*Galore International Journal of Applied Sciences and Humanities*
*Vol. 8; Issue: 4; October-December 2024*
*Website: www.gijash.com*
*Research Paper* *P-ISSN: 2456-8430*

# A Comparative Study of Soft Tissue Release and Stretching in Treating Axillary Web Syndrome After Breast Cancer Surgery

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**DOI: https://doi.org/10.52403/gijash.20240404**

## ABSTRACT

**Background:** Axillary Web Syndrome (AWS) is increasingly recognized as a side effect of post-breast cancer treatment. It is one of the primary contributors to discomfort and reduced range of motion following breast cancer surgery. Due to severe pain, patients often experience difficulty moving their arms, particularly with shoulder flexion and abduction, which are the most affected movements. After an axillary lymph node dissection (ALND), cords, webs, or adhesions can be felt and seen in areas such as the axilla, breast, antecubital region, chest wall, hands, and arms. These fibrous bands restrict shoulder movement, especially limiting flexion and abduction.
**Methodology:** The study was a randomized clinical trial that commenced after receiving approval from the ethical research committee. Data collection took place at HACC Hospital in Ahmedabad, across the In-patient Department, Out-patient Department, and Physiotherapy Department. Thirty patients were contacted two months after their breast cancer surgery. The ST-AWS questionnaire was used to assess the risk of developing axillary web syndrome and to assist patients in determining if they had AWS by completing a self-assessment.
**Result:** Data analysis and distribution for both groups were conducted using Excel 2016. In the experimental group, the pre-therapy score was 76%, while the post-therapy score dropped to 36%, reflecting a 40% difference between pre-and post-therapy. For the control group, the pre-therapy score was also 76%, with the post-therapy score decreasing to 41%, resulting in a 35% difference between pre-and post-therapy.
**Conclusion:** The study concludes that both soft tissue mobilization and stretching are effective treatments for patients with AWS. However, soft tissue mobilization proves to be more effective than stretching. Furthermore, prehabilitation can also play an important role in reducing the risk of axillary web syndrome.

***Keywords:*** Axillary web syndrome, post breast cancer surgery, soft tissue release, stretching, exercise therapy

## INTRODUCTION

Axillary Web Syndrome (AWS) is increasingly being recognized as a side effect of breast cancer treatment. It is one of the initial causes of discomfort and limited range of motion following breast cancer surgery. [1]
Many individuals develop Axillary Web Syndrome (AWS) after surgery, particularly following a mastectomy with axillary lymph node dissection (ALND). The axilla exhibits palpable cords, and the tissues around the

affected area are painful, with restricted joint movement. [1]

The primary physical examination feature of AWS is the presence of cording and webbing in the arm, chest, and axilla's superficial tissues, which causes pain and limited joint movement. The arm can be completely extended and abducted to feel and view the cord.[2]

Due to severe pain, patients have difficulty moving their limbs, with shoulder flexion and abduction being the most limited movements. After axillary lymph node dissection (ALND), cords, webs, or adhesions can be felt and seen in areas such as the axilla, breast, antecubital region, chest wall, hands, and arms. These fibrous bands restrict shoulder movement, particularly limiting flexion and abduction. [3]

The literature emphasizes the effectiveness of physiotherapy in addressing upper limb dysfunction, pain, and functional limitations associated with AWS. It also recommends early rehabilitation after surgery to prevent the worsening of symptoms. [1]

## SOFT TISSUE RELEASE

It is commonly used alongside exercises, with substantial support from the literature, and is also effective in slowing the progression of webbing. A "cross-friction massage" stimulates a specialized myofascial soft tissue release (STR) technique, which addresses tissue scars and fibrosis by improving skin elasticity and muscle function. The controlled pressure applied creates micro-traumas that help break up adhesions within the soft tissue. [1]

## STRETCHING

Stretching through the full range of motion, and even beyond, helps to modify both contractile and non-contractile components of the musculoskeletal system, reducing muscle stiffness and preventing contractures. Prolonged inactivity or neglect can significantly limit the range of motion in joints and tissues. To prevent the development of contractures and preserve movement, therapeutic activities are essential in nearly all rehabilitation programs. The results of this study can contribute to the development of future treatment guidelines for AWS, allowing clinicians to manage these patients more effectively. [2]

Strength training improves the ability of tissues to remodel and heal, promoting faster injury recovery and repair. It is an essential part of nearly all rehabilitation programs for individuals of all ages to build strength. [4]

Joint and tissue range of motion can be severely diminished by prolonged inactivity or neglect. Therefore, therapeutic activities are recommended in almost all rehabilitation programs to prevent contractures and preserve movement. [4]

This study compared the effectiveness of soft tissue mobilization versus stretching combined with exercise in patients with axillary web syndrome following breast cancer surgery. [4]

## MATERIALS & METHODS

The study was a randomized clinical trial. It was started after approval from the ethical research committee. The data were collected at the HACCA Hospital, Ahmedabad (In-patient department, Out-patient department and Physiotherapy Department).

After breast cancer surgery, thirty patients were contacted. The ST-AWS questionnaire was used to evaluate the risk of axillary web syndrome and help patients identify whether they had developed AWS by completing a self-assessment two months after surgery.

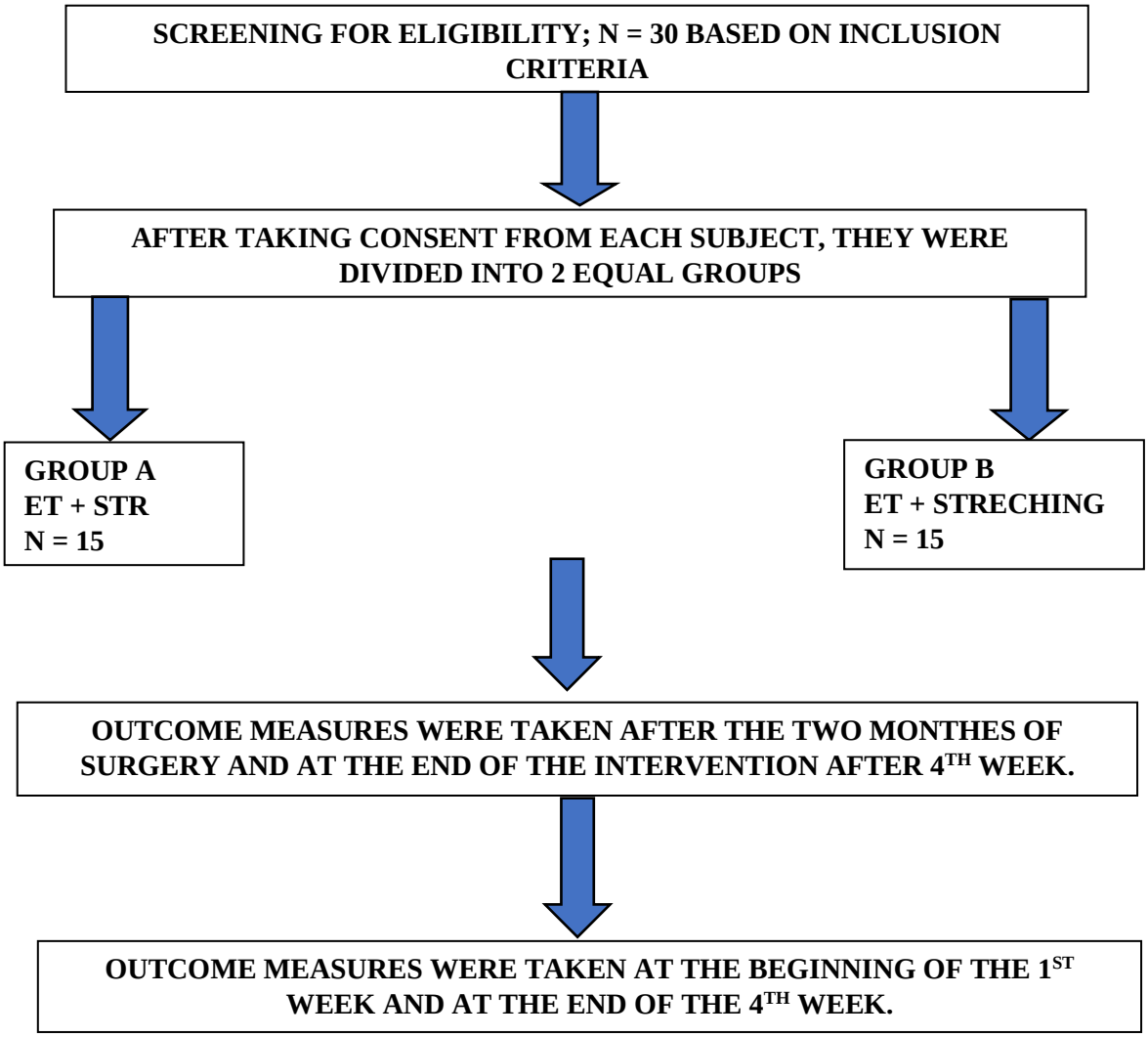
### Inclusion criteria:

- The study included post-breast cancer patients experiencing pain (NPRS > 3) eight weeks after surgery.
- Participants' ages ranged from 18 to 60 years, all showing visible and palpable cords in the axilla, arm, and breast post-surgery.
- Participants had limited shoulder abduction and shoulder extension.

- A convenience sampling method was used, and participants were invited to join the study after providing informed consent. They were randomly assigned to groups A and B through a lottery system by an unbiased physiotherapist. Both the outcome assessor and participants were blinded to the group assignments

**Exclusion Criteria:**

- Women were excluded if they had another active cancerous tumor.
- Previous breast cancer surgery.
- A history of shoulder surgery




**Interventions**

**Group A (Soft Tissue Release) interventions:**

For 20 minutes, the axillary chord and upper arm soft tissues are released. The patient was lying either prone or supine, depending on which muscles were being worked. Each part (axilla, upper arm front and rear side, lower arm front and back side) is worked for three minutes, followed by a one-minute and ten-second stretch (a total of three rounds in one session).

To prevent lymphatic fluid from returning, the limb was elevated with the pillow support during treatment sessions.

**Group B (stretching) interventions:**

Passive and active manual stretches, five days a week for four weeks, moderate intensity (7–10 repetitions), with a 5-second

hold for each stretch beyond range (five seconds of rest between repeats).

**Common (exercise therapy) interventions:**

All patients in both groups underwent therapeutic interventions, such as range-of-motion, and strengthening exercises, equally. Body mechanics were appropriately maintained to prevent any work-related injuries, and these exercises were done while the therapist monitored for any accessory movement. Exercises from the rehabilitation program were incorporated.

Strength training consists of five days a week for four weeks, mild to moderate effort, five to seven repetitions (three sets with a 30-second rest in between), and resistance training using bands and light weights.

ROM exercises include passive and active range-of-motion movements, five days a week for four weeks, moderate intensity, five to seven repetitions, and a 5-second hold (with a 5-second rest interval between repetitions).

Warm-up time for this rehabilitation procedure was ten minutes. To lessen cramping and exhaustion, a 10-minute cool-down was conducted following the particular therapy.

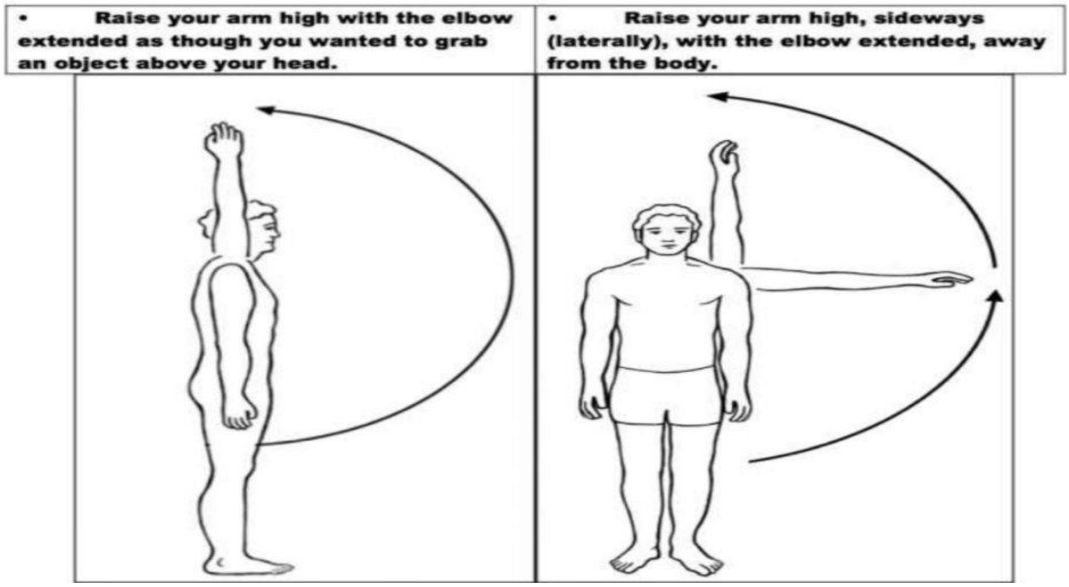
## MATERIALS

The ST-AWS Questionnaire was used, which was designed to help patients find out whether they have Axillary Web Syndrome (AWS) by conducting their self-assessment during 4$^{th}$ week following surgery.

**Initial step:**

Stand in front of a mirror and try the following movements:

Based on the range of movement the self-questionnaire was filled.




A segmented numerical version of a visual analog scale, the NPRS is an outcome measure in which participants choose a whole number (0–10 integers) that most accurately represents the degree of a patient's discomfort. Eleven points are available, with 0 denoting no pain and 10 denoting severe agony. The NPRS is anchored by phrases that use pain and severity extremes, and the typical format is a horizontal bar or line. Based on their experiences throughout the past week, patients rate their level of pain. Possess a high degree of validity and reliability when evaluating cancer patients' pain.

## RESULT

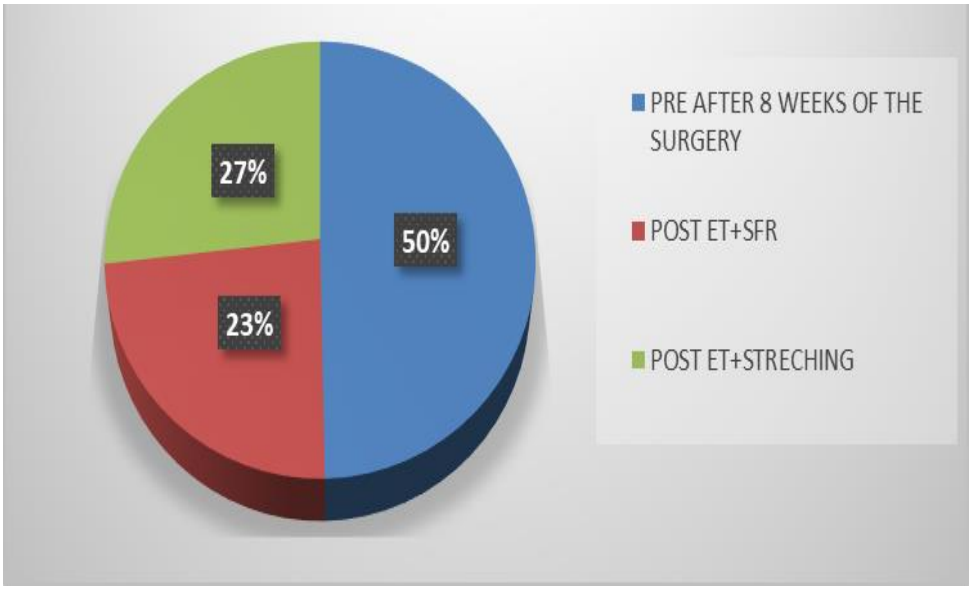
A total of 30 subjects participated in the study, which included the active participation of 15 participants in an

experimental group where exercise therapy + soft tissue release therapy protocol was given and 15 participants in a control group where exercise therapy + stretching therapy protocol was given. The outcome measures were taken before and after 8 weeks.

Excel 2016 version was used for data analysis and distribution of the data in both groups. The total of each individual was calculated and divided by 5 which is for ST-AWS Questionnaire.

The experimental group's pre-therapy score was 76%. And the experimental group's post-therapy score was 36%. The result shows a 40% difference in pre- and post-therapy. For the control group pre therapy score was 76%. And the control group's post-therapy score was 41%. The result shows a 35% difference in pre- and post-therapy.

Significance was defined as $p < 0.05$, and a 95% confidence interval was used to determine the significance of the results.




**GRAPH 1. Graphical presentation of pre and post-scoring percentages of both groups**

## DISCUSSION

For axillary web syndrome, physiotherapy was thought to be a conservative approach. An effective protocol for patients with axillary web syndrome was developed by combining several interventions into a physical therapy treatment plan. This included lymphatic drainage, manual therapy, stretches, strengthening and range-of-motion exercises, and soft tissue mobilization/massage.

According to this study, patients with AWS benefit from both stretching and soft tissue mobilization. Stretching is less effective than soft tissue mobilization. Because it helps reduce discomfort and increases range by efficiently breaking the chord. By applying controlled pressure over the area, this treatment uses "myofascial release" to immediately break the web or cord. Therefore, the repair cascade is activated when cord breaking is started by micro-traumas. The limb's range of motion is increased, discomfort is decreased, and tissue adhesions and wounds are resolved thanks to this cascade. Stretching does not lessen discomfort or remove adhesion formation; it merely increases mobility.

Tahniyat Amir Meer et al did a study on “Comparative effects of lymphatic drainage and soft tissue mobilization on pain threshold, shoulder mobility and quality of life in patients with axillary web syndrome after mastectomy” and concluded that Manual lymphatic drainage showed more improvement in functional movements. It was concluded that both groups, manual lymphatic drainage, and soft tissue

mobilization groups were clinically equally effective.

Previous studies show that soft tissue mobilization is effective in patients with axillary web syndrome and with those interventions. Furthermore, the common exercise for shoulder mobility has more improvement in the symptoms.

Prehabilitation has become a key tactic to sustain QOL and enhance physiological and psychological reserves to protect against expected deconditioning and oncology-directed treatment effects. Patients are often in better physical condition before treatment (of any kind) than they are during the acute post-treatment phase, which allows for more vigorous exercise and the establishment of baseline function levels that can be used as post-treatment goals.

## CONCLUSION

This study concludes, that soft tissue mobilization and stretching both are effective in patients with AWS. However soft tissue mobilization is more effective than stretching. Because it helps reduce discomfort and increases range by efficiently breaking the chord. By applying controlled pressure over the area, this treatment uses "myofascial release" to immediately break the web or cord. Therefore, the repair cascade is activated when cord breaking is started by micro-traumas. The limb's range of motion is increased, discomfort is decreased, and tissue adhesions and wounds are resolved thanks to this cascade. Stretching does not lessen discomfort or remove adhesion formation; it merely increases mobility.

In future recommendations Pre-habilitation will be more effective in ALND surgery so it can reduce the risk of axillary web syndrome.

### *Declaration by Authors*

**Ethical Approval:** Approved

**Acknowledgement:** A sincere thanks to everyone who took part in the research and for their immense support and active involvement.

**Source of Funding:** None

**Conflict of Interest:** The authors declare no conflict of interest.

## REFERENCES

1. Meer TA, Noor R, Bashir MS, Ikram M. Comparative effects of lymphatic drainage and soft tissue mobilization on pain threshold, shoulder mobility and quality of life in patients with axillary web syndrome after mastectomy. BMC Women's Health. 2023 Nov 10;23(1):588.
2. Koehler L, Hunter D. The axillary web and its lymphatic origin. Lymphology. 2016;49(4):185–91.2016.
3. Koehler LA, Hunter DW, Blaes AH, Haddad TC. Function, shoulder motion, pain, and lymphedema in Breast cancer with and without axillary web syndrome: an 18-month follow-up. Phys Ther. 2018;98
4. Kisner C, Colby LA, Borstad J. Therapeutic exercise: foundations and techniques. Fa Davis; 2017.
5. Ahn S-Y, Shin W-S. Effects of Manual Lymphatic Drainage and high-frequency Diathermy on Pain, volume, the function of Upper Extremity and Quality of life in Breast Cancer patients with Axillary web syndrome: a study of five case reports. J Korean Soc Integrative Med. 2021;9(4):19.
6. Zhang L, Fan A, Yan J, He Y, Zhang H, Zhang H, Zhong Q, Liu F, Luo Q, Zhang L, Tang H. Combining manual lymph drainage with physical exercise after modified radical mastectomy effectively prevents upper limb lymphedema. Lymphatic Res Bio. 2016;14(2):104–8.
7. De Oliveira MM, De Rezende LF, Do Amaral MT, Pinto e Silva MP, Morais SS, Costa Gurgel MS. Manual lymphatic drainage versus exercise in the early postoperative period for Breast cancer. Physiother Theory Prac. 2014;30(6):384–9.
8. Liu J, Chen D, Yin X. Effect of manual lymphatic drainage combined with vacuum sealing drainage on axillary web syndrome caused by Breast cancer Surgery. Int Wound J. 2023;20(1):183–90. 36. Lattanzi JB, Zimmerman A, Marshall LM. Case report of axillary web syndrome. Rehabilitation Oncol. 2012;30(1):18–21.
9. da Luz CM, Deitos J, Siqueira TC, Palú M, Heck AP. Management of axillary web syndrome after Breast cancer: evidence-

based practice. Revista Brasileira De Ginecologia E Obstetrícia. 2017;39:632–9
10. Moseley AL, Carati CJ, Piller NB. A systematic review of common Conservative therapies for arm lymphoedema secondary to Breast cancer treatment. Ann Oncol. 2007;18(4):639–46
11. Crane P, Ladden J, Monica D. Treatment of axillary web syndrome using instrument-assisted soft tissue mobilization and thoracic manipulation for associated thoracic rotation dysfunction. Physiother Theory Pract. 2018;34(1):74–8.
12. Agostini F, Attanasi C, Bernetti A, Mangone M, Paoloni M, Del Monte E, et al. Web Axillary Pain Syndrome—Literature evidence and Novel Rehabilitative suggestions: a narrative review. Int J Environ Res Public Health. 2021; 18(19):10383

How to cite this article: Steffi Alphonso, Hiral Jayeshbabu Yagnik. A comparative study of soft tissue release and stretching in treating axillary web syndrome after breast cancer surgery. *Galore International Journal of Applied Sciences & Humanities*. 2024; 8(4): 18-24. *DOI: https://doi.org/10.52403/gijash.20240404*

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