Breast Reconstruction after Mastectomy

Essay

Submitted for partial fulfillment of
Master degree in General Surgery

By

Mohammad Tarek El-Naggar
M.B.B.Ch

Supervisors

Prof. Dr. Awad Hasan El-Kyal
Professor of general Surgery
Faculty of Medicine
Ain Shams University

Dr. Abd-Allah Magdy Mohamed Zaky
Lecturer of General Surgery
Faculty of Medicine
Ain Shams University

Dr. Khaled Mohamed Ali El-Gazzar
Lecturer of Plastic & reconstructive Surgery
Faculty of Medicine
Ain Shams University

Faculty of Medicine
Ain Shams University
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الطبيب/ محمد طارق النجار
بكالوريوس الطب و الجراحة

تحت إشراف

الأستاذ الدكتور/ عوض حسن الكيال
أستاذ الجراحة العامة
كلية الطب- جامعة عين شمس

الدكتور/ عبدالله مجدى محمد زكى
مدرس الجراحة العامة
كلية الطب- جامعة عين شمس

الدكتور/ خالد محمد على الجزار
مدرس جراحة التجميل و الحروق
كلية الطب- جامعة عين شمس

كلية الطب
جامعة عين شمس
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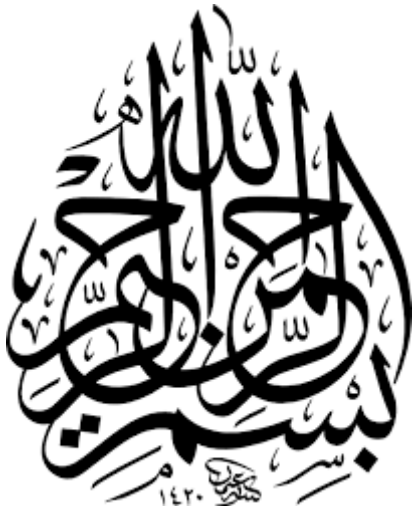
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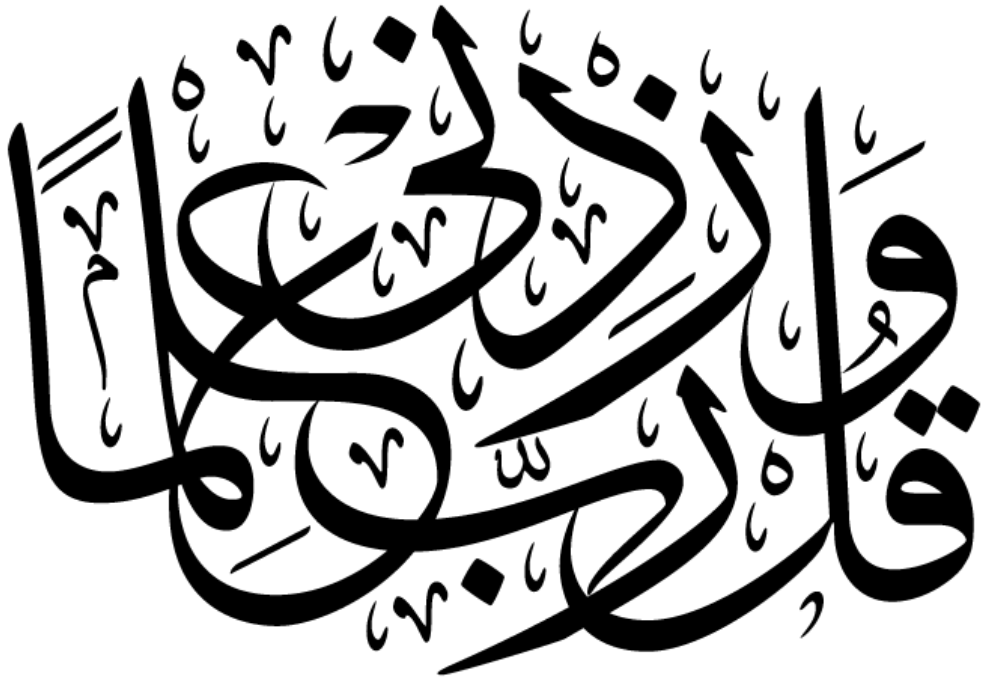
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Dedication

To those who have always been there for me

***My Mother**, for her support and dedication*

***My Father**, for his love and constant encouragement*

***My Sister**, for her encouragement*

List of Abbreviations

AND	Axillary lymphnode Dissection
BCT	Breast Conserving Therapy.
BIRADS	Breast Imaging Reporting And Data System.
CC	Craniocaudal.
CTA	Computed Tomography Angiography.
DCIS	Ductal Carcinoma In Situ.
DFAP	Deep Femoral Artery Perforator Flap
DIEA & DIEV	Deep Inferior Epigastric Artery & Vein.
DIEP	Deep Inferior Epigastric Perforator flap.
DVT	Deep Venous Thrombosis.
FDG	Fluorodeoxyglucouse.
FNA	Fine Needle Aspiration.
GAP	Gluteal Artery Perforator flap.
IGAP	Inferior Gluteal Artery Perforator.
IMF	The Inframammary Fold.
ITA & ITV	Internal Thoracic Artery & Vein.
LAP	Lumbar Artery Perforator Flap
LDM	Latismus Dorsi Muscle.
MLO	Mediolateral Oblique.
MRA	Magnetic Resonance Angiography.
MRI	Magnetic Resonance Imaging.
MRM	Modified Radical Mastectomy.
MS TRAM	Muscel Sparing TRAM.
NAC	Nipple-Areola Complex.
NSM	Nipple Sparing Mastectomy.
PEM	Positron Emission Mammography
PET	Positron Emission Tomography
PMRT	Post Mastectomy RadioTherapy.
SGAP	Superior Gluteal Artery Perforator.
SLN	Sentinel Lymph Node.
SLNB	Sentinel Lymph Node Biopsy.
T	Thoracic.
TNM	Tumour lymph Node Metastasis.
TRAM flap	Trasverse Rectus Abdominis Musculocutaneous flap.
TUG	Transverse Upper Gracilis Flap.

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Introduction

The breast is an important symbol of femininity. It plays an important role in woman's life whether functionally, psychologically or aesthetically. **(Huang et al., 2004)**

Breast cancer is the most common form of cancer diagnosed in women. In 2007, it was the second leading cause of cancer mortality. Current data suggests that one of eight women will be diagnosed with breast cancer in their lifetime, while the incidence of breast cancer has progressively increased over the past 2 decades. The mortality from breast cancer has declined largely due to better detection and improved therapeutic interventions. **(Ceradini & Levine, 2008)**

Surgical treatment for breast cancer has undergone major changes over the last 30 years; there has been a major shift from radical surgery to breast conserving surgery, with no harmful effects on survival. Some women will not be suitable for breast conserving surgery and mastectomy is indicated. **(Shokuhi & Clarke, 2007)**

Recent advances in reconstructive techniques allow reconstruction after breast ablative surgery which alleviates some physical and psychological concerns. **(Huang et al., 2004)**

The primary goal of breast reconstruction is to recreate form and symmetry by correcting the anatomic defect while preserving patient safety and health. The reconstructive process can start at the time of the mastectomy (immediate

reconstruction) or any time afterwards (delayed reconstruction). **(Hu & Alderman, 2007)**

The reconstructive options are broadly classified into:

- Implant based reconstruction.
- Autologous reconstruction.
- Combination of both. **(Ramakrishnan & Tare, 2007)**

Implant based reconstruction can be either an implant only reconstruction or an expander implant reconstruction. Autologous reconstruction involves either a pedicle or free flap reconstruction with or without a skin paddle. In certain situations, an implant and the autologous flap together are used in combination for breast reconstruction. The choice of procedure depends on the availability of local skin, size of the opposite breast, patient's expectations and surgeon's experience. The commonly used autologous tissue flaps for breast reconstruction are Latissimus dorsi myocutaneous flap , pedicled Transverse Rectus Abdominis Muscle flap (TRAM). Recent techniques include microsurgical reconstruction as free TRAM (muscle-sparing) flap, Deep Inferior Epigastric artery Perforator flap (DIEP), Superior Gluteal Artery Perforator flap (SGAP), Inferior Gluteal Artery Perforator (IGAP) flap and superficial inferior epigastric artery free flap. **(Ramakrishnan & Tare, 2007)**

Reconstruction of the nipple areola complex is typically performed once both reconstruction of the breast mound and administration of any adjuvant therapy are complete. **(Corderio, 2008)**

Symmetry is one of the main purposes of breast reconstruction, with the need to perform a surgical procedure on the healthy contralateral breast in most cases. Obtaining symmetry represents a great challenge for plastic surgeons. (**Paolo P. et al., 2012)**

Aim of the work

The aim of this essay is to discuss surgical management of breast cancer and the different techniques of breast reconstruction after mastectomy to improve the quality of life in breast cancer patient.

Anatomy of the female breast

Embryology:

The breast is a modified sweat gland originating from the ectodermal layer of the embryo during the 4^{th}-6^{th} week of intra-uterine life. It arises from two ridges of ectodermal thickening called the milk lines, which runs from the future axilla to the future inguinal region and medial thigh. Although most of the milk line eventually disappears, a prominent ridge remains in the pectoral area to form the primary breast bud during the 5^{th} week of intra-uterine life. This bud grows downwards into the underlying dermis. In the 10^{th} week, the primary bud begins to branch, and by the 12^{th} week several secondary buds have been formed. These buds lengthen and branch throughout the remainder of gestation, and the resulting ducts canalize by the coalescence of small lumens. At birth, the mammary glands consist of 15-25 lactiferous ducts, which open onto a small superficial depression called the mammary pit. Proliferation of the underlying mesoderm usually converts this pit to an everted nipple within few weeks after birth, although occasionally the nipple remains depressed (inverted nipple). The skin surrounding the nipple also proliferates to form the areola (**Heys, 2006).**

Up until the onset of puberty, the tissue of the breast responds to the release of estrogen and progesterone. Estrogen stimulates the formation of additional ducts, the elongation of existing ducts and formation of a system of milk secreting glands. These are associated with an increase in volume and elasticity of connective tissue, deposition of adipose tissue and increased vascularity. Progesterone stimulates lobule formation. By the time the breast is fully formed, typically by the age of 15. Until the menopause, the woman's breast tissue will continue to respond to the changing hormonal environment that follows the menstrual cycle. The breast spends