Surgical Management of Low Back Pain

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Disclosures

• No financial disclosures
Prevelance of Isolated Back Pain

- 80% lifetime prevalence of back pain
- Annual prevalence of 15-45%
- 5% with chronic symptoms
Socio-economic Impact

• Low back pain - #1 impairment leading to time lost from work
• #1 cause of permanent disability
• 50-100 billion $ per year
Changes With Aging

• Nucleus pulposus – less water content, fewer notochordal cells, less proteoglycan, increased similarity to fibrocartilage

• Annulus fibrosis – increasing disorganization of lamellar structure, radial tears

Vascular Supply Changes with Age

- The disc starts with vascular channels and progresses to an avascular state with age
  
  - 10 months
  
  - 54 years

Coventry et al. JBJS 1945
Degenerative Changes

• Morphological changes in the disc are followed by the typical changes of degenerative arthritis

  • Osteophyte formation

  • Joint space narrowing

  • Subchondral sclerosis

Boos, et al. Spine  2002
Age Versus Degeneration

• Degeneration of the intervertebral disc is part of aging

• DEGENERATION ≠ PAIN

Fig 1. Percent prevalence of degeneration as a function of age.

Butler et al. Spine 1990
Why does my back hurt, Doc?
Genetic Factors

Genetic Influences on cervical and lumbar disc degeneration: an MRI study in twins

MRI features of DDD in 172 monozygotic / 154 dizygotic twins

Overall score for disc degeneration – disc height, bulge, osteophytes, signal intensity

Heritability was 74% overall

Results suggest an important genetic component to intervertebral disc degeneration

Twin Studies

- Identical twins with discordant smoking history were analyzed via MRI for evidence of disc degeneration

  - Twinship>>Smoking, Age

Battie et al., JBJS 1995
When to give up on conservative management

• Variable
• No strong guidelines
• Greater benefits in more severe cases
When to give up on conservative management

- Surgical indications
  - Progressive neurologic deficits
  - Bowel/bladder dysfunction
  - Intractable pain
  - Failed conservative management
Surgery

• Surgical Options
  • Dependent of patient symptoms, imaging studies, goals of surgery
    • Techniques
      • Laminectomy
      • Laminectomy and fusion
      • MIS techniques
      • Arthroplasty
Surgery

• Surgical Options
  • Dependent of patient symptoms, imaging studies, goals of surgery
    • Approaches
      • Anterior
      • Oblique
      • Lateral
      • Posterior
      • Combined
Questions??