Omission of Axillary Dissection with Breast Conservation in Early Breast Cancer

Thesis

Submitted in Partial Fulfillment of the M.D. Degree
in General Surgery

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2014

List of Contents

List of Tables

List of Figures

List of Figures (Cont.)

List of Figures (Cont.)

List of Figures (Cont.)

List of Abbreviation

ACR	American College of Radiology
ACS	The American college of surgeons
ALND	Axillary lymph node dissection
APBI	Activated Partial Breast Irridiation
BCT	Breast Conserving Therapy
BIRADS	Breast Imaging Reporting and Data System
BRCA1	Breast Cancer gene type 1
BRCA2	Breast Cancer gene type 2
BSE	Breast self examination
CAD	Computer-Aided Detection
CBE	Clinical breast examination
CC	Cranio caudal view
CMF	Cyclophosphamide, Methotraxate5-flurouracil
DBCG	Danish Breast Cancer Group
DCIS	Ductal carcinoma in situ
EBCTCG	Early breast cancer trialists collaborative group
EBCTCG	Early Breasts Cancer Trialists' Collaborative Group
EIC	Extensive intraductal component
EORTC	European Organization for Research in Treatment of Caner
FFDM	Full field digital Mammography
HDR	High dose rate
HT	Hormonal therapy
LABC	Locally Advanced Breast Cancer
LCIS	Lobular arcinoma in s situ
LDR	Low dose rate irradiation
LR	Local recurrence
MLO	Medio lateral oblique view
MRI	Magnetic resonance imaging

List of Abbreviation (Cont.)

NCI	National Cancer Institute
NSABP	National Surgical Adjuvant Breast and Bowel Project
NSAID	Non-steroidal anti-inflammatory drugs
NSSM	Non skin-sparing mastectomy
OA	Ovarian Ablation
RT	Radiation Therapy
SEER	Surveillance Epidemiology and End Result
SLN	Sentinel lymph node
SSM	Skin-sparing mastectomy
UCLA	University of California at Los Angeles
5-FU	5-Flurouracil

ACKNOWLEDGEMENT

Praise is to **Allah**, who has guided us to this: never could we have found guidance, had it not been for the guidance of Allah: indeed it was the truth (Al A'raf 43).

Before all, I should express my deep thanks to Allah, without his great blessing I would never accomplish this work.

I wish to express my deep appreciation to **Prof. Dr. Fateen Abd-Elmoneim Anous,** Professor of General Surgery, and Faculty of Medicine, Ain Shams University, for his generous support and guidance which was the primary motive for completing this task.

I am also deeply impressed and wish to express my heartfelt thanks to **Prof. Dr. Hala Abo Senna,** Professor of Radiology, Faculty of Medicine, Ain Shams University, for her valuable advises and continuous help which without it, the completion of this work would have been an impossible job.

All my thanks to **Dr. Sherif Abd Alhalim**, Lecturer of General Surgery, Faculty of Medicine, Ain Shams University, for his kind supervision and her valuable work .

Finally many thanks to the Staff of the Department of 6 Surgeries and to all my family.

Karim Fahmy abd elmoaty

INTRODUCTION

Early breast cancer can be defined as the presence of a mobile tumor within the breast with or without associated mobile enlarged lymph nodes, and represents the vast majority of patients who present now with breast cancer ***(Haffty et al., 2007).***

For many years, axillary lymph node dissection has been used routinely for the staging and regional treatment of all patients with clinically localized breast cancer. This concept is now called into question for several reasons. Increased awareness of the disease and screening programs has led to a rise in the proportion of patients presenting with early-stage disease. These are the patients in whom axillary dissection often fails to yield positive lymph nodes ***(Nieweg et al., 2002).***

The relevance and technique of lymph node staging in patients with breast cancer are currently in a state of flux. Is axillary lymph node dissection worthwhile in patients with small primary tumors? Is importance of the tumor status of the lymph node may be surpassed by primary tumor characteristics? The trend for the past four decades has been towards more conservative loco-regional treatment. So breast-conserving treatment was introduced as we know it combined with axillary node dissection and followed by radiotherapy of the breast. This trend for more conserving treatment is continuing. Radiotherapists are conducting a European study to determine whether radiotherapy can be omitted safely in selected patients. It was to be expected that surgeons investigate whether axillary node dissection can be omitted safely in selected patients ***(Nieweg et al., 2002).***

Axillary dissection can be accompanied by many complications such as arm complications including stiffness, loss of sensation and swelling. Postoperative infection is reported to occur in 5% to 14% of patients. The intercosto-brachial nerve can be inadvertently damaged during axillary dissection, causing numbness and parasthesia in the inner side of the upper arm. Some restriction of shoulder movement is not uncommon. Lymphedema is one of the most dreaded complications of axillary dissection and, once established it is refractory to treatment ***(Maunsell et al., 2003)***

In view of the morbidity associated with axillary dissection, it would theoretically be desirable to omit this procedure whenever the possible morbidity clearly outweighed the clinical benefits or when the risk of axillary metastases is very low or when knowledge of node status will have no influence on therapy ***(Moore et al., 2002).***

Controversy continues to surround the best practice for management of the axilla in patients with early breast cancer (EBC) particularly the clinically negative axilla. The therapeutic and staging roles of axillary surgery (with the consequent morbidity of the procedures utilized) have altered. This is due to the increasing frequency of women presenting with early stage disease the more widespread utilization of adjuvant chemo therapy ***(Andrew et al., 2000).***

The sentinel lymph node biopsy is performed to predict the indication of axillary node dissection. However, slow or faulty radiotracer distribution, expended operative time, and prompt decisions based on the analysis of frozen sections by pathologists are problems of sentinel lymph

node biopsy. The sentinel lymph node biopsy has 1-15% false negative results. Thus, less invasive modalities such as ultrasound (US), power Doppler US, mammography, computed tomography(CT), dynamic contrast enhanced magnetic resonance imaging (MRI) and positron emission tomography (PET) have been increasingly attempted to stage an axillary lymph node preoperatively and to diagnose a malignant lymph node ***(Sung Eun Song et al., 2012).***

US had been the most widely used method for the evaluation of lymph nodes. Moreover, preoperative lymph node staging with US combined with either fine needle aspiration or core needle biopsy can achieve high diagnostic accuracy. The assessment of axillary nodal status, size, morphology, cortical thickness, and vascularity are used as feasible diagnostic criteria. Of these criteria, longitudinal-transverse (LT) axis ratio, concentric or eccentric cortical thickening, and absent or displaced fatty hilum on gray scale US and higher peripheral vascularity on power Doppler US are reported as the most reliable criteria for predicting metastatic lymph nodes. However, some criteria such as cortical thickening or displaced fatty hilum are subjective ***(Yang et al., 2001).***

In summary there is still a need to justify not performing a recognized effective method of axillary staging on a case-by-case basis because the axillary status is still the most reliable prognostic indicator for planning a patient's management. If the woman is at low risk of axillary disease and the result of axillary staging is highly unlikely to alter the management, then breast conservation surgery with radiotherapy to the breast and axilla or occasionally 'watch' policy can be valid alternative ***(Andrew et al., 2000).***

AIM OF THE STUDY

The aim of the study is to assess the possibility of omission of axillary dissection in cases of early breast cancer and its possible benefits.

PATHOLOGY OF BREAST CANCER

The National Cancer Institute in America estimates that there are currently more than 2 million breast cancer survivors in the United States. The risk is even higher for women with certain risk factors, such as a strong family history or known *BRCA1* or *BRCA2* mutations. However, these statistics portray only one aspect of the problem. As new information accumulates, new paradigms of management compete for acceptance with existing ones. It is axiomatic that good scientific data provides the base for good clinical management. Information obtained from molecular, biologic, and pathologic investigations and from clinical trials provides the major focus of this chapter ***(Rise et al., 2002).***

Epidemiology

Breast cancer is the most common malignancy in North American women and for women throughout the industrialized world. In the United States, breast cancer accounts for 32% of all cancers in women. The American Cancer Society estimates that during 2005, 211,240 women will be diagnosed as having breast cancer. The incidence rate of breast cancer has increased steadily over the past 40 years, by about 4% per year ***(Rise et al., 2002).***

Risk Factors

The incidence of breast cancer varies substantially according to the presence or absence of certain well-established risk factors among these factors, the two most prominent are gender and age.