Therapeutic Mammoplasty Doesn't Delay Adjuvant Therapy for Breast Cancer Patients

Original Article

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ABSTRACT

Background: There is little information on the oncological safety of therapeutic mammoplasty (TM) or its influence on the timing of adjuvant drug administration, despite growing interest in TM. The purpose of this study was to demonstrate that adjuvant chemotherapy or radiation therapy is not significantly delayed by TM.

Methods: Ninety female patients who underwent TM at Assiut University Hospital between May 2021 and May 2024 and who got adjuvant chemotherapy and/or radiation therapy following surgery were included in this retrospective analysis. Information on surgery and adjuvant therapy was also gathered, including the date of the procedure and the first adjuvant therapy session, the kind of TM method used, the adjuvant therapy type chosen for the patient, and any documented postoperative problems.

Results: Patients who received neoadjuvant chemotherapy presented a time lapse ranging between 21 to 50 days with a mean value of 39.79±7.16, while patients who underwent upfront surgery presented time lapse ranging between 30 to 55 days with a mean value of 40.58±6.17, *P*-value 0.57 which is not significant. Patients underwent Benelli mammoplasty represented the longest time lapse with an overall mean value of 39.55±9.0, The shortest overall mean value of time lapse found to be among patients underwent superior pedicle mammoplasty 37±6.19.

Conclusions: For patients with breast cancer who have had upfront surgery or have undergone neo adjuvant chemotherapy first, therapeutic mammoplasty is a safe conservative oncoplastic breast procedure since it doesn't cause a major delay in the delivery of adjuvant medication.

Key Words: Adjuvant therapy, breast cancer, therapeutic mammoplasty.

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INTRODUCTION

Therapeutic mammoplasty (TM) is becoming more and more popular across the world. It has the potential to improve long-term cosmetic results and oncological outcomes by widening the tumor-free margin[1,2].

There is no information on the approaches' long-term oncological safety or impact on adjuvant drug administration, despite growing interest in them[3].

Compared to conventional breast-conserving techniques, TM is linked to greater rates of problems. One obstacle to TM is the worry that post-operative difficulties might cause chemotherapy to be started later or not at all[4]. When administered promptly following initial resection, adjuvant chemotherapy reduces recurrence and enhances overall survival[5].

The timing of adjuvant therapies is not discussed in the majority of TM case studies. Research findings range from 1.9% to 6% of patients experiencing delays to adjuvant therapy to no delays at all[6].

The purpose of this study was to demonstrate that adjuvant chemotherapy or radiation therapy is not significantly delayed by TM.

PATIENTS AND METHODS

Ninety female patients who had TM at our clinic and who got adjuvant chemotherapy and/or radiation following surgery were included in this retrospective analysis.

After receiving clearance from the Assiut University Hospitals' Ethical Committee, the study was conducted between May 2021 and May 2024 in Assiut, Egypt. The patients gave their signed, informed permission.

Exclusion criteria were patients who underwent

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modified radical mastectomy, conventional breast conservative surgery, immediate reconstruction surgery, patients didn't receive adjuvant therapy for any reason and who missed or neglected their adjuvant therapy

The following data were collected personal data [age, marital status and menstrual status], tumor criteria [stie, size, pathological type, molecular type and stage of tumor], whether the patient received neoadjuvant chemotherapy, surgical data [date of surgery, type of TM technique used and any recorded post operative complications] and adjuvant therapy data [date of first session of adjuvant therapy and type of adjuvant therapy selected for the patient].

Time lapse between surgery and the date of first session of adjuvant therapy is thoroughly calculated in days with recording all surgical and non-surgical factors causing any delay.

Statistical analysis:

SPSS v26 was used for statistical analysis (IBM Inc., Chicago, IL, USA). The mean and standard deviation (SD) of the quantitative variables were shown, and the unpaired Student's *t*-test was used to compare the two groups. When applicable, the Chi-square or Fisher's exact test was used to examine the qualitative variables, which were shown as frequency and percentage (%). Statistical significance was defined as a two-tailed *P* value <0.05.

RESULTS

Demographic data and whether the patient recieved neoadjuvant chemotherapy prior to surgery or not were enumerated in Table (1).

Tumor's criteria (side site, pathological type) was enumerated in Table (2).

Stage of the tumor and time lapse to the start of adjuvant therapy for the two groups were enumerated in Table (3).

Time lapse between surgery and first session of adjuvant therapy was not significantly different between both groups.

Relation between surgical technique and time lapse and also recorded complictions was enumerated in Table (4).

Table 1: Demographic data:

		***N*= 90**
Age (years)		55.1±8.8
Marital status	Married	83(92.2%)
	Not married	7(7.7%)
Menstrual status	Premenopausal	46(51.1%)
	Postmenopausal	44(48.8%)
Patient received neoadjuvant chemotherapy		43(47.7%)
Patient underwent upfront surgery		47(52.2%)

Data is presented as mean±SD or frequency (%).

Table 2: Side, site and pathological type of tumor of the studied patients:

Tumor side	Right	56(62.2%)
	Left	34(37.7%)
Tumor site	Upper outer	43(47.7%)
	Peri-areolar	18(20.0%)
	Upper inner	12(13.3%)
	Lower outer	10(11.1%)
	Lower inner	7(7.7%)
Pathological type	IDC	86(95.5%)
	ILC	4(4.4%)

Data is presented as frequency (%); IDC: Invasive ductal carcinoma; ILC: Invasive lobular carcinoma.

Table 3: Tumors stage of the studied patients and time lapses between surgery and first session of adjuvant therapy:

		Patients received neoadjuvant chemotherapy (*n*= 43)	Patient underwent upfront surgery (*n*= 47)	*P*
Tumor stage	0	1(2.3%)	0(0.0%)	--
	IA	7(16.2%)	13(27.6%)	--
	IIA	22(51.1%)	17(36.17%)	--
	IIB	6(13.9%)	11(23.4%)	--
	IIIA	7(16.2%)	6(12.7%)	--
Time lapse		39.79 ± 7.16	40.58±6.17	0.57

Data is presented as mean ± SD or frequency (%). * Significant *P* value <0.05.

Table 4: Relation between surgical technique and time lapse and recorded complications:

		Patients received neoadjuvant chemotherapy (*n*= 43)	Patient underwent upfront surgery (*n*= 47)
Batwing mammoplasty		28.8±9.19	40.81±5.36
Benilli mammoplasty		38.0±9.27	45.0±6.0
Superior pedicle mammoplasty		38.6±11.06	36.44±4.58
Inferior pedicle mammoplasty		24.5±4.9	41.9±5.36
Lateral mammoplasty		24.5±4.9	40.92±7.37
Complications	Wound gapping		6(6.6%)
	NAC ischemia		5(5.5%)
	Breast seroma		4(4.4%)
	Infection		3(3.3%)
	Fat necrosis		3(3.3%)

DISCUSSION

For bigger tumors, TM methods can allow for the resection of a greater amount of tissue along with the tumor, allowing patients to undergo breast-conserving surgery[7].

Similar to the findings of studies by Sisti *et al*.,[8], which found that the upper-outer quadrant was the most frequent primary tumor site with a percentage of 47%, 62% of our patients presented with a tumor in the right breast. They also reported that the upper-outer quadrant is the most common site of the tumor (47.7%). According to Bright *et al*.,[9], the upper outer quadrant (UOQ) accounts for 40% of all breast cancer tumors.

Invasive ductal carcinoma is the most often diagnosed pathological type among the patients studied, affecting 95.5% of the patients. In 4.4% of instances, invasive lobular cancer is identified. This is in line with the American Cancer Society's most recent revisions, which indicated that the most prevalent kind of breast cancer is invasive ductal carcinoma. One out of ten invasive breast cancers is an invasive lobular carcinoma (ILC), and eight out of ten are invasive ductal carcinomas (IDC)[10–14].

Hormone-positive individuals made up 73.3% of the participants in our research. Of the patients, 32.2% had luminal A tumors and 41.1% had luminal B tumors. Eleven individuals were HER 2 neu positive, whereas thirteen patients were triple negative. About 75% of breast tumors test positive for ER and/or PR, according to Yersal, O.[15]. Fifteen to twenty percent of breast cancer subtypes are HER2-positive. Of all breast cancers, the triple negative subtype accounts between 8% to 37%.

Seventeen patients presented in stage IIA and underwent upfront surgery. 22 patients presented after completion of neoadjuvant chemotherapy. Total number of patients in stage IIA is 39 patients, 11 patients presented to our department in stage IIB and underwent upfront surgery, 6 patients presented after completion of neoadjuvant chemotherapy. Total number of patients in stage IIB is 17 patients.

Thirteen patients presented to our department in stage IA and underwent upfront surgery, 7 patients presented after completion of neoadjuvant chemotherapy. Six patients presented to our department in stage IIIA and underwent upfront surgery. Seven patients presented after completion of neoadjuvant chemotherapy. Stage 0 included only one patient who presented to our facility after completion of neoadjuvant chemotherapy in stage 0. Harvey *et al*.,[16] reported 37.5% patients in stage IIA, 45% patients in stage IIB and one patient stage IIIA.

3.3% had wound infection and treated by antibiotics and 6.6% had wound gapping, left to heal spontaneously. Breast seroma developed in 4.4% who were managed by repeated percutaneous aspiration. Fat necrosis occurred in 3.3%. Nipple and areola complex partial ischemia occurred

to 5.5% also left to heal spontaneously. Not one of those patients needed to have surgery again. According to Harvey *et al*.[16], complications included one hematoma that needed to be evacuated, one that was treated conservatively, one that required debridement due to nipple necrosis in the breast, one that required debridement due to skin necrosis, nine cases with delayed wound healing, and one patient with significant fat necrosis.

Fifty-five of our patients received chemoradiotherapy as an adjuvant treatment and 35 patients received radiotherapy as an adjuvant treatment, only eight of them received chemoradiotherapy as adjuvant treatment while the remainder 34 patients received radiotherapy, as those eight patients showed poor response to neoadjuvant chemotherapy which changed the plan to surgery then completion of chemotherapy as adjuvant treatment. While all of the 48 patients who underwent upfront surgery received chemoradiotherapy as adjuvant treatment. This in consistency with the latest guidelines of ESO-ESMO 2nd International Consensus Guidelines for Advanced Breast Cancer (ABC2)(2014)[15].

The number of days that passed between the date of the operation and the first adjuvant therapy session was computed and compared to other published studies on the best time to start adjuvant therapy following breast cancer surgery.

A mean of 38.56±7.38 was the total time lapse among our patients. Adjuvant chemotherapy is similarly effective up to 12 weeks after definitive surgery, according to Lohrisch *et al*.,[5], although delays of more than 12 weeks after final surgery seem to impair overall survival (OS) and recurrence free survival (RFS). The mean time lapse for patients who had neoadjuvant chemotherapy was 37.17±8.37, whereas the mean time lapse for patients who had upfront surgery was 40.58±6.17. Between the two groups, the P value is 0.030, indicating a significant difference.

The relationship between surgical methods and the interval between surgery and the first adjuvant treatment session was examined.

we found that among our included patients who underwent lateral mammoplasty technique with mean value of time lapse of 38.58±7.62, but it varied significantly between patients who received neoadjuvant chemotherapy prior to surgery as the mean value of time lapse among those patients is 24.5±4.9, and those who underwent upfront surgery as the mean value of time lapse among them is 40.92±7.37. Benelli mammoplasty represented the longest time lapse with an overall mean value of 39.55±9.0 and presented the longest time lapse both for patients who received neoadjuvant chemotherapy prior to surgery 38.0±9.27 and those who underwent upfront surgery 45.0±6.0. The shortest overall mean value of time lapse found to be among patients underwent superior pedicle mammoplasty 37±6.19.

One of the study's limitations was the very small sample size. There was just one center for the study. the government paperwork delay, which had an impact on some of the study's findings.

CONCLUSIONS

Since there is no appreciable delay in the delivery of adjuvant medication, TM is a safe oncoplastic procedure for patients with breast cancer.

CONFLICT OF INTERESTS

There are no conflicts of interest.

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