BREAST RECONSTRUCTION AFTER MASTECTOMY

Essay

Submitted for partial fulfillment of Master Degree in General surgery

By

Mina Agaiby Asham

M.B.B.Ch.

Assiut University

Supervised by

Prof.Dr.Nabil Sayed Saber

Professor of General surgery

Faculty of Medicine Ain Shams University

Dr.Samy Gamil Akhnokh

Lecturer of General surgery

Faculty of Medicine Ain Shams University

Faculty of Medicine

Ain Shams University

2013

Acknowledgments

First and last, I thank ***"Almighty Allah"*** *as I deeply owe* ***HIM*** *mercy, support and guidance in my whole life.*

I would like to express my endless gratitude and appreciation to ***Prof. Dr. Nabil Sayed Saber,*** *Professor of General surgery, Ain Shams University, for giving me the honor of working under his supervision and providing me a lot of encouragement throughout this work.*

I would like to acknowledge my profound gratitude to ***Dr. Samy Gamil Akhnokh,*** *Lecturer of General surgery, Faculty of Medicine, Ain Shams University, for his active supervision, valuable advice, precious comments and kind help throughout this study.*

Dedication

To those who have always been there for me, to spirit of my father, my mother for her care & instructions, to my sisters, their husbands & my friends for their support.....

Thanks all...

Yours...Mina

Contents

Title Page

List of Figures

List of tables

List of Abbreviations

Abb.	Descriptions
AS	Areola sparing.
BCT	Breast conservation therapy.
DIEP	Deep inferior epigastric perforator flap.
DSEA	Deep superior epigastric artery.
FDA	US Food and Drug Administration.
GAP	Gluteal artery perforator flap.
IGAP	Inferior gluteal artery perforator flap.
LDMF	Latissimus dorsi muscle flap.
MDOT	Modified double opposing tab flap.
MRM	Modified radical mastectomy.
NAC	Nipple areola complex.
NAS	Nipple areola sparing.
PMRT	Post mastectomy radiotherapy.
SGAP	Superior gluteal artery perforator flap.
SIEA	Superficial inferior epigastric artery flap.
SSM	Skin sparing mastectomy.
TRAM	Transverse rectus abdominis myocutaneous flap.
TUG	Transverse upper gracilis musculocutaneous flap.
VRAM	Vertical rectus abdominus myocutaneous flap.

Breast cancer is the second leading cause of cancer deaths in women and is the most common cancer among women, excluding non melanoma skin cancers ***(Fancher et al., 2009).***

Surgical management of breast cancer involves four major aspects: the breast parenchyma, the skin envelope, the nipple-areola complex, and the lymph nodes. There has been a trend toward a more conservative approach to the surgical extirpation of breast cancer. For a more than a century, the primary treatment of breast cancer was the Halsted radical mastectomy. It's now clear that such radical surgery is often not necessary for the treatment of breast cancer. The treatment preference is now modified radical mastectomy ***(Mathes and Massey, 2006).***

Breasts are a potent symbol of femininity, and the loss of a breast can have important psychological consequences. Mastectomy involves the removal of breast tissue, varying amounts of skin and invariably the nipple-areola complex. The removal of these tissues results in the loss of volume, shape and contour of the breast ***(Kroll, 2000).***

Timing of breast reconstruction after mastectomy is determined primarily by patient factors and the need for post mastectomy radiation therapy. If the risk of post mastectomy radiation is low, then immediate reconstruction produces the optimal aesthetic result. If the risk of post mastectomy radiation is high, then delayed reconstruction is preferable

to optimize both radiation delivery and aesthetic outcome ***(Ananthakrishnan and Lucas, 2008).***

Breast reconstruction generally consists of two stages: restoration of the breast mound and reconstruction of the nipple–areola complex. Reconstruction of the breast mound itself can be performed with the use of either non autologus (implants) or autogenous tissues ***(Rovere and Breach, 2004).***

Aim of the Work

The aim of this study is to highlight & illustrate current breast reconstruction techniques after mastectomy.

Breast Development:

The human breast is a dynamic organ that does not go through all developmental stages unless a woman experiences pregnancy and childbirth. The course of breast development can be described in distinct phases beginning with the fetal phase and progressing through the neonatal / prepubertal and postpubertal phases ***(Geddes, 2007).***

- **Prenatal development:**

Prenatal development is similar in both sexes, with epithelial mammary bud appearing at a gestational age of 35 days, by day 37 this has become a mammary line extending from axilla through to the inguinal region. Usually invagination of the thoracic mammary bud into mesenchyme occurs by day 49, with involution of remaining mammary line . Accessory breast tissue may be present in adult anywhere along milk line (polythelia). Nipple formation begins at day 56 and primitive ducts (mammary spronts) develop at 84 days with canalization occurring at about the 150th day ***(Moore K., 2005).***

The absence of the testosterone hormone or its receptors allows female breast development to proceed. Conversely the presence of testosterone hormone in the male fetus induces rapid mesenchymal proliferation and effectively, the epidermal spruts and obviates further breast development ***(Moore K., 2005).***

- **Postnatal development:**

Lobule formation occurs (exclusively in females) after puberty when there is branching of ducts and development of lobules from terminal ducts. Externally recognizable breast development from puberty onwards can be divided into 5 separate phases. In phase1: there is elevation of nipple. In phase2: glandular subareolar tissue is present with both nipple and breast projection from the chest wall as a single mass. Phase3: encompasses increase in diameter and pigmentation of the areola, with proliferation of palpable breast tissue. During phase4: there is further pigmentation and enlargement of the nipple and areola so that the nipple and areola form a secondary mass anterior to the main part of the breast. Finally, phase5: there is development of smooth contour of the breast ***(Moore K., 2005).***

Morphology:

The adult breast lies between the second and sixth ribs in the vertical axis and between the sternal edge and the midaxillary line in the horizontal axis. The average breast measures 10 to 12 cm in diameter, and its average thickness centrally is 5 to 7 cm. Breast tissue also projects into the axilla as the axillary tail of Spence. The contour of the breast varies but is usually dome-like, with a conical configuration in the nulliparous woman and a pendulous contour in the parous

woman. The breast is comprised of three major structures: skin, subcutaneous tissue, and breast tissue, with the last comprising both parenchyma and stroma. The parenchyma is divided into 15 to 20 segments that converge at the nipple in a radial arrangement. The collecting ducts that drain each segment are 2 mm in diameter, with subareolar lactiferous sinuses of 5 to 8 mm in diameter. Approximately 10 major collecting milk ducts open at the nipple, See Fig.1&2 ***(Mimoumi R. et al., 1993).***

The skin of the breast is thin and contains hair follicles, sebaceous glands, and eccrine sweat glands. The nipple, which is located over the fourth intercostal space in the nonpendulous breast, contains abundant sensory nerve endings, including Ruffini-like bodies and end bulbs of Krause. Moreover, sebaceous and apocrine sweat glands are present, but not hair follicles. The areola is circular and pigmented, measuring 15 to 60 mm in diameter. The Morgagni tubercles, located near the periphery of the areola, are elevations formed by openings of the ducts of the Montgomery glands. The Montgomery glands are large sebaceous glands capable of secreting milk; they represent an intermediate stage between sweat and mammary glands. Fascial tissues envelop the breast; the superficial pectoral fascia envelops the breast and is continuous with the superficial abdominal fascia of Camper. The undersurface of the breast lies on the deep pectoral fascia, covering the pectoralis major and serratus anterior muscles. Connecting these two fascial layers are

fibrous bands (Cooper suspensory ligaments) that represent the "natural" means of support of the breast ***(Romrell L.J. and Bland K.I., 1998).***

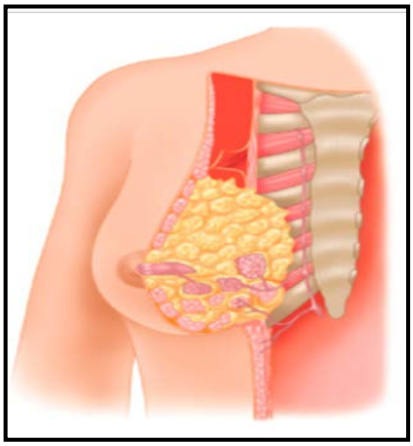

Fig. 1: Anatomy of the breast. Tangential view of the breast and associated chest wall **(Romrell L.J. and Bland K.I., 1998).**

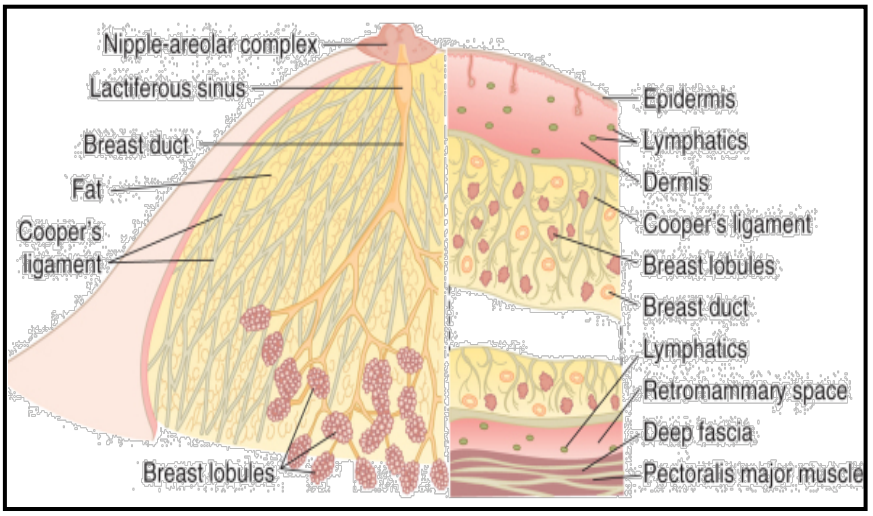

Fig.2: Sagittal section of the breast **(Bannister et al., 2005).**