A RETROSPECTIVE COMPARATIVE STUDY OF MODIFIED RADICAL VERSUS CONSERVATIVE BREAST SURGERY IN EARLY STAGES BREAST CANCER

Thesis

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By

Mohsen Lotfy Hennawy

(M.B.B.Ch – Diploma of G.Surgery Cairo University)

Supervised By

Prof. Dr.
Adel Fahmy
Professor of G. Surgery
Faculty of Medicine
Cairo University

Dr.
Amr Sakr
Lecturer of Clinical Oncology
Faculty of Medicine
Cairo University

Dr.
Amr Ayad
Lecturer of G. Surgery
Faculty of Medicine
Cairo University

Cairo University

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Mohsen Lotfy Hennawy

Dedication

To My Parents and My Family
Who Helped Me and Supported Me

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ABSTRACT

Breast cancer is the most common type of cancer in women. It involves a precious part of the woman's body. Dealing with such a disease must take into consideration her quality of life as well as her cure. The two most common procedures used in management of early stages breast cancer (stage I & II) are modified radical mastectomy (MRM) and conservative surgery (Lumpectomy or Quadrantectomy). The following retrospective study is concerned with comparing the two techniques regarding local control of the disease, disease free survival, and over-all survival in the early stages of the disease.

KEY WORDS

Breast Cancer

Conservative Breast Surgery

Modified Radical Mastectomy

AIM OF THE WORK

The aim of this study is to evaluate:

- Local control.
- Disease – free survival.
- Overall survival.

In Egyptian breast cancer female patients whom underwent modified radical mastectomy versus conservative breast surgery in early stages breast cancer.

INTRODUCTION

Breast cancer is the most common type of cancer in women, accounting for an estimated 32% of all new cancer cases in the United States *(Kimberly J. Van Zee, 2004)*.

Patients with stage I and II disease usually have two options: breast conservation and mastectomy with or without reconstruction *(Martin D. Abeloff et al., 2004)*.

Modified radical mastectomy was a more frequently utilized treatment than breast-conserving therapy in patients with clinical stage II lesions, older age, larger tumor size or shorter distance between tumor and nipple *(Horiguchi J. et al., 2002)*.

Breast conserving therapy (lumpectomy with levels I and II axillary node dissection, plus radiotherapy) provides comparable overall and disease-free survival to modified radical mastectomy. Breast-conserving therapy may offer an advantage over mastectomy in terms of body image, psychological and social adjustment but appears equivalent with regard to marital adjustment, global adjustment and fear of recurrence *(Can J. Surg., 2005)*.

ANATOMY OF THE FEMALE BREAST

Embryology of the Breast

The breast develops as invagination of the chest wall ectoderm, which forms a series of branching ducts. Shortly before birth, this site of invagination everts to form the nipple *(Harold et al., 1993).*

During the fourth week of gestation, paired ectodermal thickenings termed mammary ridges or milk lines (Fig. 1) develop on the ventral surface of the embryo and extend in a curvilinear fashion convex towards the midline from the axilla to the medial side of the thigh on both sides. This is the first morphologic evidence of mammary gland development. In normal human development, these ridges disappear except at the level of the fourth intercostal space on the anterior thorax, where the mammary gland subsequently develops *(Don R Revis, 2003).*

During the 20^{th} week of gestation, solid cords of epithelial cells grow down, in the tissues beneath the ectodermal swelling of the remaining milk ridge (the underlying mesoderm), as solid epithelial columns, comprising some 15 to 20 branches. The epithelial system becomes surrounded by invading mesenchyme, which develops into the supporting connective tissue and fat of the breast *(Ellis and Skandalakis, 1993).*

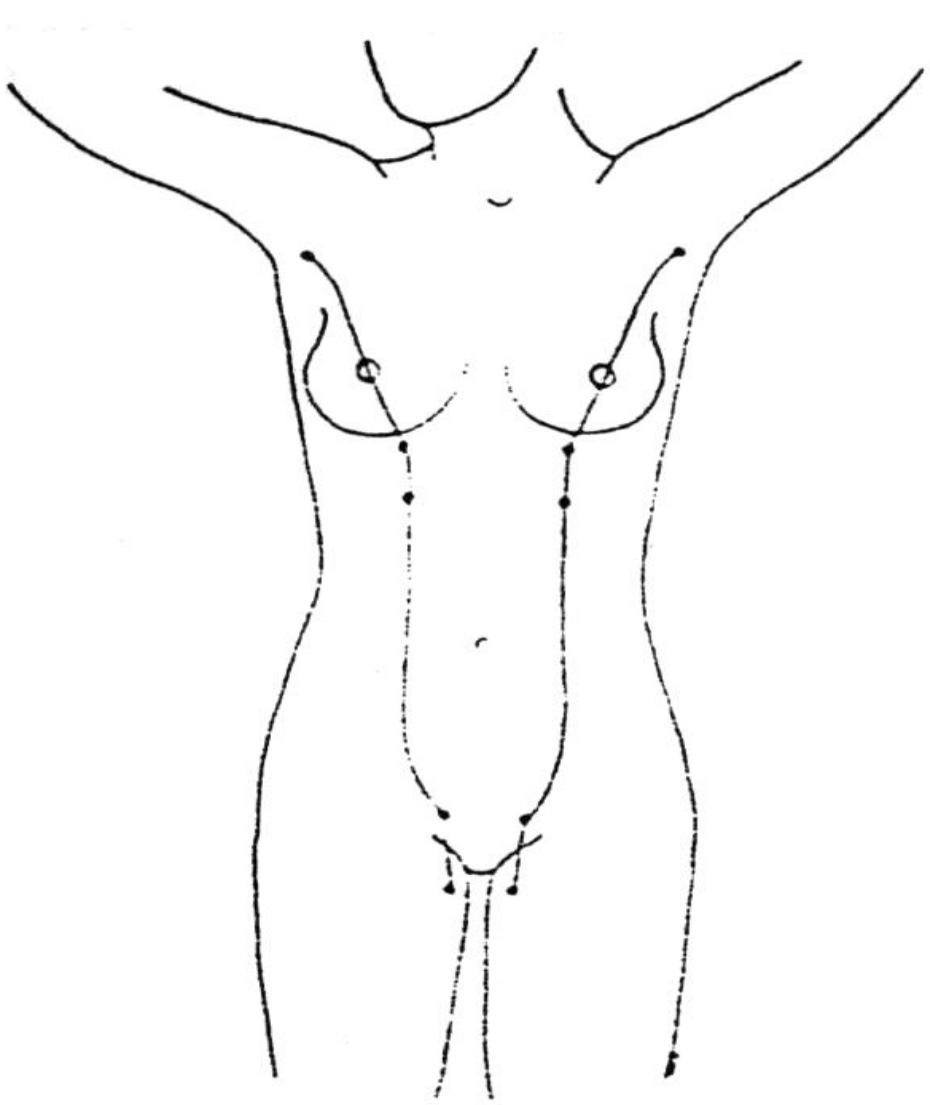

Fig. (1)

Mammary milk lines

(From: Bland KL. Romrell U. Congenital and acquired disturbances of breast development and growth, in Bland KL. Copeland EM [3rd Edition]: The Breast: Comprehensive management of benign and malignant diseases. Philadelphia. WB Saunders, 1991 Chap.4, P.70).

The epithelial lining of the breast ducts and acini is developed from ectoderm, and the supporting tissue is derived from the mesenchyme *(Deker and Du Plessis, 1986).*

Between the 30th and 36th weeks of gestation, the solid ducts become canalized to form the lactiferous ducts. At this time, the original ectodermal swelling sheds its surface central cells which creates an epithelial pit (the mammary pit) into which the lactiferous tubules open. This becomes everted at about 38th week to form the definitive nipple. From infancy, no involutional changes occur till 2 to 3 weeks and thereafter the breast is quiescent until 2 to 3 years prior to menarche *(Jones, 1996).*

Surgical Anatomy

The anatomy of the breast and its relation to underlying structures is important for the successful management of benign and malignant breast diseases. The human breast develops as a dermal derived organ lying within the subcutaneous tissue, similar to the development of sweat glands. The ductal system develops from the nipple bud by invasion of the primitive ectodermal cells into the underlying subcutaneous tissues, and the formation of ducts with a limiting basement membrane (Fig. 2) *(Donegan et al., 1988).*

The mature breast parenchyma lies cushioned in fat between the layers of superficial pectoral fascia. The breast rests on the pectoralis muscle and on a thin layer of loose areolar tissue, the retro mammary space, containing lymphatics and small vessels (Fig. 3). A total mastectomy generally separates the breast from the pectoral muscle and includes the retro mammary space and deep fascia over the muscle *(Dupont WD et al., 1985).*

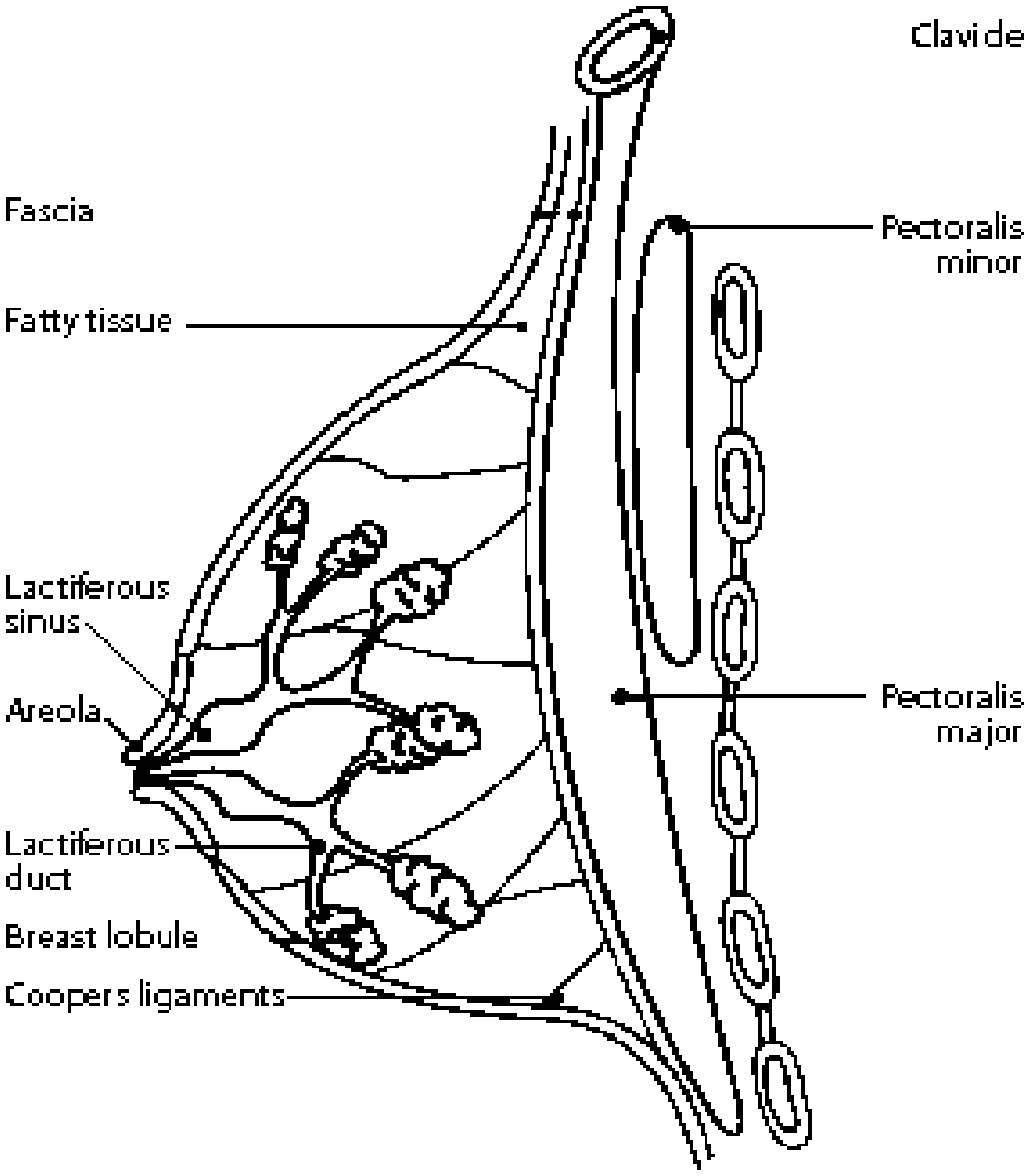

Fig. (2)

Lamarque J-L, ed. Anatomy and embryology. In: An atlas and text of the breast: Clinical Radio-diagnosis. London: Wolfe Medical Publications, 1984: 17-28.

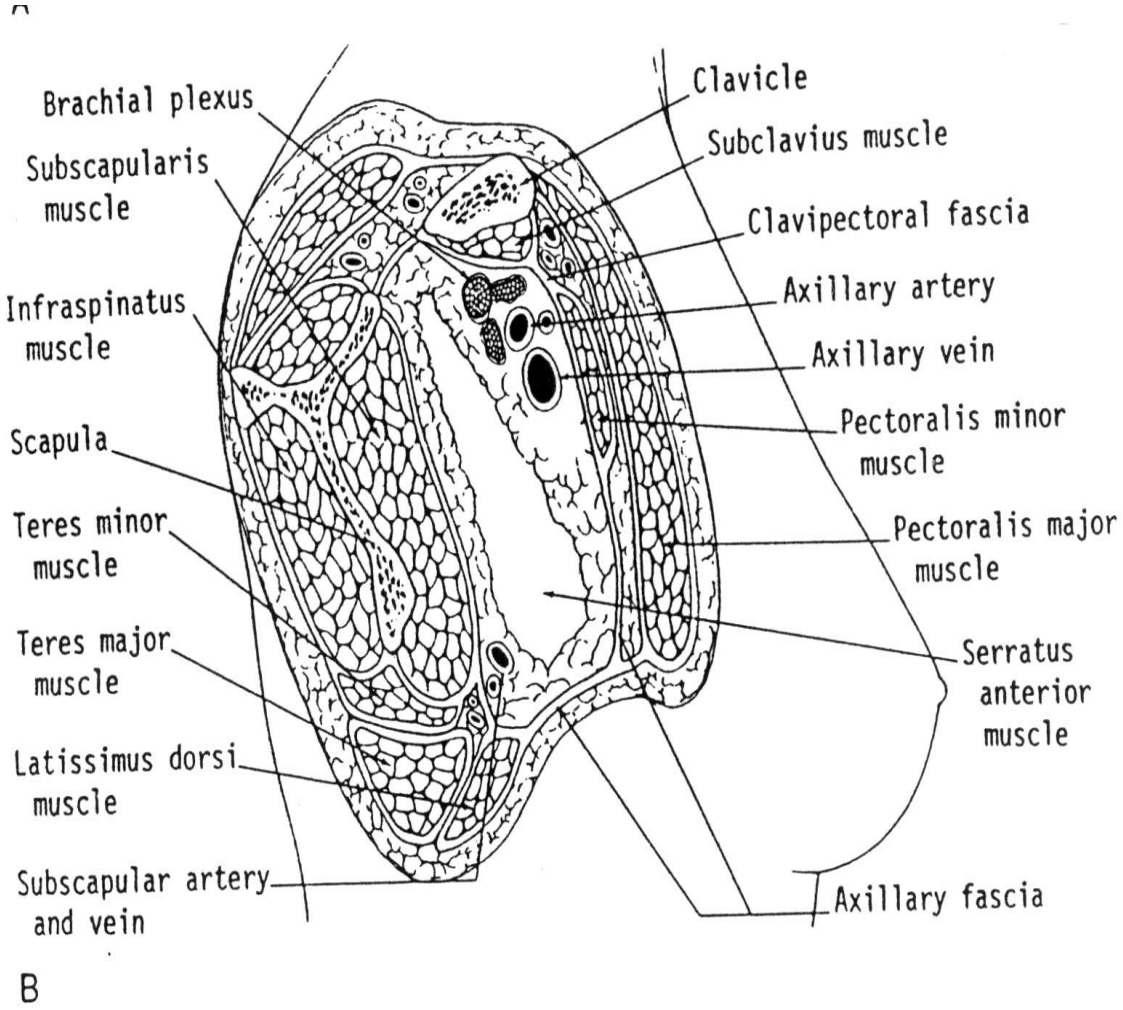

Fig. (3)

A sagittal section of the axilla shows the relationship of muscles, blood vessels, and nerves to facial planes. (Courtesy of Thomas G. Peter, MD).

Deep to the pectoralis major muscle, the pectoralis minor muscle is enclosed in the clavipectorl fascia, which envelops it and extends laterally to fuse with the axillary's fascia. In a standard modified radical mastectomy, dissection along the lateral border of the pectoralis minor muscle divides the axillary fascia and exposes the axillary contents. Within the loose areolar fat of the axilla, one fined a variable number of lymph nodes (Fig. 4) *(Lincoln B, 1996).*

Blood Supply of the Breast:

Arterial supply: (Fig. 5)

1- The lateral thoracic artery: from the second part of the axillary artery, is a main source of blood supply for the lateral quadrants of the breast *(Manson, 1997).*

2- The internal mammary arteries: from the first part of subclavian artery, courses downward along the lateral border of the sternum, sending branches through the intercostal spaces supplying the medial parts of the breast *(Mecminn, 1994).*

3- The intercostal perforators: supply the inferior and lateral parts of the breast. These perforators are the lateral branches of the second, third, and fourth posterior intercostal arteries *(Mecminn, 1994).*

Venous drainage:

Around the nipple, the veins form anastomotic circle, the circulus venous. Veins from this circle and from the mammary gland transmit blood to the periphery of the breast, and then to the vessels joining the internal mammary, axillary, and posterior intercostal veins (Fig. 6) *(Haagensen, 1986).*