Prevalence of Axillary Web Syndrome in Post-Operative Breast Cancer Female Patients in Kolhapur District

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Abstract:- **Introduction- One of the most common cancers that strike women is breast cancer.**
The patients who recently underwent surgery for breast cancer are susceptible to axillary web syndrome (AWS), an obscure postoperative complication that can lead to shoulder morbidity and functional impairment. Axillary Web Syndrome (AWS) is marked by one or more cords, measuring one millimetre in width that, following breast cancer surgery it expands further into the wrist and forearm from the ipsilateral axilla to the antecubital fossa. These cords may cause the discomfort and constrain your range of motion.
Methodology-In the above study, post –operative breast cancer patients were taken into consideration. Name, age, employment, surgical procedure and surgery date were among the data acquired. Except that, VAS was taken for both activity and rest. Both the damaged and unaffected sides' shoulder ROM was measured using SPADI.
Result- The prevalence of axillary web syndrome (flexion) was 59.67% and prevalence of axillary web syndrome (abduction) was 75.80%.
Conclusion- AWS may develop in survivors of breast cancer who have had breast reconstruction surgery. AWS, a debilitating side effect of breast cancer surgery affects 76% of breast cancer survivors.

Keywords- **Breast cancer, Axillary web syndrome, Shoulder movements, Reduced ROM, Pain.**

INTRODUCTION

Of all the structures that reside in the pectoral region, the breast is the most vital. Breasts are present in both sexes. In females, it matures completely after puberty. The breast is located underneath the pectoral area's superficial fascia. There are four different quadrants in it. These quadrants are labelled upper medial, upper lateral, lower medial, and lower lateral.[1] The axillary tail of Spence is a little outgrowth from the upper lateral quadrant. It resides in the axilla after passing via a hole in the deep fascia. The base is a circular approach, and the hole is identified as the Langer foramen.[1] In Western nations including the United States, Canada, Australia, and New Zealand, breast cancer has become one of the most prevalent cancer kinds since the 20th century. The condition is extremely uncommon before the age of 20, seldom manifests itself before the age of 30, and becomes more common beyond the age of 50. The incidence of postmenopausal women continues to climb, although the rate of increase slows down. Breast cancer is the leading cause of cancer-related deaths in people aged 20 yrs to 59 yrs. When cells begin to multiply uncontrollably, cancer is born. Breast cancer is primarily diagnosed in women, though it can strike men as well.

AWS is an issue that some people encounter after getting breast cancer surgery. Other names for it include cording lymphedema, syndrome of the axillary adhesion, and syndrome of the axillary cords. It was discovered that the cords began at the axilla and extended to the base of the thumb, the Anteromedian component of the forearm, the epitrochlear region, and the medial aspect of the arm. On average, the cords made up 44% of the length of the limb. The presence of a palpable cable that starts at the axilla and extends down the arm, occasionally reaching the thumb, is known as axillary web syndrome. [2] [3][4][5] This syndrome often emerges one week after surgery and goes away in the three months that follow. The Shoulder range of motion. is negatively impacted by axillary web syndrome, specifically affecting abduction, extension, and any

other overhead motions. [6][5][3][7] Sentinel lymph node biopsy (SLNB), axillary lymph node dissection (ALND), melanoma staging surgery, and cancer-related axillary lymph node swelling are among the potential causative factors. After surgery, AWS typically appears one to five weeks later and goes away in two to three months. [6] [5][7]

An appropriate course of treatment can be administered for this post-operative complication if it is identified early. This will assist the therapist in determining the functional capabilities of the surgically repaired side in comparison to the un-operated side and in developing a therapy plan accordingly. The patient will benefit even more from this since it will reduce their discomfort and enhance their quality of life and hence the above study was conducted.

MATERIALS AND METHODS

The observational cross-sectional study was conducted for 6 months (October 2023 to March 2024) after getting approval from D.Y. Patil Education Society Kolhapur Research Ethics Committee. The inclusion and exclusion criteria guided the selection of 62 participants.

Inclusion criteria

Post-operative patients aged between 40-60 years of age, having pain less than 3 on Visual Analog Scale, Unilateral breast cancer, and those willing to participate.

Exclusion criteria

Patient having any kind of infection, cognitive impairment, Visual impairment, bilateral breast cancer, pre-operative patients, Patients having history of Diabetes Mellitus, and unwilling to participate.

62 female patients with post-operative breast cancer were recruited from the Om Sai Onco Surgery Centre located in Kasaba Bawada. The complete study and research protocol were explained to the participants along with getting a verbal and written consent from them. The current condition of the patients was evaluated. The shoulder joint's ROM was evaluated. The shoulder ranges, comprising flexion-extension and abduction-adduction, were measured. Apart from that, the Visual Analogue Scale (VAS) was used to measure the pain. The patients were asked to rate their level of pain on a scale from 1 to 10. The discomfort was assessed during activity and at rest. The level of discomfort a patient experience during rest and activity. A comprehensive medical history was taken, and a brief inquiry concerning the patient's discomfort was made. Such questions as I) Onset of pain ii) Precipitating factor iii) Quality of pain iv) Relieving factors v) Site of pain vii) Temporal variations. Patients who scored higher than three on the pain scale were not included in this study. The patients underwent examinations as well. The patients were previously briefed about the procedure.

SPADI

The patient fills the outcome measure which includes 13-item, which measures the degree of discomfort and the degree of difficulty with ADLs involving the activities of the upper extremities. There are five items on the pain subscale and eight on the disability subscale. The affected shoulder's degree of pain and difficulty is represented by a number, which the patient is asked to select. The total sum for the pain is 50 and that for the disability is 80. The consolidated SPADI score is represented using a percentage. A score of 0 denotes the best, and 100 the worst. A higher rating indicates greater disability. When scoring SPADI, any questions missing should be deducted from the total score of each subscale. For example, if one question is deleted from the pain section, the entire score is divided by 40.

Age (in years)	Mean	Standard Deviation
40-60 years	49.80	5.59
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SPADI had strong reliability coefficients (ICC > 0.89) across several cohorts of patients. Cronbach α values typically exceed 0.90, indicating good internal consistency. Other tests, such as the range of motion of the shoulder joint, were performed and recorded. The shoulder joint's flexion-extension and abduction-adduction movements were investigated. A goniometer is used to measure movement in both the left and right shoulder joints.

Data was studied, analysed and recorded using Microsoft Excel 16.

RESULT

TABLE 1- Mean and SD of age (in years)

The mean and SD of the age (in years) of the female patients with post-operative breast cancer was 49.80 and 5.59, respectively.

TABLE 2- Mean and standard deviation of VAS

At rest, the VAS's mean and standard deviation were 0.056 and 2.210, respectively. Additionally, the activity's mean and SD were 2.210 and 0.449, respectively.

TABLE 3- Mean and SD of SPADI Score

SPADI Score	Mean	Standard Deviation
Pain Score (A)	33%	0.0892%
Disability Score (B)	40.65%	0.2157%
Total Score (A+B)	36.15%	0.144%

The Disability score (B) is determined after the Pain score (A). After then, the final score (A+B) is determined. The A pain score's mean and SD are 33% and 0.0892, respectively. The Disability score (B) has a mean of 40.65% and a SD of 0.2157. For the total score (A+B), the mean and SD are 36.15% and 0.144, respectively.

Severity SPADI Score	No. of Patients	Percentage
Mild	10	16%
Moderate	32	52%
Severe	16	26%
Very severe	4	6%
Extremely severe	0	0%
Total	62	100%

TABLE 4- Mean and SD of Shoulder movements

Shoulder Movements	Mean	Standard Deviation
Flexion	84.68%	19.76%
Extension	26.05%	7.70%
Abduction	77.65%	18.24%

The shoulder flexion mean and SD are 84.68% and 19.76, accordingly. The shoulder extension mean is 26.05%, while the standard deviation is 7.70. For shoulder abduction, the mean and SD are 77.65% and 18.24%, accordingly.

TABLE 5- Severity according to the SPADI score

Of the 62 patients, 10 had mild severity (16%), 32 had moderate severity (52%), 16 had severe severity (26%) and 04 had very severe severity (6%).

VAS	Mean	Standard Deviation
On Rest	0.056	0.257
On Activity	2.210	0.449

TABLE 6- Number of patients diagnosed with Axillary Web Syndrome

Axillary web Syndrome	No. of Patients	Percentage
Yes	47	76%
No	15	24%

Of the 62 patients, 15 do not exhibit axillary web syndrome, while 47 do. Axillary web syndrome patients account for 76% of the total, with the remaining 15% contributing.

DISCUSSION

In the above study, AWS was noted in 76% of subjects. Retrospective studies have shown that approximately one-third of patients acquire AWS following breast surgery, and that patients with a history of HTN or undergoing chemotherapy should have their AWS closely watched for development. Consistent with the above study findings, retrospective studies involving lymph node dissection and all types of surgery reported that AWS was present in 29.4% and 19% of cases, accordingly.[6] AWS was shown to occur in 9% of cases in a study involving 110 Korean patients. However, this study only addressed clinical T1-2 stage patients, which may explain why the prevalence was lower than in our analysis. Diversity in study designs and AWS detection techniques may be the cause of the variation in incidence or prevalence. Because both AWS and lymphedema are believed to be related to lymphatic damage and inflammatory responses, they have a similar pathogenesis. [6]

According to one study, lymphedema increases the risk of AWS. In accordance to retrospective research by Ryan et al., there was a 44% increased risk of lymphedema development in individuals with AWS. [8] After a decade of follow-up, Wariss et al., concluded AWS is not a risk factor for lymphoedema. The relationship between lymphoedema and AWS has not been supported by a systematic review. [9] The main conclusion was that AWS susceptibility was prevalent among all the patients who survived breast cancer and had underwent breast reconstruction (up

to 86%) and that the risk of AWS was much higher in this group of patients than in those who had undergone mastectomy alone. Despite investigations looking into the link between AWS and breast reconstruction, only one relevant publication was found that studied the clinical and ultrasonographic aspects of AWS in 36 patients with surgical breast cancer at 2 weeks, 4 weeks, and 3 months postoperatively. Their research showed that people who had breast reconstruction had a 60% incidence of AWS, but there were not enough cases to make a contrast. [9]

It's still unclear what causes breast cancer survivors to experience an increased incidence of AWS following breast reconstruction. Most previous studies on impaired lymphatic drainage in the upper limbs concentrated on the connection between lymphedema development in the future and breast reconstruction; it was hypothesised that reconstructing vessels would aid in re-establishing lymphatic flow and potentially encourage angiogenesis and lymphatic regeneration. Conversely, lymph angiogenesis, or the mending of damaged lymph vessels, may be the source of cording development. Although we believe that breast reconstruction can help clear lymphatic obstructions and prevent lymphedema, cording during the healing phase may be encouraged by newly created lymphatic channels. Further research should be done on this theory.

AWS incidence ranged from 0.6% to 85.4% depending on the date and assessment techniques,

according to Yeung et al. [5] review article, and it was frequently disregarded. limits the shoulder abduction's range of motion. Enhancing shoulder ROM, relieving pain, and shortening cording resolution time have all been demonstrated benefits of physiotherapy.

Because AWS is more common in breast cancer survivors who have had breast reconstruction, pre-operative education about the likelihood of developing AWS symptoms and the inclusion of post-operative assessment and care in the treatment protocol are crucial. The ROM for shoulder abduction is also lowered by cording.

CONCLUSION

AWS can develop in carcinoma of the breast descendants who have undergone breast reconstruction surgery. AWS is a painful side effect of breast cancer surgery that affects 76% of breast cancer survivors, is often ignored in the scientific community. All of the above data point to several important risk factors for the emergence of AWS after breast cancer surgery, such as the number of lymph nodes involved, more advanced tumour staging and grading, mastectomy, ALND, chemotherapy and restricted shoulder range of motion.

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