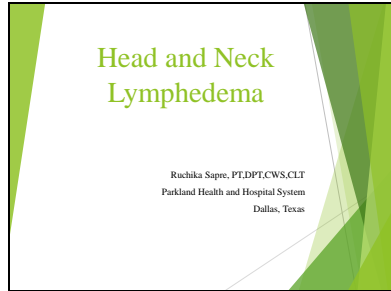
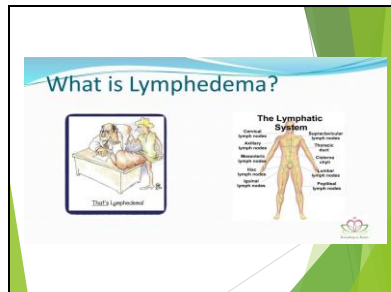


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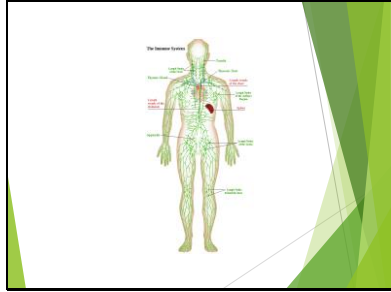
Slide 2



Slide 3



Slide 4



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Lymphatic system

- ▶ Lymphatic system is the immune system in our body
- ▶ It is composed of lymph vessels, lymph nodes, the tonsils, the thymus and the spleen
- ▶ Lymph fluid is a clear-to-white liquid composed of variety of substances including protein, salts, glucose, fats, water and white blood cells, especially lymphocytes
- ▶ The primary function of the lymphatic system is to transport infection-fighting cells throughout the body and remove toxins and waste products from different tissues and organs
- ▶ About 600 - 700 lymph nodes in the body of which about 300 are in the neck

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Why Lymphedema?

- ▶ Under normal conditions, lymph is collected by lymph vessels and drained into lymph nodes
- ▶ From there eventually it is returned into the bloodstream
- ▶ When this process is interrupted by removal of lymph nodes as in surgery or damage to the lymph nodes by radiation, the lymph fluid is collected in tissues
- ▶ This collection of protein-rich fluid in the tissues is referred to as lymphedema

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Types of Lymphedema

- ▶ Primary Lymphedema : caused by congenital malformation of lymphatic vessels/nodes.
 - ▶ May be present at birth or develop later in life without any known cause
 - ▶ Common in women (87%); 90% sporadic, 10% familial
- ▶ Secondary Lymphedema - caused by damage to lymphatic pathways and/or nodes.
 - ▶ Common reasons include cancer, surgery, radiation, injury, trauma, chronic venous disease, infection, obesity
 - ▶ Affects men and women equally

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Primary Lymphedema

- ▶ 1st episode frequently occur in 2nd or 3rd life decades
- ▶ Common age : 17 years
- ▶ Most cases, swelling is unilateral. If bilateral, then swelling is asymmetric
- ▶ Hypoplasia - lymphatic vessels are too narrow
- ▶ Aplasia - insufficient number of lymphatic vessels and nodes
- ▶ Lymphangiectasia - dilatation of lymphatic vessels with resultant valvular insufficiency
- ▶ Primary lymph node fibrosis - some lymph nodes become fibrotic which obstructs lymph fluid
- ▶ Praecox - before age 35
- ▶ Tarda - after age 35
- ▶ Genetic cause is known, approximately 6% of edema

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Secondary Lymphedema

- ▶ Usually a known cause of edema
- ▶ Post Surgical - Axillary lymph node dissection, neck dissection, bladder/prostate surgery, lymphoma, ovarian cancer, joint replacement
- ▶ Post Radiation
- ▶ Post Infection - Erysipelas, Lymphangitis, Lymphadenitis, Filariasis
- ▶ Post Inflammation - Rheumatic disorders
- ▶ Chronic Venous Insufficiency
- ▶ Obesity
- ▶ Trauma - Whiplash injury, scarring, crush injury
- ▶ Self induced

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Signs and Symptoms

- Sensation of heaviness / tension
- Restricted motion
- Pitting : degree dependent on stage of edema development
- Usually will begin at root of the limb, base of the neck
- May be associated with mild redness
- Constant dull ache, even severe pain at times
- Skin problems including dryness, flakiness, thickening, excoriation and breakdown
- Positive Stemmer's sign, toes square
- Recurrent infections

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Stages of Lymphedema

Latency Stage Pre stage	Pre visible edema
<p>Stage 1 - Edema is clinically visible but spontaneously reversible</p> <p>Stage 2 - Edema is not spontaneously reversible, it can be reduced by not completely eliminated.</p> <p>Stage 3 - Irreversible skin changes, lymphoedematous elephantiasis.</p>	<p>Subacute/chronic of heaviest and earliest</p> <p>Transport capacity is reduced</p> <p>Tissue is soft</p> <p>Protein in the interstitial tissue possible</p> <p>Edema not developed</p> <p>Stemmer's sign is negative</p> <p>Edema is harder and pitting is hardly possible</p> <p>Phenodermic change</p> <p>Stemmer's sign: frequently positive</p> <p>Hardening and thickening of skin</p> <p>Dilatation of the vessels</p> <p>Stemmer's sign is positive</p> <p>Accumulation of protein-rich edema</p>

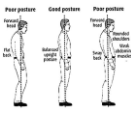
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Pre-Stage Stage 1 Stage 2 Stage 3

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Posture and Sleep Position

- ▶ Maintain appropriate head, neck and shoulder posture at all times
- ▶ Strengthen the scapular and neck muscles to maintain good posture during the day
- ▶ Sleep in a semi recumbent position (about 35 degrees)
- ▶ Have the head and neck supported with appropriate size pillow while sleeping




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Manual Lymph Drainage

- ▶ Slow, rhythmic stretching of the skin to stimulate the lymph vessels and capillaries and thereby facilitate the lymph flow
- ▶ Movement of the lymph fluid from an area affected by lymphedema to an area that is healthy
 - ▶ Utilises subcutaneous lymph vessels
 - ▶ Utilises lymphatic anastomoses and existing lymphovenous anastomoses
- ▶ Breakdown tissue fibrosis
- ▶ Gentle pressure - never cause redness or pain
- ▶ Soothing and relaxing with stimulation of the PNS

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Manual Lymph Drainage

- ▶ Indications
 - ▶ Lymphedema
 - ▶ Phlebolympheoedema
 - ▶ Lipedema
 - ▶ Traumatic edema
 - ▶ Post-surgical edema
 - ▶ Arterioopathy
 - ▶ Reflex sympathetic dystrophy
 - ▶ Rheumatic disease

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Manual Lymph Drainage

- ▶ Absolute Contraindications
 - ▶ Malignant disease, including tumor recurrence or metastases
 - ▶ Acute inflammation
 - ▶ Acute allergy
 - ▶ Acute thrombosis
 - ▶ Cardiac decompensation (cardiac insufficiency)
- ▶ Relative Contraindications
 - ▶ Low blood pressure
 - ▶ Thyroid disorder
 - ▶ Pregnancy during the first couple months or if there are complications
 - ▶ Bronchial asthma

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Manual Lymph Drainage for Neck Treatment

- ▶ Absolute contraindications
 - ▶ Hyperthyroidism
 - ▶ Hypersensitive carotid sinus
 - ▶ Cardiac arrhythmia
- ▶ Relative contraindications
 - ▶ Patients over the age of 60 with possibility of atherosclerosis of carotid artery
- ▶ Possible indications
 - ▶ Local disturbances of lymph flow due to trauma like in Whiplash injury
 - ▶ Local disturbances of lymph flow post surgery
 - ▶ Lymphostatic encephalopathy
 - ▶ Pre-treatment for MLD in all other body regions

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Scar Management

- ▶ Scar massage to soften and flatten the scar tissue
 - ▶ Gentle pressure
 - ▶ Prolonged stretch
- ▶ Release the scar tissue from underlying muscle, bone and/or fascia
- ▶ Promote lymphatic regrowth and anastomosis
- ▶ Scar desensitization
- ▶ Other methods
 - ▶ Elastomer molds, gel sheet
 - ▶ Compression garments



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Compression Garments

- ▶ Preferably applied right after manual lymph drainage to prevent re-accumulation of fluid
- ▶ Helps breakdown the fibrotic tissue
- ▶ Applies even compression because of the garment's low elastic material
- ▶ For head and neck compression, pressure to not exceed more than 10 mm Hg pressure
 - ▶ Short stretch compression bandages during the initial decongestive phase
 - ▶ Daytime and night time compression garments for long term management

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Short stretch compression bandages



A roll of short stretch compression bandage is shown next to a person wearing the bandage on their arm.

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Compression Garments



Jobst Epstein Support
» Has Velcro on the neck and over the head
» Ease of application
» Can add foam pads underneath to add compression
» Slit can be created to expose ears

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Compression Garments



Nighttime compression garment
- The Chin Strap
» Designed to address edema of the neck, mandible and anterior and lateral aspect of the face
» Velcro straps at the neck and top of the head
» Can be used as a daytime/nighttime garment
» Comes without the padding

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Lymph Taping

- ▶ Cure Tape - similar to KT tape
- ▶ Has the same elasticity as the skin
- ▶ Applied in accordance with the lymphatic system of the body
- ▶ The tape lifts the skin a little through which the lumen of the lymph capillaries are opened
- ▶ Stimulates lymph drainage 24 hours a day
- ▶ Tape usually requires replacements every 5-6 days depending on the sweat production




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Exercise

- ▶ Muscle contraction helps pump fluids away from the swollen area
- ▶ Improves circulation
- ▶ Prevents adhesion formation by gliding of tissue
- ▶ Improves neck movement which will prevent neck pain long term
- ▶ Strong muscles will pump fluid out of the area
- ▶ Help maintain normal neck posture which will in turn promote lymph drainage
- ▶ Important to exercise neck, face and shoulder muscles
- ▶ Cardio/ Aerobic exercise 30 minutes/day, 5 days per week


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CERVICAL SPINE - 18 Upper Cervical Flexion / Extension



Clarity flex and extend upper neck by nodding head. Try to make a "long neck" - hold ____ seconds. Repeat ____ times per set. Do ____ sets per session. Do ____ sessions per day.


CERVICAL SPINE - 20 Upper Cervical Flexion Mobilization



Rotate head as far as possible to left. Clarity and hold up and down. Repeat ____ times per set. Do ____ sets per session. Do ____ sessions per day.

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CERVICAL SPINE - 46 Neck Flexion: Side-Head



Sitting or standing, neck tilted and side-head bent toward left shoulder.

Repeat 10 times per set. Do 2 sets per session. Do 1 session per day.

CERVICAL SPINE - 8 Strengthening: Extension (separate on screen)




Using right forearm from fingertips at back of head, press head back.

Hold 3 seconds.

Repeat 10 times per set. Do 1 set per session. Do 1 session per day.

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CERVICAL SPINE - 23 Flexibility: Upper Trapezius Stretch




Covert your right side of head while reaching behind neck with other arm. The hand may rest a gentle stretch to the head.

Hold 30 seconds.

Repeat 3 times per set. Do 1 set per session. Do 1 session per day.

CERVICAL SPINE - 24 Flexibility: Cervical Stretch




Standing in corner with hands just above shoulder level and feet 30 inches from corner, neck stretched until a comfortable stretch is felt across chest.

Hold 30 seconds.

Repeat 3 times per set. Do 1 set per session. Do 1 session per day.

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TMJ - 9 Lateral Glide



Move jaw to right side. Hold 5 seconds. Repeat.

Repeat 10 times per set. Do 1 set per session. Do 1 session per day.

TMJ - 10 Facial Exercise: Smile



Turn up corners of mouth. Hold 5 seconds. Repeat.


Repeat 10 times per set. Do 1 set per session. Do 1 session per day.

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TMD-11 Facial Exercise: Pursed Lip


Push in cheeks and push lips forward. Hold ___ seconds.
Relax.

Repeat ___ times per set.
Do ___ sets per session.
Do ___ sessions per day.



TMD-14 Facial Exercise: Nose Winkle


Wrinkle nose. Hold ___ seconds. Relax.
Repeat ___ times per set. Do ___ sets per session.
Do ___ sessions per day.



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TMD-16 Facial Exercise: Tug


Repeat over lightly when tired. Hold ___ seconds. Relax.
Repeat ___ times per set. Do ___ sets per session.
Do ___ sessions per day.



TMD-20 Facial Exercise: Self-Massage - Opening

With mouth open to point of opening, place right hand on both sides to keep mouth open. In one motion and one stroke as if one will light up, do TMD20 over the point of pain. Hold ___ seconds. Relax.

Repeat ___ times per set.
Do ___ sets per session.
Do ___ sessions per day.



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Skin care

- ▶ Very important to wash skin daily without using harsh soaps
- ▶ Can use natural boar bristle dry brush to remove dead skin and promote lymph circulation
- ▶ After brushing, use non-fragrant soap (Dove, Ivory, Cetaphil, etc.) to clean your skin
- ▶ Gently dab your skin dry with a clean towel
- ▶ Do not rub vigorously
- ▶ Apply non-fragrant and non-pore blocking body lotion (Eucerin, Aquaphor, Cetaphil, etc.)
- ▶ Important to keep skin soft and supple to keep it healthy



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Diet

- ▶ Watch sodium intake
- ▶ Manage weight
- ▶ Stick with plant based diet rich in omega-3 with rainbow colored fruits and vegetables
- ▶ Drink 64-80 ounces of water daily (unless you are on fluid restrictions)

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Sleep and Stress management

- ▶ Make sleep a priority
- ▶ Need 7-8 hours of sleep every night
- ▶ Be on a fixed sleep schedule
- ▶ Do not watch television before going to bed at night.
- ▶ Listen to soothing/relaxing music, meditate or simply focus on your breath while in bed
- ▶ Focus on deep diaphragmatic breathing
- ▶ Seek medical attention if you need assistance managing stress

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What happens if lymphedema is left untreated?

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Complications of lymphedema & General information

- Pronounced postural lymphedema of the neck and head
- Swelling of lips, subcutis and mucosal membrane resulting in cerebral functional deficiency
 - Lymphatic encephalopathy
 - Depressed mood
 - Ophthalmopathy
 - Impaired vision
- Lymphedema that develops after a long edema free interval is strong indicator of recurrent tumor
 - Intensive diagnostic examination
- Avoid exposure to sunlight, bug bites and injuries sustained during dental treatment

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Patient Resources

- American Cancer Society
 - 1-800-332-3443; Donor, Volunteer and/or support
- National Lymphedema Network
 - www.lymphnet.org
 - Can find a local lymphedema therapist
- Lymphatic Education & Research Network (LEARN)
 - www.lymphnetnetwork.org
- American Head and Neck Society
 - 1710 427-8816; Email: admin@ahns.org
- Nat'l Cancer Institute : Treatment of Lymphedema
 - 1-800-4-CANCER
- Lymphology Association of North American (LANA)
 - www.lana.org

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