Back pain
Outline

♦ Urgent Vs. Elective.

♦ **Diagnosis** of four common spine disorders
  – Spinal Stenosis (*with and without instability*)
  – Disk degeneration
  – Herniated Disc
  – Arthritis (spondylosis)

♦ **Treatment** of common spine disorders
  – Nonsurgical Vs. Surgical
Urgent Vs. Electives

**Urgent**
- Infection
- Tumor
- Trauma
- Caudal equina

**Electives**
- Everything else.
1. SPINAL STENOSIS

Anatomy
Stenosis with Spondylolisthesis

- Derivation from Greek
  - Spondylos: “vertebra”
  - Olisthein: “to slip”

- Myerding Grading System
  - Grade 1 25%
  - Grade 2 50%
  - Grade 3 75%
  - Grade 4 100%
Stenosis with scoliosis

- Rotatory instability
Pathophysiology

- Narrowing cauda equina to 63% of normal raises intrathecal pressure to 50 mmHg
- ↓ capillary flow
- ↓ electrical conduction
- ↑ edema within & along nerve roots

Clinical Presentation – Neurogenic Claudication
2. Disc Degeneration

- Controversial
- Young patients
- Mostly mechanical back pain worsen with any activities
- Sitting intolerance
- More pain with flexion than extension
- Abnormal psychological profile
Discogenic pain
Discogenic Pain
MECHANICAL FAILURE
Disc Degeneration

- Black disc
Disc Degeneration

- Discogram
3. Herniated Disc
Herniated Disk

**Clinical Presentation**

- Young patients
- Radiculopathy (sciatic pain)
  - L4, L5, S1
- Leg pain more than back pain
- Increase with cough or straining
- Positive straight leg raise
- More pain with flexion than extension
Herniated disc
Normal MRI
MRI-HNP
Treat patient not x-ray!

- **67 Asymptomatic volunteers:**
  - MRI + Herniated disc
    - <60 yo = 20%
    - >60 yo = 36%
    - >80 yo = 90%
  (Boden JBJS 1990)

- **98 Asymptomatic vol.**
  - 36% had normal disc at all levels
  (Jensen NEJM 1994)
4. Arthritis of the Spine
Pathoanatomy

- Begins w/ disc degeneration
- Disc space collapse
- OA of facet joints from abnormal loading
- Osteophytes @ facets and bodies
- Disc collapse, bulging ligamentum, and new bone shorten canal and decrease overall volume
- Scoliosis/spondy/ instab worsen stenosis
Inferior articular process

- Located posterior and medially

- Forms lateral wall of spinal canal

- Osteophytes cause **central canal** narrowing
Superior articular process

- Located laterally and anteriorly

-Osteophytes cause narrowing of:
  - **lateral recess**
  - **neural foramen**
Clinical Presentation of Facet Arthropathy

- Morning Stiffness.
- Lower back Pain without radiculopathy.
- Pain improves with activities during the day, returns in the evening.
- More pain with extension than flexion.
- Aggravated by weather or humidity change.
Arthritis of the Spine

- **Osteoarthritis**
- **Spondyloarthropathy**
  - Ankylosing spondylitis
  - Enteropathic (Crohn’s)
  - Reiter’s
  - Psoriatic
- **Rheumatoid**
Radiographic findings: AS

- Vertebral scalloping
- Ankylosis/ Bamboo spine
Non-Surgical Treatment
(80-90% of patient)

- Bed rest (1-2 days)
- Traction (at least 25% of body weight)
- Acupuncture/trigger point injection
- TENS
- Corset/Braces
- Manipulation
- Medication
  - NSAID
  - Muscle relaxant
Physical Therapy

- **Aerobic** (LA firefighter-higher fitness, lower risk of subsequent back pain)
- **Stretching** (YMCA-80% improvement/6wks)
- **Williams isometric flexion program** (stenosis, arthritis)
- **McKenzie extension program** (Discogenic)
Epidural Steroid Injections (ESI)

- May be helpful in acute flare-ups with significant radicular complaints and/or mild/moderate stenosis
- Useful in older pt population with many co morbidities (poor surgical candidates) after failing medical Rx and PT
- Complications - meningitis, nerve injury, epidural hematoma, arachnoiditis
Epidural Steroid Injections (ESI)

- Prospective, randomized, double-blind study in pts with radicular Sx (~ 50% had Dx of lumbar stenosis)

- No significant difference in symptomatic improvement between steroid and placebo injections at 24-hr and 1-year f/u
  - Cuckler JM et al, JBJS Am 1985; 67:63-66
Surgical Treatment

Is a Quality of Life Issue!

A. Decompression

B. Stabilization
For Stenosis
Decompressive Laminectomy
Surgical Decompression
Open technique

- Unilateral/bilateral laminotomy with foraminotomy – Focal lateral stenosis

- Up to 50% of facet joint usually may be removed w/ low risk of post-op instability
Unstable spine-Fusion

- Instability
  - Spondylolisthesis
  - Scoliosis
  - Severe disc degeneration
Minimal Invasive decompression
Minimal Invasive Access
Minimal Invasive exposure
Minimal Invasive Decompression
Minimal Invasive cage placement
Minimal Invasive-lateral transpsoas technique
Position Confirmation
Disk Preparation
Minimal Invasive Technique
Motion Preservation-Artificial Disc for Patients w Disc Degeneration

Charite’ (depuy)

Maverick (Medtronic)

Prodisc (synthes)

Flexicore (stryker)
Intra-op: Artificial Disc
Posterior Dynamic Stabilization IDE
Facet Joint Replacement - IDE
Facet Joint Replacement
Fracture in osteoporosis

Age 50

Age 75

National Osteoporosis Foundation
Kyphoplasty for fracture in Elderly

Minimally Invasive Fracture Reduction

Sept 3, 2000
Kyphoplasty
Chronic pain - Stimulator & pain pump
Conclusion

Patient selection and Making the correct diagnosis is the key to success.
Thank You