

Advantages & Risks Of Breast Conservation Therapy In The Treatment Of Breast Cancer

Essay

Submitted for partial fulfillment of the Master Degree In General Surgery

by

Mostafa Mahmoud Hafez Ismail

(M.B.,B.Ch)

Faculty Of Medicine - Alexandria University

Under Supervision Of

Prof.Dr.Hesham Hassan Wagdy

Professor Of General Surgery

Faculty Of Medicine - Ain Shams University

Prof.Dr.Asser Mostafa El Afifi

Professor Of General Surgery

Faculty Of Medicine - Ain Shams University

Dr. Hany Said Abdel Baset

Lecturer Of General Surgery

Faculty Of Medicine - Ain Shams University

**Faculty Of Medicine
Ain Shams University
(٢٠١٢)**

Acknowledgment

To Allah, goes all my deepest gratitude and thanks for achieving any work in my life.

*I would like to express my profound gratitude & deepest appreciation to **Prof.Dr. Hisham H.Wagdy**, Professor of General Surgery ,Faculty of Medicine,Ain Shams University, for his relentless support, for the time & effort .It is great honor to work under his guidance and supervision.*

*I am deeply thankful to **Prof.Dr.Asser M.El Afifi**, Professor of general surgery,faculty of medicine ,Ain Shams University, for his willing assistance and advice, splendid efforts & continuous encouragement along the entire course of the assay.*

*I would like to extend cordial appreciation & infinite gratitude to **Dr.Hanny S.Abd El Baset**,lecturer of general surgery,faculty of medicine,Ain ShamsUniversity, for his constant advice , exteme effort and creative thoughts as well as providing a valuable criticism and direction.*

Last but not least, my deep appreciation is expressed to all my family,my parents,my wife,my daughter and my newly son for their cooperation and encouragement.

MUSTAFA MAHMOUD HAFEZ

LISTS OF CONTENTS

-		
	Introduction.....	
	١
-	Aim of work.....	٤
-	Surgical anatomy of the female breast.....	٥
-	Pathology of the female breast cancer.....	٢٩
-	Diagnosis the female breast cancer.....	٥٢
-	Treatment of the female breast cancer.....	٧٣
-	Advantages & risks of breast conservation Therapy.....	١١
		٣
-	Summary.....	١٤٤
-	References.....	١٤٨
-	Arabic summary	

LIST OF FIGURES

Figure		Page
١	Side view of breast structure.	٨
٢	Axillary lymph node chains.	١٢
٣	Vessels and nerves of axilla.	١٣
٤	Arterial distribution of blood to the breast, axilla, and chest wall.	٢٠
٥	Lymph nodes of the breast.	٢٧
٦	Schematic drawing illustrating the major lymph node groups associated with the lymphatic drainage of the breast.	٢٨
٧	Intrinsic subtypes of the breast cancer.	٣١
٨	External (gross) appearance of a mastectomy specimen containing a very large invasive ductal carcinoma of the breast.	٤٠
٩	Invasive ductal carcinoma of the breast,H&E stain.	٤١
١٠	A drawing of a breast duct containing ductal carcinoma in situ.	٤٢
١١	Normal breast with invasive lobular carcinoma (ILC) in an enlarged cross–section of the lobule.	٤٣
١٢	Normal mammograms in a ٤٠-year-old woman show dense breast parenchyma.	٥٩

١٣	A malignant-type lesion: an invasive ductal carcinoma.	٦٠
١٤	Breast cancer, ultrasonography. Mediolateral oblique digital mammogram of the right breast in a ٦٦-year-old woman with a new, opaque, irregular mass approximately ١ cm in diameter.	٦٤
١٥	Modified radical mastectomy versus Halsted radical mastectomy.	٧٦
١٦	Modified Radical Mastectomy.	٧٧
١٧	Breast-conserving surgery.	٨٠
١٨.A	This mammogram shows a spiculated mass to be transfixed by the guidewire with Grid technique of localization.	٨٧
١٨.B	This orthogonal (mediolateral) projection confirms the position of the needle to be placed beyond the cluster of microcalcification.	٨٧
١٨.C	This specimen radiograph shows the wire and the localized speculated mass in situ, with a good excision margin.	٨٧
١٩	Simple mastectomy.	٩٠
٢٠	Skin sparing mastectomy.	٩٢
٢١	Sentinel lymph node biopsy of the breast.	١٠٠

LIST OF TABLES

Table	Page
١ Histological patterns of infiltrative lobular carcinoma	٤٣
٢ Risk of malignancy and care plan by American College of Radiology Breast Imaging Reporting and Data System	٦١
٣ Survival rates of breast conservative surgery plus radiation therapy compared with mastectomy alone	١٢٨
٤ Annual recurrence pattern between breast conserving therapy and modified radical mastectomy	١٢٩
٥ Local recurrence rates for negative margins in breast conserving surgery	١٣٥
٦ Local recurrence rates for close margins in breast conserving surgery	١٣٥
٧ Local recurrence rates for positive margin in breast conserving surgery	١٣٦

LIST OF ABBREVIATIONS

AJCC	The American Joint Committee on Cancer
ASCO	American Society of Clinical Oncology
BCS	Breast Conserving Surgery
BCT	Breast Conserving Therapy
BI-RADS	American College of Radiology Breast Imaging Reporting and Data System
BSE	Breast Self-Examination
CAP	The Collage of American Pathologists
CBE	Clinical Breast Examination
CC	Cranial-Caudal
CT	Computed Tomography
CTX	Chemotherapy
DEXA	Dual Energy X-ray Absorptiometry
EBCTCG	The Early Breast Cancer Trialists' Collaborative Group
EIC	Extensive Intraductal Component
ER	Estrogen Receptor
FNA	Fine Needle Aspiration

H&E	Hematoxylin and Eosin
HER γ	Human Epidermal growth factor Receptor γ
IDC	Invasive Ductal Carcinoma
IHC	Immunohistochemistry
ILC	Invasive Lobular Carcinoma
LCIS	Lobular Carcinoma In Situ
LM	Latero-Medial
ML	Medio-Lateral
MLO	Medio-Lateral-Oblique
MRI	Magnetic Resonance Imaging
MRM	Modified Radical Mastectomy
NCCN	National Comprehensive Cancer Network
NSM	Nipple-Sparing Mastectomy
ROLL	Radioisotope-guided Occult Lesion Localization
RS	Recurrence Score
RT	Radiotherapy
RT-PCR	Real-Time Polymerase Chain Reaction
SLN	Sentinel Lymph Node

SSM	Skin - Sparing Mastectomy
TRAM	Transverse Rectus Abdominis Myocutaneous
UICC	International Union Against Cancer
US	Ultrasonography
VACNB	Percutaneous Vacuum-Assisted large-gauge Core Biopsy
WHO	World Health Organization

INTRODUCTION

Breast cancer in females represents a major health problem. It is the commonest cancer in the women worldwide. It accounts for nearly 30% of female cancer. (*Greenlee et al., 2000*)

Breast cancer is the commonest cause of death due to cancer in females throughout the world. The incidence of breast cancer especially the early- stage is increasing . This increase in incidence may be due to the increase in early detection by screening and self-examination. (*Veronesi et al., 1995* .)

Although surgery remains the principal initial treatment for early- stage breast cancer, the choice of procedure can be controversial. Because of continuing research into new treatment methods, women with early-stage breast cancer now have more treatment options and better chance for long- term survival than ever before. The primary treatment for early-stage female breast cancer is either breast-conserving surgery (BCS) and radiotherapy or mastectomy (MRM) with or without breast reconstruction. (*Morrow et al., 1999*)

Total mastectomy has been the standardized primary treatment in all stages, early or late, of breast cancer. Now,

BCT is established as a safe oncologic treatment for early stage breast cancer. A thorough understanding of risk factors for local recurrence and to achieve lumpectomy margin control is necessary for optimal application. Neoadjuvant chemotherapy, as well as advances in breast imaging, cytopathology, and radiotherapy, have successfully expanded the number of lumpectomy-eligible cases. *(Lisa Newman and Henry Kuerer, 2007)*

Local recurrence after breast conserving surgery and radiotherapy may be due to inappropriate patient selection, inadequate surgery or radiation therapy, or biologically aggressive disease. *(Monica Morrow et al., 2007)*

However, a suspicion of breast cancer requires coordination among the involved physicians. An integrated approach with breast and reconstructive surgeons, radiation and medical oncologists, radiologists and pathologists often yields the most expeditious evaluation and facilitates the kind of communication and coordination that maximizes therapeutic options. *(Chang et al., 2007)*

For most patients, the choice of mastectomy with or without reconstruction or breast conservation treatment does not impact on the likelihood of survival, but it may have a

differential effect on the quality of life. Psychological research comparing patient adaptation following mastectomy and breast conservation treatment shows significant differences in global measures of emotional distress. Women whose breasts are preserved have more positive attitudes about their body image and experience fewer changes in their frequency of breast stimulation and feelings of sexual desirability .(*Zhi-Ming Shao et al., " " " "*)

AIM OF WORK

The aim of this work is to review the advantages & risks of breast conservation therapy in relation to different methods of surgical treatment of the female breast cancer.

SURGICAL ANATOMY OF THE FEMALE BREAST

The breast is made up of fatty tissue and glandular, milk-producing tissues. The ratio of fatty tissue to glandular tissue varies among individuals. In addition, with the onset of menopause (ie, decrease in estrogen levels), the relative amount of fatty tissue increases as the glandular tissue diminishes. *(Maxwell & Gabriel, 1994)*

Site and extension:

The base of the breast overlies the pectoralis major muscle between the second and sixth ribs in the non ptotic state. The gland is anchored to the pectoralis major fascia by the suspensory ligaments first described by Astley Cooper in 1827. These ligaments run throughout the breast tissue parenchyma from the deep fascia beneath the breast and attach to the dermis of the skin. Since they are not taut, they allow for the natural motion of the breast. These ligaments relax with age and time, eventually resulting in breast ptosis. The lower pole of the breast is fuller than the upper pole. The tail of Spence extends obliquely up into the medial wall of the axilla. *(Maxwell & Gabriel, 1994)*

The breast overlies the pectoralis major muscle as well as the uppermost portion of the rectus abdominis muscle inferomedially. The nipple should lie above the inframammary crease and is usually level with the fourth rib and just lateral to the mid-clavicular line. . (*Maxwell & Gabriel, 1974*)

Embryology

The mammary glands are modified sweat glands. The breast develops from the ectodermally derived milk streak. The milk streak extends between the limb buds from the primordial axilla distally to the inguinal region. In humans, normally only one gland develops on each side in the pectoral region. At the end of the first trimester, all but the pectoral portion of the milk streak atrophies, leaving the nipple bud. The ducts and lobules form from ingrowth of the ectoderm from the nipple surface, thus the breast is a dermally derived organ. (*Bland & Vezeridis, 1974*)

Size and shape

Its base is circular and measures around 10 to 12 cm, but its volume is very variable. The weight of a non-lactating breast ranges from 100 to 220g, while a lactating breast may exceed 300g in weight. The breasts of nulliparous women have a