Message From the Editor-in-Chief

The benefits of compression sleeves to prevent clinically significant lymphedema in women with breast cancer

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The July 2023 issues of *Annals of Palliative Medicine* featured 10 Original Articles, 7 Editorials, 1 Brief Report, 4 Review Articles, 1 Editorial Commentary Articles, 2 Case Reports, and 1 Letter to the Editor. The Editorial Commentary and the article it comments on will be highlighted in this Message From the Editor-in-Chief.

Lymphedema is a progressive condition that causes tissue swelling, fluid accumulation, and chronic fibroadipose tissue deposition (1). The treatment of breast cancer is the most common cause of secondary lymphedema in developed countries, as approximately one-third of patients who undergo axillary lymph node dissection develop clinically significant lymphedema (2,3). The prevalence of lymphedema is striking, with approximately 1 million cancer survivors suffer from secondary lymphedema in the United States alone (4).

Patients with lymphedema often report having a decreased quality of life, pain, and functional limitation. Lymphedema also places patients at risk of developing recurrent infections (5,6). Furthermore, lymphedema is associated with financial toxicity for patients (7). Once it develops, currently, lymphedema is typically considered incurable. Treatment options focus on palliation of symptoms through the use of compression garments and manual lymphatic drainage. These interventions can be variably successfully in improving patient symptoms and duress from lymphedema.

As such, there is increasing focus on the prevention of lymphedema. The quality of life implications of lymphedema have spurred the shifting breast cancer treatment landscape to one of more deescalated axillary dissection (8). While more selective use of axillary lymph node dissection is one such lymphedema preventative approach, this procedure remains the standard of care for women with more locally advanced disease. Other preventative approaches, including manual lymphatic drainage (9) and exercise (10), have limited to only modest success in mitigating the development of lymphedema.

The prophylactic use of compression sleeves has also been trialed as a means to reduce the risk of upper extremity lymphedema in patients with breast cancer (11). Paramanandam and colleagues recently reported their results of a randomized controlled trial to assess the prophylactic use of compression sleeves on arm swelling in women specifically at high risk for developing breast cancer-related lymphedema. In their phase III trial published in *Journal of Clinical Oncology*, these investigators randomized 307 women who underwent axillary lymph node dissection for breast cancer to receive or not receive a compression sleeve. Women receiving this intervention wore compression sleeves postoperatively until 3 months after completing adjuvant treatments. Rigorous means were used to assess for lymphedema in this trial, including bioimpedance spectroscopy thresholds and measurements of changes in arm volume. The investigators also assessed patient reported outcomes using the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) and the breast cancer-specific (BR23) questionnaire (12).

Women randomized to compression sleeves had both postponed symptoms from and significantly lower rates of lymphedema. The cumulative incidences of arm swelling at 1 year was 42% for women randomized to compression sleeves *vs.* 52% for patients not receiving this intervention

when measured by bioimpedance spectroscopy and 14% *vs.* 25% when measured by changes in arm volume. The investigators concluded that the prophylactic use of compression sleeves reduced and delayed the occurrence of arm swelling in women with breast cancer who were at high risk for lymphedema following surgery (12). Although outcomes were only reported at 1-year, and longer follow-up is needed to determine if the benefits of prophylactic compressions sleeves is sustained, this is a notable study in that it is the first randomized control trial with concealed allocation and adequate power to assess the value of compression sleeves in the preventative setting for breast cancer in high-risk women.

Demirors and Soran wrote an Editorial Commentary in *Annals of Palliative Medicine* discussing this preventative use of compression sleeves to reduce the risk of clinical lymphedema among patients with breast cancer (13). The authors underscored the clinical significance of lymphedema and detailed the physical, psychological, and emotional detriments associated with this condition after breast cancer therapies like surgery, radiation therapy, and chemotherapy. Demirors and Soran noted that the approximately 10% reduction in lymphedema achieved in patients receiving prophylactic sleeve compression is noteworthy, although they caution that the study conclusions by Paramanandam *et al.* likely should not be considered definitive due to the relatively small sample size, the baseline differences in significant risk factors between groups, and the limited duration of follow-up of patients in the trial to date.

They also discussed the importance of and methods for early diagnosis of lymphedema, and how effective personalized treatment approaches can be pursued when lymphedema is detected early, including manual lymphatic drainage, pressure adjustment of compression sleeves, and compression pump. They also recommended that patients with breast cancer who at high risk—those who had their axillary lymph nodes dissected, had ≥5 sentinel lymph nodes removed, had an LDex of >7 units (or a change of 7 units between two measurements), and experienced lymphedema symptoms including heaviness and fullness—wear low-pressure (15–20 mmHg) compression sleeves before any clinical signs of lymphedema develop (13).

While additional studies and longer follow-up are warranted, the use of prophylactic compressions sleeves are a safe intervention that may provide significant benefits in delaying symptoms from and reducing the incidence of developing lymphedema in high-risk patients with breast cancer.

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Footnote

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