Management of Chronic Knee Pain: Leading Edge Therapies

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CONSERVATIVE TREATMENT
Are you sure you want to fix your trick knee? This is pretty cool.
The Basics

• Activity Modification
• Weight Loss
• Physical Therapy
• Bracing/Orthotics
• Diet
• Medications
• Supplements
• Injections
• Other treatments
Weight Loss and Knee Pain

- 1/3 of individuals over the age of 60 are obese
- Knee is exquisitely sensitive to body weight
- Each pound of body weight lost = 4 pound reduction in knee joint stress
Weight Loss and Knee Pain

• 7% to 10% weight loss should be the aim to achieve pain relief.
• Obesity is a risk factor for complications with surgery
Physical Therapy and Exercise

- Muscle mass and strength are lost in the natural aging process.
- Therapy can reduce pain and improve function in patients with arthritis.
- 12 or more sessions will have the best impact on pain reduction.
- Patients will continue to benefit for 2 to 6 months after therapy.
Physical Therapy and Exercise

- **Muscle strengthening** can improve pain
- **Aerobic exercise** can improve function
- Exercise programs that are “mixed” (involving both aerobic and strength training) and encourage integration of exercise into daily life are most beneficial.
Bracing

- Unloader braces can improve symptoms of arthritis
- Have not been shown to prevent the advance of arthritis
- Can be costly
  - $500-$1000
Bracing

- Patella brace
  - Not as supportive
  - Not as effective
  - Better tolerated
  - Not expensive
• Anti-inflammatory and well balanced diet that is low in sugar and simple carbs and high in vegetables is recommended.

• Mediterranean diet
  – high consumption of vegetables and olive oil and moderate consumption of protein
Diet

- Slow carbohydrates diet
  - No to sugar and simple carbs (i.e. bread, pasta, grains).
  - Limit fruit.
  - Yes to complex carbs (i.e. Legumens, vegetables), fats and proteins

What are Slow Carbs?

<table>
<thead>
<tr>
<th>All Vegetables</th>
<th>(except potatoes, corn, winter squashes)</th>
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<tbody>
<tr>
<td>These Fruits:</td>
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<td>All berries and apricots</td>
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<td>All Beans</td>
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<td>All Peas</td>
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<td>All Legumes (except nuts)</td>
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Medications

• Topical NSAIDs
  – Achieve local anti-inflammatory effect with minimal systemic absorption
  – May need to be used for longer period of time (>12 weeks) to see an effect
  – Gastrointestinal, cardiac, and renal adverse effects have been reported but are usually rare.
Medications

• Capsaicin
  – Found in the root of hot peppers
  – Applied in a thin layer 4 times daily in order to achieve pain relief.
  – Local skin irritation occurs commonly, and care must be taken not to accidentally touch eyes or other sensitive areas.
Medications

• Oral NSAIDs
  – Pros: usually provide good pain relief
  – Cons: potential for deleterious effects to kidneys, cardiovascular and gastrointestinal systems
Medications

• Acetaminophen
  – May not be as effective as NSAIDs
  – Contraindicated if liver problems
  – Doses up to 3 g daily (and continuously) are often required in order to achieve a modest pain relief benefit.
  – Often found in other medications and care must be exercised to avoid overdosing.
Supplements

• Disclaimer:
  – more studies are needed but are usually worth a try due to a favorable safety profile

• Glucosamine and Chondroitin
  – The safety profile of glucosamine and chondroitin makes them attractive agents in elderly patients.
  – Could have similar efficacy as NSAIDs
  – Formulations with 1500 mg Glucosamine Sulfate seem to be more efficacious (Chondroitin sulfate 1200 mg)
Supplements

• Others:
  – MSM, Boswellia, SAMe, Turmeric/Curcumin, Fish Oil. May have potentially dangerous interactions with Rx medications and should be discussed with your healthcare provider before initiating.
Corticosteroid Injection

• Probably most useful for the acutely inflamed/painful knee
• Pain relief may be variable and modest in duration with benefit usually observed for 4 to 6 weeks that continues to decrease further.
• No predictors of response based on available data to date
• Can cause local side effects
  – Skin color change
  – Fatty atrophy
Corticosteroid Injection

- One of every 5 nonvisualized knee injections doesn’t enter the intra-articular space.
- Ultrasound-guided injections can provide better short-term outcomes and less injection site complications as compared with blinded injections.
Viscosupplementation ("Gel shots")

- First approved in 1997, viscosupplementation is thought to improve shock absorption and provide improved lubrication and pain relief in the knee.
- Different preparations of IA-HAs exist with the frequency ranges from single-dose injection (eg, Synvisc-One) to multidose injections given as a series once weekly over several weeks (eg, Euflexxa). Can be repeated every 6 months.
Viscosupplementation ("Gel shots")

- IA-HA injections may have improved pain relief at the 8-week mark and could last up to 24 weeks.
- Given the risks to older patients from chronic NSAID use, IA-HA injections may be more appropriate due to their relative safety.
Platelet Rich Plasma

- There has been a tremendous growth in the regenerative medicine health care space since the beginning of platelet-rich plasma use in 1987.
- The existing studies suggest that PRP could be an effective treatment in the short term to improve patients' function and quality of life and reduce pain. However, its long-term efficacy remains unclear.
Platelet Rich Plasma

- PRP injections have shown efficacy for 9-12 months.
- Patients with less severe OA achieve superior outcomes.
- The effectiveness of PRP may be better and more prolonged than that of hyaluronic acid.
PRP Injection for Arthritis

- The administration of PRP varies in terms of frequency and treatment intervals.
- 1 to 3 injections are administered during the treatment course approximately 3-4 weeks apart.
- Takes approximately 2 months to feel the effect.
- Most common adverse reactions are local swelling and pain.
- Currently, not covered by insurance.
PRP Injection

- Obtain a sample of your blood
- Place in centrifuge
- Collect portion with platelets (and growth factors)
- Inject into a joint
Stem cell treatment for arthritis

• First bone marrow aspirate to assist in orthopedic treatment was used in 1986
• Knee OA first treated in 2002
• Bone marrow aspiration is performed under imaging guidance
• 20-30 minute procedure
• Concentrating and injecting
• Paucity of solid clinical data
• Cost can range upward of $5,000
Regenerative medicine

• Long-term implications of autologous cell therapy currently are unknown.
• Despite the lack of strong clinical support, the use of these therapies continues to grow as patients seek novel therapies to treat conditions with few alternatives.
Other treatments

- Transcutaneous electrical nerve stimulation (TENS)
  - can provide short-term relief by inhibiting pain transmission to the brain

- Acupuncture
  - insertion of thin, flexible needles into the body at specific points
  - generally safe
  - recent trials show a generally positive effect on knee osteoarthritis symptoms

- Tai chi
  - promotes mental focus and attention alongside movement exercises.

- Meditation
THANK YOU FOR YOUR TIME AND ATTENTION!