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Is Modified Radical Mastectomy of Patey Equivalent to Radical Mastectomy in Treatment of Operable Breast Carcinoma?: An Evaluation Study

ELASHRY TAHA, M.D.; MOHAMED A ABDEL HAKIM, M.D.; MOHAMED EL HAGARY, M.D.; MOHAMED B. HASHEM, M.D.; MOHAMED ABDEEN, M.D. and NABIL SHEDID, F.R.S.C.

The Departments of Surgery and Radiation Oncology & Nuclear Medicine, Faculties of Medicine, Benha and Cairo Universities

Abstract

Sixty female patients diagnosed as operable breast cancer were subjected to either radical mastectomy (first group) or to modified radical mastectomy of Patey's (second group) in a randomized study. Each group included 30 patients. Their mean ages were 42 ± 5 years and 44 ± 3 years in both groups respectively. Postoperative adjuvant radiotherapy and systemic therapy (hormonal and chemotherapy) were given when indicated. All patients were followed up from 24 to 36 months. Axillary clearance showed that the number of dissected nodes were 10-22 (mean 15±3) and 12-22 (mean 14±4) in both groups respectively. No operative mortality occurred in either group. Early post-operative complications were 30% after radical mastectomy and 10% after modified radical mastectomy; seroma in (10%) and (3.3%), wound infection in 13.3% and 6.6% in both groups respectively. Skin flap necrosis was observed in 6.6% in the first group and not occurred to any of the second groups. Late post-operative complication were 23.3% in the first group and (6.6%) in the second group; lymphoedema in 20% and (3.3%) in both groups respectively: radiation pneumonitis occurred in 3.3% after radical mastectomy, while radiation dermatitis occurred in 3.3% after modified radical mastectomy. Locoregional recurrences occurred in 6.6% in either group, while distant metastases occurred in 16.6% after radical mastectomy and in (20%) after modified radical mastectomy. The overall survival was 90% in the first group and 86.7% in the second group; while the disease free survival was 76.7% and 73.4% in both groups respectively during the period of follow up. In conclusion, modified radical mastectomy of Patey is as effective as radical mastectomy regarding the locoregional control of the disease, disease free survival and the overall survival. It has less morbidity, better cosmetic, functional and psychological results. Therefore, we recommend the use of modified radical mastectomy of Patey for treating patients with operable breast carcinoma.

Introduction

THERE is a great deal of controversy regarding the optimal method of primary therapy to potentially curable breast carcinoma, and opinions on this subject have changed considerably in the past decade.

The fact that most of patients diagnosed as potentially curable cancer breast already have micrometastatic disease, which is undetectable by currently available means, has lead to change the concept of treatment. On this basis different surgical modalities do not affect the overall survival, as the survival is determined by the presence or absence of micrometastasis at the time of presentation [1].

It is now relevant that the rational of treating potentially curable breast carcinoma is to achieve locoregional control of the disease, and to consider the use of adjuvant systemic therapy against the possible micrometastases.

Current surgical modalities include: radical mastectomy, modified radical mastectomy and breast conservation surgery. Conservative breast surgery including: lumpectomy, partial mastectomy, quadrenectomy or simple mastectomy; either with or without dissection of the axillary nodes has gained popularity in some Western surgical centers. The incidence of local recurrence in patients subjected to conservative surgery is higher than those patients subjected to radical surgery [1,2,3]. This higher incidence of local recurrence may be attributed to multicentricity of the tumour. Multicentric breast carcinoma was reported to vary from 9-75% [4] and 31% [5]. In our locality, conservative breast surgery does not enjoy popularity among surgeons. The relatively late presentation of our patients regarding the tumour size, and the concept of multicentricity are some of the limiting factors for breast conservative surgery.

The aim of this study is to evaluate the morbidity, mortality locoregional recurrence or distant metastases and survival in patients subjected to modified radical mastectomy of Patey in comparison to those subjected to Halsted radical mastectomy.

Patients and Methods

Sixty female patients with operable (stage I and II) breast cancer were treated surgically at Benha University Hospital in the period from 1985 - 1992.

The patients were classified into two groups at random; each group constitutes 30 patients,. Group I was subjected to the Halsted radical mastectomy, while group II was subjected to modified radical mastectomy of Patey. Careful history and complete clinical examination, laboratory studies, chest X Ray and abdominal sonography were done preoperatively for all patients.

Halsted radical mastectomy involving en- bloc removal of the skin, nipple-areola, breast tissue, pectoral muscles and axillary

nodes bearing tissues. The thoracodorsal and long thoracic nerves were preserved.

Modified radical mastectomy of Patey was done involving removal of the breast together with the pectoral fascia, pectoralis minor muscle, and axillary nodes bearing tissues all in one mass. Proper dissection close to the deep surface of the upper part of pectoralis major muscle after division of the pectoralis minor was done as an essential step aiming at clearance of the inter pectoral (Rotter's) nodes. Preservation of the pectoral branch of thoraco-acromial artery and lateral pectoral nerve, as well as the long thoracic and thoracodorsal nerves. Suction drainage was used for 5-7 days postoperatively. The operative specimen was subjected to compete histopathological study.

Adjuvant postoperative radiotherapy alone or combined with systemic therapy were planed for those patients in need. Postoperative radiotherapy was applied for those patients having tumour mass more than 2 cm in the centromedial area or more than 5cm anywhere, and in patients with positive axillary lymph nodes. Chemo or hormonal therapy were applied to those patients having primary tumour mass more than 5 cm or having three or more positive axillary lymph nodes.

Comprehensive radiotherapy was given in a dose of 50 Gy, over 5 weeks-25 sessions using cobalt 60 beam. Chemotherapy as a systemic treatment was given to premenopausal patients with positive lymph nodes in the form of sex cycles of CMF or FAC. Hormonal treatment in the form of tamoxifin 20 mg per day was given as a systemic therapy to postmenopausal patients.

All patients were followed up closely with a minimum follow up for 24 months and maximum for 36 months.

Results

Sixty female patients studied with a diagnosed operable breast cancer were subjected either to Halsted radical mastectomy in thirty of them (group I), or to modified radical mastectomy of Patey in the other thirty (group II).

Patients in the first group were subjected to radical mastectomy. Their mean ages were 42 ± 5 years, while in the second group they were subjected to modified radical surgery with the mean age of 44±3 years.

Twenty one patients (70%) were premenopausal in the first group and 20 patients (66%) were so in the second group. The size of the breast was considerably large in 6 patients (20%) in the first group and in 8 patients (26%) in the second group.

The most common site of the primary tumour was in the upper outer quadrant of the breast in 22 patients (73%) in the first group and in 20 patients (66%) in the second group.

The numbers of the removed lymph nodes from the axilla ranged between 10-22 with a mean (15±3) in the radical group, while it was between 12±22 with mean of 14±4 in the modified mastectomy (second group).

As regards the histopathological findings. Infiltrating duct carcinoma (grade II & III) was the most common variety constituting (84%) in the first group and (82%) in the second group. Lobular invasive carcinoma 2 patients (6.6%) in the first group and one patient (3.3%) in the second group. Non invasive duct carcinoma was in 2 patients (6.6%) in the first group and in one patient (3.3%) in the second group. Medullary carcinoma was in one patient (3.3%) in the first group and in three patients (10%) from the second group and mucoid carcinoma in one patient (3.3%) in group (II).

Post operative radiotherapy was given to most of our patients; 24 (80%) in the first group and 23 (76%) in the second group. Combined radiotherapy and chemo or hormonal therapy were applied to 4 patients (13%) in the first group and to 6 patients (20%) in the second group. No adjuvant postoperative therapies were given to 2 patients (6.6%) in the first group and to one patient (3.3%) in the second group.

Postoperative Complications:

Early postoperative complications were compared between the two groups. The overall complications rate was (30%) in the radical mastectomy (first group) and (10%) in the second group of modified mastectomy. Seroma formation requiring aspiration occurred to 3 patients (10%) in the first group and to one patient (3.3%) in the second group, wound infection occurred to 4 patients (13.3%) in the first group and to 2 patients (6.6%) in the second group. Necrosis of the skin flap occurred to 2 patients (6.6%) in the first group and not occurred to anyone in the second group (Table I).

As regards, the late postoperative complication which occurred to seven patients (23.3%) from the radical mastectomy group and only in two patients (6.6%) from the modified radical mastectomy group. These late complications were observed in the form of lymphoedema in six patients (20%) in the first group and in one patient (3.3%) in the second group. Radiation pneumonitis occurred to one patient (3.3%) from the first group. One patient (3.3%) from the second group developed radiation dermatitis (Table II).

Locoregional recurrences observed in 2 patients (6.6%) from each group, all manifested as skin nodules. While distant metastases occurred to 5 patients (16.6%) in the radical mastectomy group and in six patients (20%) in the modified mastectomy group during the period of follow up. The sites of distant metastases were in the lungs, bones and supraclavicular lymph nodes. The overall survival was 90% in the first group and 86%.7% in the second

Table (1): Early Postoperative Complications.

Type of Operation	Seroma		Would infection		Flap necrosis		Total	
	No.	%	No.	%	No.	%	No.	%
Radical Mast.	3	10	4	13.3	2	6.6	9	30
Mod Rad. Mast.	1	3.3	2	6.6	-	--	3	10

Table (II): Late Postoperative Complications

Type of Operation	Seroma		Would infection		Flap necrosis		Total	
	No.	%	No.	%	No.	%	No.	%
Radical Mast.	6	20	1	3.3	--	--	7	23.3
Mod. Rad. Mast.	1	3.3	--	--	1	3.3	2	6.6

group; while the disease free survival was 76.7% and 73.4% in both groups respectively.

Discussion

There is diversity of opinions in the recent years concerning surgical treatment of potentially curable breast cancer. The fact that breast cancer is a systemic disease implies that, surgical treatment is essentially a local therapy and has no effect on the survival rate [1].

The question is that does locoregional and systemic control achieved by modified radical mastectomy of Patey justify its use as a primary treatment for early breast carcinoma in the face of Halsted radical mastectomy?

Modified radical mastectomy had criticized of being unable to adequately clear the axillary lymph nodes bearing tissues. However, several studies confirmed the effectiveness of the axillary clearance while

the pectoralis major muscle was preserved [6]. In the studied groups, the number of removed axillary lymph nodes were 10-22 with a mean 15±3 in the (first) radical mastectomy group, while it was 12-22 with a mean 14±4 in the (second) modified mastectomy group. From the previous finding, which shows no significant difference in the numbers of dissected axillary lymph nodes, one can say that just removal of the pectoralis minor muscle alone can ensure adequate axillary clearance, and this goes with the findings of others [6-8] who demonstrated that lymphatic spread of early (potentially curable) breast cancer is embolic rather than by lymphatic permeation, and that preservation of the pectoralis major despite the lymphatic traversing through it does not affect the incidence of local recurrence. In the studied series, removal of the pectoralis minor muscle not only ensure adequate axillary clearance, but also allows proper dissection of the deep surface of pectoralis major together with removal of the interpectoral (Rotter's) lymph nodes.

The incidence of local recurrences was observed in four patients (6.6%) in the studied series; two from each group during the period of follow up, while Giuliano [9] reported a incidenc of local recurrence ranged from 5% to 25% and he correlated that to the tumour size, presence and number of involved axillary lymph nodes and the histopathologic types of the tumour.

Distant metastases occurred in (16.6%) and (20%) in the radical and modified radical mastectomy group respectively.

The early postoperative complications after radical mastectomy included; seroma in (10%), wound infection in (13.3%) and flap necrosis in (6.6%). Meanwhile, the incidence of those complications after modified radical mastectomy was seroma (3.3%), wound infection (6.6%) and no case with flap necrosis. Feigenberg et al. [10] reported an incidence of seroma (17%) wound infection (8%), and flap necrosis (10%) after radical mastectomy, while he reported an incidence of seroma (10%), wound infection (4%) and flap necrosis (3%) after modified radical mastectomy. The proper hemostasis, the use of suction drainage and the use of well fitted chest binders had reduced much the incidence of postoperative seroma formation in the present study.

The late postoperative complications in our series included an incidence of lymphoedema in (20%) after radical mastectomy and (3.3%) after modified radical mastectomy, radiation pneumonitis only occurred in (3.3%) after radical mastectomy while radiation dermatitis occurred in (3.3%) after modified radical mastectomy. The high incidence of ipsilateral oedema of the arm following Halsted radical mastectomy may be explained by the fact that, disinsertion of the pectoralis major muscle may injured the lymphatic of the ipsilateral arm. In addition removal of the pectoralis

major muscle may deprive the axillary and cephalic veins from its natural protective support against mechanical compression. Such compression may be significantly increased by the stretched skin flaps directly against skeletonized chest wall, a point which may favor the use of Patey's modification over Halsted procedure. However, more lymphatic and venous studies following these types of operations are recommended.

The overall survival was (90%) in the first group and (68%.7%) in the second group, while the disease - free survival was (76.7%) and (73.4%) in both groups respectively during the period of the follow up.

The basis for our follow up period: (24-36) months was dependant on the statement that, 60-80% of recurrences after surgery on patients with breast cancer occurred within the first three years as mentioned by Madox et. al. and Martin et al. [11,12]. However, longer follow up period seems to be necessary for proper evaluation.

Conclusion:

Modified radical mastectomy is as radical mastectomy in locoregional control of operable breast cancer patients. It also enjoys preservation of limb functions, diminishes the incidence of postoperative lymphoedema and acts as a shield against postoperative radiation pneumonitis. Moreover, it gives better cosmetic appearance, more feasible breast reconstruction and better psychological results and mode of life.

We do recommend modified radical mastectomy of Patey as a prime treatment for stage I and II breast cancer.

Radical mastectomy would be preserved for selected cases with pectoralis major involvement.

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