Lumbar disc herniations in athletes

Gino Chiappetta, M.D.
University Orthopaedic Associates
Assistant Clinical Professor
Dept of Orthopaedic Surgery
Rutgers Medical School
Disclosure

- Nothing to disclose
Clinical Question:

• In the athletic population, what are the treatment options for patients with a herniated lumbar disc who wish to return to normal physical activity?
Lumbar HNP

- Background
- Anatomy
- Clinical Presentation
- Imaging
- Treatment
Background

• Very common condition encountered

• ~200,000 surgeries/year in US
Anatomy of the Lumbar Spine
Disc Herniations
Anatomy

Perfectly healthy discs DO NOT herniate
Clinical Presentation

- Acute LBP followed by leg pain (uni vs. bilateral)

- Radiculopathy (Sciatica): Pain originating in the lumbar spine radiating in a dermatomal pattern down the LE

- Paresthesias/Numbness, E shocks, Burning, etc
Physical Signs

- Antalgic Gait
- Decreased Lumbar ROM
- +SLR, Ipsi and Contra Lateral
- Motor Strength 0-5, L1-S1
- Sensory Function
- Reflexes/Clonus
- Pulses
- Skin Changes
- Hip/Knee Exam
Types of HNPs

• Bulge
  – Symmetrical bulge of annulus (NOT a herniation)

• Protrusion
  – HNP where diameter of base > herniated fragment

• Extrusion
  – Herniated fragment diameter > base
    – Subligamentous or transligamentous

• Sequestered
  – Fragment is not in continuity with disc space
Disc Bulge
Disc Extrusion

Large L4-5 Disc Herniation
Sequestered HNP
Annular Tear
Non-operative Treatment

- Initial period of rest, activity avoidance
- NSAIDs
- Medrol dose pack
- Trunk stabilization program
- Epidural steroids
- Selective nerve root injections are effective and may avert surgery
Operative Options

- Discectomy
  - Open/Microdiscectomy
  - Percutaneous
  - Endoscopic
Microdiscectomy Surgery
Microdiscectomy


- 14 elite athletes competing at NCAA level
- Mean age 20.7 yrs

Sports:
  - Football (4)
  - Basketball (2)
  - Swimming (2)
  - Water polo (2)
  - Soccer, track & field, volleyball, diving
Microdiscectomy


- Minimum non-operative treatment period of 8 weeks
- 5 did not return to competition, 2 football
  - 2 single-level open discectomy
  - 3 two-level open discectomy
  - 1 percutaneous discectomy
- Of 9 who returned, one football player played 3 yrs at college level, rest still played professionally
Microdiscectomy Results

Watkins *Spine* 2003

- 60 Olympic & pro athletes had microdiscectomy
- Surgery criteria: HNP on MRI, leg pain with playing sport, failed 6 wks non-op treatment
- 53 (83%) returned to their sport, avg 5.2 months post-op
- All pts started on trunk stabilization and sport specific PT avg of 3 weeks post-op
# Return to Sport Rate

**Table 1**

Return-to-sport rate and average time, by sport

<table>
<thead>
<tr>
<th>Sport</th>
<th>Total surgeries (N)</th>
<th>Return to sport (N)</th>
<th>Return to sport (%)</th>
<th>Average time (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ballet</td>
<td>1</td>
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<td>19</td>
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<td>75.0</td>
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<td>100.0</td>
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<td>100.0</td>
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<tr>
<td>Swim</td>
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<td>1</td>
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<tr>
<td>Water polo</td>
<td>2</td>
<td>2</td>
<td>100.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

*One athlete, 15 months; other six, 6.8 months.

Watkins et al *Spine* 2003
Elite Athletes

• Large study June 2015, *CORR*

• Included pro, Olympic or DI level athletes only

• (1) What proportion of athletes return to play after lumbar discectomy, and what is the effect of sport?

• (2) What is the expected recovery time after lumbar discectomy in elite athletes?

• (3) What is the expected career length and performance of elite athletes after lumbar discectomy?
Outcomes for Elite Athletes

• 75-100% returned to play sport
• Highest proportion was baseball players
• The reported recovery period after lumbar discectomy ranged from 2.8 to 8.7 months.
• The average career length after lumbar discectomy ranged from 2.6 to 4.8 years.
• Elite athletes reached an average of 64.4% to 103.6% of baseline preoperative statistics after lumbar discectomy with variable performance based on sport
SPORT Study

• Surgical vs. Non-Op Outcomes
• Subset Analysis
• Lumbar Level differences
• Short vs. Long Term Outcome
• Patient Factors
Long Term Outcomes

• There is nothing worse for outcomes than long term follow up!

• What is the fate of the damaged disc?

• Recurrent Herniation

• Disc Degeneration

• Need for Fusion???
Return to Play : Watkins

• 171 athletes treated: 85 surgery (MLD), 86 nonop

• Of surgically treated patients, **89.3%** returned to sport.

• The average time it took operative patients to return to their sport (return time) was 5.8 months.

• Progressive return data for surgically treated patients showed the percentage of athletes who returned increased from 50% at 3 months to 72% at 6 months to 77% at 9 months and 84% at 12 months.
Adolescent Discectomy

• 72 patients 16yo or younger had lumbar discectomy

• 20 patients (28%) required revision surgery

• Of the other 50 patients, 46 noted occasional or no pain with activity

• Papagelopoulos et al JBJS 1998
Endoscopic Discectomy

Selective Endoscopic Discectomy (SED)

YESS scope used to inspect disc surface. Peri-annular fat is removed and small capillaries are cauterized. Small nerves in the annular fat can be removed along with peri-annular tissue.

TRaversing nerve & exiting nerve are outside of and protected by the cannula.
Complications

• Infection rate <1%
  – Discitis

• Nerve Injury <1%

• Dural Tear ~1-3%

• Recurrent HNP 4-8%, higher in adolescents

• Vascular Injury – Rare but possibly fatal
Take Home Points

• Lumbar disc herniations are common and affect athletes at all levels

• Non-operative care can be successful

• Surgery is minimally invasive with high success of pain relief

• Return to sport is very high, 89%
References


References


Thank You

"YOU IDIOT! I ASKED FOR A SCALPEL!"