Occupational Hazards of Dentistry: Shoulder, Neck and Back Pain

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Objectives

- List most common injuries related to the dental profession
- Recognize postural adaptations that can lead to pain and dysfunction
- Demonstrate exercises that can assist in correcting postural abnormalities
- Demonstrate understanding of the role of physical therapy in lower back, neck, and shoulder rehabilitation
Prevalence of Musculoskeletal Disorders in Dentistry

- Back, neck, shoulder and arm pain is found in 81% of dental operators even after the techniques changed to seated four-handed dentistry and ergonomic equipment.

- Changing to seated positions in dentistry did not change the frequency of pain, only the location.

- The sitting position predisposes dental operators to back, neck, shoulder and arm pain.
  - Valachi and Valachi, 2003
Postures Used in Dentistry
Dentistry and Low Back Pain

- Prolonged sitting postures have a negative effect on the health of the intervertebral discs (Marras, WS, et al, 1995)
- Sitting in a forward flexed position causes increased pressure within the disc, possibly leading to disc herniation
- The disc gets its nutrition through movement of fluid, which happens with movement of the body
- Other problems can occur in the joints of the spine as static sitting postures prevent movement of the joint fluid and reduce the lubrication of the joints
Common Lumbar Spine Diagnoses

1.) Sciatica
2.) Piriformis Syndrome
3.) Lumbar DDD
4.) Lumbar DJD/OA
5.) Disc bulge/herniation
6.) Sacroiliac Joint Dysfunction
7.) Paraspinal Muscle Spasm
The Spine
Examples of Disc Problems

- Normal Disc
- Degenerated Disc
- Bulging Disc
- Herniated Disc
- Thinning Disc
- Disc Degeneration with Osteophyte Formation
Is it nerve root compression (radiculitis) or nerve compression (neuritis)?

Nerve roots

Piriformis muscle

Sciatic nerve

Piriformis Syndrome
Pain from sciatica radiates from the buttock down the leg and can travel as far as to the feet and toes.
Longissimus thoracis

Intertransversii Interspinales

Iliocostalis lumborum

Superficial layer

Deep layer

Multifidus

Intermediate layer

Lumbar Muscles

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Dentistry and Neck Pain

- Static seated postures in a rounded back position can lead to a forward head posture.
- Forward head posture causes cervical muscle imbalances.
- Dental operators frequently work with their heads rotated and sidebent, which can cause more muscle imbalances.
- The overstretched muscles must still hold up the head, and these lengthened muscle contractions can lead to pain and development of trigger points.
Common Cervical Diagnoses

1. Cervical DDD
2. Cervical DJD/OA
3. Cervical Radiculopathy
4. Cervical Disc Bulge/herniation
5. Muscle Spasm
6. Postural Syndrome
7. Thoracic Outlet Syndrome
Neck Pain in Dentistry

Figure 1

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Fig. 1 (© Paul Chek, C.H.E.K L3 Manual)
Neck Pain in Dentistry
Atlas (the first cervical vertebra)

Axis (the second cervical vertebra)

Spinous Process

Transverse process

Vertebral body
Healthy Cervical Spine

Degeneration of Cervical Spine Due To Arthritis
Sitting Posture and Back/Neck Pain
Dentistry and Shoulder Pain

- Arm positions change the subacromial space
- There is 11 mm space available with the arm by the side; at 90 degrees elevation, it decreases to 6 mm
- There are 11 pain generating tissues in the subacromial space
- Overuse of the rotator cuff along with poor arm positioning leads to impingement of the rotator cuff tendons
Common Shoulder Pathology

- Tendonitis/tendonosis/tendonopathy
  - Rotator Cuff
  - Bicipital
- Impingement Syndrome
- Bursitis
  - Subacromial
- Rotator Cuff Tear
- Labrum
- Osteoarthritis (OA)
  - AC joint
  - Glenohumeral joint
Dentistry and Shoulder Pain
Tips for Reducing Strain to Your Body

- **Neck/Back**: Maintain an upright posture as much as possible, relax your shoulders, avoid prolonged sitting, take frequent breaks from sitting to allow your spine to move.
- **Shoulder**: Reach overhead in a “thumbs-up” position.
- **Maintain your overall health with proper diet and regular exercise (cardiovascular, strengthening, and flexibility)**.
Postural Correction
Preventative medicine

- Doorway stretches
- Scapular squeezes
- Upper Trapezius stretches
- Chin tucks
- Hamstring stretches
- Standing backward bends
Signs of Danger

- Neck: Pain that radiates into your shoulder blade or down your arm, especially if it limits your neck mobility or causes tingling in your fingers.
- Back: Pain that radiates into your buttock or down your leg, especially if it causes tingling in your foot.
- Shoulder: Sharp pain with movement of the shoulder, aching in the shoulder joint at rest, or when you start to compensate with the other hand.
- If pain is inhibiting your ability to sleep.
- If pain worsens despite attempts at resting the area, use of ice, or OTC medications.
What Your Physical Therapist Can Do

- If your symptoms do not resolve you can have your doctor refer you to physical therapy.
- We will do a thorough evaluation to determine the source of the pain, areas of tightness or weakness, functional limitations and other contributing factors.
- You may need more specialized treatment, manual techniques such as joint mobilization, and an individualized exercise program to fully address your symptoms.
Rehabilitation: Neck Pain

- Trigger point releases (ball in sock or against the wall, theracane, massage therapy)
- Nerve stretches
- Postural stretches (snow angels against wall or on foam roller, foam roller exercises, doorway chest stretches)
- Strengthening (scapular retraction/rowing, prone I/Y/T, deep neck flexor exercise)
- Stretches (cervical retraction, upper trapezius, levator scapula)
Prone Hughston’s I, Y, T

- I’s -1
- Y’s - 2
- T’s - 3
Rehabilitation: Shoulder Pain

- Postural stretches (same as for the neck)
- Strengthening: scapular retraction/rowing, scaption, external rotation (ER), horizontal abduction, also prone I/Y/T as for the neck
- Stretching: doorway chest stretches, foam roller stretches
Rehabilitation: Low Back Pain

- Stretches: Hamstring, hip rotators, low back stretches (knees to chest, prone pressups)
- Strengthening: Core exercises such as abdominal bracing, planks, supermans, as well as hip/glute strengthening such as leg presses, chair squats, side stepping with resistance
- Postural modification: Using a lumbar roll when sitting
Ice or Heat?

- For an acute injury, ice will help decrease inflammation and swelling, and numb pain.
- Heat helps bring circulation to an area and make the area relax and become more flexible, but it can make inflammation/swelling worse.
- For neck and low back pain, you can try ice or heat and use the one that helps the most.
- For shoulder pain, ice typically works the best because the shoulder problems usually have inflammation involved.
Any Questions?
Mechanisms leading to musculoskeletal disorders in dentistry. Valachi B, Valachi K
JADA. 2003 Oct; 134: 1344-1350
Theracane

Available at:
http://www.theracane.com/

http://www.amazon.com/s/ref=nb_sb_noss_1?url=search-alias%3Daps&field-keywords=theracane

Foam Roll – typical size is 36in. long, 6 in. diameter

Available at:
Exercise ball – Typical size 65cm (Also available in 55cm and 75 cm)

Available at:
Any store with sporting goods


“The Stick” – Available in multiple sizes (17-26in.) We typically use a 24in. Version

Available at:
https://www.thestick.com/

http://www.amazon.com/The-Stick-Original-Massage/dp/B000YDO1NA/ref=sr_1_3?ie=UTF8&qid=1364562474&sr=8-3&keywords=the+stick