CONSERVATIVE BREAST SURGERY

Essay
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The Master Degree Of
General Surgery

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بسم الله الرحمن الرحيم

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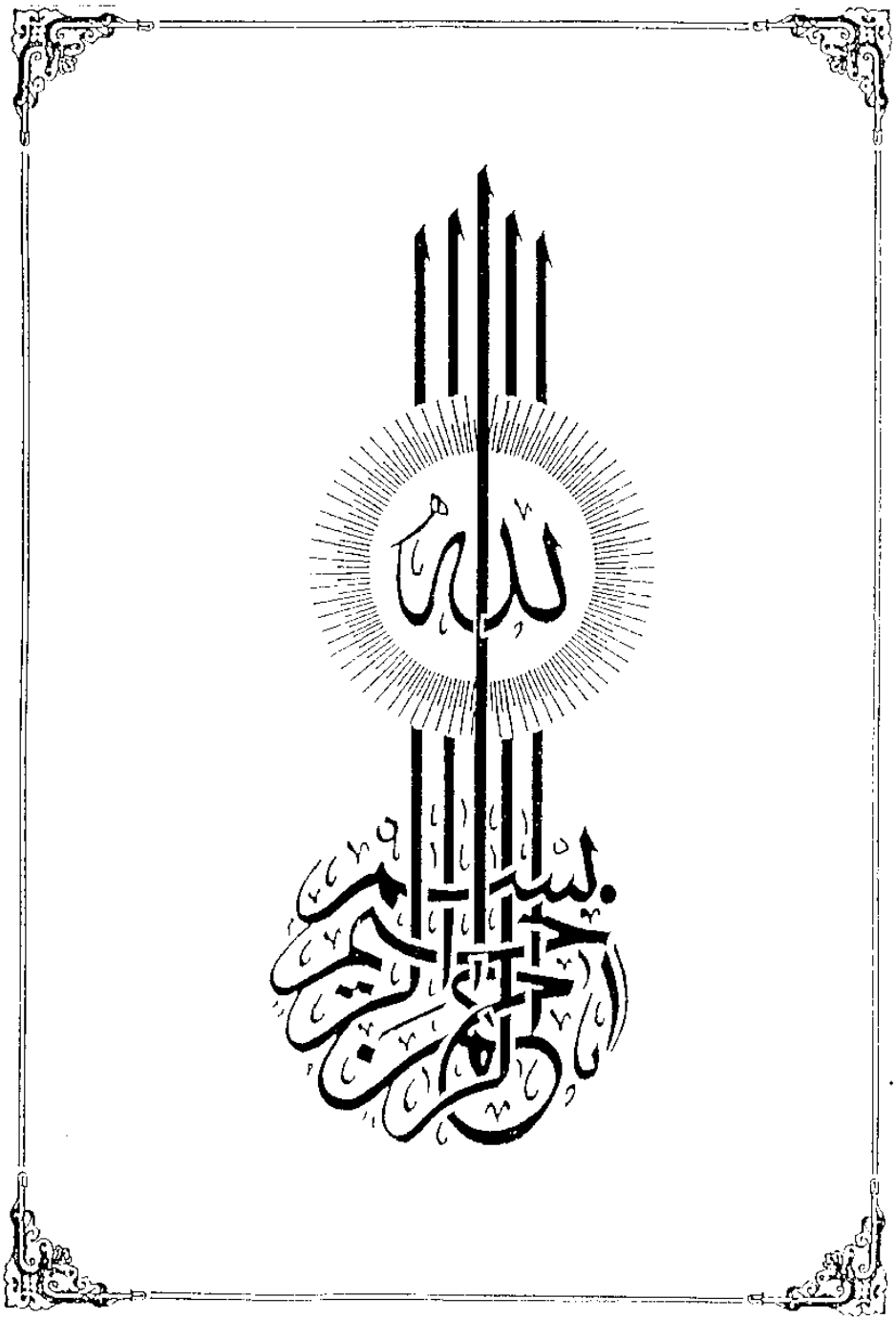

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Introduction

INTRODUCTION

The mutilation caused by radical mastectomy have been accepted by women as a sacrifice they were called on to face in view of a hypothetical benefit. Radical mastectomy nevertheless has been regarded for decades as an indispensable step to reach any possibility of cure (Veronesi, 1987).

There is a need to match individual patients with appropriate treatment to avoid either under-treating patients who have inherently aggressive disease or exposing others with indolent tumors to the unnecessary toxic side-effect of potentially ineffective treatment (Miller, 1992).

A number of clinical trials have been performed in the last 20 years to test the validity of techniques for preserving the breast in patients with a mammary carcinoma. The long-term results shows that in patients with a tumor of less than 2 cm, a conservative treatment can substitute to the total mastectomy. Therefore, for those patients the indication for quadrentectomy or large excision plus axillary dissection and radiotherapy on ipsilateral breast is formal one, while mutilating techniques are ethically difficult to justify (Veronesi, 1987).

Numerous studies have now shown that although local recurrence may be slightly more common after breast conservation than mastectomy, disease-free survival and overall survival are the same (Fisher et al., 1989).

The advantages of conservation therapy are that, it produces an acceptable cosmotic appearance and when compared with mastectomy, it results in an improvement in patient's body image (Dixon, 1993).

AIM OF THE WORK

The aim of this essay is to provide a meaningful insight to the conservative breast surgery as a management of early breast cancer.

I. Biology Of Breast Cancer

BIOLOGY OF BREAST CANCER

Long term follow up studies of survival show that in most cases, primary breast cancer is a systemic disease at the time of diagnosis that may recur decades after it has been initially diagnosed (Sigurdson et al., 1990).

The concept that breast cancer represents a heterogenous group of neoplasms is now obvious, and recent evidence suggests biologic heterogenicity of cells comprising individual breast cancer (Fisher, 1984).

The disease takes two forms :

- One is rapidly fatal .
- Another in which the outcome differs little from that of women of similar age without disease (Fox, 1979).

Local therapy cannot affect the micrometastases which have already spread to other parts of the body and this fact explains why the 5 and 10 year results of breast cancer treatment have changed little over the last 10 years (Mansel, 1988).

Tumor doubling time:

It is the time taken by tumor to double it's volume. The concept of tumor doubling time (TDT) is useful in estimating the duration of the preclinical stage of the breast cancer and in understanding the clinical course of the disease (Stierer and Rosen, 1989).

It is well appreciated that most breast cancers cannot be palpated until they are at least 1 cm in size, or 1 billion cells (Fisher, 1984).

Kinetic studies indicate that such a size requires 30 population doublings. When it is recognized that a doubling time might encompass 30 to 200 or more days, it becomes apparent that a tumor that is regarded as clinically early is in truth biologically late, requiring only 10 to 20 more doubling before causing death of the host (Fisher, 1984).

Gershon-Cohen (1963) reported that the average tumor doubling time was 128 days in patients with negative axillary node involvement and 85 days in patient with positive axillary node involvement (Stierer and Rosen, 1989).

The difference in mean doubling time in early and late breast cancer is statistically significant, providing convincing documentation of the growth retardation in advanced human tumor (Stierer and Rosen, 1989).

The most important consideration is when a tumor, if it does contain metastasizing phenotypes, exhibits such a phenomenon, most evidence suggests that when metastases occur, they do so within the first 10 to 20 doubling time, or at a stage undetectable by prevailing methodologies (Fisher, 1984).

Biological Markers for the Behaviour :

However, the poorer prognosis of patients with invaded lymph nodes and approximately 70% of patients without lymph node involvement survive long-term. There are substantial minorities whose disease behave expectionally, hence the need for additional factors which reflect more accurately the inherent biological aggressiveness of tumors (Miller, 1992).

1. Nuclear grading:

The prognostic value of tumor grading can be enhanced significantly by substituting quantitative measurments for traditional histopathologic feature (Sunderland and McGuire, 1990).

Grading is a measurement of the amount of neoplasia (the degree to which the tissue lakes normal histologic and cytologic differentiation). Nuclear grade is increasingly replacing histopathological grade as a prognostic marker, having been found to be at least as effective (Sigurdsson et al,. 1990).

The essential features of the system of nuclear grade are:

NG 3: - nuclei showing marked variation in size and shape.

- prominant nucleali.
- chromatin clumping.
- neumerous mitotic figures are considered to be undifferentiated.

NG 2: - appearance intermediate between the tow extreme one considered to be moderately differentiated.

NG 1: -quite similar in size and appearance to those of the homologus non cancerous cells are considered to be well differentiated (Leis, 1986).

The frequency of mitosis has been claimed to be more accurate than nuclear pleomorphism in predicting relapse (Sigurdsson et al., 1990).

2. DNA Content:-

Abnormal DNA content is associated with tumor aggressivness and might predispose the tumor to nuclear pleomorphism (Olszewski. 1981).

Mitotic frequency reflects proliferative activity, as does estimation of the synthesis phase fraction (s- phase fraction) (Siguardsson et al., 1990).

Proliferative capacity is estimated by DNA flow cytometry as the percentage of cells in the synthesis phase of the cell (S-phase fraction) unlike thymidine-labeling techniques, DNA flow cytometry also provide an estimate of the DNA content (ploidy) of the tumor cells (Clark et al., 1989).

Tumor can be classified as :

- Diploid: normal DNA content.
- Aneuploid: abonormal amount of DNA (Clark et al., 1989).

Aneuploidy has been correlated with increasing tumor size, poor differentiation, and presence of nodal metastases (Hedley et al., 1987).

Patient with aneuplaidy tumor have shorter disease-free and overall survival as compared with diploid tumor (Kallioniemi et al., 1988).

The rate of proliferation will depend not only upon the number of cells in S-phase but the time in S-Phase (Miller, 1992).

S-phase fraction was highly predictive of disease free survival in patients with diploid tumor but not provide additional prognostic information in patients with aneuploidy tumor (Clark et al., 1989).

Relationship between DNA ploidy status and other clinicopathologic features:

DNA aneuploid was found to be significantly associated with tumor size, histologic grading, axillary lymph node status and axillary and internal mammary lymph node metastasis. DNA ploidy was not associated with age, menopausal status or histologic type (Noguchi et al., 1991).

It is agreed that the faster the tumor grows the quicker it will spread and the quicker it will kill, whilst this may be true, it is necessary to emphasise that tumor growth depends not only upon