SPECIAL COMMUNICATION

DEDICATED BREAST CANCER MANAGEMENT CENTRES WITH FACILITIES FOR FULL IMAGE-GUIDED ASSESSMENT AND IMAGE-GUIDED SURGERY IN THE DEVELOPING AREAS OF PAKISTAN - A LONG OVERDUE NECESSITY

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Background: Dedicated centres to manage breast cancers are important to combat this menace. An example of practice in the UK Hospitals is given with an attempt to explain reasons for an urgent need of dedicated breast cancer centres in developing areas of Pakistan. **Methods:** The rates of breast conservation, mastectomy, and immediate breast reconstruction are compared between a centre in the UK and a secondary radiotherapy facility in developing areas in Pakistan for 2011. **Results:** At Kettering General Hospital, 152 patients (71%) had breast conservation therapy including image-guided surgery, 45 (29%) had mastectomy and 15 (33.3%) had immediate breast reconstruction. All the 263 patients who had adjuvant therapy with surgery, has had mastectomy at the institute of radiotherapy and nuclear medicine (IRNUM) in Peshawar, and no patient had immediate reconstruction. **Conclusion:** The availability of mammogram in individual clinics in Peshawar, without the back up of dedicated breast cancer centre fails to materialize the dream of provision of whole spectrum of breast cancer care. Government and international donor organisations may need to be approached for investment in technology and training of personnel.

Keywords: Mastectomy, Immediate Reconstruction, Breast Conservation Therapy (BCT)

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INTRODUCTION

In the developed world there are active population-screening programmes. In the UK, 50–70 year olds are invited for breast screening with 2-image (cranio-caudal and medio-lateral) analogue mammography.[1] The age group has now been extended to include the 47–49 and 71–73 year age groups, as part of a trial. The conventional analogue mammography with two films is increasingly being replaced with digital mammography with attendant benefits of better image resolution and image analysis facility such as tomo-synthesis (computerized image analysis), contrast enhanced mammography and digital archiving facility.[2,3] Any suspicious areas of malignant looking micro-calcification or stromal distortion is subjected to further compression view mammograms and high frequency ultrasound (>10MHz), image guided core biopsy and marker clip insertion by expert radiologists and radiographers trained specifically in the assessment of breast images.[4]

Radiologically visible impalpable malignant lesions, detected on assessment, are subjected to wire localization, conservation breast surgery (Figures-1 and Figure-2). The wire localised specimen is orientated with liga clips and a specimen x-ray obtained in mammogram or faxitron (Figure-3). Specimen radiography improves complete lesion excision with clear margins.[5]

The rate of breast conservation surgery for breast cancer treatment has steadily expanded. Two systematic reviews, one involving six randomized trials and the second, a meta-analysis of nine randomized trials, confirmed the oncological safety and survival equivalence of breast conservation in relation to mastectomy.[6,7] Many studies have shown that breast conservation surgery followed by radiotherapy (BCT) results in an improved body image and a lower level of psychological morbidity.[8,9] The national mastectomy and reconstruction audit in the UK showed that patients with immediate reconstruction experienced a much more positive body image, as well as a stronger sense of physical and emotional wellbeing.[10]

Lessons could be learnt from remarkable developments in breast cancer care in the western and developed world. There is a long overdue need for a specialist Breast Cancer unit, at least at provincial level, in Khyber Pakhtunkhwa (KPK) province of Pakistan. We put forward an example of practice in one of the UK Hospitals with an attempt to explain the reasons for the urgent need of dedicated breast cancer centres in the developing areas of Pakistan.

MATERIAL AND METHODS

The rates of breast conservation, mastectomy, and immediate breast reconstruction are compared between a centre in the UK and one in a secondary radiotherapy facility in developing areas in Pakistan, over a period one year.

RESULTS

Comparison of breast conservation, mastectomy and immediate breast reconstruction in the developing and developed countries.

Table-1: Comparative Data between IRNUM and UK

Comparative Data	Developing Country (IRNUM)	Developed Country (UK)
Number of patients who had BCT including image guided surgery	0 (0%)	152 (71%)
Number of patients who had Mastectomy.	263 (100%)	45 (29%)
Number of patients who had immediate reconstruction	0 (0%)	15 (33.3%)
Total Number of Patients who had surgery as initial treatment	263	197
Total Number of Patients who has not had surgery as initial treatment	155	58
Grand total of all patients	418	255

Figure-1: Right Breast Cranio-caudal view mammogram with guide wire *in situ*

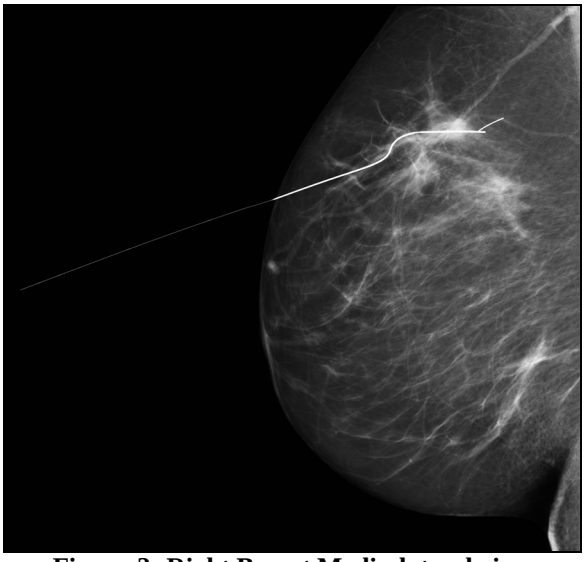

Figure-2: Right Breast Medio-lateral view mammogram with guide wire *in situ*.

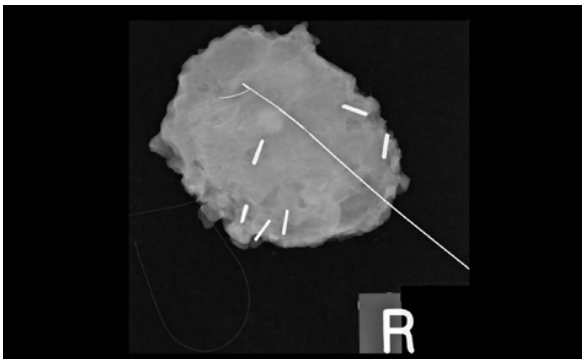

Figure-3: Right Breast Specimen Radiography with guide wire *in situ*
(Lesion is visible and centrally located with good margins. Orientating clips: 1 anterior, 2 medial, and 3 inferior clips)

At Kettering General Hospital in the UK, mastectomy (with or without immediate reconstruction) was carried out in 45 (29%) of cases, while 152 patients (71%) had breast conservation therapy including image-guided surgery (BCT). In the mastectomy group, 15 patients (33.3%) had immediate breast reconstruction. The figures of immediate breast reconstruction varied between different surgeons.

The Institute of Radiotherapy and Nuclear Medicine (IRNUM) in Peshawar (KPK) treated 263 out of 418 patients with adjuvant therapy after primary surgery, the remaining patients presented at an advanced stage. All the 263 patients who underwent adjuvant therapy with surgery as their initial treatment at IRNUM had mastectomy and no patient had immediate breast reconstruction in the mastectomy group. A one hundred percent mastectomy rate with no prospect of immediate breast reconstruction at a secondary referral centre overseas may have valid explanations.

DISCUSSION

The epidemiology of breast cancer is well documented in the developed world, as they have an accurate record of data from national cancer registries and autopsy studies. Breast cancer is a major health issue, and the incidence is rising by over 20% every decade. Over 1 million worldwide are diagnosed with breast cancer each year. One in nine women in the UK are afflicted with breast cancer in their lifetime. 95% of breast cancer is sporadic with multi-factorial causation, such as early menarche, late menopause, null parity and other causes. Only about 5% or less has an underlying hereditary cause and genetic mutations such as BRCA1, BRCA2 and other gene carriers. The disease is more prevalent in the developed world and more prevalent in Caucasian women.[1]

Epidemiology of breast cancer is not accurately known in the developing countries such as

Pakistan, as there is lack of central cancer registries and autopsy studies. However breast cancer is by no means rare in Pakistan and there is enough circumstantial evidence of members in the family, as well as patients seen in personal medical practice, and acquaintances with breast cancer, to suggest that the incidence may be increasing with changes in epidemiological factors and life style changes.

The national mastectomy and breast reconstruction audit in the UK between 2007 and 2010 was the first of its kind in the world to accumulate vast amounts of data regarding mastectomy and breast reconstruction. Of the 18,216 women with complete operation data submitted to audit, 16,485 had undergone a mastectomy, a further 3,389 (20.6%) of whom had received an immediate reconstruction. Rates of immediate reconstruction varied significantly from 9–43% across thirty English cancer networks. This was the first time that a national data has demonstrated the effectiveness of breast reconstruction in improving quality of life following a mastectomy. The audit showed that patients with immediate reconstruction experienced a much more positive body image, as well as a stronger sense of physical and emotional wellbeing.[1]

As there is no population screening, most of breast cancers diagnosed in Peshawar and other areas of Pakistan, are through the symptomatic route, either as a malignant breast lump or locally advanced or metastatic breast cancer. All of operable breast cancer patients who had adjuvant therapy, as shown in figures from IRNUM, have been treated with mastectomy with no immediate reconstruction. The reasons for this variation in practice, includes the following, but the list is by no means exhaustive. They are 1) Patient preferences, 2) Surgeon related variables and preferences, 3) Tumour and patient related variables, meaning mastectomy as the safest option, 4) When it is not possible to try neo-adjuvant chemotherapy before surgery to downsize, because of the non-availability of tumour bed marking and subsequent wire localization pre-operatively in cases of complete clinical and radiological response, 5) Inability of patients to pay for these various options of treatment as free health care is not universally available, and 6) Demographic factors such as distance to the nearest radiotherapy facility, the widespread availability of specialist breast units, and surveillance imaging such as mammography/breast magnetic resonance imaging.

Even those patients who have had mastectomy will need mammographic surveillance of the contra-lateral breast with regular yearly mammograms with the possibility of detection of impalpable suspicious lesions in the contra-lateral breast. Also there is increasing realization in the surgical fraternity in Peshawar that conservation breast surgery and adjuvant radiotherapy (BCT) in eligible patients is oncologically safe and results in a better patient outcome with improved body image and less psychological morbidity. Surgeons are able to offer BCT but with no facility of dedicated breast units and no facility for percutaneous image guided biopsy, surveillance mammograms, and wire localization of clinically occult malignant lesions. Moreover, breast conservation therapy is not a realistic option in KPK. There is a need for dedicated breast units with radiologists trained in breast radiology assessment and surgeons trained in performing image guided surgery and the full spectrum of breast cancer treatment including therapeutic mammoplasty and post-mastectomy reconstruction for all eligible patients.

Patients, who had BCT, require regular yearly surveillance mammograms to detect and assess possible recurrence. There is wide variation in the recurrence rate, reported in the world literature, but most units have achieved a 1% or less per year. Almost 80% of recurrences are in the index quadrant and 90% of these are invasive recurrence. Isolated breast recurrence adequately treated, does not appear to be threat to survival rate, but the aim of initial treatment of primary breast cancer should be to avoid local recurrence.[11,12.] In Peshawar and KPK province, mammograms and ultrasound scan of the breast have become available in individual clinics. However there is no dedicated breast unit with full facilities for assessment of mammographic and ultrasound findings, such as image-guided percutaneous biopsy and marker clip insertion, stereotactic or ultrasound guided wire localization of radiologically visible, clinically impalpable suspicious and malignant looking lesions. Therefore, the lack of trained personnel and non-availability of dedicated breast cancer units with full facilities, make BCT a non-realistic option, even in eligible patients in KPK, to their physical and psychological detriment.

A dedicated breast unit will need substantial capital investment in technology and trained personnel with radiologists trained in breast cancer assessment, and surgeons trained in the full spectrum of breast cancer management including image guided wire localisation surgery, therapeutic mammoplasty and post mastectomy reconstruction.

CONCLUSION

There is an urgent, long overdue need for the establishment of specialized breast cancer services in the province of Khyber Pakhtunkhwa (KPK) to set an example of developing medical practice in Pakistan. Government and international donor organizations may need to be approached for capital investment in technology acquisition and training of personnel. This will bring breast cancer services in KPK at par with the 21st century management of breast cancer. We will then

be able to provide the full spectrum of breast cancer management, including image guided wire localization surgery, therapeutic mammoplasty and mastectomy with the option of immediate reconstruction. This is expected to improve the clinical outcome and will have a substantial impact on the physical and psychological well-being of breast cancer patients treated in the province.

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