OBJECTIVES

1. Recognize the outpatient rehabilitation implications for breast cancer survivors.

2. Identify key impairments and special considerations that can impact the assessment, treatment and successful outcomes of a person with breast cancer.

3. Select appropriate and effective interventions to treat impairments secondary to breast cancer treatments.

This presenter has no conflict of interest to report regarding any commercial product/manufacturer that may be referenced during this presentation.
BREAST CANCER

• In the US in 2013 (www.cancer.gov):
  – ~232,000 Women
  – ~2200 Men
• > 2.6 million breast cancer (BC) survivors in the US (www.cancer.org)

BREAST CANCER TREATMENTS

TREATMENTS
SURGERY (Primary)
CHEMOTHERAPY
RADIATION THERAPY
HORMONE THERAPY

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6 years after diagnosis, > 60% of women BC survivors experience 1 or more adverse treatment effects. (Schmitz, et al, 2012).

**REHABILITATION IMPLICATIONS**

- Upper quadrant dysfunction
- Pain
- Chemo-induced peripheral neuropathy (CIPN)
- Secondary lymphedema

- Lower quadrant dysfunction
- Cancer-related fatigue
- Cardiotoxicity
- Osteopenia/Osteoporosis
- Arthralgias

**UPPER QUADRANT DYSFUNCTION**

- ↓ ROM
- ↓ strength
- ↓ skin, fascia, muscular mobility
- Denervated muscles
- ↓ sensation
- ↓ joint mobility
- Neural tension
- ↓ coordination/fine motor
- Postural dysfunction

- Overhead reach
- Retrieve items from floor
- Pushing & pulling open doors
- Dressing, eating and other ADLs
- Using computer
- Writing
- Carrying groceries, other IADLs
- Participation in sports
WHEN TO START REHAB?

BEFORE

- Post-op day 1
- Prior to radiation

DURING

- Radiation
- ROM
- Strength
- Tissue Expanders
- Chemotherapy
- CIPN

AFTER

- Upper quadrant dysfunction

OUTPATIENT REHABILITATION

- Scar Tissue
- Capsular Contracture
- Cording
- Radiation Fibrosis
- Scapular Dyskinesis
- Postural Dysfunction
- Neuropathies/Plexopathies
- Chemo-induced peripheral neuropathies (CIPN)

TREATMENTS AND CONSIDERATIONS

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SCAR TISSUE

• Result of
  – Surgery
  – Radiation
• Impairments
  – Pain
  – ↓ ROM
  – ↓ Strength
• Loss of UE function

SCAR TISSUE TREATMENT

Manual Therapy
• Myofascial release (MFR)
  – Neck
  – Chest
  – Upper back
  – Abdominal
• Scar Tissue Mobilization
  – Mastectomy scars
  – Drain scars
  – ALND scars
  – TRAM and LAT scars
  – Capsular Contracture

TREATMENTS

– Manual Therapy
  • Scar Massage
  • Myofascial Release (MFR)
– Therapeutic Exercise
  • PROM/AROM UEs
  • Strengthening UEs
– Modalities
  • Kinesiotape®
SCAR TISSUE TREATMENT

• Latissimus Dorsi Flap

SCAR TISSUE TREATMENT

SCAR TISSUE TREATMENT:

DYCEM®

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MANUAL THERAPY CONSIDERATIONS

SCAR TISSUE TREATMENT

• Kinesiotape®
  – Elastic tape
  – Can wear up to 5 days
  – RCT (Castro-Sanchez, et al., 2012)7
    • ↓ Pain control
    • Facilitate or inhibit muscles
    • ↓ disability
    • ↑ ROM
  – Other uses
    • Scar mobility
    • Edema

SCAR TISSUE TREATMENT

• Therapeutic exercise
  – Breathing exercises
  – ROM exercises
  – Strengthening
    • DO NOT STRENGTHEN THE PEC MAJOR FOR RECONSTRUCTION PATIENTS
CAPSULAR CONTRACTURE

- Result of:
  - Scar tissue adhesions around implant
    - Surgery
    - Radiation
- Cause:
  - Pain
  - ↓ ROM
- Baker’s Grades⁹
  1. Soft, natural
  2. Firm, normal
  3. Firm, distorted
  4. Hard, distorted, painful

Treatment:
- Manual Therapy
  - MFR/Scar massage
  - Self massage
- Therapeutic exercise
  - ROM exercises
  - Breathing exercises
- Modalities¹⁰
  - Kinesiotape®
- Closed Capsulotomy
- Surgery

CORDING¹¹

- Sclerosed & thrombosed
- Axillary Web Syndrome
- Breast and Trunk Cording
- Breast → Hand
- Can cause:
  - Pain
  - ↓ ROM
  - Edema
- Restrictions or adhesions

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90% of BC survivors with cords (Josenhans, E. 2008):
- Full pain free ROM
- Manual Therapy
  - MFR
  - Fixation
  - Hooking
  - Manual Lymph Drainage
  - Nerve Glide techniques

Photo by Laura Sheridan, PT, DPT, CLT

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CORDING\textsuperscript{8,9}

- Therapeutic Exercise
  - PROM/AROM B UEs
  - Strengthening Shoulder girdle
- Modalities
  - Kinesiotape®

- Patient Education
  - HEP
  - Self MFR with Dycem®
  - Nerve glides
  - Therex

RADIATION\textsuperscript{11}

- A beam of high-energy particles
- Destroys or slows down the growth of cancer cells
- Impacts all layers within radiation field

RADIATION FIBROSIS\textsuperscript{11}

- Progressive fibrotic sclerosis:
  - Skin
  - Fascia
  - Ligament
  - Tendon
  - Muscle
  - Nerves
  - Viscera
  - Bone
- Long term musculoskeletal and neuromuscular complications
RADIATION FIBROSIS TREATMENT

• Soft tissue and deep tissue mobilization
  – Pectoralis major and minor
  – Deltoid
  – Serratus anterior
  – Intercostals
  – Obliques
  – Latissimus dorsi
  – Upper trapezius
  – Rotator cuff

Illustration by Adrianna Wong

RADIATION FIBROSIS TREATMENT

• Joint Mobilizations
  – Glenohumeral
  – Sternoclavicular
  – Acromioclavicular
  – Sternocostal
    • 1st Ribs
    • Ribs 2-7th
  – Coracoclavicular
  – Cervical and Thoracic spine

Illustration by Adrianna Wong

RADIATION FIBROSIS TREATMENT

• Nerve Glides
  – Brachial Plexus
  – Median Nerve
  – Ulnar Nerve
  – Radial Nerve

Illustration by Adrianna Wong

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RADIATION FIBROSIS TREATMENT

- Therapeutic Exercise
  - Breathing exercises
  - Stretching
  - Strengthening

- Neuromuscular Re-education
  - Postural Re-education
  - PNF

RADIATION FIBROSIS TREATMENT

- Patient Education
  - Skin Hygiene
  - Life long HEP

SCAPULAR DYSKINESIS\textsuperscript{5,11,13,14}

- Dysfunctional scapula
  - Movement
  - Position
- Scapulo-humeral rhythm
- Develops secondary to radiation &/or surgery
  - Overactive
    - Upper trapezius
    - Pectoralis major
  - Weak serratus anterior
SCAPULAR DYSKINESIS TREATMENT

• Manual Therapy
  – MFR
  – Posterior capsule stretching
  – STM to pectoralis minor/major
  – PROM/stretching of shoulder
  – Joint mobilizations

SCAPULAR DYSKINESIS TREATMENT

• Neuro Re-education
  – Postural alignment
  – PNF
  – Kinesiotape®

• Strength training
  – Rotator cuff muscles
    • Theraband®
  – Serratus
    • Scapular retraction/protraction on wall
  – Rhomboids
  – Mid and lower trapezius
  – Prone and side lying exercises

SCAPULAR DYSKINESIS TREATMENT

• Cools, et al., 2007\(^{15}\)
  1. Side lying external rotation
  2. Side lying forward flexion
  3. Prone horizontal abduction with external rotation
  4. Prone extension
POSTURAL DYSFUNCTION

BEFORE

AFTER

BRA FIT

• Well fitting supportive bra
  – Proprioceptive cueing for posture
  – Un-weight chest
  – Manage pain
  • Refer to a certified fitter

• S/P reconstruction
  – No underwire
  – Thicker straps
  – Measure Circumference

• Prosthetics
  – Light weight

http://danesecreations.com/mybrasizesecrets.html

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NEUROPATHIES/PLEXOPATHIES

- Damage due to radiation treatment
  - Brachial plexus or peripheral
  - Ischemic or fibrotic
- Treatment
  - Manual Therapy
  - Therapeutic Exercise
  - Neuromuscular Re-education
  - Bracing
  - Compensatory techniques
  - Modalities
    - Kinesiotape

CHEMOTHERAPY INDUCED PERIPHERAL NEUROPATHY (CIPN)

- Toxic damage to the peripheral nerves
  - Sensory
  - Motor
  - Autonomic
- Burning, numbness, tingling, pain.
- Paclitaxel (Taxol®), Carboplatin (Paraplatin®), Cisplatin, Vinorelbine (Navelbine®)

CIPN TREATMENTS

HANDS
- Functional Training
  - Compensatory techniques
- Compression
  - Pain/symptom management
- Desensitization Techniques
CIPN TREATMENTS

FEET
- Compression
  - CIPN pain/symptom management
- Gait training
- Balance training
- Orthotics bracing
- Desensitization Techniques

OTHER CONSIDERATIONS

LYMPHEDEMA
- Disruption of lymphatic system
  - Protein rich fluid in interstitial space
  - Swelling:
    - Arm
    - Breast
    - Shoulder
    - Neck
    - Trunk
    - Legs
- 6-12 months post BC treatment

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LYMPHEDEMA

- Complete Decongestive Therapy (CDT)
  - Manual Lymph Drainage
  - Compression
    - Bandaging
    - Garments
  - Exercise
  - Self Care and Management

- Exercise
- Self Care and Management

2 types of BC client

- Lymphedema
  - Self management
  - Garments
- At risk for lymphedema
  - Education on precautions
  - Referral to certified therapist

Precautions
- Measure/monitor circumference of UE
- Avoid ice or heat
- Avoid aggressive joint mobilization and STM
- Wear garments while exercising

CANCER-RELATED FATIGUE (CRF)

- Results from cancer, its treatments or other co-morbid conditions
- Treatment strategies
  - Physical activity and exercise
  - Cognitive behavioral therapy
  - Pharmaceuticals
**ARTHRALGIA**
- Joint pain and stiffness
- Winters-stone et al, 2012
  - 50% of BC survivors taking Aromatase inhibitors
  - 10% of women on Tamoxifen
- Treatment Strategies
  - Weight loss
  - Exercise
  - Manual Lymph Drainage
  - NSAIDs

**OSTEOPENIA/OSTEOPOROSIS**
- BC survivors below age expected BMD (Chen et al, 2005)
  - American College of Sports Medicine
    - Weight bearing exercises, 3-5x/day
    - Resistance exercises, 2-3x/day
    - 30-60 min/day
  - Caution with joint mobilizations
  - Educate in body mechanics

**Post-chemotherapy Cognitive Impairment**
- “CHEMO-BRAIN”
  - Thinking and memory impairments
- TREATMENT
  - Cognitive therapy
  - Reinforce HEP
  - May need increased cueing
CARDIOTOXICITY

- 33% of BC survivors may experience a cardiotoxic treatment effect (Schmitz et al, 2012).27

- Monitor vitals
- Modifiable risk factors
  - Weight control
  - Smoking Cessation

RED FLAGS/PRECAUTIONS

1. Metastasis
   - Bone, brain, lungs
2. Recurrence
3. Cellulitis
4. Venous thrombosis

QUESTIONS???
REFERENCES


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