

Incidence of Thoracic Kyphosis in Post Mastectomy at El-Minia Governate

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Abstract: Mastectomy is the surgical removal of one or both breasts, partially or completely. A mastectomy is usually carried out to treat breast cancer. It should be strongly noted that breast reconstruction surgery has a significant effect on the patient's postoperative body posture. The study was performed to investigate the incidence of postural deformities especially thoracic kyphosis in patients post mastectomy at EL MINIA governate. One shot assessment descriptive study design was used, one hundred patients with mastectomy had been participated in the study and each participant signed the consent form. Subjects were recruited from Minia oncology center. The measurement for both posture and mobility was taken using spinal mouse from three different positions (Standing in upright position, standing with flexion and standing with extension) directly on the skin. Percentage of regional kyphosis was recorded also, comparison between sample and equivalent normative values was conducted using paired t test. 74% of sample had been found to have regional kyphosis also paired t test statistics showed statistically significant difference in sample values compared to normal one except for flexion posture ($P=.227$) and moving from neutral to full extension ($P=.384$). There is 74% incidence of thoracic kyphosis in post mastectomy at EL MINIA governate also there were statistically significant thoracic postural deformities in patients post mastectomy at EL MINIA governate.

Key words: Thoracic Kyphosis • Post Mastectomy • El-Minia Governate

INTRODUCTION

Breast cancer is usually classified primarily by its histological appearance. Most breast cancers are derived from the epithelium lining the ducts or lobules and these cancers are classified as ductal or lobular carcinoma [1].

Mastectomy is the medical term for the surgical removal of one or both breasts, partially or completely. A mastectomy is usually carried out to treat breast cancer [2].

In some cases, people believed to be at high risk of breast cancer have the operation as a preventative measure. Alternatively, some people can choose to have a wide local excision, also known as a lumpectomy, an operation in which a small volume of breast tissue containing the tumor and a surrounding margin of healthy tissue is removed to conserve the breast [3].

Postural kyphosis is a non-structural, functional deformity with onset during the late juvenile period, usually nine to 12 years. Postural kyphosis does not involve the centres of ossification of the vertebral bodies. The cause of postural kyphosis is purely postural. Slouching and poor posture can stretch spinal ligaments, thus increasing the natural curve of the spine [4].

Postural kyphosis bears a clinical resemblance to Scheuermann's disease in the form of a hyperkyphotic thoracic spine, but the radiological appearances of the vertebrae are within normal limits. A flattened appearance of the anterior thoracic wall (Flat chest) usually accompanies postural kyphosis. Postural kyphosis is usually not progressive and is easily corrected [5].

Mastectomy is known to effect body posture after a change in the center of gravity of women due to a missing breast. Although previous studies on short-term postural changes in mastectomy patients using photogrammetry or

Moiré topography suggested ipsilateral inclination of the trunk, our clinical observations during breast reconstruction surgeries indicated a contralateral shoulder elevation in women with unilateral mastectomy [6].

So, this study was conducted to investigate the incidence of postural deformities especially thoracic kyphosis in patients post mastectomy at EL MINIA governate.

MATERIALS AND METHODS

Design of the Study: One shot assessment descriptive study using spinal mouse.

Subjects: One hundred patients with mastectomy had been participated in the study and each participant signed the consent form. Subjects were recruited from outpatient physical therapy clinic in El-Minia Oncology center. The age of the women participated in this study ranged from 35 to 65 years.

Outcome Measures

Weight and Height Scale: Weight and height will be measured for each patient to ensure that fulfil the criteria of being included in the study

Spinal Mouse: It is an electronic computer aided measuring device which measures spinal range of motion and it is non-invasive methods.

The spinal mouse was used according to the following procedures:

First, the procedures were explained to the patient before starting the assessment. The instruction was given to each patient to take off the shoes before standing to avoid any spinal abnormality. The patient will ask to unclthe her back till the waist level; the whole spinal

column from thoracic to S3 will accessible and skin will clean by alcohol. The starting point of the assessment will determine by marker at C7 spinous process for accurate measurement.

The instruction will give to the patients to take up position with standard instruction (Please stand as you usually do, not too relax, not too stiff).

RESULTS

The mean age of the sample was 56.28 ± 5.9 , they have mean weight of 73.26 ± 13.19 and mean height of 1.62 ± 0.06 with total BMI of 28 ± 4 (Table 1).

Thoracic Spine:

Postural Angles: The mean value of thoracic spin angles were 67.6 ± 75.87 , 67.14 ± 68.79 and 57.74 ± 68.54 for Flexion, Neutral and Extension respectively.

Also, 57%, 57% and 18% of patients were found to be out of normal values of subjects with similar characteristics regarding Flexion, Neutral and Extension Postures respectively (Table 2, Fig. 1).

All thoracic spine angles showed statistically significant difference with the mean normative value of matched sample except for flexion angles ($P=.277$).

Mobility Changes: The mean value of thoracic spine mobility were 2.32 ± 12.49 , 9.02 ± 14.06 and -4.36 ± 16.12 for From Neutral to Full Flexion , From Full Extension to full flexion and From neutral to Full Extension respectively.

Also, 56%, 57% and 43% of patients were found to be out of normal values of subjects with similar characteristics regarding changes From Neutral to Full Flexion, From Full Extension to full flexion and from neutral to Full Extension respectively (Table 3, Fig. 2).

Table 1: Showing mean and standard deviation of basic characteristic of sample

	Age	Weight	Height	BMI
Mean	56.28	73.26	1.62	28
SD	5.9	13.19	0.06	4

Table 2: Showing means \pm SD of angles of Posture TS in Flexion, Neutral and Extension

Posture TS	Upper Limit	Mean Value	Lower Limit	Percent of Abnormality
Flexion	49.34 ± 3.21	67.6 ± 75.87	69.06 ± 2.3	57
Neutral	36.84 ± 3.4	67.14 ± 68.79	54.9 ± 3.82	57
Extension	31.64 ± 4.98	57.74 ± 68.54	52.84 ± 2.09	18

Table 3: Showing mean \pm SD of changes of Mobility TS From Neutral to Full Flexion, From Full Extension to full flexion and From neutral to Full Extension

Mobility TS	Upper Limit	Mean Value	Lower Limit	Percent of Abnormality
From Neutral to Full Flexion	3.26 ± 2.3	2.32 ± 12.49	23.7 ± 1.91	56
From Full Extension to full flexion	2.7 ± 0.46	9.02 ± 14.06	30.2 ± 1.95	57
From neutral to Full Extension	-13.92 ± 3.53	-4.36 ± 16.12	7.92 ± 3.43	43

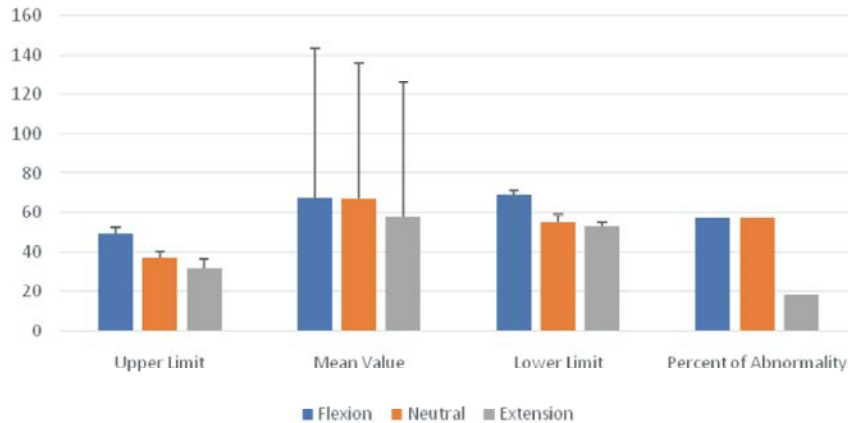


Fig. 1: Showing means ± SD of angles of Posture TS in Flexion, Neutral and Extension

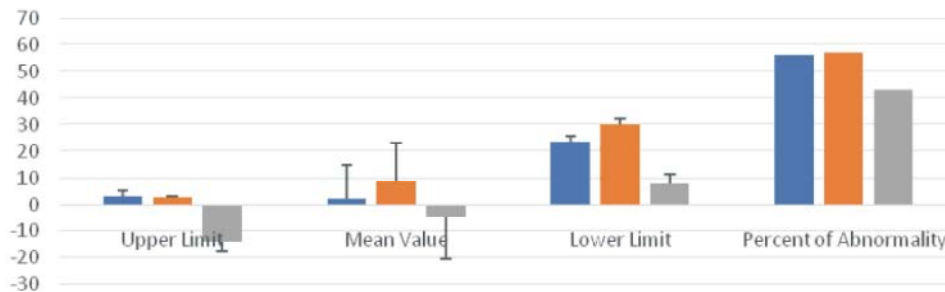


Fig. 2: Showing mean ± SD of changes of Mobility TS From Neutral to Full Flexion, From Full Extension to full flexion and From neutral to Full Extension

All patients have segmental kyphosis but only 74 percentage of sample has regional kyphosis.

DISCUSSION

The purpose of this study was to investigate the incidence of postural deformities especially thoracic kyphosis in patients post mastectomy at EL MINIA governate. One shot assessment descriptive study design was used, one hundred patients with mastectomy had been participated in the study and each participant signed the consent form. Subjects were recruited from outpatient physical therapy clinic in Minia Oncology center. The measurement for both posture and mobility was taken using spinal mouse from three different positions (Standing in upright position, standing with flexion and standing with extension) directly on the skin. Percentage of regional kyphosis was recorded also, comparison between sample and equivalent normative values was conducted using paired t test, 74% of sample had been found to have regional kyphosis also paired t test statistics showed statistically significant difference in

sample values compared to normal one except for flexion posture ($P=0.227$) and moving from neutral to full extension ($P=0.384$).

Mastectomy is surgical procedure used to remove one or both breasts, partially or completely. A mastectomy is usually carried out to treat breast cancer [7].

Traditionally, in the case of breast cancer, the whole breast was removed. Currently, the decision to do the mastectomy is based on various factors, including breast size, the number of lesions, biologic aggressiveness of a breast cancer, the availability of adjuvant radiation and the willingness of the patient to accept higher rates of tumour recurrences after lumpectomy and radiation [8].

Regarding to Malicka *et al.* [9] study which involved a group of 51 (Group 1) women following surgical treatment of breast cancer and a group of 37 healthy women (Group 2). A significantly higher incidence of faulty body postures especially regional kyphosis was observed among women after surgical treatment of breast cancer.

In Agree with Małgorzata [10] study which stated that breast cancer has its negative consequences and the treatment affect body posture of post-mastectomy women. The obtained results confirm that radical mastectomy causes negative changes in body posture. Women after mastectomy show an increased tendency for kyphotic posture which is confirmed by the distribution of the γ angle's variable.

Ciećła and Bąk [11] found that it should be strongly noted that breast reconstruction surgery has a significant effect on the patient's postoperative body posture.

Atanes *et al.* [12] conducted a cross-sectional study conducted to compare the body postures of women who underwent immediate breast reconstruction using an abdominal flap with those of women who underwent mastectomy alone. Women who underwent mastectomy alone, compared with women who underwent immediate breast reconstruction with abdominal flaps, showed differences in the vertical alignment of the trunk, with greater asymmetry between the acromion and greater trochanter, which can mean trunk rotation.

Haddad *et al.* [13] demonstrated in study conducted to evaluate postural changes and upper limb range of motion in post-mastectomy and lymphadenectomy women who underwent radiotherapy as adjuvant treatment. Women who underwent mastectomy had asymmetries and postural changes and lymphedema seems to aggravate this condition. In addition, they presented shoulder range of motion deficits on the operated side. Women with lymphedema also exhibited elbow and wrist deficits.

In Agree with Ribeiro *et al.* [14] Women with mastectomy showed posture changes, such as asymmetry of trunk and shoulder girdle and greater forward leaning of the trunk. These clarifications may provide reliable information for the prescription of physical exercise, such as intervention protocols with exercise for posture and upper kinetic chain, as well as feet motion-control during gait for better postural balance after mastectomy or placement of the prosthesis.

Ribeiro *et al.* [15] stated that Breast cancer remains the most common malignant neoplasm in women, which surgical treatment options include the Radical Mastectomy (RM). Breast reconstruction may have a positive effect in maintaining the proper body posture and balance in women after late mastectomy.

CONCLUSIONS

The results obtained from the current study and the discussion that followed it was concluded that: there is

74% incidence of thoracic kyphosis in post mastectomy at EL MINIA governate also there were statistically significant thoracic postural deformities in patients post mastectomy at EL MINIA governate.

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