

Preventing skin breakdown in lymphoedema



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Lymphoedema following breast cancer treatment is characterised by an accumulation of lymph fluid in the affected limb, leading to abnormal swelling. Meticulous daily skin care forms an integral part of lymphoedema risk reduction and also prevents skin breakdown. This article examines an innovative skin care programme that aims to improve the condition of patients' skin and prevent skin injury.

Page points

1. Lymphoedema is a widespread problem, with over 40% of women treated for breast cancer going on to develop the condition
2. A skin care regime for breast cancer survivors needs to target the pro-inflammatory milieu in order to optimise skin condition and prevent skin injury
3. Many breast cancer survivors with lymphoedema do not receive enough information on lymphoedema and protecting their skin

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INTRODUCTION

Lymphoedema is a major health problem that affects thousands of breast cancer survivors. More than 40% of women treated for breast cancer go on to develop lymphoedema^[1-3] and are then affected by the associated psychosocial problems^[4,5,6]. A lower quality of life is observed in breast cancer survivors who go on to develop lymphoedema than in those who do not^[5,7,8].

Lymphoedema following breast cancer treatment is characterised by an accumulation of lymph fluid in the interstitial spaces of the affected limb, leading to abnormal swelling and multiple symptoms^[1,4], for example repeated cellulitis, infections and lymphangitis. These symptoms represent a huge burden, both in terms of the quality of life of patients, but also on the finances of healthcare services^[7]. Meticulous daily skin care forms an integral part of lymphoedema risk reduction.

The role of inflammation in the activation of lymphoedema pathogenesis provides innovative insights into skin care for breast cancer survivors^[1-3,8-14]. Breast cancer survivors who undergo surgery and the dissection of lymph nodes and vessels are known to have a compromised lymphatic system. This makes survivors more vulnerable to ineffective lymphatic drainage, inflammation and infection^[15]. Inflammation and infection worsen lymphatic drainage, which triggers lymphangiogenesis as the body attempts to resolve inflammation by removing the excess fluid^[16,17].

However, lymphangiogenesis that is driven by inflammation only serves to create further inflammation. Breast cancer survivors already have a compromised lymphatic system and as inflammation continues and fluid accumulates, the lymphatic system responds by creating new lymphatic vessels, but because the inflammation has not

been resolved, lymphangiogenesis further damages the lymphatic system through expansion of an inflamed lymphatic network, leading to lymphoedema. The lymphatic vessels themselves are not inflamed but the surrounding environment contains inflammatory cytokines^[16,18-21].

Besides treatment-related risk, recent research reveals that inflammation/infection is the main predictor of increased limb volume and lymphoedema^[1-3,8-14]. Women who had previous inflammation-infection in the breast, chest, or arm were 3.8 times more likely to develop lymphoedema^[1,9]. It is important to design a skin care regime for breast cancer survivors by targeting the pro-inflammatory milieu (an internal and external environment that promotes inflammation) to optimise skin condition and prevent skin injuries.

IMPROVING PRACTICE THROUGH RESEARCH

In clinical practice, many breast cancer survivors do not receive any information regarding lymphoedema and risk reduction^[22]. Educational and behavioral interventions can ameliorate lymphoedema-related symptoms and promote early detection^[23]. Similarly, targeting the proinflammatory milieu on a daily basis by optimising skin condition and preventing skin injuries has the potential to reduce lymphoedema risk.

To address this important clinical need, the author's team proposed a pilot research programme aimed at improving clinical practice. The Optimal YOU research programme, which was funded by the Avon Foundation, aims to evaluate the effectiveness of daily behavioural interventions in promoting lymph flow, optimising the condition of patient's skin and preventing skin injuries.

THE OPTIMAL YOU PROGRAM

The goal of The Optimal YOU programme was to address the lack of information available to breast cancer survivors and to provide them with some techniques designed to promote lymph flow and prevent inflammation/infection. Specifically, the interventions sought to:

- **Minimise chronic and acute proinflammatory milieu**
- **Incorporate skin care into daily living**
- **Enhance behavioral competence through step-by-step instructions**
- **Sustain behavioural adherence by providing relevant explanations.**

Minimising chronic proinflammatory milieu

A daily frequency-specific breathing-pumping exercise was designed to promote lymph flow and reduce oxidative stress.

The behavioral instructions involve:

- **Taking 10 deep breaths**
- **Performing a pumping exercise by elevating both arms above the heart**
- **Opening and closing both hands 10 times**
- **Finishing with 10 deep breaths**
- **The breathing-pumping exercises should be performed at least three times a day – morning, noon and before bed.**

Rationale – the goal for the breathing-pumping exercise is to promote lymph flow on a daily basis, thus the three-times-a-day frequency is very important. Deep breathing stimulates the lymphatic system, promotes lymph flow, and relaxes the body to decrease oxidative stress and as a result, minimise chronic proinflammatory milieu.

Minimising acute proinflammatory milieu

Skin care strategies for the prevention and care of skin injuries were designed to prevent acute infection and minimise acute proinflammatory milieu.

Preventive behaviors to prevent skin injuries involve:

- **Wearing protective gloves while gardening or doing household chores (washing dishes, cleaning or cooking)**
- **Wearing long-sleeve clothes or apply sunscreen to prevent sunburn**
- **Applying insect repellent or wear an insect-repellent band to prevent insect bites**
- **Cuticles should be pushed back and kept moist, but never cut**

Page points

1. *Skin care strategies that prevent injury are designed to prevent acute infection*
2. *The risk of inflammation and infection is increased if the skin integrity is compromised*
3. *Daily skin care can optimise patients' skin condition by maintaining hygiene and keeping the skin moisturised*
4. *Dry skin is more likely to breakdown allowing bacteria to penetrate the protective skin barrier*
5. *Water-based moisturisers are absorbed more readily by the skin and low pH moisturisers provide an active barrier against infection*

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Page points

1. Pre and post programme tests demonstrated that the majority of participants have an increased knowledge of their condition
2. The programme has made it easier for breast cancer survivors to adhere to self-treatment behaviours on a daily basis
3. The programme has meant that the subject of lymphoedema is no longer avoided in the author's Institute

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- Always offer the unaffected or least affected arm for blood pressure measurements, blood draw or injection.

Minor skin injuries

Strategies were also designed to care for minor skin injuries:

Cuts and scratches:

- Wash the injured area with soap and water
- Apply antibiotic cream to the injured area
- Cover the injured area with a clean and dry dressing as needed.

Oil splash and steam burns:

- Apply a cold pack or cold water for 15 minutes
- Wash the burn with soap and water
- Apply antibiotic cream to the burn
- Cover the burn with a clean and dry dressing as needed.

Insect bites:

- Apply hydrocortisone cream for itching
- Apply antibiotic cream if the bite is red and slightly inflamed.

Rationale – the risk of inflammation-infection increases as skin integrity is breached. Gardening gloves will prevent scratches and thorns. Protective gloves will prevent direct contact with chemical cleansers that cause local inflammatory reactions and potential skin injuries. Sunburn, oil splash or steam burns and insect bites can induce local inflammation and increase the risk of infection. Subcutaneous, intramuscular, or intravenous injections can cause an allergic or inflammatory response, which can further impede lymph flow.

Optimising skin condition

Daily diligent skin care was designed to optimise patients' skin condition by maintaining good hygiene and keeping the skin moisturised.

The behavioral instructions involve:

- Wash the at-risk limb or area with soap and water on a daily basis
- Use water-based and low-pH moisturisers to prevent dry skin.

Rationale – fluid accumulation can cause skin dryness and irritation. Dry skin is more likely to breakdown and permit bacteria to cross the skin barrier. Water-based moisturisers are absorbed more readily and low pH moisturisers discourage infection.

EVALUATION OF THE OPTIMAL YOU PROGRAMME

Over 85% of eligible women with a breast cancer diagnosis at the author's institute have participated in the programme. Pre and post-cognitive knowledge tests have revealed that participants have increased their knowledge of lymphoedema and risk-reduction. Participants have reported 98–100% behavioral adherence and overall there was a view that knowing why, when and how to implement the risk-reduction behaviors made it easier to maintain them on a daily basis. Limb-volume has been maintained and no cellulitis and infections have been reported. The author's team will report on the final 12-month follow-up findings in 2011.

Lymphoedema is no longer a taboo at the institute. Surgeons, oncologists, radiologists, and nurses are willing to discuss lymphoedema and risk-reduction. With more research, the team is confident that clinical practice will be changed and clinical outcomes will be improved, especially regarding breast cancer survivors' symptom experience and quality of life as well as the cost-effectiveness of management for the healthcare service.

CONCLUSION

Lymphoedema is a major problem for thousands of breast cancer survivors. A lower quality of life is observed in breast cancer survivors who go onto develop lymphoedema than in those who do not. In clinical practice, many breast cancer survivors do not receive any information regarding lymphoedema and risk reduction and to address this, the author's team proposed a pilot research programme aimed at improving clinical practice.

The goal of the programme was to provide patients with techniques designed to promote lymph flow and prevent inflammation/infection. This included providing patients with techniques to minimise chronic and acute proinflammatory milieu, incorporate skin care into daily living, enhance behavioral competence and sustain behavioral adherence.

So far the programme has been a success, with patients not only becoming used to performing risk-reduction behaviours, but also adhering to them. A 12-month review will report on the true efficacy of the programme.

AUTHOR DETAILS

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