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Scapular Performance in Women with Breast Cancer Compared to Healthy Controls

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Background

The Scapular Flip Test is designed to recognize abnormal scapular position denoted by winging/tipping of the scapula on resisted external rotation. Originally created to detect scapular dysfunction with spinal accessory nerve damage, the Scapular Flip Test may be a simple screening tool for any scapular dysfunction that results from breast cancer surgery and treatment to the shoulder and axillary region.

Purpose

To identify scapular dysfunction in women treated for breast cancer.

Hypothesis

- Women treated for breast cancer will have greater scapular dysfunction measured by a positive Flip Test
- A prospective surveillance model could mitigate long term effects of scapular dysfunction.

Subjects

143 women diagnosed with and treated for breast cancer (BC); 52 healthy control (HC) participants.

Inclusion criteria: women ≥ 18 years; for BC participants - unilateral breast cancer diagnosis, Stage 0-3, seen within a military medical Center.

Exclusion criteria: Previous shoulder surgery or injury.

Methods

The Scapular Flip Test was assessed in women with BC at 3 time periods: pre-operatively, 1-3 months, and 12+ months post-operatively. A physical therapist performed the Scapular Flip Test at each time period. Data for the HC was collected in a single session.

The both limbs were tested in 90 degrees elbow flexion with the arm at the side. Resistance of external rotation was given at the wrist. The position of the scapula was categorized as normal, winging, or winging and tipping.

A positive Scapular Flip Test is the presence of winging or winging and tipping.



		Involved Side Flip Test (%)		
		- Sign	+ Sign	p
HC	(n=86)	82	17	
BC	Base-line (n=252)	78	22	0.386
BC	1-3 mo (n=85)	66	34	0.013
BC	12+ mo (n=52)	69	27	0.069

$p \leq .05$; +Flip comparison to HC at each time period

Analysis

A Chi-Square analysis (alpha was set at $p \leq .05$) was used for group comparisons at each time period. T-tests were used to compare baseline demographics. A 95% confidence interval and a 2-tailed t-test were used.

Results

- No differences were noted between groups at baseline.
- At 1-3 months, the BC group had significantly more positive involved limb Scapular Flip Test results after treatment compared to Healthy Controls.
- At 12 months, no differences were present between groups in the involved limb.
- No statistical significance existed between BC and HC for the uninvolved limb Flip Test at 1-3 and 12 months.

Discussion

Scapular dysfunction is present with positive Scapular Flip Tests in BC patients compared to HCs. Women with BC were treated in a prospective surveillance model, allowing for improvements in upper extremity function by 12 months; thus, a negative scapular flip test may indicate resolution of scapular dysfunction by this time point.

Clinical Relevance

The findings suggest that positive Scapular Flip Test results identify higher frequency of scapular dysfunction in women during or after breast cancer surgery or treatment compared to baseline measurements and healthy controls. The Scapular Flip Test is useful in identifying scapular dysfunction in breast cancer patients. Findings support that the clinician treat breast cancer patients within a prospective surveillance model to mitigate long term effects of cancer treatments.

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