GEMs
GOOD EVIDENCE MATTERS

GEMs of the Week

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What's in this week's issue?

Week of May 17 - 21, 2021

SPOTLIGHT: Hipsters - Full or Partial Replacement?

- Hypertonic Dextrose Prolotherapy - A Possible Effective Treatment for Knee Osteoarthritis

Hipsters: full or partial replacement?

GEMs GOOD EVIDENCE MATTERS SPOTLIGHT

Total Hip Arthroplasty or Hemiarthroplasty for Hip Fracture

HEALTH Investigators, Bhandari M, Einhorn TA, et al. Total Hip Arthroplasty or Hemiarthroplasty for Hip Fracture. *N Engl J Med.* 2019; 381(23):2199–2208.

KEY TAKEAWAY: There is no significant difference in the need for a second surgery when comparing total hip arthroplasty to hemiarthroplasty in previously independent mobile patients >50 years old with a displaced femoral neck hip fracture.
STUDY DESIGN: Expertise based randomized control trial
LEVEL OF EVIDENCE: STEP 2

BRIEF BACKGROUND INFORMATION: Hip fractures are a leading cause of disability, health complications, and decreased function. Previous research indicates displaced hip fractures treated with total hip arthroplasty result in better function and less procedures compared to hemiarthroplasty. However, total hip arthroplasty is associated with worse morbidity.

PATIENTS: >50 years old with displaced femoral neck fracture
INTERVENTION: Total hip arthroplasty
CONTROL: Hemiarthroplasty
OUTCOME: Unplanned secondary hip procedure within 24 months post-op
Secondary: death, serious adverse events, hip related complications

METHODS (BRIEF DESCRIPTION):

- Patients: >50 years old with low-energy displaced femoral neck hip fracture between January 2009 and May 2017
- Patients assigned to one of two treatment groups (hip arthroplasty or hemiarthroplasty) through prognostic matching to balance patient characteristics
    - Surgeons, patients, and research coordinators were aware of the assigned treatment
    - Data analysts were not aware of the assigned treatment
- An adjudication committee reviewed and confirmed the type and reason of secondary procedures
- Cox proportional-hazards modeling was used to estimate the relative effect of the two groups on death and adverse events (alpha level 0.01)

INTERVENTION (# IN THE GROUP): 749 with 718 in final analysis
COMPARISON (# IN THE GROUP): 746 with 723 in final analysis

FOLLOW UP PERIOD: 24 months after surgery

RESULTS:

- There was no statistically significant difference between the two treatment groups in secondary unplanned hip surgeries within 24 months post-op (HR 0.95; 95% CI, 0.64–1.4)
- Participants with total hip arthroplasty had a lower risk of secondary unplanned hip surgeries 1 to 2 years post-op compared to the hemiarthroplasty group (HR 0.23; 95% CI, 0.08–0.69)
- There was no significant difference between the two groups in the following secondary outcomes:
    - Death at 24 months (HR 1.1; 95% CI, 0.77–1.6)
    - Serious adverse events (HR 1.2; 95% CI, 0.90–1.5)
    - Hip related complications (HR 2.0; 95% CI 0.97–4.1)

LIMITATIONS:

- Patients and providers were not blinded to the treatments.
- The follow up only lasted two years. Therefore, complications which occurred >2 years post-op were not captured.
- No information given on immediate post-operative complications, such as infection.

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Hypertonic Dextrose Prolotherapy: A Possible Effective Treatment for Knee Osteoarthritis

Efficacy of Intra-Articular Hypertonic Dextrose (Prolotherapy) for Knee Osteoarthritis: A Randomized Controlled Trial

Sit RWS, Wu RWK, Rabago D, et al. Efficacy of Intra-Articular Hypertonic Dextrose (Prolotherapy) for Knee Osteoarthritis: A Randomized Controlled Trial. *Ann Fam Med*. 2020; 18(3):235–242.

KEY TAKEAWAY: Prolotherapy with hypertonic dextrose solution is more useful in relieving pain and increasing function in patients suffering with knee osteoarthritis than placebo.

STUDY DESIGN: Single-center, parallel-group, blinded, randomized controlled trial

LEVEL OF EVIDENCE: STEP 2

BRIEF BACKGROUND INFORMATION: Millions suffer from knee osteoarthritis, but conservative treatments are lacking for those patients who are not ready for major surgery. Existing evidence for efficacy of prolotherapy is conflicting. This study examines the effect of prolotherapy with hypertonic dextrose to improve the quality of life of patients with knee osteoarthritis.

PATIENTS: Patients 45–75 years old with diagnosis of knee osteoarthritis with moderate to severe knee pain for at least 3 months

INTERVENTION: 5 mL of 25% dextrose solution intra-articular knee injection

CONTROL: 5 mL normal saline intra-articular knee injection

OUTCOME: Primary: Pain at 52 weeks
Secondary: WOMAC function, stiffness, and composite score subscales; physical function; health related quality of life

METHODS (BRIEF DESCRIPTION):

- Patients:
  - Enrolled from outpatient practices in Hong Kong
  - Knee osteoarthritis diagnosis: clinical and radiographic findings defined by the American Rheumatology College
  - Moderate to severe knee pain: >3 on a 6 point scale for at least 3 months with no reduction in the pain to a score <3 after 6 months of conservative care
  - Exclusion criteria: Previous knee replacement surgery, knee injections within the previous 3 months, diagnosis of inflammatory or post-infectious knee arthritis, presence of significant effusion
  - Patient weight:
    - 31.6% normal BMI
    - 1.3% underweight
    - 21.1% overweight
    - 46.1% obese
- The intervention group was administered 1% lidocaine anesthesia before intra-articular injections of 5 mL 25% dextrose in water solution directed to the suprapatellar pouch under guidance of ultrasound at weeks 0, 4, 8, and 16.
- The control group was administered intra-articular injections of 5 mL 0.9% saline solution using the same procedure and at the same intervals as the treatment group.
- Outcomes were evaluated at 0, 16, 26, and 52 weeks.

INTERVENTION (# IN THE GROUP): 38
COMPARISON (# IN THE GROUP): 38

FOLLOW UP PERIOD: 52 weeks

RESULTS:
The prolotherapy group had statistically better outcomes than the placebo group in the following areas:

- Function measured with WOMAC Composite Score (Difference in difference (DID) –9.7; 95% CI, –18 to –1.5)
  - WOMAC scale: Combined WOMAC pain, stiffness, and function scores; Scale: 0–100 with increased scores indicating increased pain, increased stiffness, and decreased function
- Pain (WOMAC scale) (DID –10; 95% CI, –19 to –1.5)
- Function (WOMAC scale) (DID –9.6; 95% CI, –18 to –1.4)
- Pain Intensity (DID –11; 95% CI, –21 to –0.61)
  - Measured with visual analogue scale: Scale 0–100 with increased scores indicating increased pain intensity
- Health related quality of life (DID 8.6; 95% CI, 1.4 to 16)

    - EuroQol-5D VAS: Scale 0–100 with higher scores indicating higher patient-reported health-related quality of life
- The prolotherapy group and placebo group were not statistically different in the following outcomes:
    - Stiffness (WOMAC score) (DID –8; 95% CI, –19 to 2.5)
    - Timed up and go (DID –0.3; 95% CI, –2.4 to 0.92)
    - 30-second chair stand (DID –0.03; 95% CI, –0.96 to 1.0)
    - 40-m fast-paced walk (DID –1.8; 95% CI, –5.1 to 1.5)
    - Health related quality of life index score (DID 0.08; 95% CI, –0.02 to 0.19)

LIMITATIONS:

- The intervention group was compared to placebo rather than the standard of care.
- The results may not be reliable as a larger proportion of participants in the intervention group had a normal BMI than the control group.
- The study had a small sample size and 71% of participants were female, so results may not be generalizable.

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