Learning Objectives

1. List the warning signs and symptoms that would indicate a need for further imaging in LBP
2. Identify a management strategy for the most common types of mechanical low back pain (sprain/strain, hyperlordotic mechanical LBP, HNP, spinal stenosis).
3. Cite the indications for surgical intervention in the treatment of common types of mechanical LBP (HNP spinal stenosis)
4. Recognize the diagnosis and management of AC joint injuries
5. Identify and recommend management for acute hand and wrist injuries (scaphoid fracture, mallet finger, infection and high pressure injury)

1. 68-yo male with 3 weeks of LBP presents with worsening pain disrupting his sleep. LROM in lumbar spine and normal neurovascular exam. Your next best course of action would be to…

   A. Provide reassurance
   B. Prescribe an NSAID and PT
   C. Obtain LS spine radiographs
   D. Prescribe a sleep aid

LBP Imaging – “Red Flags”

- Fracture
  - Major trauma
  - Minor trauma-osteoporosis
- Tumor or infection
  - Age >50 or <20 years
  - Hx cancer, IVDA, bacterial inf., immunosuppression
  - Pain worse in recumbancy
- Cauda equina syndrome
  - Saddle anesthesia
  - Bladder retention
  - Fecal incontinence

LBP Imaging

- Adult with acute LBP without “red flags”
  - Suspect degenerative changes/sprain/strain
  - 4-6 weeks of treatment/therapy
  - Symptoms improve
  - Stop imaging
  - Neuro deficit
  - MRI
  - Symptoms continue (XR)
  - No neuro deficit
  - Stop imaging

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2. A 43 yo male was moving a dresser 2 days ago and felt pain in low back. Pain persists & radiates to left buttock. No radiculopathy. Which of the following recommendations have been shown to be helpful for recovery?

A. Bed rest until pain resolves
B. Use of a NSAID
C. Referral to back school
D. Lumbar support

4%
3%
80%
13%
4%

3. All of the following are beneficial in the treatment of chronic LBP to reduce pain and improve function except…

A. Analgesics
B. Home traction
C. Cognitive Behavioral Therapy
D. Exercise

2%
Chronic LBP

Benefits
- Pain
- Function
- Intensive Multidisciplinary treatment program (B)
- Analgesics* (B)
- Exercise (B)
- Behavioral therapy (B)

Pain
- Antidepressants (B)
- NSAIDs (B)
- Tramadol* (B)
- Back school (B)
- Manipulation (B)

AFP 2009, 79(12)
Cochrane 2007, 2005

Psychosocial Factors Predicting Long-Term Disability in Chronic LBP

- **Affect**
  - Anxiety, depression, feeling of uselessness
- **Behavior**
  - Adverse coping strategies, impaired sleep, passive
- **Beliefs**
  - “Pain is harmful” and must be eliminated
- **Social**
  - History of abuse (phys/sexual/drug), lack of support
- **Work**
  - Expect pain will increase with work, pending litigation

USPSTF

...no good evidence for or against the use of back strengthening exercises or risk factor modification for the primary prevention of LBP in adults...and mechanical supports may increase the risk for LBP.

February 2004

4. 68-yo male with LBP and pseudo-claudication is having difficulty walking longer than 17 minutes due to symptoms. What is the next best step in treatment?

A. Limit all exercise to under 15 minutes
B. Prescribe an NSAID
C. Obtain an ankle-brachial index
D. Refer for surgical decompression

Lumbar Spinal Stenosis

- Older age at onset
- Signs most suggestive of LSS
  - Symptoms improve with forward bending
  - Urinary disturbance
  - Pseudoclaudication
- MRI = CT = myelography
- 3T MRI may be most sensitive

Eur Spine J 2007; 16(11)
Spine 2006; 31(10)

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LSS Surgical Indications

Myelopathy or Cauda Equina Syndrome

- Significant muscle weakness
- Radicular pain
- Neurogenic claudication

Widely agreed upon indications do not exist. Patient quality of life and functional limitations play a significant role in decision for surgery. Some evidence suggests that patients with moderate to severe symptoms will benefit more from surgery than nonsurgical treatment.

AHRQ, March 2001

Lumbar Spinal Stenosis

- Management as functional outcome (ETT)

Prospective study of 50 pts. with severe LSS, preoperative vs. 3 month postoperative

“Time to first symptoms” (1.82 v. 11.93 min)

“Total ambulation time” (6.91 v. 13.26 min)

- No evidence that earlier intervention (surgery) = better outcomes

Dean et al. Spine, 1998

5. A 25-year-old male falls onto his shoulder and presents with this radiograph. The most likely diagnosis is…

A. Distal clavicle fracture
B. Shoulder dislocation
C. Rotator cuff injury
D. AC joint separation

5. A 25-year-old male falls onto his shoulder and presents with this radiograph. The most likely diagnosis is…

A. Distal clavicle fracture 4%
B. Shoulder dislocation 8%
C. Rotator cuff injury 8%
D. AC joint separation 88%

AC Joint Injury

- Fall directly on shoulder
- Stress radiographs not helpful
- Grades I-III managed nonoperatively
  Sling for comfort
  Grade III nonoperative treatment = outcomes for surgical treatment (B)

- Grades IV-VI require immediate surgical consultation

6. A 36-yo female falls on an outstretched hand, presents with wrist pain and this radiograph. What is the best treatment option?

A. Wrist splint for 2 weeks  
B. Splint and repeat x-rays in 2 weeks  
C. Recommend DEXA  
D. Thumb spica cast for 8 weeks

Scaphoid Fracture

- FOOSH injury
- Tenderness in the anatomical snuff box
- \( \text{Trauma} + \text{tenderness} + \text{normal x-rays} = \text{splint and repeat x-rays in 2 weeks} \)
- Bone scan, CT, or MRI
- Complication = avascular necrosis

Scaphoid Fracture

- Operative vs. nonoperative treatment
  - RCT of 88 patients
  - Herbert screw vs. casting
  - No difference in pain or time to return to work
  - 10/44 failed casting due to nonunion
  - 13/44 minor complications in operative group
  - Dias et al. JBJS, 2005
  - There is not a clear benefit to operative treatment of an acute scaphoid fracture (B)

7. 39 yo male presents with left index finger pain, palmer aspect & worsening. Noted a sting the day prior while pressure washing his house. You note a small puncture wound on the palmer index finger. Initial management includes...

A. Reassurance & return if worsening symptoms  
B. Clean & dress the wound with follow up in 24 hrs  
C. Provide immunoglobulin  
D. Referral for surgical evaluation

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High-Pressure Injection Injury

• Nondominant index finger most common
• Appears benign but risk for infection
• Consider monitoring LFTs, creatinine, BUN
  – Injection of “caustic substances”
• Immediate surgical consultation
  – Amputation rate 40% < 2000 PSI
  – Amputation rate 50% > 2000 PSI

Purulent Tenosynovitis

• Flexor tendons most common
• Kanavel’s signs
  - Slight digital flexion
  - Uniform volar swelling
  - Flexor tendon tenderness
  - Pain with passive extension
• S. aureus or Streptococcus
  Antibiotics and surgical consultation

8. The following is true regarding ACL injuries.
   A. Most injuries occur in practice
   B. Most are the result of a contact injury
   C. Most occur during deceleration
   D. Most occur during acceleration

ACL Disruption

• Loss of knee hyperextension
• Most accurate functional tests
  - Lachman (sens 84%)
  - Anterior drawer (sens 62%)
  - Pivot shift (sens 62%)
• Associated with meniscal tears (60-75%), collateral lig injury (46%), and complete collateral lig tears (5-24%)

NEJM 2008; 359(20)

ACL Tears

• 70% are noncontact injuries
• Twisting with rotatory force or hyperextension
  Female athletes at higher risk (LOE 2)
• Early-onset effusion < 1 hour
  Surgical repair is treatment of choice for instability
• Neuromuscular training reduced risk of injury in female athletes
  FPIN 2011; www.fpin.org
  Scholten et al. JFP, 2003
9. A 26 yo male suffers an inversion ankle injury and ambulates to the ED for evaluation. You find lateral ankle swelling and tenderness over the anterior distal fibula. The next best course of action includes…

A. Recommendation for early range of motion for the ankle
B. Radiographs of the ankle
C. Strict non-weight bearing 3-5 days
D. A and C

25% ✓ A. Recommendation for early range of motion for the ankle
25% B. Radiographs of the ankle
3% C. Strict non-weight bearing 3-5 days
47% D. A and C

Ankle Sprain
• Lateral sprains most common (80%)
• Initial treatment with rest, ice, elevation, protection

Early range of motion improves recovery (A)

Ankle Sprains
Clinical Recommendations
• NSAIDs reduce pain postinjury and may reduce time for return to play
• Semi-rigid ankle supports are recommended as functional treatment for ankle injuries
• Graded exercise programs and proprioceptive training are recommended to reduce the risk of ankle sprains

Ottawa Ankle Rules
• X-ray if...
  Malleolar pain or pain in region of navicular or proximal 5th metatarsal AND
  Inability to weight bear 4 steps at exam OR
  Discrete bone tenderness at any site noted

Stiell et al. JAMA, 1994 (A)
10. You are a team physician for a Division II college basketball team. A 20 yo male with recurrent ankle sprains wants to prevent further injuries and you tell him...

- **A. High-top shoes prevent ankle injuries** (2%)
- **B. Ankle bracing reduces recurrent ankle injury** (40%)
- **C. Ankle bracing reduces the severity of ankle injuries** (58%)

**Answers**
1. C
2. B
3. B
4. B
5. D
6. D
7. D
8. C
9. A
10. B