

Interventional Pain Procedures and Return to Play

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NOTHING TO DISCLOSE

Objectives

- Discuss reasons and goals of performing interventional pain procedures in the athlete
- Common interventional pain procedures in the athlete
- Return to Play after interventional pain procedures

Evidence

- There is a paucity of literature on interventional pain procedures in the athlete.
- Extrapolation from general population literature and common sense.

Basic concepts

- Sports rehabilitation is of utmost importance in treating the athlete with spinal related pain
 - Reduction of inflammation and pain
 - Correction of muscle imbalances and biomechanical abnormalities
 - Dynamic Stabilization or Neuromuscular re-education
 - Evaluation and correction of the kinetic chain
 - Sports specific rehabilitation
- Interventional pain procedures are not a substitute for adequate sports rehabilitation

When to perform interventional procedures

- Poor response to rehabilitation program
- Failure of other conservative treatments
- Athlete unable to tolerate rehabilitation due to pain
- Pain inhibition
- Neurogenic inflammation

Pain inhibition

- SLIDES ON:
 - Lumbar repositioning error
 - Arthrogenic inhibition literature
 - ? Muscle atrophy or inactivation caused by pain

Low Back Pain

- Altered activation patterns of RA and ES
 - Newcomer, Arch Phys Med Rehab 2002
- Increased repositioning error in LBP
 - Newcomer, Spine 2000
- Increased repositioning error in Radiculopathy due to HNP
 - Leinonen, Spine 2003

Dynamic Stability and Low Back Pain

- Feed back control
 - Unexpected perturbation
 - CNS initiates response
- Impaired response in patients with LBP

Newcomer, Arch Phys Med Rehab 2002

Motor Control

- Impaired motor lumbo-pelvic motor control in low back pain
- Altered response of Transverse abdominis, multifidus on EMG and sonography

Hodges PW, Richardson CA. Spine. 1996; 21:2640–2650

Moseley GL, Hodges PW, Gandevia Spine. 2002; 27:E29–E36

Motor Control

- Reduced bilateral muscle activity with induced unilateral low back pain
 - Lumbar multifiduslumbar
 - Erector spinae
 - Psoas muscles

Dickx N, et al. Spine. 2008

Neurogenic Inflammation

HNP AND RADICULOPATHY

Return to Play after HNP

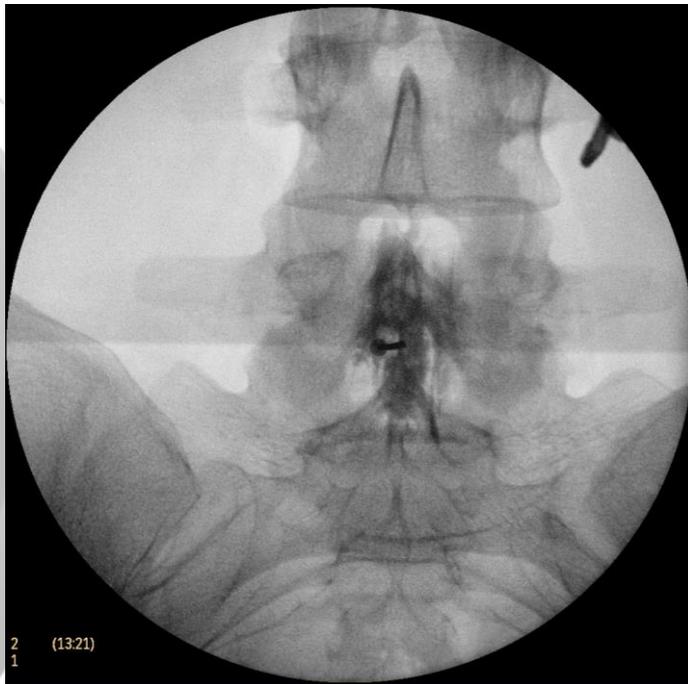
- Iwamoto, et al 2006:
 - Conservative treatment (Rest, meds, PT)
 - Return to play rate of 79%
 - Average of 4.7 months
- Iwamoto, et al 2010:
 - Surgical Group
 - No difference in RTP

The Professional Athlete Spine Initiative

- 342 Athletes (Football, baseball, basketball and hockey)
- 226 treated operatively
 - 81% RTP; 3.3 years career length
- 116 treated non-operatively (PT, activity modification, ESI)
 - 84% RTP; 3.5 years career length

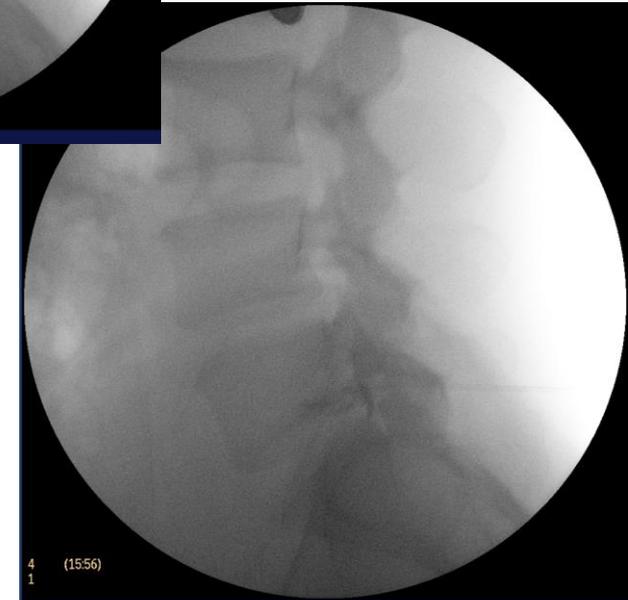
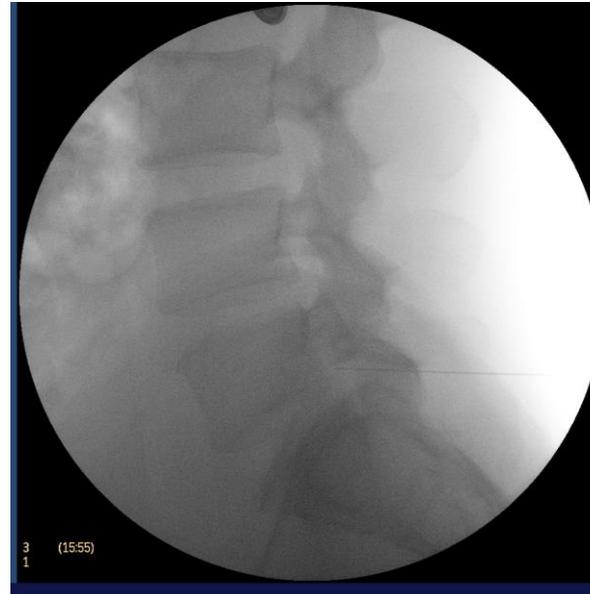
Epidural Steroid Injections

- Interlaminar
 - Posterior Canal



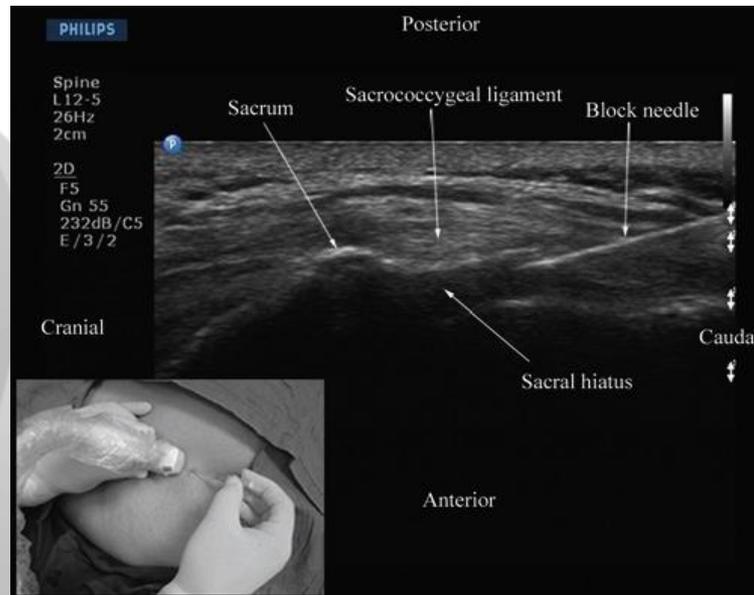
Epidural Steroid Injections

- Transforaminal
 - Anterior Canal
 - Better outcomes for HNP
 - Reduced symptoms short term
 - Less surgery long term



Schaufele MK, Hatch L, Jones W. Pain Physician. 2006; 9:361Y6.

- Caudal
 - Large volume, larger spread



ESI in low back pain

- TESI in management of low back and lower extremity pain
 - Level II-1 evidence for short-term (≤ 6 months) pain relief
 - Level II-2 for long-term (> 6 months) relief

Buenaventura RM, Datta A, Abdi S, Smith HS. Pain Physician. 2009; 12:233Y51.

Acute Disc Herniation in NFL

- Retrospective review, one team 2003-2007
- 17 players
- 27 distinct disc herniations
- 37 total ESI's (Transforaminal or Interlaminar)
- No contact for 48 hours
- Low time lost (0.6 games, 2.8 practices)

Krych AJ, Richman D, Drakos M, et al. Med Sci Sports Exerc. 2012; 44:193Y8

Acute Disc Herniation in NFL

- 4 players required repeat ESI for same episode
- 3 of these required surgery
- Sequestered disc or weakness correlated with poor response

Krych AJ, Richman D, Drakos M, et al. Med Sci Sports Exerc. 2012; 44:193Y8

Our approach

- Surgical evaluation if true weakness, bowel bladder changes
- Start with Physical therapy and medication
- Consider TESI if poor response to PT, unable to tolerate PT or if pain is interfering with ADL's
- Repeat procedure if partial or short-lived response to TESI

Return to Play

- Tissue is adequately healed
 - 3 months (acute HNP, based on RTP after discectomy) Nair R, et al. Clin Orthop Relat Res. 2015 Jun;473(6):1971-7
- Athlete is pain free
- Athlete has returned to baseline strength, stability and flexibility
- Athlete is able to perform sport specific exercises

Things to consider

- Type and severity of injury
- Sport
- Risk inherent to sport
- Timing within the season
 - Off-season, mid-season, Finals
- Level of competition
 - Recreational, Elite, Professional
- Importance of upcoming competition
- Tissue healing
- Strength, stability and flexibility

AXIAL LOW BACK PAIN

Discogenic pain and intra-discal injections

- Koht et al published RCT which showed no difference between methylprednisolone and placebo in disability or pain
- Animal studies of intradiscal corticosteroid injections have shown disk degeneration and calcifications

Khot A, Bowditch M, Powell J, Sharp D. Spine. 2004; 29:833Y7.
Aoki M, Kato F, Mimatsu K, et al. Spine. 1997; 22:127Y31.

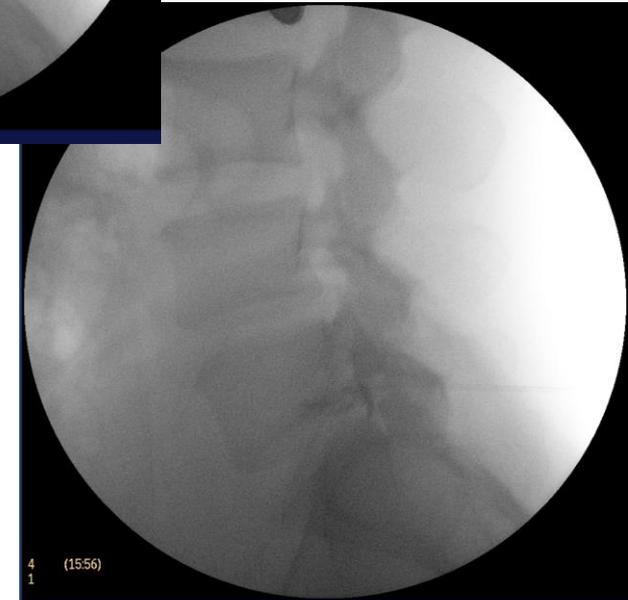
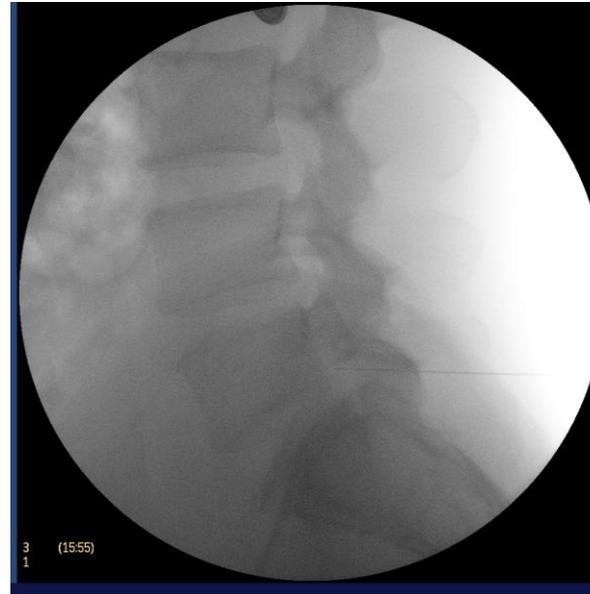
Discogenic pain and intra-discal injections

- Oxygen-ozone mixture
- Methylene blue
- Hypertonic dextrose
- Platelet Rich Plasma
- Hematopoietic stem cells

- Little or no evidence

Discogenic Pain and TESI

- Transforaminal
 - Better outcomes for HNP
 - Reduced symptoms short term
 - Less surgery long term



Schaufele MK, Hatch L, Jones W. Pain Physician. 2006; 9:361Y6.

Facet Mediated Pain

- Axial low back pain
- Sports with high torsional or extension forces
- Pain in extension and rotation not flexion
- Spondylolysis ruled out in young athletes
- Consider lumbar facet interventions

Facet Mediated Pain

- Relative Rest
- Physical Therapy
 - Modalities
 - Core strength
 - Dynamic Stability

Facet interventional procedures

- Poor response to rehabilitation program
- Failure of other conservative treatments
- Athlete unable to tolerate rehabilitation due to pain
- Pain inhibition
- Neurogenic inflammation

Lumbar Facet Interventions

- Level II-1 to II-2 evidence for Medial branch blocks
- Level II-2 to II-3 evidence for lumbar radiofrequency neurotomy
- Level III (limited) for intra-articular facet injections
 - Moderate for short term relief
 - Limited for long term relief
- All studies on chronic pain, not athletes

Datta S, Lee M, Falco FJ, et al. Pain Physician. 2009; 12:437Y60.
Manchikanti, L. et al. (2003). Pain Physician, 6, 3.

Spondylolysis

Sacroiliac Dysfunction

- Some report greater risk and incidence in athletes
- Limited evidence for short-term and long-term relief with intra-articular SI joint injections and radiofrequency neurotomy for therapeutic purposes.

Hansen HC, McKenzie-Brown AM, Cohen SP, et al. Pain Physician. 2007; 10:165Y84.

Sacroiliac Dysfunction

- Prospective study
 - 25 patients with > 6 months) SI joint
 - 3 CT guided injections of hypertonic dextros, 6 weeks apart
 - apart)
 - Significant improvement in pain and function at 3, 12,
 - and 24 months.
- Cusi M, et al. Br J Sports Med. 2010; 44:100Y4.

Regenerative Medicine

- Very promising
- Not enough data
- Most techniques for chronic conditions
- Most can take up to 3 months to see results
- Platelet lysate for acute symptoms?

Conclusions

- Use interventional procedures:
 - Failed conservative treatments
 - Pain interferes with PT or ADL's
 - Reduce pain inhibition
- Not recommended for immediate return to play

Return to Play

- Type and severity of injury
- Sport
- Risk inherent to sport
- Timing within the season
 - Off-season, mid-season, Finals
- Level of competition
 - Recreational, Elite, Professional
- Importance of upcoming competition
- Tissue healing
- Strength, stability and flexibility

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QUESTIONS?



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