





Current Orthopedic Trends

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**WEST IDAHO**
ORTHOPEDICS &
SPORTS MEDICINE

Today's Topics



- PRP
- Stem Cell Therapy

- Multimodal Pain Control
- Bone Marrow Lesions

My Overall Goals

1. Reduce pain and swelling
2. Prevent or decrease disability
3. Increase amount of daily activity
4. Improve quality of life



Non-Surgical Treatment

- Heat/Ice
- Bracing
- Oral Anti-inflammatories or Topical Analgesics
- Injections:
 - Cortisone
 - Viscosupplementation
 - PRP
 - Stem Cell Treatment

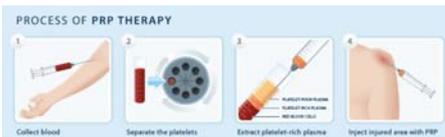


Platelet Rich Plasma (PRP)

Currently used to increase tendon healing or decrease pain

How Is PRP Completed?

- Approximately 60 cc's of patient's blood is drawn
- It is then spun in a centrifuge to concentrate plasma
- After sterile preparation of affected joint, approximately one teaspoon of PRP is injected in joint



PRP- Clinical Evidence

- AAOS/NICE: inconclusive
- Multiple randomized/non-randomized studies show reduction in pain and improvement of function at six months
- PRP shows significant improvement versus viscosupplementation



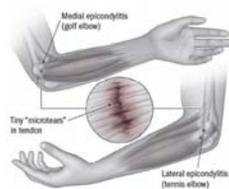
PRP-Clinical Evidence: Rotator Cuff

- Most common cause of shoulder disability in 20-40% of aging population
- Treatment:
 - Arthroscopy: 90% patient satisfaction at 10 years
 - Conservative treatment: 50-60% satisfaction at ten years
- PRP: does not affect function but shown to decrease re-tear of cuff after repair



PRP-Clinical Evidence: Epicondylitis

- Types:
 - Lateral (tennis)
 - Medial (golfers)
- Treatment:
 - NSAIDs
 - Cortisone
 - Brace
 - Physical Therapy
 - Shockwave Therapy
 - Surgery (persistent symptoms)
- PRP: not additionally effective over other methods



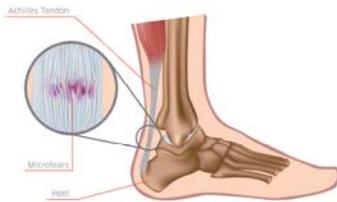
PRP-Clinical Evidence: Patellar Tendinitis

- AKA Jumpers knee
- Treatment:
 - NSAIDs
 - Quadriceps stretching/strengthening
 - Surgery
- PRP: no benefit



PRP-Clinical Evidence: Achilles Tendinitis

- PRP: no benefit in treating injury



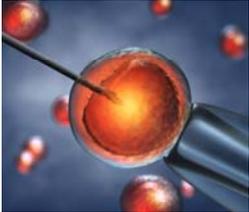
PRP- Clinical Evidence: Conclusion

- Limited benefit:
 - Knee osteoarthritis
 - Lateral epicondylitis
- Inconsistent or no benefit
 - Rotator cuff repair
 - Medial epicondylitis
 - Patellar/Achilles tendinitis
 - ACL repairs
 - Hamstring injuries

Stem Cell Therapy

Stem Cell Transplant

- Human body is made of billions of cells
- Everyday, cells go through degenerative/regenerative processes
- With age or injury, we may not be able to recruit enough cells to repair damage



Are Stem Cells Unethical?

<ul style="list-style-type: none">▪ Embryonic Cells:<ul style="list-style-type: none">▪ Human embryo is a human life with moral value▪ Extraction of cells is unethical	<ul style="list-style-type: none">▪ Adult/Umbilical Stem Cells:<ul style="list-style-type: none">▪ Free of ethical issues
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Stem Cell Procedure

- Stem cells obtained from bone marrow, concentrated, and injected into injured area
- Frequently use PRP in addition to stem cells
- Usually outpatient procedure



Stem Cell Therapy Cost

- 65 centers measured:
 - Mean cost= \$5,156
 - Range from \$1,150 to \$12,000

Stem Cell Therapy (SCT)- Clinical Evidence

385 Current Clinical Trials

SCT-Clinical Evidence: Bone Non-Union

- Increase number of cells injected shows increased amount of callus or bone forming tissue



SCT-Clinical Evidence: Osteoarthritis

- Equine study:
 - Shows increased fill of defects and improved integration of repair tissue with surrounding cartilage
- Patients who receive MSC with osteoarthritis show significant reduction of pain versus control



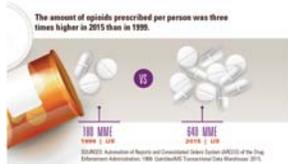
**Beware of....

- "Stem Cell Clinics" with **HIGH** sales pressure
- Frozen amniotic fluid **WITHOUT** viable ("living") stem cells
- Newspaper articles/ads with "promises"



Multimodal Pain Management

The use of multiple drugs and other modalities to achieve pain relief using less or no opioids



Opioids

- Opioid use increasing
- Americans represent 4.6% of population but take 80% of opioid supply
- 85% of opioids are dispensed for chronic pain

Multimodal pain

- Acetaminophen (Tylenol)
 - Peak one hour
- NSAIDs (Advil, Aleve, Voltaren, Mobic, Naproxen, etc.)
 - Risk: bleeding GI/renal
- Cox-2 (Celebrex)
 - Lower GI complications and bleeding
- Gabapentin (Neurontin)
 - Decrease pain
 - Centrally: used pre- and post-operatively

Ketamine

- Occasionally used in low dose
 - For patients with history of substance abuse, chronic pain, or high opioid tolerance
- Occasional outpatient use for chronic pain



Cortisone (Dexamethasone)

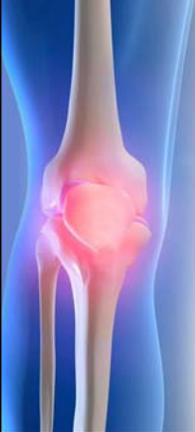
- High dose before surgery leads to...
 - Marked decrease in pain for 32 hours
 - Decreased pain medication use
- "Wires" patient- leads to sleep difficulties first night
- Side effects?



Exparel

- A local anesthetic
 - AKA *liposomal bupivacaine*
- Studies show that Exparel:
 - Assists in significantly decreasing post-operative pain
 - Allows for greater improvements in knee range of motion post-operatively
 - Allows for shorter hospital stay
- Some hospitals refuse to pay for medication due to extra cost





Case Study:

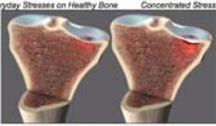
- 64 year old female with sharp knee pain for over six months, mostly with walking and activity
 - She locates the pain on the inside of her knee
 - No relief with Aleve, bracing, or cortisone
- X-rays show mild degenerative osteoarthritis
- MRI shows torn medial meniscus
- Treatment: Arthroscopy with removal of torn cartilage
 - However, her pain remains after arthroscopy
- What now...?

What now...?

<p>Old School of Thought</p> <ul style="list-style-type: none">▪ Patient can either:<ul style="list-style-type: none">▪ Have a total knee arthroplasty (replacement)▪ Live with the pain	<p>New School of Thought</p> <ul style="list-style-type: none">▪ Further review of MRI to assess candidacy for outpatient Subchondroplasty® procedure
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Subchondroplasty®

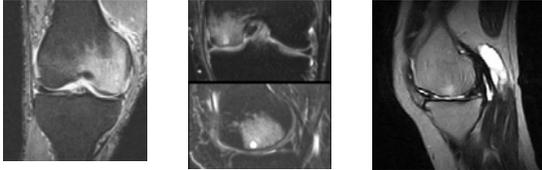
- Minimally invasive procedure that fills and repairs bone defects associated with bone marrow lesions (BML)
- Surgeon targets defect using pre-operative MRI and navigation instrument
- Bone substitute (mimics composition and strength of natural bone) is injected into bone defect- sets within ten minutes



Bone Marrow Lesion (BML)

Orthopedic Evaluation

- BML observed **only** on fat-suppressed MRI
- History of persistent, chronic pain, particularly on weight-bearing surface
- Palpation of area over BML elicits pronounced pain response
- Clinical diagnosis may be in combination with mechanical symptoms



Before and After X-Rays



Candidates

- Symptomatic pain for 3+ months
 - Chronic, aching pain: increased with load-bearing, progressive localized pain
- Failed trial of conservative treatment
 - Physical therapy, NSAIDs, bracing, cortisone/lubricant injections
- Cartilage loss, deterioration, or focal lesions
- Possible history of osteoarthritis or suspected avascular necrosis
- Symptoms inconsistent with x-ray findings
 - Disproportionate pain despite intact joint space





Replace the whole tire or fill the hole in the tire?



Conclusion

- These treatment options are available and show some benefit but need to be evaluated on an individual basis to enable an injured worker to return to his previous employment





Questions?
