combined with axillary dissection to stage the axilla and to have enough information for subsequent adjuvant treatment[11]. In this respect, Sacks *et al*[20] suggested two options: complete axillary node clearance or axillary node sampling. Axillary node clearance is associated with greater morbidity than sampling. This is reversed if the latter is combined with axillary radiotherapy--the main complication being lymphoedema (40%)[24]. In 1991, Anderson *et al*[21] sug-

gested keeping axillary sampling for early impalpable breast cancers as the incidence of positive deposits is less than 20%. Ignoring the prognostic information gained, Sacks [20] also suggested doing no axillary radiotherapy. This is not widely accepted considering the morbidity of radiotherapy[22]. In the present work, axillary clearance was the policy and axillary sampling was not tried. This was associated with a relatively higher incidence of upper limp lymphoedema.

TABLE 1. Data collected from clinical examination.

Findings	No. of Patients
Early (< one month)	
10 Minimal wound infection	10 (all are diabetics)
20 Prolonged discharge (axillary and breast wounds)	31
30 Wound induration	90
40 Arm oedema** (increase of arm diameter by 3 cm or more)[12]	8
Late	
10 Persistent wound induration	20
20 Deformed breast	85
30 Arm oedema**	15
40 Distressing arm oedema	2
50 Recurrent lymphagitis (arm)	12
60 Recurrent lymphagitis (breast)	2
70 Evidence of local recurrence	1*
80 Local pain (breast and arm)	101
90 Pregnancy	1
1000 Deaths	5***

* A 28-year-old married woman with a small breast having a 3x3 cm lump, ULQ proven by FNAC and later by wide local excision to be poorly differentiated adenocarcinoma with EIC and vascular invasion. Resection margins were negative. Recurrence was observed on the 44th weeks while she was under tamoxifen treatment (20 mg/day on two doses). A wider local excision was suggested and refused by the patient. Mastectomy was done. Full course of local radiotherapy was given again. Body screening detected no evidence of systemic dissemination.

** This follows the definition of postmastectomy lymphoedema by Haagensen[12], but all patients (101) developed some degree of swelling following the operation, especially in the early postoperative period.

*** These include two deaths that were unassociated with recurrences or disseminated disease.

Moreover, to achieve an acceptable cosmetic result, the patient must have a breast of sufficient size to enable excision of a 4 cm tumour without considerable deformity. However, the patient and not the surgeon should be the judge of what is cosmetically acceptable, as some patients would prefer breast deformity rather than complete absence or even reconstruction. This view is supported also by Giuliano[2].

An inadequate cosmetic outcome can be manifested in several ways: displacement, distortion of nipple-areola complex, localized tissue loss, and breast retraction. Although some of these changes were not met within this work, they were reported by Radford and Wells in 1993[5]. Methods of their correction were also mentioned. The previously done quadrantectomy is not superior to local excision and gives significantly poor cosmetic results[23]; this was not tried in this series.

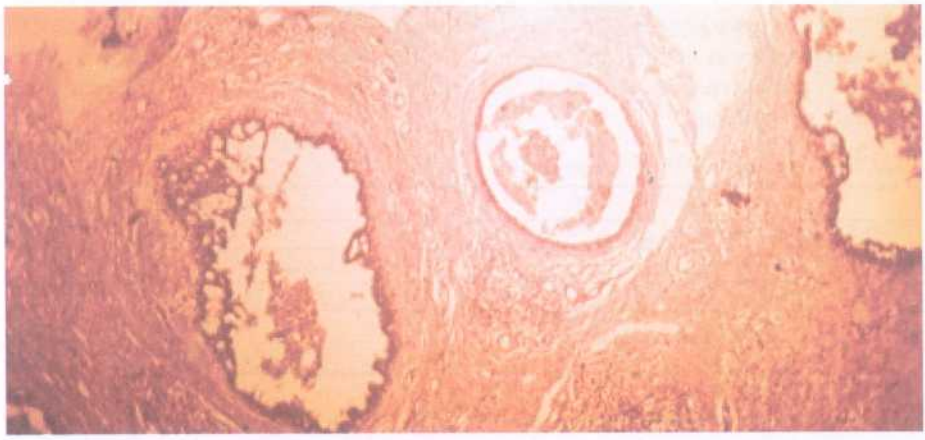

FIG. 2. Photomicrograph showing EIC +ve tumour

After lumpectomy, the resultant cavity was drained. This was not done in the first seven cases in whom we followed the policy of Wheeler and Lakhany[24]. They advised not to drain the resultant cavity as not to interfere with an excellent final cosmetic result. A seroma was found in all the seven cases. Infection and repeated evacuations resulted in an ugly deformity and undue induration. This may explain the high incidence of wound infection reported in the series (Table 1).

Several studies indicated that cosmesis is impaired if chemotherapy and radiotherapy are administered concurrently. This is probably due to chemotherapeutic agents acting as radiation sensitizer[5]. The options are either to give chemotherapy before or after but not during radiation.

In an analysis of the 106 patients that were available for follow-up in this work, 16 of them were followed for more than 36 months. Among those, 2 died from disseminated disease and one developed local recurrence. The 3-year survival rate is 94.4% as compared to about 90% in Fisher's series for the same follow-up period for those treated by BCT or by mastectomy. The 5-year survival rate for untreated cases was 18%[25].

Although the patient's age was not considered in patient selection in this work, the two deaths and the single local recurrence were reported in patients whose ages were 65, 66, and 28 years, respectively. This goes with the data demonstrated by Host and Lund[19]. They found the most favourable prognosis in the 35-39 age group for all stages of the disease.

It is of interest that none of our patients escaped one or more of the complications reported in Table 2--arm pain and arm oedema being the commonest (100% and 95.3%, respectively). But all these complications were well accepted by the patients. The uni- or bilateral ovarian cysts detected by sonograph screening in eight patients were attributed to tamoxifen treatment as suggested by Leak in 1991. Tamoxifen was routinely

instituted in all patients as it increases the disease-free survival and overall survival rates when given as an adjuvant systemic therapy. This is partly independent of oestrogen receptor status. It also produces significant improvement in well-being and is generally well tolerated[26].

TABLE 2. Data collected from investigations.

Findings	No. of Patients
10 Findings of abdominal sonography	Normal
20 Findings of pelvic sonography	8 cases ovarian cysts
30 Level of serum C 15-3	Normal range
40 Findings of chest x-ray	Normal
50 Routine bone scan	Normal

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جراحة الثدي التحفظية في سرطان الثدي المبكر

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المستخلص. يمثل سرطان الثدي أكثر من ثلث الأمراض السرطانية التي تصيب النساء في الوطن العربي. وفي الولايات المتحدة الأمريكية وحدها تعتبر الاصابة بمرض سرطان الثدي ثاني الأمراض السرطانية التي تسبب الوفاة بين النساء بعد سرطان الرئة. ومنذ الفهم الأفضل للتكوين البيولوجي لسرطان الثدي الذي قام به العالم فيشر ورفاقه عام ١٩٨٠ تقلص استئصال الثدي كاملا. إن جراحة الثدي التحفظية تعطي نفس النتائج التي كانت تعطيها استئصال كامل الثدي مع فارق الاحتفاظ بوجود الثدي. وهذه الجراحة تناسب المرضى المصابين بورم أحادي من الناحية الاكلينيكية والتصويرية عندما يكون الورم بحجم ٤ سم أو أقل سواء كانت الاصابة في المرحلة الأولى أو الثانية مع عدم وجود علامات لانتشار المرض موضعيا أو انتشاره في غدد الابط الليمفاوية. هذه الجراحة التحفظية لا تناسب المريضات ذوات الثدي الصغير أو أولئك اللاتى تكون الاصابة بالسرطان لديهن في وسط الثدي. في جراحة الثدي التحفظية تجرى عمليات استئصال الورم بحد آمن وكذلك استئصال غدد الابط اللمفاوية ويتم تعريض أنسجة الثدي كاملة للعلاج الاشعاعي باستعمال (4-6 MV linear accelerator of Co-60 units) وتكون مجموع الجرعات ٥٠ GY في خلال خمسة أسابيع. وقد تم خضوع مائتان وثمان وثمانون من النساء لعمليات استئصال الثدي التحفظية في هذه الدراسة خلال الأربع سنوات الماضية وكانت أعمار النساء تتراوح بين ٢٥-٦٦ عاماً. وفي هذه الحالات المذكورة كانت الاصابة بالمرض في الثدي الأيمن بنسبة ٥٩٪ و٤١٪ في الثدي الايسر. وفي ٧٨,٦٪ من الحالات كانت الاصابة في الأجزاء الجانبية من الثدي

وكان حجم الورم أقل من ٤ سم في ٥ , ٩٥٪ من الحالات المصابة سواء في الثدي الايمن أو الايسر. وكانت حالة جميع المريضات اللاتي اجتزن فترة النقاهة بعد العملية مستقرة وتلقت جميع المريضات العلاج الاشعاعي والكيماوي بعد عمليات استئصال الثدي التحفظية. وقد تم متابعة مائة وستون مريضة خلال ٤٨ شهراً بعد العملية وقد دونت النتائج. وفي هذه الدراسة توفت حالتين بسبب انتشار المرض وظهر على مريضة واحدة عودة المرض موضعياً.