

# ***TREATING PAIN AFTER SURGERY***

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# INTRODUCTION

- Breast cancer most common cancer among women
  - ACS estimates 232,340 new cases in 2013<sup>1</sup>
- Second most common cause death
  - 39,620 deaths in 2013<sup>1</sup>

	Trends in 5 Yr. survival		
<b>BREAST</b>	1975-1977	1984-1986	<b>1996-2004</b>
<b>CANCER</b>	75%	79%	<b>89%</b>

<sup>1</sup> [www.cancer.org](http://www.cancer.org)

# SCOPE OF THE PROBLEM

- Estimated 2.9 million breast cancer survivors 2012
- Persistent postsurgical pain demonstrated in **25 - 50%** of patients undergoing breast cancer surgery<sup>1</sup>



<sup>1</sup>Kehlet H, *Lancet*, 2006

# OVERVIEW

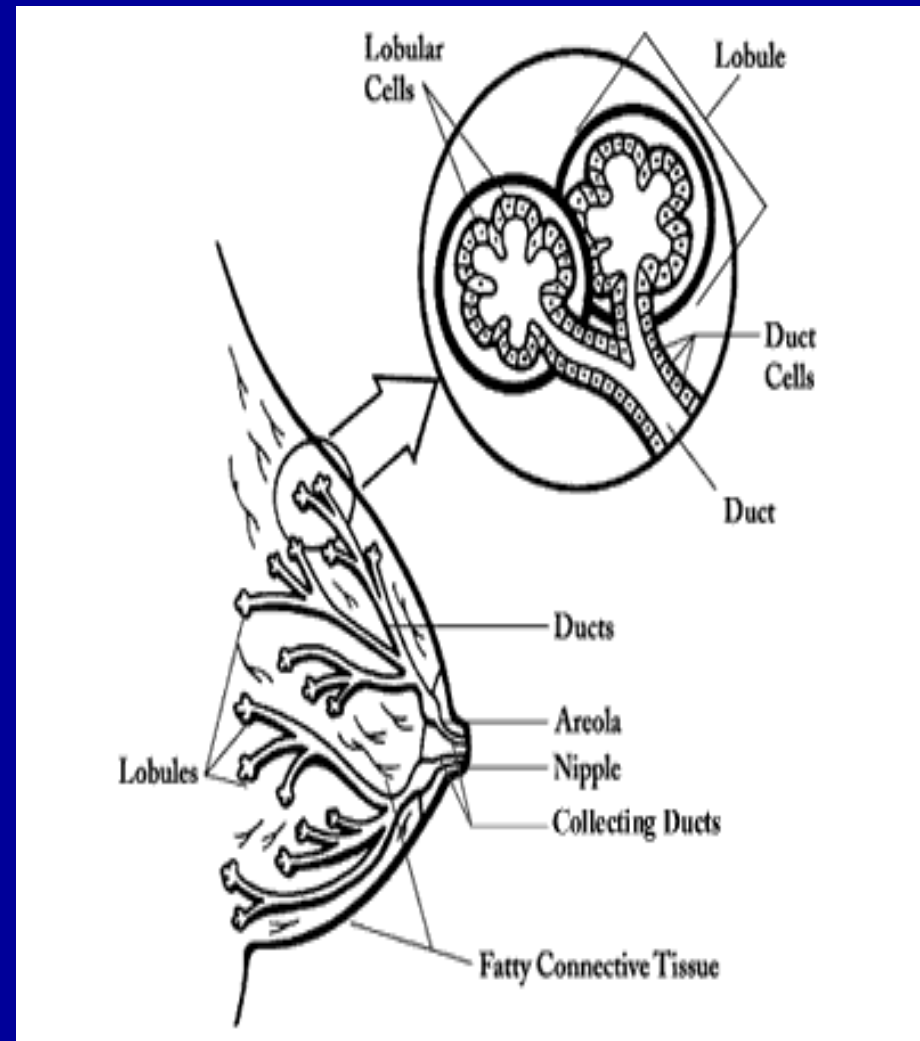
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- Anatomy
- Presentation of breast cancer
- Common surgical procedures for breast cancer
- Causes of acute post-surgical pain
- Causes of post-surgical sensory disturbances
- Lymphedema
- Treatment

# **BREAST AND AXILLARY ANATOMY**

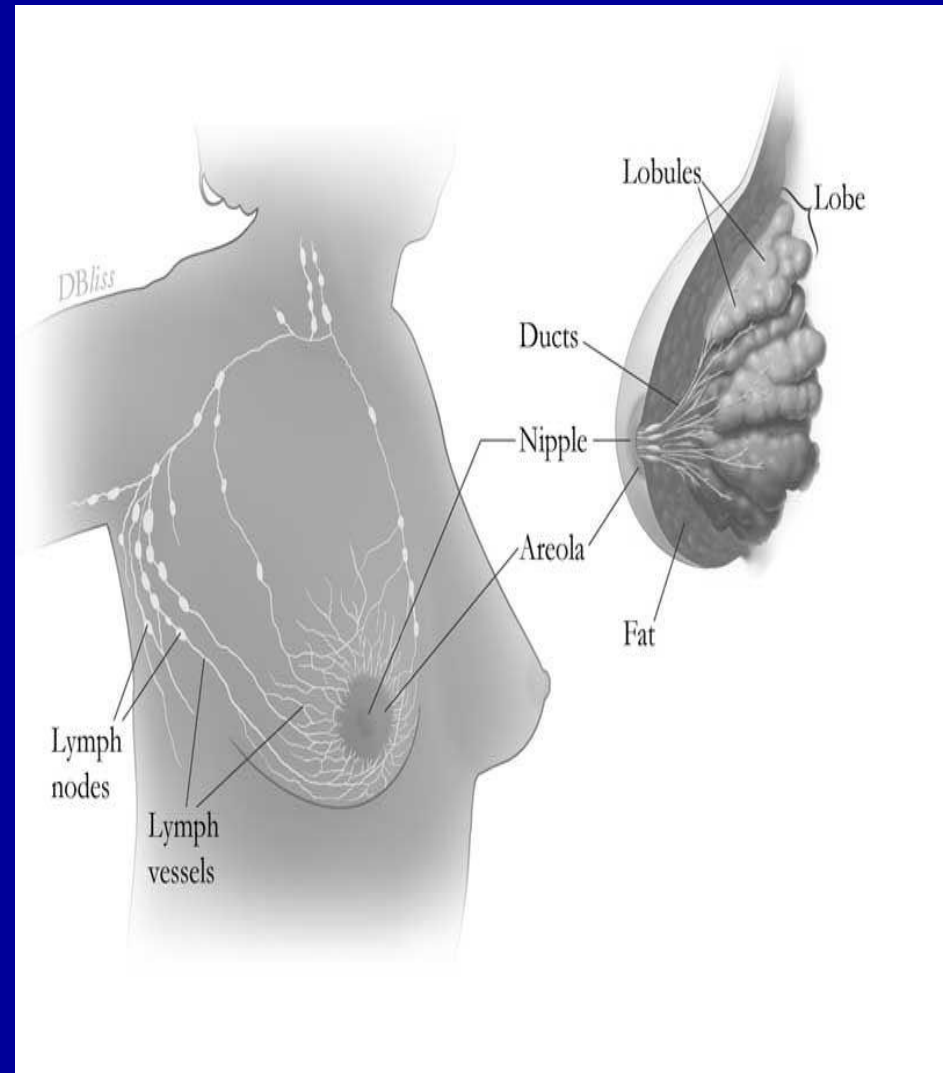
# BREAST ANATOMY

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

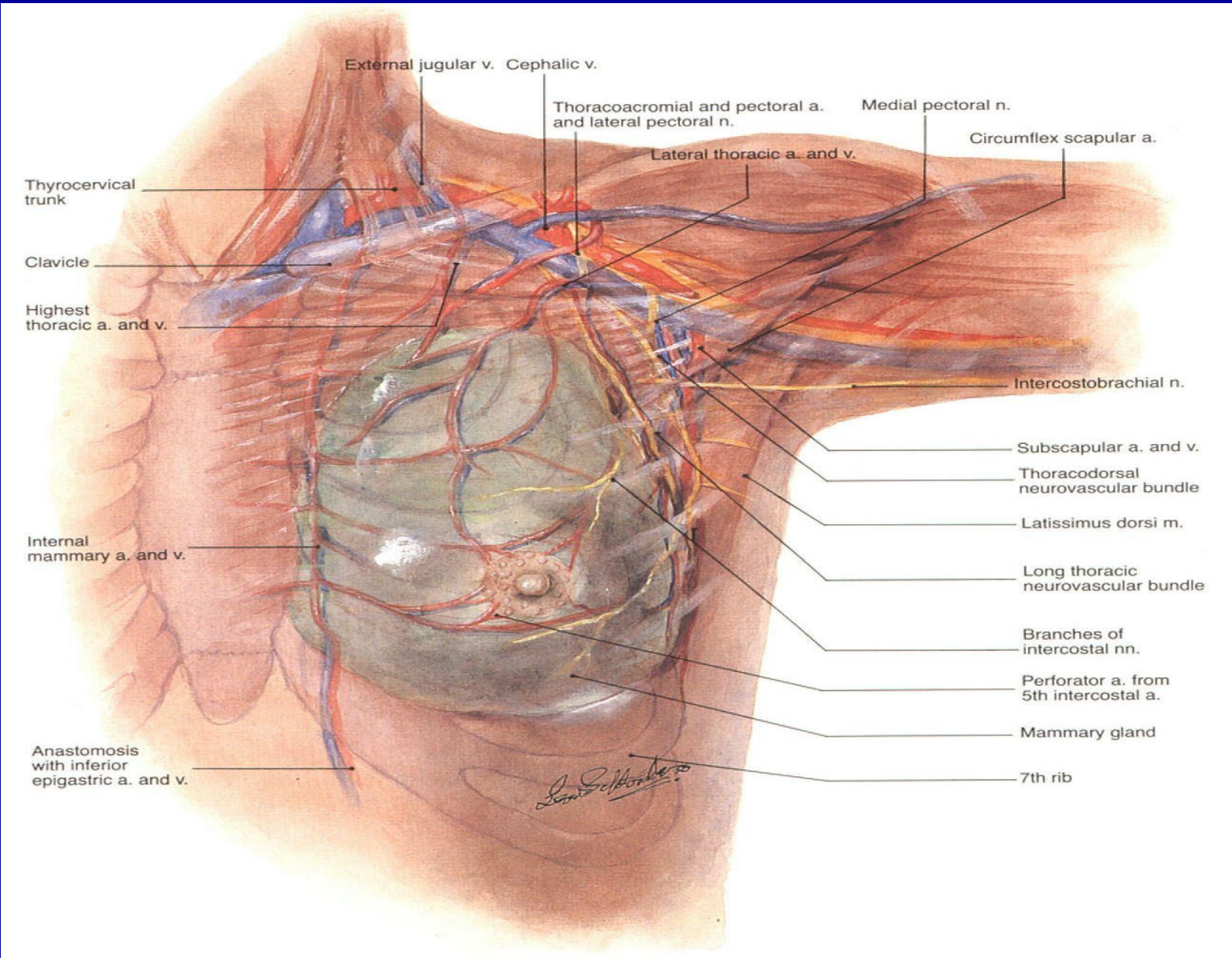


# THE LYMPHATIC SYSTEM

- 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*)

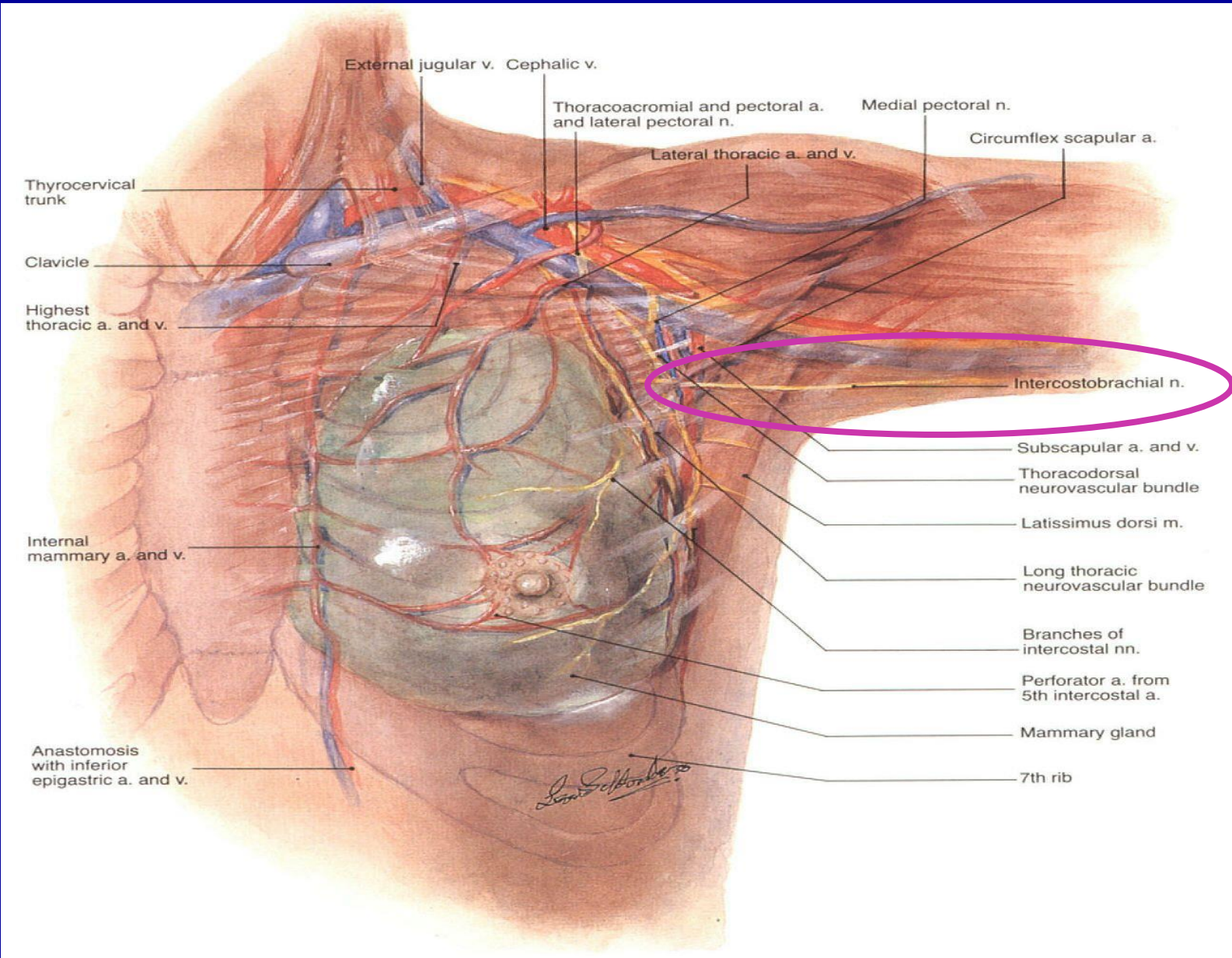


# Pain after surgery: Anatomy





# Pain after surgery: Anatomy



# HOW DO BREAST CANCERS PRESENT?

# **BREAST CANCER PRESENTATION**

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

# BREAST CANCER PRESENTATION

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# BREAST CANCER PRESENTATION

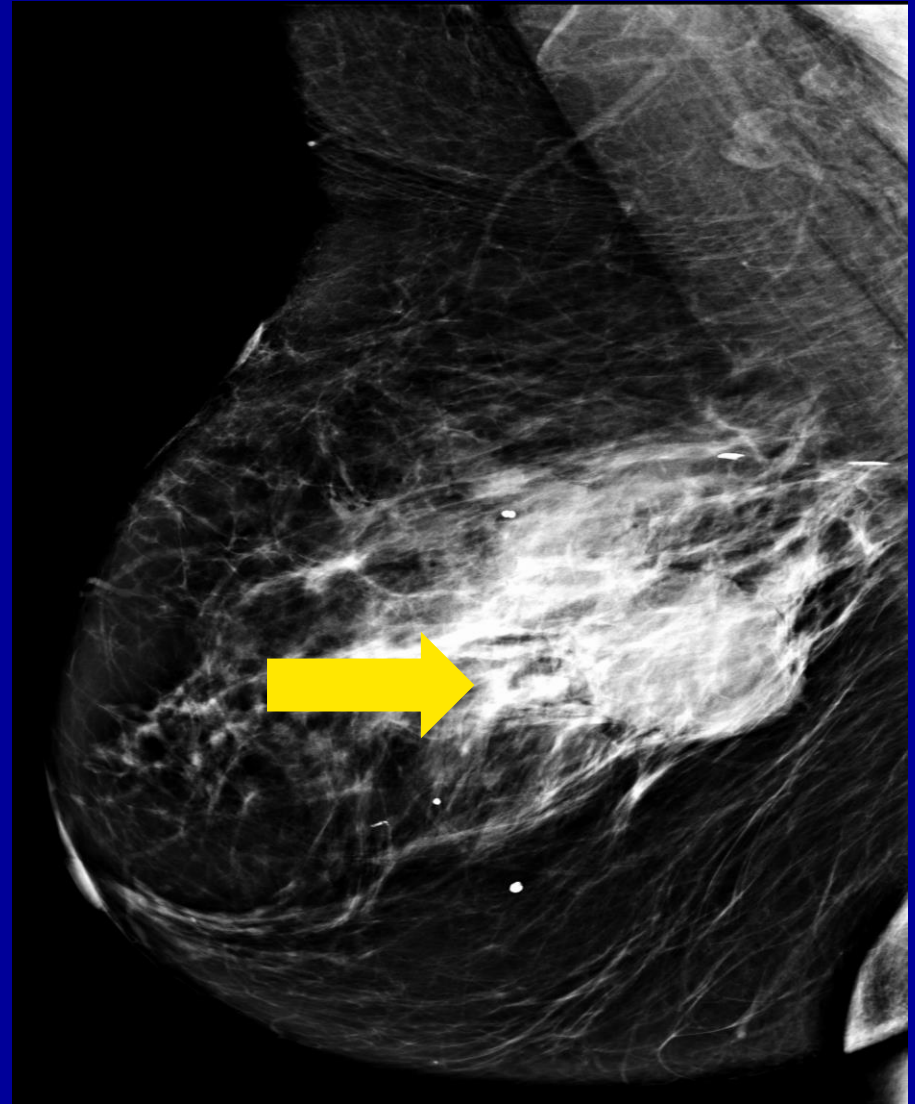
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Diagnosis usually made  
with image-guided  
biopsy

# 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



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## **CAN I DECREASE MY CHANCES OF HAVING A POST-BIOPSY HEMATOMA?**

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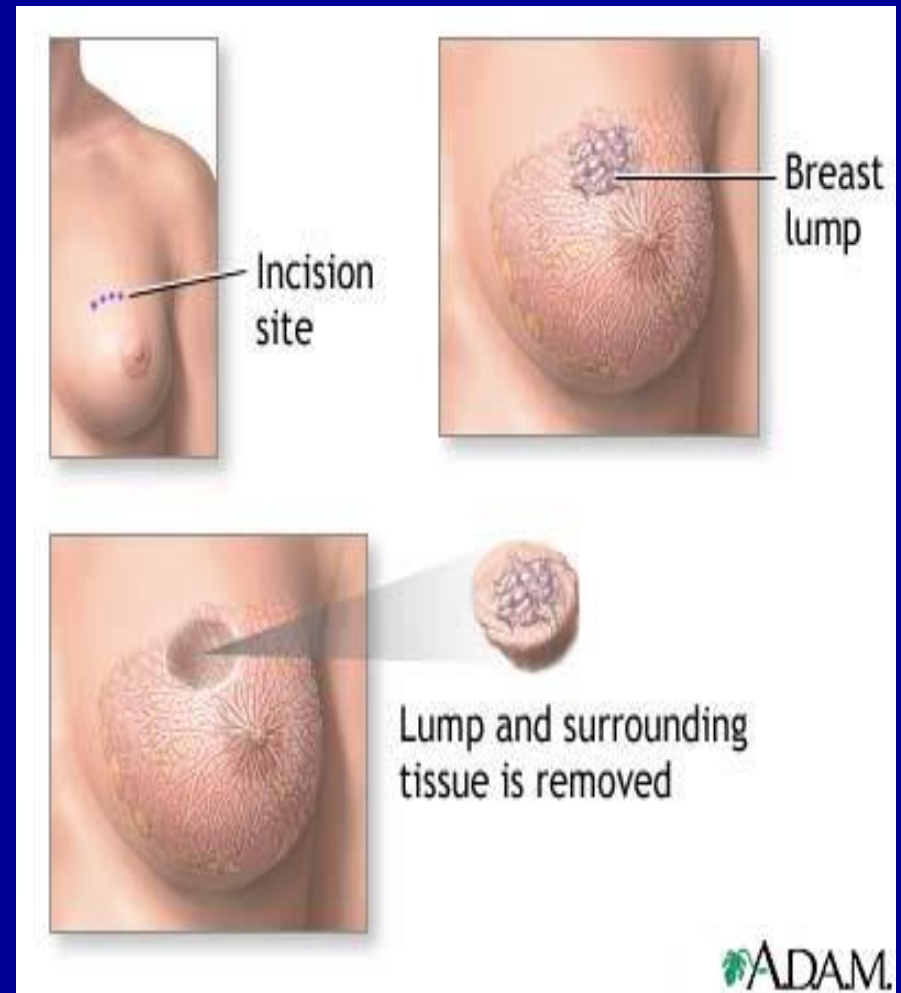
- Often unavoidable
- Avoid blood thinners
  - Coumadin
  - Anti-platelets
  - Aspirin?
  - Vitamin E
  - Fish oil

# **SURGICAL PROCEDURES OF THE BREAST**



# LUMPECTOMY

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



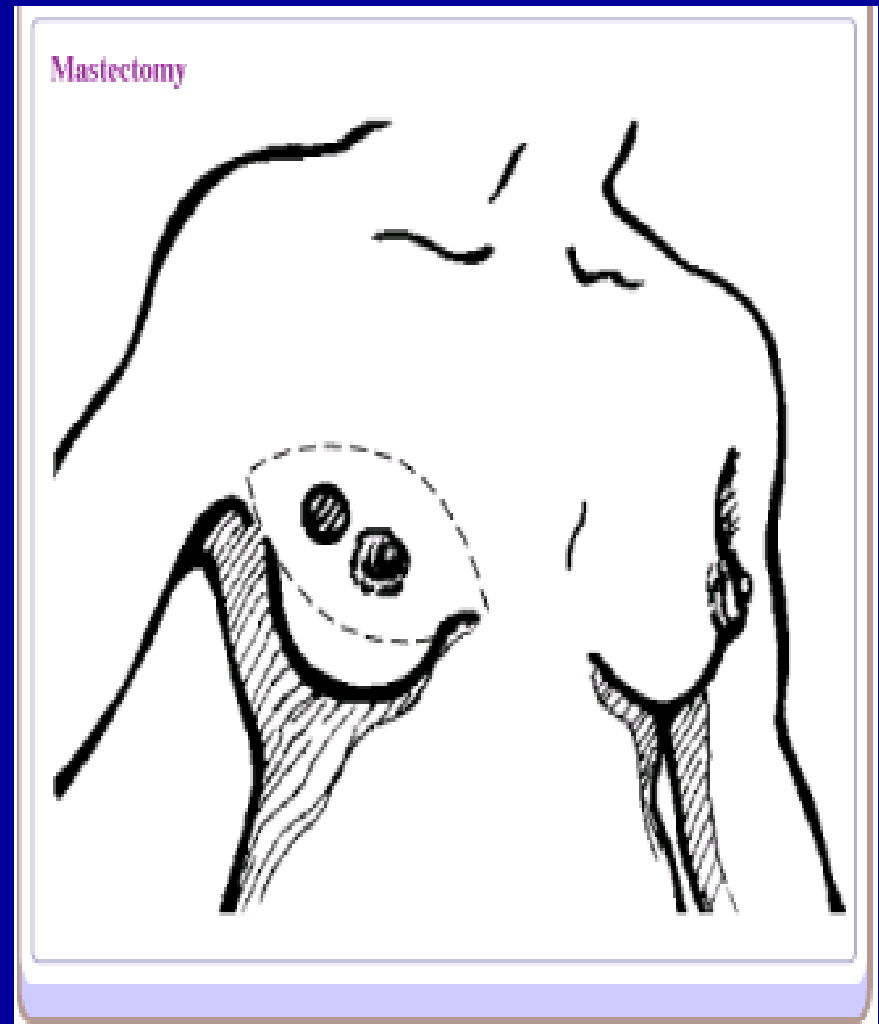
# **RADIATION THERAPY**

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- 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%

# MASTECTOMY

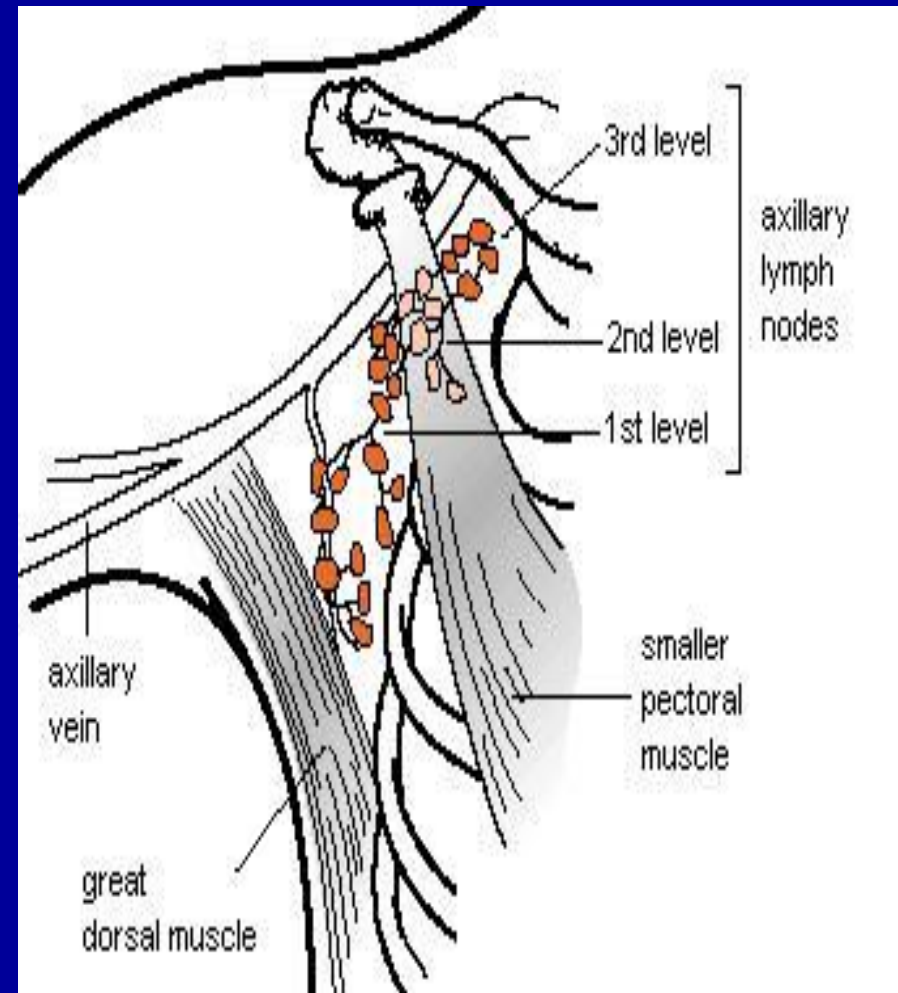
- Removal of the entire breast including the nipple and areola, leaving the pectoralis major intact
- With a mastectomy, radiation is *usually* not necessary



# **SURGICAL PROCEDURES OF THE AXILLA**

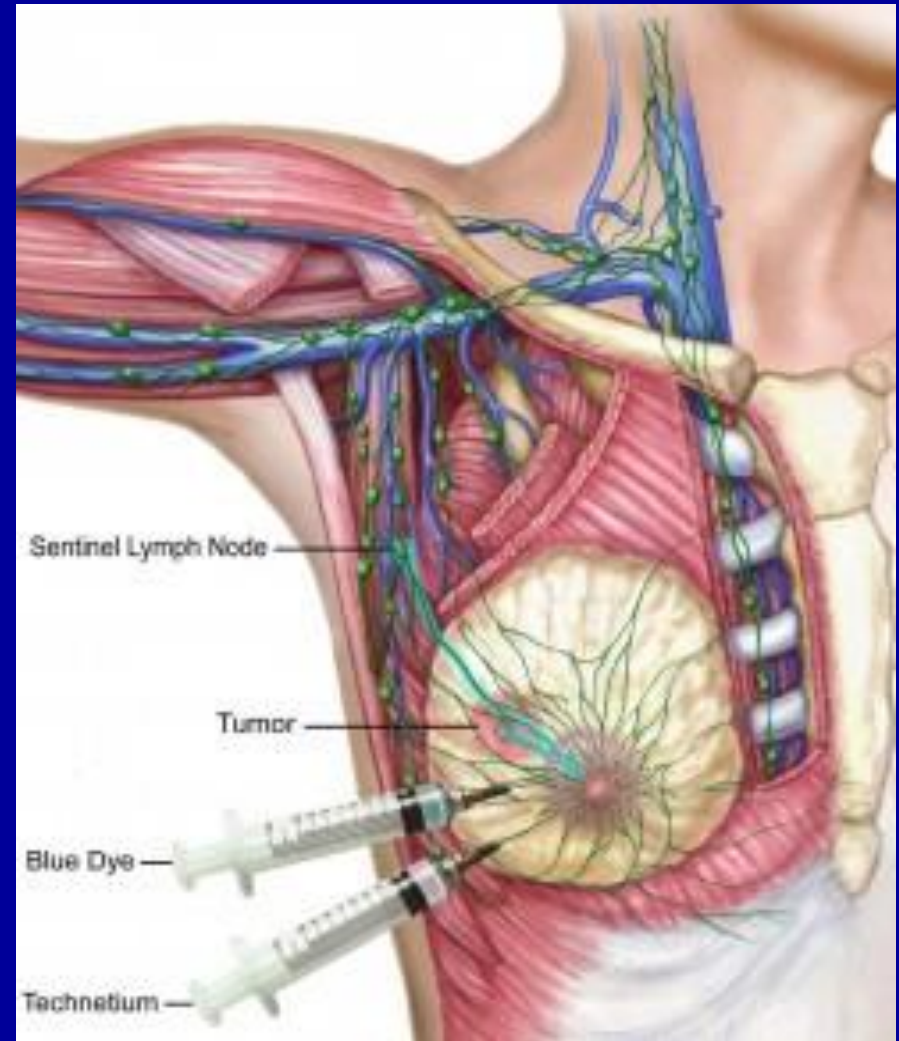
# AXILLARY LYMPH NODE DISSECTION

- 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**

# 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

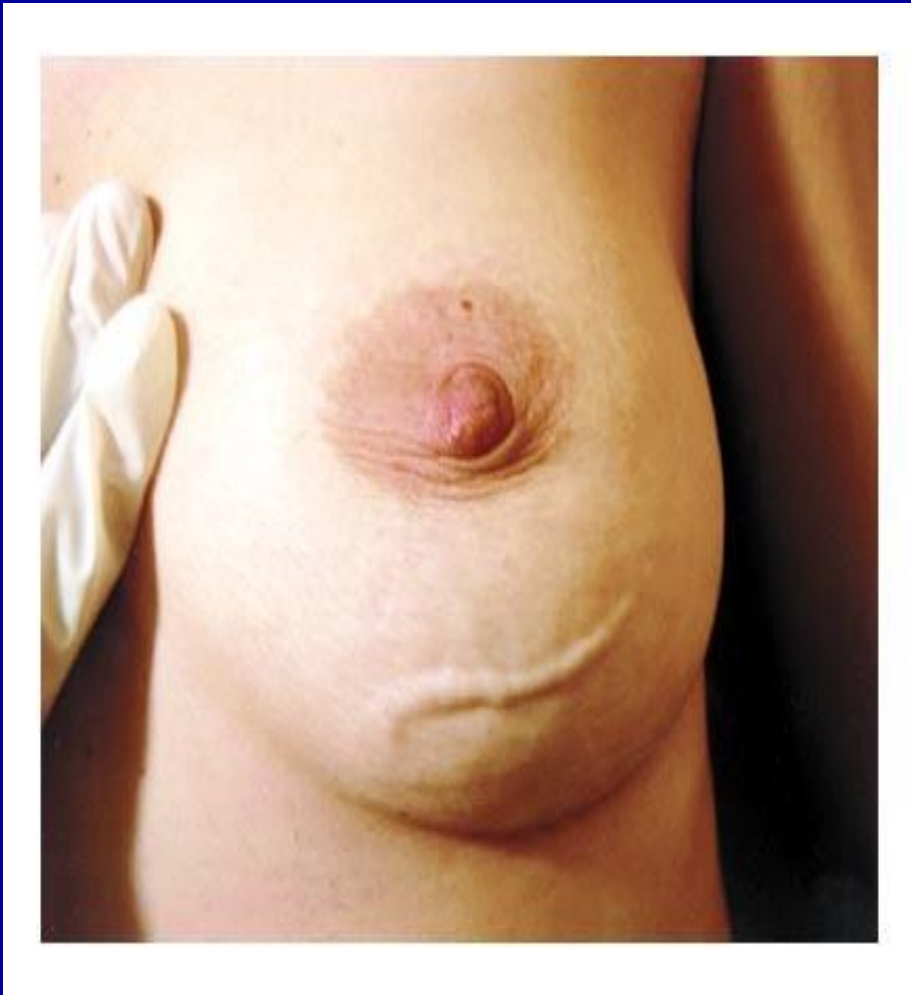


Breast cellulitis



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# 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

# 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

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- “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

## **SHOULDER ABDUCTION MORBIDITY**

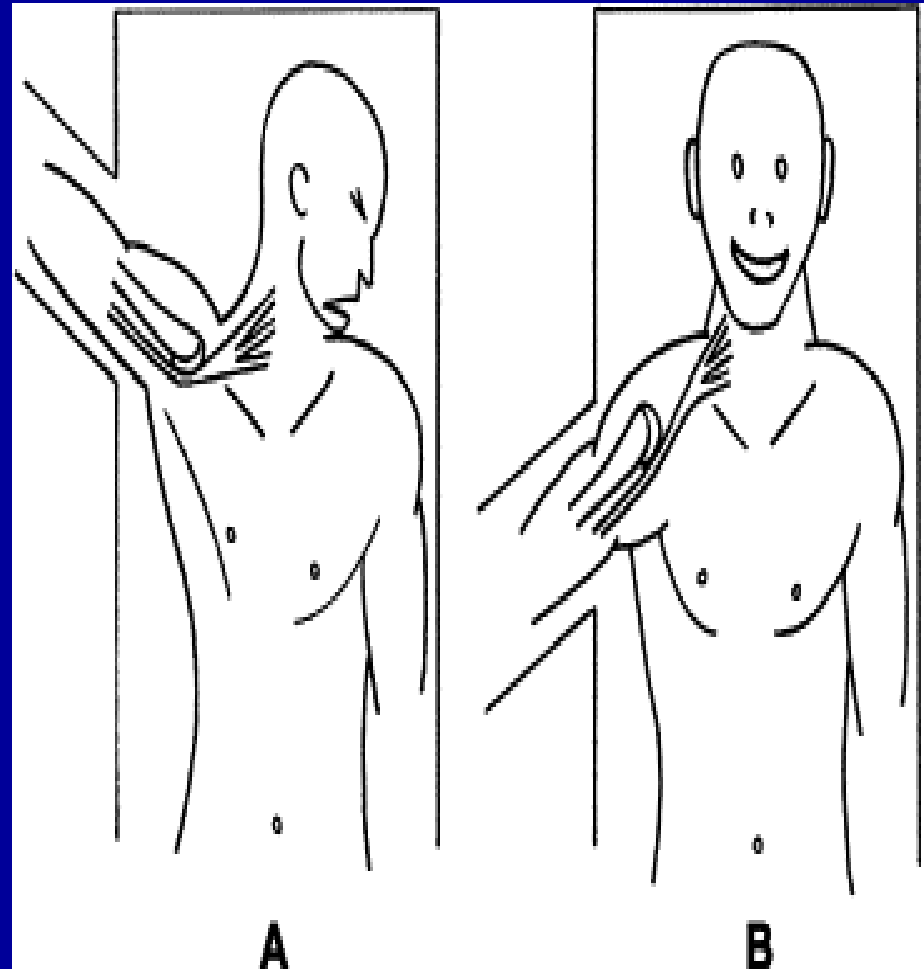
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- After axillary surgery, range of motion in shoulder may be significantly limited
- May be due to:
  - Pain
  - Scar tissue
  - Axillary web syndrome
- Study demonstrated shoulder deficits 1 week after surgery<sup>1</sup>:
  - 41% after SLN biopsy
  - 75% after ALND
- Symptoms were significantly improved 6 months after surgery

# CAUSES OF POST-SURGICAL SENSORY DISTURBANCES

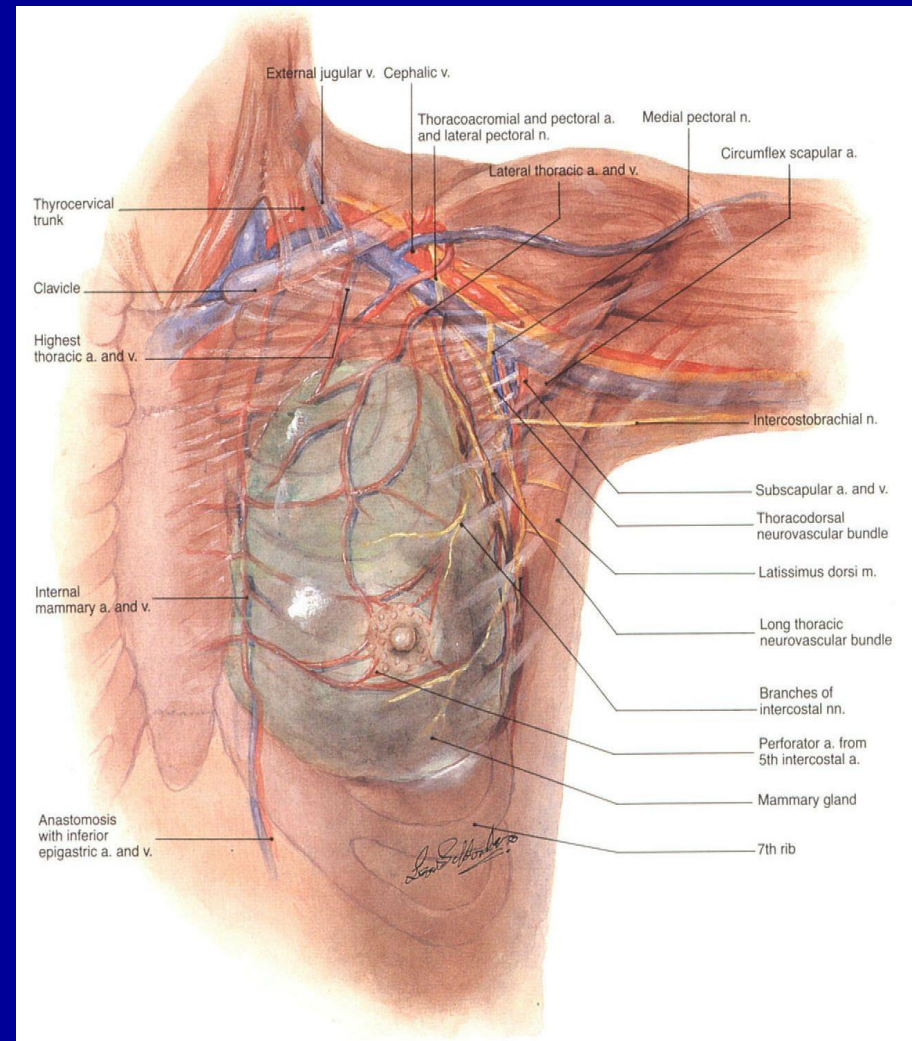
# BRACHIAL PLEXOPATHY

- 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



## 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

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- 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

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- 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

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- 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

## **18 SENSATIONS AFTER BREAST CANCER SURGERY**

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- 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

## **18 SENSATIONS AFTER BREAST CANCER SURGERY**

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

## **18 SENSATIONS AFTER BREAST CANCER SURGERY**

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- 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

## **18 SENSATIONS AFTER BREAST CANCER SURGERY**

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- 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<sup>1</sup>
  - 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<sup>2</sup>

<sup>1</sup>McLaughlin SA, *Oncology*, 2012

<sup>2</sup>Showalter S, *ASO*, 2013

# **TREATMENT / TIPS TO REDUCE SYMPTOMS**

# POST-OPERATIVE EXERCISE

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- 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<sup>1</sup>
- Structured exercise programs with a physical therapist significantly improve post-operative range of motion and shoulder dysfunction<sup>1</sup>

<sup>1</sup>McNeely M, *Cochrane review*, 2010

# PHYSICAL THERAPY



Diagram showing how to do a beach pose exercise after breast reconstruction surgery  
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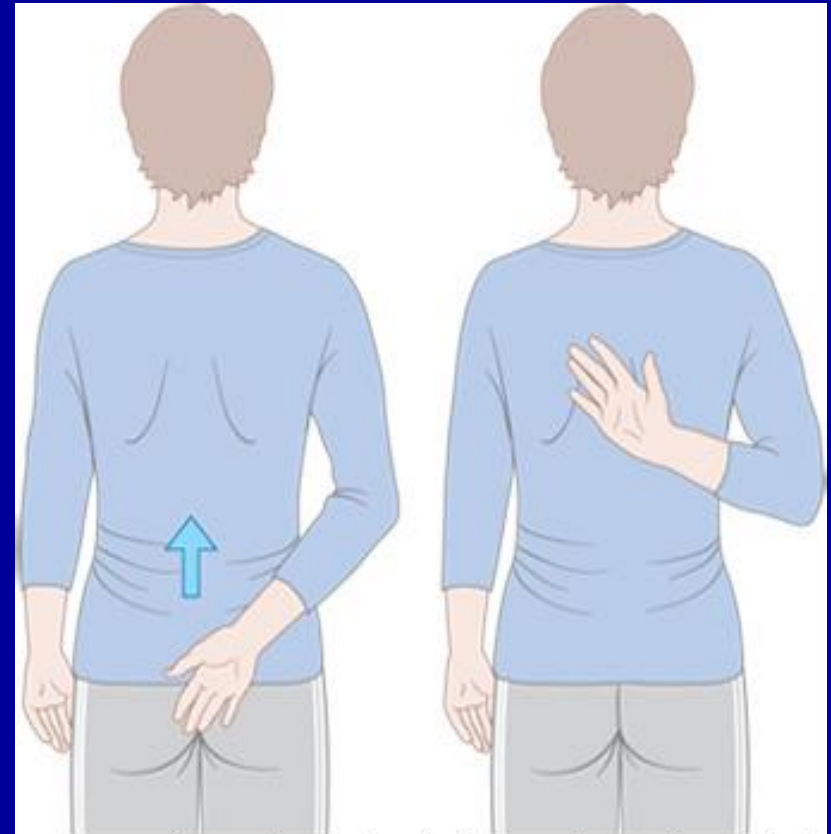
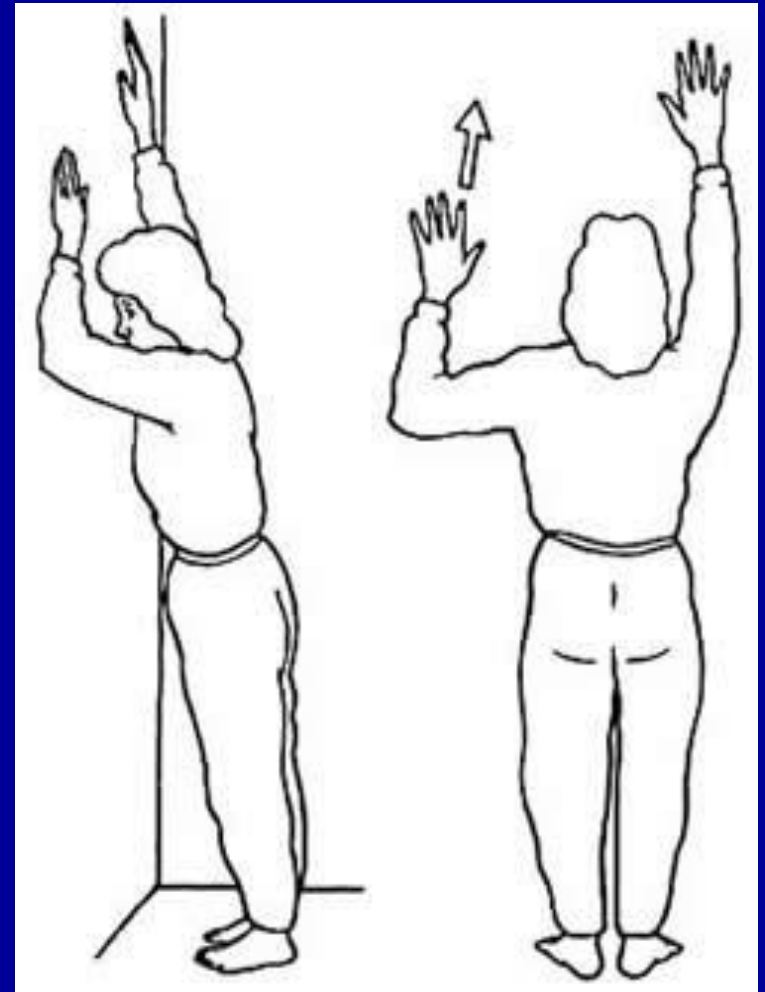
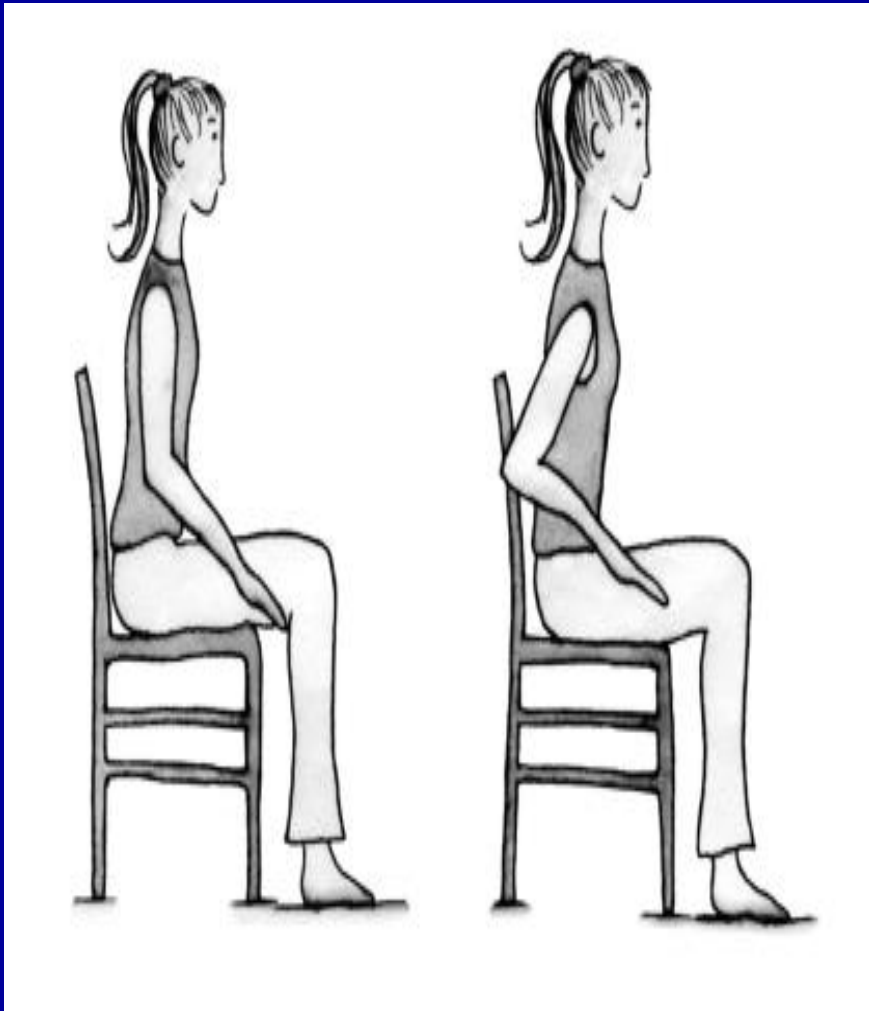


Diagram showing how to do an exercise moving your hand up your back after breast reconstruction surgery  
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# PHYSICAL THERAPY



# PROSPECTIVE MODEL<sup>1</sup>

- 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

<sup>1</sup>McNeely M, *Cancer*, 2012

# **LYMPHEDEMA SURVEILLANCE /TREATMENT**

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- Surveillance
  - Report any symptoms to surgeon or medical oncologist
  - Immediate therapy can decrease symptoms
- Treatment
  - Physical/Occupational therapy
  - Manual lymphatic drainage
  - Compression garment

# ALTERNATIVE THERAPIES

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