TREATING PAIN AFTER SURGERY

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INTRODUCTION

- Breast cancer most common cancer among women
  - ACS estimates 232,340 new cases in 2013¹
- Second most common cause of death
  - 39,620 deaths in 2013¹

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<tbody>
<tr>
<td>BREAST</td>
<td>75%</td>
<td>79%</td>
<td>89%</td>
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<td>CANCER</td>
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¹ www.cancer.org
Pain after surgery: Introduction

SCOPE OF THE PROBLEM

• Estimated 2.9 million breast cancer survivors 2012
• Persistent postsurgical pain demonstrated in 25 - 50% of patients undergoing breast cancer surgery¹

OVERVIEW

- Anatomy
- Presentation of breast cancer
- Common surgical procedures for breast cancer
- Causes of acute post-surgical pain
- Causes of post-surgical sensory disturbances
- Lymphedema
- Treatment
BREAST AND AXILLARY ANATOMY
BREAST ANATOMY

• Female breast
  – Lobules (milk-producing glands)
  – Ducts (tubes carry milk from lobules to nipple)
  – Stroma (fatty tissue and connective tissue surrounding ducts and lobules)
THE LYMPHATIC SYSTEM

- Part of body’s defense system
- Most lymphatic vessels in the breast connect to lymph nodes under the arm (axillary nodes)
- Some connect to lymph nodes inside the chest (internal mammary nodes) and some to those above the collar bone (supraclavicular nodes)
Pain after surgery: Anatomy
HOW DO BREAST CANCERS PRESENT?
BREAST CANCER PRESENTATION

- Imaging abnormality
  - Mass
  - Calcifications
  - Architectural distortion
- Palpable lump
- Skin changes
- Changes in nipple
  - Rash
  - Nipple discharge
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BREAST CANCER PRESENTATION

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Diagnosis usually made with image-guided biopsy
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IMAGE-GUIDED BREAST BIOPSY

- Minimally invasive biopsy standard of care for initial diagnosis of imaging abnormalities
- Hematoma after biopsy can often cause significant discomfort/pain
CAN I DECREASE MY CHANCES OF HAVING A POST-BIOPSY HEMATOMA?

• Often unavoidable

• Avoid blood thinners
  – Coumadin
  – Anti-platelets
  – Aspirin?
  – Vitamin E
  – Fish oil
SURGICAL PROCEDURES OF THE BREAST
LUMPECTOMY

- Incision is made on the breast
- Removes the breast cancer with a rim of normal tissue
RADIATION THERAPY

- Treatment with high energy rays that destroy cancer cells
- The treatment is used to kill cancer cells that remain in the breast
- Treatment with lumpectomy is almost always followed by radiation therapy
  - Radiation therapy decreases the likelihood of the cancer coming back in the breast by more than 50%
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**MASTECTOMY**

- Removal of the entire breast including the nipple and areola, leaving the pectoralis major intact.
- With a mastectomy, radiation is usually not necessary.
SURGICAL PROCEDURES OF THE AXILLA
AXILLARY LYMPH NODE DISSECTION

- An important part of staging breast cancer is determining if the lymph nodes under the arm are involved with cancer.
- 10 – 40 lymph nodes are removed during a standard ALND.
- Was once standard of care for breast cancer patients.
**SENTINEL LYMPH NODE BIOPSY**

- Sentinel lymph node is the first lymph node to receive drainage from the breast or a tumor in the breast.
- Injection of radiotracer +/- blue dye into the skin.
- A gamma probe used to detect radioactivity in the axilla.
- Only nodes that are hot and/or blue are removed.
CAUSES OF ACUTE POST-SURGICAL PAIN
Pain after surgery

CELLULITIS/ABSCESS

• Post-operative infection rare, but can occur in breast or axilla
• If superficial, can treat with antibiotics
• If deeper infection suspected, may require incision and drainage of infected fluid
Mondor’s Disease

- Thrombosis of superficial vein
- Presents as a firm tender cord of tissue usually from upper abdomen to lower part of breast
- May occur after breast surgery
- Self-limited (resolves within 2-8 weeks)
- Treatment:
  - Heat
  - Anti-inflammatory medication

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SEROMA

- Collection of fluid in surgical cavity
- Normal part of wound healing
- Seroma may become tense and painful, particularly in axilla
- Treatment:
  - Simple aspiration
  - Repeated as necessary

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AXILLARY WEB SYNDROME

• Can be seen after any axillary surgery
• Presents as a series of tender, cord-like structures that are visible and palpable beneath axillary skin
• Cords can extend down the arm, into forearm
AXILLARY WEB SYNDROME

“Cording” due to disruption of lymphatic vessels during axillary surgery

Incidence:
- 20% after sentinel node biopsy
- 44%-72% after axillary node dissection

Develops in early post-operative period

Limits range of motion

Treatment:
- PHYSICAL THERAPY to improve symptoms and shorten course
• After axillary surgery, range of motion in shoulder may be significantly limited
• May be due to:
  – Pain
  – Scar tissue
  – Axillary web syndrome
• Study demonstrated shoulder deficits 1 week after surgery¹:
  – 41% after SLN biopsy
  – 75% after ALND
• Symptoms were significantly improved 6 months after surgery

¹Ashikaga T, JSO, 2010
CAUSES OF POST-SURGICAL SENSORY DISTURBANCES
Pain after surgery

BRACHIAL PLEXOPATHY

- Usually related to operative positioning
- Involves paresis of arm with sensory changes distinct from minor sensory disturbances caused by injury to intercostobrachial nerve
- Prevention:
  - Appropriate positioning including avoiding hyperextension of the arm
- Treatment:
  - Physical therapy
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NUMBNESS

- At incision site after lumpectomy or lymph node biopsy
- Of skin after mastectomy
- Inner arm after lymph node biopsy
  - Intercostobrachial nerve often sacrificed during axillary dissection
  - Even if preserved, may be stretched or injured
NUMBNESS

• If nerve is sacrificed:
  – Numbness under arm remains, but symptoms become significantly less distressing

• If nerve is simply stretched:
  – Normal sensation to the inner arm will return, but may take several months
PHANTOM BREAST PAIN

- Most common after mastectomy
  - Johns Hopkins study reported 39% women had phantom sensations after mastectomy
  - Incidence was similar with or without reconstruction
- During mastectomy, small nerves between breast and skin are cut
- Phantom sensations may be related to altered connection between the cut nerve and the brain
PHANTOM BREAST PAIN

• Common sensations reported:
  – Pain and discomfort
  – Itching
  – Pins and needles
  – Tingling
  – Pressure
  – Burning
  – Throbbing

• Treatment:
  – Exercise or “breast” massage may help
  – Pain medication for severe cases
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18 SENSATIONS AFTER BREAST CANCER SURGERY

- 187 patients with breast cancer completed questionnaire at 3, 6, 12, 24 and 60 months after surgery
- 141 lumpectomy
- 46 mastectomy
- All had axillary surgery
  - 133 sentinel node biopsy
  - 54 axillary lymph node dissection

Baron R, ASO, 2006
18 SENSATIONS AFTER BREAST CANCER SURGERY

- Tender
- Sore
- Pull
- Ace
- Painful
- Twinge
- Tight
- Stiff
- Prick
- Throb
- Shoot
- Tingle
- Numb
- Burn
- Hard
- Sharp
- Nag
- Penetrate

Baron R, ASO, 2006
Most prevalent sensations at baseline = tenderness

Sensations less prevalent and less severe after sentinel node biopsy compared to axillary dissection

Some sensations were prevalent, even at 5 years
- Tenderness and twinges after SLN biopsy
- Tightness and numbness after ALND
Study provides valuable important information regarding what is to be normal and expected part of healing process.

Most sensations observed, even if prevalent, were not severe or distressing.
LYMPHEDEMA

- Potential cause of post-surgical pain
- Limb swelling occurs as a result of protein rich fluid accumulating in the soft tissues
- Additional fluid build-up in arm can cause tingling, aching and heaviness
- Incidence 3 -16% of women undergoing axillary surgery
RISK FACTORS FOR LYMPHEDEMA

• Many retrospective studies evaluating association between risk factors and lymphedema\(^1\)
  – Axillary lymph node dissection
  – Mastectomy
  – Obesity
  – Radiation
  – Infection
  – Ipsilateral upper extremity injury

• Recent study reported that sauna use was only lifestyle risk factor associated with lymphedema\(^2\)

\(^1\) McLaughlin SA, *Oncology*, 2012
\(^2\) Showalter S, *ASO*, 2013
TREATMENT / TIPS TO REDUCE SYMPTOMS
Early post-operative exercise most important

In a review of 10 studies, introduction of upper extremity exercise as early as post-operative day 1 after axillary surgery showed clear benefit over delayed (day 5-7) for shoulder range of motion\(^1\)

Structured exercise programs with a physical therapist significantly improve post-operative range of motion and shoulder dysfunction\(^1\)

\(^1\)McNeely M, *Cochrane review*, 2010
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PHYSICAL THERAPY

Diagram showing how to do a beach pose exercise after breast reconstruction surgery
Copyright © CancerHelp UK

Diagram showing how to do an exercise moving your hand up your back after breast reconstruction surgery
Copyright © CancerHelp UK
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PHYSICAL THERAPY
Pain after surgery

PROSPECTIVE MODEL¹

• Pre-operative rehabilitation visit
  – Establish baseline measurements including range of motion, pain, strength and upper extremity volume

• Early post-operative rehabilitation visit
  – Address pain, decreased range of motion, axillary web syndrome, weakness
  – Determine need for ongoing rehabilitation therapy

• Ongoing surveillance
  – Recognizing patients may need re-evaluation during additional reconstructive surgery, radiation or other therapies

¹McNeely M, Cancer, 2012
LYMPHEDEMA SURVEILLANCE /TREATMENT

• Surveillance
  – Report any symptoms to surgeon or medical oncologist
  – Immediate therapy can decrease symptoms

• Treatment
  – Physical/Occupational therapy
  – Manual lymphatic drainage
  – Compression garment
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ALTERNATIVE THERAPIES

• Acupuncture/acupressure
  – Most clinically common use of acupuncture is for treatment of pain
  – Only a few studies to support findings
• Relaxation training
• Hypnosis
• Yoga