

Postoperative Pain Issues Following Breast Cancer Surgery

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Objectives

- By the end of this presentation, the participants will be able to:
 - Recognize lymphedema
 - Identify phantom breast pain/post-mastectomy pain syndrome

Agenda

- Lymphedema
- Axillary Web syndrome (cording)
- Phantom breast Pain/ postmastectomy pain syndrome

Thoughts After Mastectomy

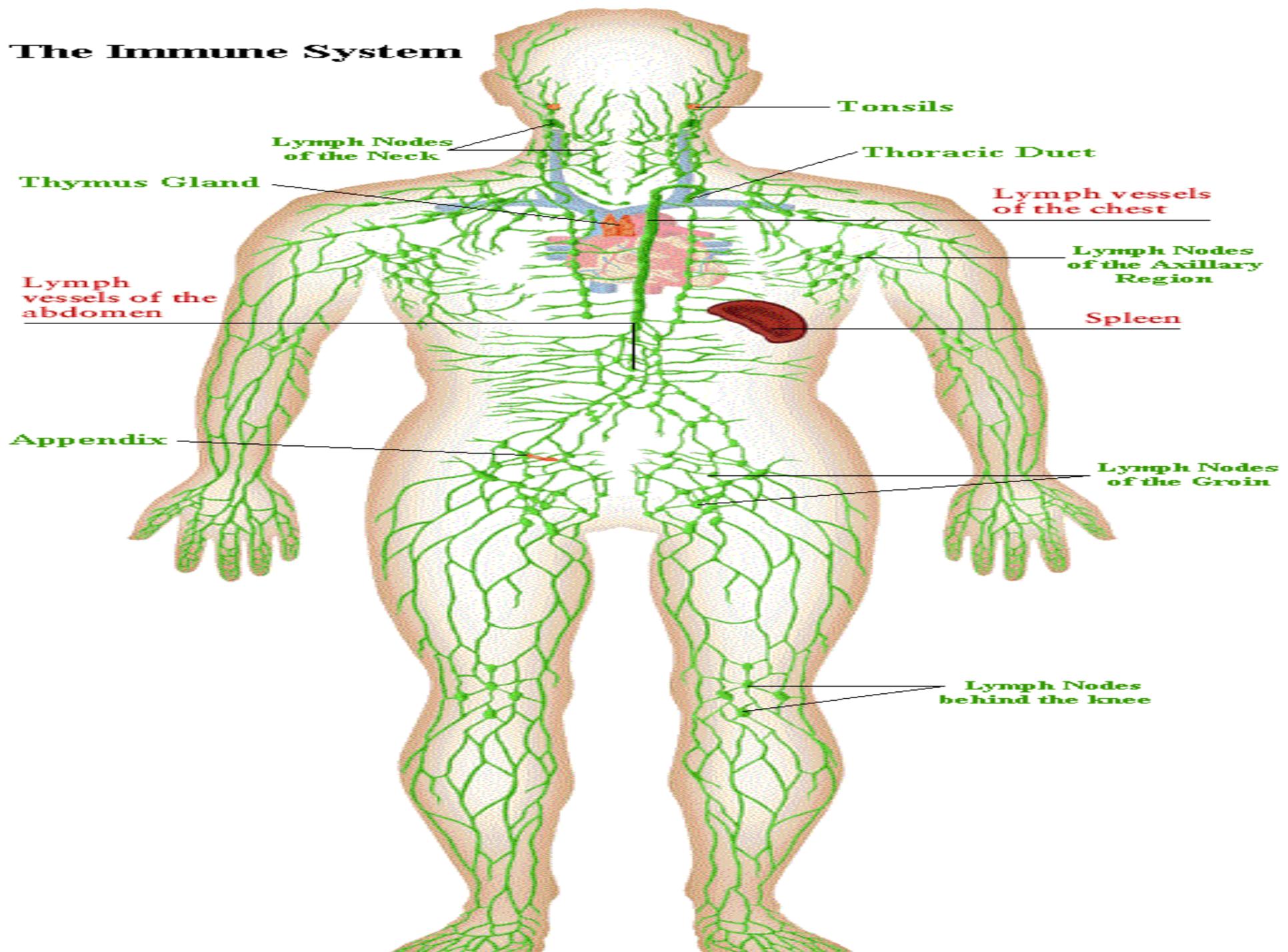
- “If a person loses an arm or a leg, physical therapy is part of the standard rehabilitation process. But, if a woman loses a breast, physical therapy is not routinely suggested”.

Lymphedema: Overview, New Information, Treatment Options

Lymphatic Anatomy Review

- Consists of the tonsils, thymus, spleen, initial lymphatics, collecting lymphatics, nodes, trunks, ducts
- 600-700 lymph nodes throughout the body
- Superficial lymphatics are divided into quadrants and drain to nodal areas
- The lymphatic system rejoins the circulatory system at the thoracic and lymphatic ducts located at the venous angle of the neck

The Immune System



Lymphatic Physiology

- The lymphatic system transports larger molecules (typically proteins, hormones, cellular waste) and foreign bodies such as bacteria/viruses from the tissue space. Water is the transport medium. In a healthy normal system 1-2 liters of fluid per day is transported.
- The lymphatic system is stimulated by: muscle contraction, arterial pulsation, pressure differences, negative pressure in central veins, and external pressure (massage, bandages, etc)

Lymphatic Function Influenced by:

- Activity Level
- Diet
- Sleep
- Body weight
- General Health
- Skin
- Genetics
- Stress

New Thoughts on Lymphatic Physiology

- Interdependence of venous and lymphatic function
- ? The existence of an axillary-inguinal path via the alternative pathways, watersheds, anastomotic pathway
- Lymphangiogenesis: Scars may prevent lymphangiogenesis or alter the lymphatic reorganization
 - Incisional
 - Radiation fibrosis

Lymphedema

- Is the result of fluid accumulation in the tissue space which results in swelling in a portion of the body
- Is associated with some type of malfunction or obstruction of the lymphatic vessels or nodes.
- May be the result of a congenital condition known as primary lymphedema or may be a secondary lymphedema which may occur following: surgery (especially lymph node dissection), irradiation, compression, or trauma.

Incidence

- There are 1-2 million breast cancer survivors with approximately 400,000 having lymphedema. Incidence rates vary from as low as 6% to as high as 70%.
- ALND and XRT 33-47%, SLNB and XRT 4-17%

Risk Factors

- Higher risk
 - Mastectomy
 - ALND
 - Radiation
 - Node status

Sentinel node biopsy data suggests less risk than ALND but long term effect is uncertain

Additional Risk Factors

- Obesity
- Post operative infection
- Age
- Thoracic inlet/outlet syndrome
- Thyroid disease
- Diabetes
- Level of hand use

Obesity and Lymphedema

- Kaiser Permanente Study:
- 13.3% risk of developing lymphedema
- Mean time to diagnosis: 8.3mos. Post-op
- Number of nodes removed increased risk
- Being obese was suggestive of an elevated risk
 - HR of 1.43

Body Mass Index and Lymphedema

- Secondary analysis done out of Vanderbilt University.
- N=138 newly diagnosed breast cancer patients
- Arm volume and weight data: Baseline and up to 30 mos. Post-op
- BMI>30 were 3.6times more likely to develop Lymphedema.
- Those whose weight rose during the 30 mos. were not more likely to develop lymphedema

Clinical Assessment of Lymphedema

- Previously
 - Circumferential measurements
 - Volumeter
- Newer Ways to assess
 - Bioimpedence
 - Perometer

Perometer



Perometer Stationary

The Perometer is used to take quick, accurate, and hands-free measurements of the limb. It can be used in a retail setting for the fitting of compression garments or in a clinical setting for limb volume monitoring.

- Patient Can Stand While Being Measured
- Good for Upper & Lower Extremity Measuring
- Helps Patients Who Have Difficulty Balancing

Bioimpedence

- The Delfin MoistureMeter D is a novel and compact dermal water measuring instrument which has recently been launched to customers world-wide. The device measures skin non-invasively and locally in only a few seconds. Applications for the MoistureMeter D vary from assessing medical conditions to research and development of cosmetic and pharmaceutical products affecting skin water content. .



Earlier Detection

- Pre Operative Assessment
- Evaluation every 3 months
- If increase of $>3\%$ of volume using a perometer, pt provided with a compression sleeve for 4 weeks with reduction in limb volume, then instructed to wear during strenuous activities.
- Results: A short trial of compression garments successfully treated subclinical lymphedema

Stages of Lymphedema

- New** Latent
 - Increased limb density without increase in girth
- Reversible Lymphedema
 - accumulation of protein rich edema fluid
- Spontaneously Irreversible Lymphedema
 - Protein rich edema fluid with connective and scar tissue
- Lymphostatic Elephantiasis
 - Protein rich edema with connective and scar tissue; hardening of the dermal tissue, papillomas and hyperkeratosis of the skin
 - (Beirsdorf-Jobst, 1999)



Onset

- Lymphedema can occur within the first few months after surgery or at any time thereafter. Onset can be triggered by trauma, strain, or pressure changes.
- Current data suggests that with longer survivorship increased likelihood of developing lymphedema

Warning Signs

- Swelling of only the at risk limb/s
- Changes in skin color
- Subtle changes in the limb i.e.: decreased ability to see veins and contours of the arm/leg
- Abnormal sensations such as burning or tingling
- Feelings of fullness in the limb

Consequences of Untreated Lymphedema

- Increased risk for cellulitis
- Increased risk for lymphangitis
- Increased risk over time for lymphangiosarcoma
- Altered body image
- Altered quality of life
- Periarticular changes





Evaluation

- Self report
 - Armer correlated highly the relationship of feelings of fullness with lymphedema
- Why shoulder slope is important to lymphedema.
- Scars/tissue texture of the anterior chest and axilla as well as limb
- ROM limitations
- Limb girths
- Impact on ADL

Lymphedema Prevention

- Good Skin Care: Lotion, Good nail hygiene, avoid cuts, scrapes, gloves when gardening
- Exercise: Maintain Healthy weight, Avoid repetitive movements, slow gradual weight lifting may be of benefit
- Avoid extreme temperature change
- Avoid Limb Constriction

Weight Lifting in Women with Breast Cancer Related Lymphedema

- N= 141 at risk patients, 141 with lymphedema
- Twice Weekly slow progressive weight lifting with stable lymphedema for 1 year
- Primary Endpoint: change in arm and hand swelling at 1 year
- Secondary Endpoint : Exacerbations of lymphedema

Results

- The proportion of women with an increase of 5% or more of limb swelling was the same in the exercise and control group.
- The weight lifting group had greater improvements in severity of lymphedema symptoms, increase in upper body strength and decrease in lymphedema exacerbations

Physical Activity and Lymphedema (PAL) trial

- Abramson Cancer Center:
- N= 141with lymphedema, 154 at risk patients
- Goals:
 - was a slow progressive weight lifting regimen safe and would not worsen lymphedema?
 - For those at risk would exercise impact the development of lymphedema

PAL Trial

- 13 week gym memberships and twice weekly small group classes
- Results:
 - 50% reduction in likelihood of lymphedema worsening with exercise
 - 70% reduction in arm swelling increases in women with 5 or more lymph nodes removed
 - Improved strength, body image and body fat

Lymphedema Treatment

- OLD
 - Manual Lymph Drainage
 - Bandaging
 - Compression sleeve
 - Sequential Pump Home program consisting of : exercise (stretching, aerobic activities and self massage), and prevention guidelines
 - Other: Reid Sleeve, Mediassist, Circaid, Legacy, Jovi, Contour Plus,
- NEW Low Level Laser, Scar Management, Flexitouch, Kinesiotape, Strengthening, Silver sleeves, nerve stretches

Manual Lymph Drainage

- Proximal to distal, then distal to proximal.
- Touch is light
- Alternative pathways using anastomotic or watershed areas

Low Level Laser

- treatment using laser to bring about a photochemical reaction at a cellular level. The laser light penetrates into tissue where it is absorbed by cells and converted into energy that influences the course of metabolic processes.
- The LTU-904 models are infrared lasers operating at a wavelength of 904 nanometers. This invisible wavelength penetrates deeply into tissue
- Stimulates the repair system of normal cells increasing their viability
- **Do NOT look into the laser light**



Compression



Silver Compression Garments

- For people who are prone to cellulitis, lymphagitis, or folliculitis compression garments with silver woven in may help decrease bioload
- Silver ions released by the garment create an ionic "shield" around the area covered by the garment. The silver ions bind with microbes and compounds to essentially deactivate them. When the silver ions bind with microbes, the microbes are inhibited from multiplying. When the silver ions bind with ammonia and denatured proteins the odors associated with these substances are diminished.



Juxtafit Garment



Jovi Compression Garment



Additional Tools for Management



Kinesiotape

- Kinesio® Taping Method can assist in the movement of muscles, repositioning of joints, alleviation of pain, but most importantly assist in the “lifting or creation of space” within the superficial skin decreasing pressure while opening initial lymphatics. # The effect of Kinesio® Taping on muscle also improves the efficiency of the deeper lymphatics by allowing maximum contraction and relaxation of a muscle.



Flexitouch

- The Flexitouch system, a pneumatic device designed to follow the principles of manual lymph drainage therapy, has received FDA clearance for the treatment of lymphedema and chronic wounds.



Upper extremity Flexitouch garments

Rule out Recurrence: case Study: Mrs. O

- 68 yr old Dx. In 1998 with a stage IIB left breast cancer. S/ P lumpectomy CMF, tamoxifen
- In 2009, she developed numbness in her fingertips and loss of function in her left arm. This was originally felt to be secondary to an apparent left subclavian venous thrombosis and a biopsy was felt to be too risky, and she was therefore placed on anticoagulation. Over time, however, her symptoms worsened and finally on 02/22/2010, a transvascular biopsy was performed, which revealed a metastatic lobular carcinoma encasing the left subclavian vein and artery, lesion was ER 0%, PR 0%, HER-2/neu 3+ positive.

Websites/Products

- National Lymphedema Network
- Lymphedivas

- The story of LymphedIVAs began in Philadelphia when two young breast cancer survivors, Rachel Troxell and Robin Miller, developed lymphedema, a side effect of breast cancer treatment that can cause permanent swelling in the arms. Their physicians and lymphedema therapists recommended a compression sleeve as the most effective way of controlling the swelling. When they researched the options for the sleeve they found that the only ones available were rough textured, heavy, hot, beige, and bandage-like. Frustrated and dismayed over the lack of options they had for compression sleeves, Robin and Rachel met with Kristin Dudley, a fashion designer, to discuss their idea of creating a more elegant and comfortable compression sleeve.
- In early 2007, Robin left the company. Soon after, Rachel discovered her breast cancer had returned. While she was being treated, she continued building LymphedIVAs, which brought her much joy during a difficult time in her life. Rachel died January 22, 2008, at the age of 37. Her determination and compassion to improve the lives of breast cancer survivors is very much ingrained in the spirit of LymphedIVAs.



Areas of research

- Lymphovenous anastamosis
- Lymph node transplant

Ongoing Issues

- Chronic condition requiring lifelong awareness and management.
- Compression garment coverage by insurance
- Tissue health/infection
- Prevention information clear, concise, based on recent information
- Self management
- WWW.LymphedemaTreatmentAct.org
 - Bill sponsored by Larry Kissell of north Carolina the purpose being to improve coverage for the diagnosis and treatment of lymphedema

Axillary Web Syndrome “cording”

- Definition: Palpable subcutaneous cord from the axillary crease down the ipsilateral arm across the antecubital space and in severe cases down to the base of the thumb. (Moskovitz et.al., 2001)
- Underlying cause is lymphovenous injury, stasis and hypercoagulability as a consequence of superficial venous stasis, lymphatic disruption and tissue injury caused by axillary surgery.
- Generally a self- limiting cause of post-operative morbidity. Immobility of the limb can also cause a frozen shoulder



Incidence

- Results in pain and range of motion limitation with **45%** incidence following sentinel lymph node dissection and **86%** following axillary lymph node dissection
- More recent study of 116 patients showed that 43% of patients developed Axillary web syndrome after ALND

Axillary Web Treatment

- NEW
 - Low level laser
 - Stretch
 - kinesiotape
- OLD
 - Short duration heat (5-7 minutes)
 - Stretch longitudinal and transverse by therapist
 - Self Stretching program

Phantom Breast Pain

- Prospective longitudinal study of 120 women postmastectomy.
- Painful vs. non-painful phantom sensations:
- 13% and 15% after 3 weeks post-op
- 12.7% and 11.8% after 1 year
- 17.4% and 11.8% after 6 years

- Preop pain was positively correlated, but not age

Scar Pain

- 35% at 3- weeks
- 22.7% at 1 year
- 30.9% at 6 years
- Anecdotally, pain is often skin sensitivity, nerve pain, numbness, pain on examination, pulling or pain when reaching, certain movements
- Treatment: Scar Therapy, Kinesiotape, help with bras etc.

Conclusions

- As we move further away from the days of the radical mastectomy and ALND, lymphedema rates have decreased, but it remains a potentially morbid consequence of breast cancer surgery and radiation therapy. Perhaps further improvements in local therapy such as partial breast irradiation may help lessen the risk even more

Conclusions

- We as oncology nurses have the ability/skill set to aid in the prevention, early detection and treatment of these postoperative breast pain issues