Modified Radical Mastectomy

An Update

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By

Salah Fathi Mohamed Hamdi

M.B. , B.CH.

Supervised By

Dr. Hussein Kheleif

Assistant Professor Of General Surgery
Faculty OF Medicine
Ain Shams University

Faculty Of Medicine
Ain Shams University
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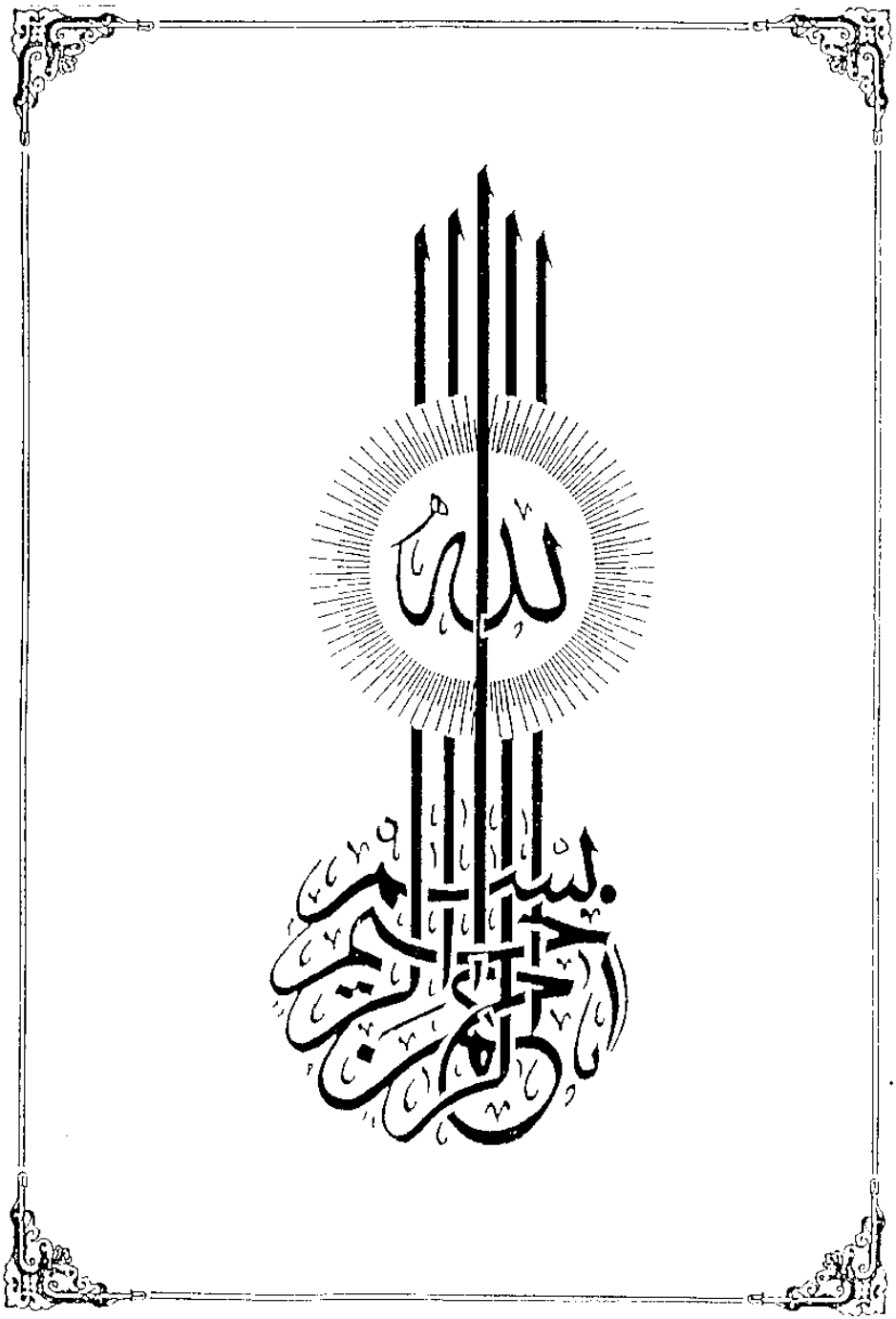
بسم الله الرحمن الرحيم

قال الله سبحانه وتعالى :

"اقرأ باسم ربك الذى خلق ، خلق الانسان من علق ، اقرأ وربك الاكرم ، الذى علم بالقلم علم الانسان مالم يعلم" .

صدق الله العظيم



A C K N O W L E D G E M E N T

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C O N T E N T S

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INTRODUCTION

In the United States, breast cancer is presently the leading cause of cancer death in women. Most cases occur between the ages of 40 and 71, with women aged 55 to 74 having the highest mortality, 17,000 deaths per year (Silverberg, 1980). Breast cancer is diagnosed in 1 of 11 American women, or approximately 110,000 new cases per year (Miller, 1981). It is the most commonly occuring cancer in women in this country, accounting for 27% of all cancers in females. In 1979 there were 106,900 new cases of breast cancer in the United States. Carcinoma of the breast remains the No. 1 lethal cancer of females in this country. In 1982, it is estimated that 11,300 new cases will be diagnosed in California (Silverberg, 1982). Carcinoma of the breast is the commonest cancer in women; 10,000 women die annually of the disease in Britain. It has been estimated that 1 in 25 of all female children born will develop cancer of the breast during their life-time (Bevan, 1980). Breast cancer is the most common malignancy in women. It is exhibited in a multiplicity of patterns, charecterising a multicentric feature in origin and often metastasizing in regional lymph nodes (Ashikari, 1984). Of patients with early carcinoma 1 in 4 die of the disease within 5 years if the axillary nodes are not involved. One in 2 are dead within 5 years if the nodes are involved (Bevan, 1980). The frequency of breast cancer in the U.S. population has been slowly increasing, and the death rate has remained essentially unchanged. This seems to indicate an increase in survival, which probably results from earlier diagnosis and possibly from some improvements in treatment.

Today the subject of breast cancer treatment generates a great deal

of controversy but also has achieved some broad areas of consensus. Controversies arise for a variety of reasons. It is the most common cancer in women and is still the most frequent cause of cancer deaths among women. Its occurrence and its treatment have powerful effects on a woman's sense of sexual identity, her integrity, and her self-image.It has even become a feminist issue, with some women blaming the predominantly male medical establishment for introducing mutilating therapy and resisting the develpment and introduction of other therapies that are less disfiguring. The treatment of no other form of cancer has evoked such a degree of controversy and emotionalism as has that of carcinoma of the breast (Stehlin, 1979).

Breast cancer treatment has been evolving over a long period. During the last 90 years, it has been evolving from extensive to less radical surgery and has seen the addition of irradiation to surgery, the intr-oduction of simple excision with irradiation, and most recently, the addition of adjuvant chemotherapy to surgery. Recent changes have been largely in the direction of less extensive surgery and greater use of radiotherapy and chemotherapy. The primary goal has been to achieve better results with less mutilation and fewer other undesirable effects of therapy.

Surgical treatment of cancer is not new. In fact, it is the oldest of the therapeutic methods used in cancer (Pilch, 1983). There are many approaches to the problem of local treatment which range from simple lumpectomy to supraradical mastectomy and to which can be added a variety of radiotherapeutic manoevers (Hughes and Webster, 1980). Surgery for

breast cancer continues to evolve. Less radical procedures and increasing concern about appearance and rehabilitation are now the trend (Wilkinson *et al.*, 1982).

Mastectomy, in one form or another, remains the orthodox treatment for apparently localized breast cancer. In the last two decades, however, the objectives of the operation have become more restricted. A radical "Halsted" mastectomy with excision of pectoral muscles is nowadays uncommonly practised. At the other extreme, the early enthusiasm for a minimal operation (lump excision only) has not been maintained. The majority of present-day surgeons practise some form of total mastectomy, either with excision of the pectoralis minor muscle and axillary contents, with a limited axillary node sampling technique, or with no attempt at node excision (Black, 1983). Since Halsted first described his radical mastectomy in 1894 increasing attention has been paid to this condition, reaching a crescendo in the past 20 years with multiple clinical trials throughout the world of various combinations and forms of surgery, radiotherapy, chemotherapy, and latterly immunotherapy, supported by a mass of research (Bevan, 1980). Halsted's operation was used almost exclusively for treatment of carcinoma of the breast during the early years of this century, although sporadic attempts were made to modify it.

Modified radical mastectomy has been proposed and practiced to replace classical radical mastectomy for the treatment of operable breast cancer. A considerable period of time has been elapsed since the operation was introduced. Modified radical mastectomy has been performed for several decades to treat breast cancer; however, it was not until the 1970s that it

was used widely. Breast surgery was designed to improve postoperative appearance primarily by preserving the pectoralis major muscle. Surgeons also began to develop thicker skin flaps while removing less skin around the surgical biopsy site to decrease the risk of ischemia (Wilkinson *et al.*, 1982).

HISTORICAL BACKGROUND

Operative resection is most effective in the treatment of breast cancer when the cancer is limited to a localized anatomic area. To ensure complete removal, the tumor and an adequate margin of surrounding breast tissue must be removed. In addition, the removal of regional (axillary) lymph nodes has been advocated because of the high incidence of metastases to the axillary node group. The major areas of controversy regarding the surgical management of breast cancer are (1) what constitutes an adequate anatomic local excision and (2) does removal of the regional (axillary) lymph nodes provide curative benefit or does it provide only prognostic information? (Hermann and Steiger , 1978).

Prior to the development of the radical mastectomy by Halsted in 1894, the results of breast surgery for cancer were dismal, with operative mortality ranging from 1.7 to 23 per cent and 3 year survival from 4.7 to 30 per cent. The contribution of Halsted was important in that he reported an operation with an increased survival rate and lower operative mortality (Hermann and Steiger , 1978).

Crile (1983) reported that is now more than a century since Sir Charles Moore described the operation that was subsequently popularized as the Halsted Radical Mastectomy. In 1885, when Halsted reported his first 50 patients treated by the Moore technique, there were protesta from such distinguished surgeons as Dr. Rudolph Matas of New Orleans. Matas said he had tried the radical operation, but to his disappointment had found that the patients so treated had died of cancer faster than those in a previous period who had been treated by simpler operations.

Maddox *et al.* (1983) wrote "In the 1880s, Dr. William S. Halsted was

confronted with patients having extremely large breast cancers that were often fixed to the chest wall. Bulky metastases to the axilla and supraclavicular nodes were also common. To provide effective local disease control Dr. Halsted devised an operation to remove the entire breast and underlying pectoralis muscles and the axillary lymph nodes. His reported results showed that the local recurrence rate was reduced from greater than 50% in most previous series to 6% in Dr. Halsted's series. Only later did he demonstrate improved survival rates as well. The radical mastectomy became the standard surgical treatment for comparison with all subsequently described operations for carcinoma of the breast".

Hermann and Steiger (1978) claimed that "The radical mastectomy was designed to remove widely the large breast cancers commonly seen in the late 1800's by removing the entire breast, pectoralis major and minor muscles, the axillary contents en bloc (in one piece). In 1907 Halsted reported a survival rate of 32.3 per cent at 3 years and 29.8 per cent at 5 years in 232 patients with an operative mortality of only 2.5 per cent, a rate considered low for that time. In 1906, Handley described an operation similar to Halsted's except that it preserved the pectoralis major muscle; he felt it was suited for most cases of breast cancer not involving this muscle".

Thus, traditionally, surgical treatment of carcinoma of the breast has followed the precepts outlined by Halsted, who as early as the 1890s began to advocate en block removal of the breast, the pectoral musculature, and the axillary contents. Although the number of patients he treated in this fasion was small and follow-up was short, his report influenced surgical therapy for over half a century (Rudolph, 1984).

Matas' remarks were made at the turn of the century, when modern techniques of surgery and anesthesia were being perfected and when the hopes of surgeons were high. A half century of expanding radical treatment followed, based on the theory that the way to cure cancer was to remove as much as possible of the local and regional tissue that might be involved or to which the cancer might have spread. During this period there was a steady increase in the proportion of patients who were cured by surgery and also in the incidence of deformity and disability inflicted by the radical operations. But no scientific studies were made to determine whether the improvement was the result of the more radical treatment, or due to the fact that education of the public had led the patients to seek treatment earlier, when their cancers were in a more curable stage (Crile, 1983).

Ashikari (1984) stated that for many years, the Halsted radical mastectomy was thought to be the ideal surgical management for this disease; it involves complete removal of all breast tissue, including overlying muscle in continuity with regional lymph node dissection.

The Halsted radical mastectomy, initially introduced for locally advanced breast cancer, has been the traditional treatment for the past 80 years. Initially, Halsted devised the operation to achieve total removal of tumors based on his understanding of tumor biology, which stipulated that tumors spread contiguously. Thus, he supported the en bloc removal of lymphatics and axillary lymph nodes. In Halsted's era the patient commonly was first seen with large bulky tumors indicative of a more advanced state of disease. Succeeding generations of surgeons were taught that this oper-

ation represented the only legitimate treatment of primary breast cancer and pointed to appreciable cure rates in patients with positive axillary nodes. Leaving behind such involved nodes was equated with inevitable treatment failure (Moxley *et al.*, 1980).

In 1955, Fisher and Turnbull showed that long before distant metastases from a cancer had been established, there were demonstrable cancer cells in the blood of the veins that drained the effected organ. With the comprehension of this soon indisputable fact came the realization that further extension of the score of surgery could not be expected to cure those people whose disease had already spread. Although the limited role of surgery in controlling systemic local disease had been established, there was still the question of spread to the regional lymph nodes. Soon, many surgeons began to believe that involvement of the nodes was not the primary cause of systemic spread, but rather an indication that the type of tumor that spreads to the nodes was also likely to have spread through the blood stream systemically. Yet it was not until the 1970s that controlled studies were made. These studies have shown that in melanomas of the extremities or in cancers of the breast, in which the regional nodes can be examined and removed if or when they become involved, there is no advantage, from the standpoint of survival, to the prophylactic removal of nodes that do not seem to be involved. As a result of these studies the rationale for the previous obsessive removal of regional tissues and nodes was negated. It was by then the late 1970s, and time for a new philosophy of treatment to be expressed. The impectus came from the published results of several retrospective studies and then of randomized trials conducted in England , Italy,