NONOPERATIVE TREATMENT OF KNEE ARTHRITIS
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Knee Arthritis
- Total knee arthroplasty is projected to grow 85% to 1.26 million procedures per year by 2030
- Other studies predict up to 3.48 million TKA procedures per year
- 17% adults over age 45 have symptomatic OA of knee
- Recommend 6 months nonoperative management prior to consideration of knee arthroplasty

EVIDENCE-BASED GUIDELINES

MEDICAL QUACKERY IS LOOSELY DEFINED AS THE PRACTICE OF PALMING OFF FALSEHOODS AS MEDICAL FACT. IT NOT ALWAYS DONE FOR THE PURPOSE OF FINANCIAL GAIN BUT OFTEN TO CONCOCT OR CONTORT FACT SIMPLY TO SUIT ONE’S OWN PERSONAL BELIEFS OR PRETENSIONS

OVERVIEW OF NON-OPERATIVE OPTIONS
Treatment of Osteoarthritis of Knee: Evidence Based Guideline

- Input from American Academy of Family Physicians, Am. College of Rheum, and Am. Physical Therapy Association
- 10,000 separate pieces of literature reviewed

Strong Recommendation: Quality of supporting evidence is high
- Implication: Practitioners should follow a strong recommendation unless a clear and compelling rationale for an alternative approach is present

Moderate Recommendation: Benefits exceed the potential harm. Quality/applicability of evidence not as strong
- Implication: Practitioners should generally follow a moderate recommendation but remain alert to new information and be sensitive to patient preferences

Inconclusive Recommendation: Lack of compelling evidence that has resulted in an unclear balance between benefits and potential harm
- Practitioners should feel little constraint in following the recommendation, exercise clinical judgement, and be alert to emerging evidence that clarifies or helps to determine the balance between benefits and potential harm

Recommendation 1:
- Pts with symptomatic OA of knee participate in strengthening, low-impact aerobic exercises, and neuromuscular education and engage in physical activity
- Strength of recommendation: Strong

Recommendation 2:
- Suggest weight loss for patients with symptomatic OA of knee and body mass >25
- Strength of recommendation: Moderate
Treatment of Osteoarthritis of Knee: Evidence Based Guideline (AAOS)

- **Recommendation 3a:**
  - Cannot recommend acupuncture in pts with symptomatic knee OA
  - Strength of recommendation: Strong

- **Recommendation 3b:**
  - Unable to recommend for or against the use of physical agents (including electrotherapeutic modalities) in pts with symptomatic OA of the knee
  - Strength of recommendation: Inconclusive

- **Recommendation 3c:**
  - Unable to recommend for or against manual therapy
  - Strength of recommendation: Inconclusive

- **Recommendation 4:**
  - Unable to recommend for or against the use of an unloader brace
  - Strength of recommendation: Inconclusive

- **Recommendation 5:**
  - Cannot suggest that lateral wedge insoles be used for pts with symptomatic medial knee OA
  - Strength of recommendation: Moderate

- **Recommendation 6:**
  - Cannot recommend using glucosamine and chondroitin
  - Strength of recommendation: Strong
Treatment of Osteoarthritis of Knee: Evidence Based Guideline (AAOS)

- **Recommendation 7a:**
  - Recommend NSAIDs (oral or topical) or tramadol
  - **Strength of recommendation:** Strong

- **Recommendation 7b:**
  - Unable to recommend for or against use of acetaminophen, opioids, or pain patches
  - **Strength of recommendation:** Inconclusive

- **Recommendation 8:**
  - Unable to recommend for or against the use of intra-articular corticosteroids
  - **Strength of recommendation:** Inconclusive

- **Recommendation 9:**
  - Cannot recommend HA for pts with symptomatic OA of knee
  - **Strength of recommendation:** Strong

- **Recommendation 10:**
  - Unable to recommend for or against growth factor injections and/or platelet rich plasma
  - **Strength of recommendation:** Inconclusive

- **Recommendation 11:**
  - Cannot suggest that the practitioner use needle lavage
  - **Strength of recommendation:** Moderate
Recommendation 12:
Cannot recommend performing arthroscopy with lavage and/or debridement in patients with primary diagnosis of OA
Strength of recommendation: Strong

Recommendation 13:
Unable to recommend for or against arthroscopic partial meniscectomy in pts with OA of knee with a torn meniscus
Strength of recommendation: Inconclusive

STRONG recommendations:
- Exercise/strengthening beneficial
- NSAIDS beneficial
- No benefit to glucosamine/chondroitin
- No benefit to acupuncture
- No benefit to arthroscopy if no meniscal pathology
- No benefit to HA

Moderate recommendations:
- Weight loss beneficial
- Lateral wedge insoles not beneficial

Inconclusive recommendations:
- Acetaminophen, opioids, or pain patches??
- Intra-articular corticosteroids??
- Growth factor or PRP injections??
- Arthroscopic partial meniscectomy??

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Treatment of Osteoarthritis of Knee: Corticosteroids

- Overview:
  - First reported 65 years ago (1951)
  - US survey: 95% rheumatologists administer to pts
  - Safely administered at 3 month intervals up to 2 year period in multiple studies
  - 30% of pts who underwent a TKA had previous steroid injection

- Overview
  - Decrease inflammation
  - Decrease pain
  - Improved function

- Systemic effects:
  - Rare cortisone axis suppression/adrenal insufficiency
  - Recovers in 1-2 weeks
  - Transient elevation blood glucose
  - Lasts average 48 hours
  - No net effect on bone resorption
  - Septic joint: 1/400,000

INTRA-ARTICULAR CORTICOSTEROIDS
Treatment of Osteoarthritis of Knee: Corticosteroids

- Cortisone injections prior to TKA:
  - 4 retrospective studies have analyzed the effect on cortisone injections in the knee on the rate of infection following TKA
  - 3 of 4 found no association with increased infection
  - 1 study showed significant increased infection
  - No relationship between number/dose/timing could be established
  - Avoid injection within 2 months of arthroplasty

Matzin et al. JBJS. 2017
- Prospective, randomized control
- 100 pts, single cortisone injection in knee
- Evaluated 3 wks, 6 wks, 3 months, and 6 months
- All improved WOMAC scores
- WOMAC scores improved at all time points in Grade I/II OA from baseline all time points
- Obese pts (BMI>30) and Grade III/IV OA- worse scores at baseline, 6 wks, and 3 months- no improvement at 6mos

Cochrane systemic review and meta-analysis (2015):
- Cortisone injections vs saline vs no treatment for knee OA
- Cortisone moderate improvement with respect to pain, small improvement in physical function-lasted 1-6 weeks
- No increased joint space narrowing
- Cortisone vs placebo-no difference in side effects

Treatment of Osteoarthritis of Knee: Summary

- Safe
- Moderate improvement with regard to pain/function
- Short term benefits
- Optimal frequency/dose/duration not established
- Less effective with advanced OA/obesity

VISCOSUPPLEMENTATION INJECTIONS FOR KNEE OA
Viscosupplementation/Intra-Articular Hyaluronic Acid (HA)

- Overview:
  - Normal knee contains 2ml synovial fluid - acts as lubricant and medium for articular cartilage nutrition
  - Hyaluronic acid (HA) - naturally occurring polysaccharide within synovial fluid produced by synoviocytes, fibroblasts, and chondrocytes
  - HA acts as a viscoelastic shock absorber during high shear and as a lubricant during slow movement

Viscosupplementation/HA

- Overview:
  - Approved as a biologic device for use in humans in Canada in 1992 and in US in 1997
  - Commercial preparations of HA are either harvested from rooster combs or synthesized
  - Multiple current preparations available in North America - vary by molecular weight, method of production, half-life, dosing regime, and cost

Viscosupplementation/HA in Knee OA: Evidence Based Studies

- Meta-Analysis:
  - Viscosupplementation in knee OA:
    - 2003-2015
    - 26 systemic reviews and meta-analysis
    - Opposing views on efficacy and safety
Viscosupplementation/HA in Knee OA: Evidence Based Studies

- Meta-Analysis:
  - 89 level I trials/12,667 pts
  - Majority of studies favorable effect
  - High-molecular-weight or cross-linked formulations achieved both significant and clinically important pain reductions

- Meta-Analysis:
  - 19 RCTs/4,485 pts
  - 14 double blind, placebo-controlled

- Meta-Analysis:
  - If considering only adequately blinded studies, no clinically important difference over placebo
  - Cross-linking and longer f/u associated with improved treatment effects

- Meta-Analysis:
  - 10 meta-analysis/110 to 39,814 pts
  - Compared electrical modalities, orthotics, NSAIDS, cortisone, HA, PRP

- Meta-Analysis:
  - Greatest effects were those of intra-articular PRP and high molecular weight HA
  - HA most precise effect estimate

- Meta-Analysis:
  - Campbell: 2015 compiled 14 overlapping meta-analysis
  - Compared with NSAIDs, cortisone, PRP and placebo
  - Level of evidence I-IV
  - HA improved results vs others in pain and function up to 6 months
Viscosupplementation/Hyaluronic Acid in Knee OA

- Safety:
  - Self-limited soft tissue reaction
  - Pseudoseptic reaction
  - Immune-mediated response
  - Less complications/side effects than NSAIDs

Treatment of Osteoarthritis of Knee: Hyaluronic Acid

- Safe
- Extensive literature
- Clinically important reduction in pain in younger pts with use of cross-linked and/or higher molecular weight

CANNABIS

- Moderate evidence effective for managing general chronic pain
- Support for medical cannabis growing given early findings supporting efficacy and safety
- Opioid alternative
- Deregulation/public support

Cannabinoids in the Management of Musculoskeletal Pain

- JBJS 2018
- Data search: 7,759 articles, 204 human clinical studies on the use of cannabis for pain management for any condition
- 33 articles looking at core orthopedic topics
- Arthritis pain 15 studies
Cannabinoids in the Management of Musculoskeletal Pain
A Critical Review of the Evidence

- Few level I studies
- Mostly observational
- Ortho: focus was on MS, fibromyalgia, and spinal cord injuries

Results:
- 118 studies on musculoskeletal pain
  - 85/118 (72%) studies cannabis effective for pain
- 33 core orthopedic studies
  - 22/33 (67%) studies cannabis effective
  - 8/23 did not evaluate safety
  - No significant adverse effects

Cannabis
- Jury is out
- Promising
- Few studies evaluating OA present
- Level I studies needed

Radiofrequency Ablation
- GNRFA: Genicular Nerve Radiofrequency Ablation
- Relatively new pain management intervention for pts with knee OA who have failed non-op measures
- Alternative to surgery
- Thermal or cooled RFA with probes

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Limited studies on safety or efficacy
- Promising therapy for pts with unsuccessful nonoperative management
- Consistently provide short-term relief (3-6 months) and sometimes longer in pts with symptomatic knee OA or pain syndrome following TKA