Joint Restoration: Adolescent and Masters Athletes
Corey A. Wolf, MD

Nothing to disclose

Joint Restoration
- “If it’s not on the Web, it doesn’t exist at all”: Electronic Information Resources - Myth and Reality
  - Sarah Stevens-Rayburn
    - Space Telescope Science Institute, 3700 San Martin Drive, Baltimore, MD 21218, USA
  - Ellen N. Botton
    - National Radio Astronomy Observatory, 520 Edgemont Road, Charlottesville, VA 22903, USA

Joint Restoration
- Higher incidence in adults compared to adolescents
  - Exposure increases with age (on average)
- However, some disease processes are encountered more frequently in particular age groups
  - Adolescents
  - OI
  - Adults

Joint Restoration
- Goals
  - Provide review and update of the current literature in regards to:
    - OI
    - Meniscal deficient knees

Joint Restoration
- Google search: Definition, Define, Joint, Restoration, Articular
  - Arthroplasty
  - Therapy sites
  - Companies that supply services related to joint restoration services
  - Physician sites
- No definition readily available
Joint Restoration Adolescents

- Osteochondritis Dissecans (OCD) of the knee
- In 2011 JAOJS published their clinical practice guidelines regarding the management of OCD lesions of the knee.
- No recommendations.
  - Strong: 0
  - Moderate: 4
  - No opinion: 10
  - Weak: 3

Joint Restoration in Adolescents

- OCD
  - Epidemiology
    - Incidence has been unclear
    - Latest study
      - Pediatric and adolescent
      - No lesions in children 2-5
      - 9.5/100,000 age 6-9
      - More common in males; 1.8 times higher risk
      - Medial femoral condyle 63%, LFC 35
      - Bilateral
      - Incidence increased with age

Joint Restoration in Adolescents

- OCD
  - Etiology
    - Incidence of OCD lesions, but areas of diminished viability with failure of repair mechanisms.
    - 1.5% incidence of Vitamin D deficiency in the JAOJS group.
    - Boros et al., Knee Surg Sports Traumatol Arthrosc 2004:12:553-558: increased frequency or deficiency related to the development of osteochondral lesions.
    - In 18/21, a distinctly Vitamin D deficiency was found, and patients with increased D3 measurements. In these patients, the Vitamin D level peaked at least 200 ng/ml.

Joint Restoration in Adolescents

- Presentation
  - Early onset of upper extremity tend to present with vague symptoms, pain, swelling, decreased range of motion, etc.
  - Late-stage,-painful lesions may be associated with more localized symptoms, persistent pain, and mechanical symptoms.

Joint Restoration in Adolescents

- Evaluation
  - Includes physical exam
  - X-rays
  - Also consider an opinion for patients with vague symptoms, pain, swelling, decreased range of motion, etc.
  - Arthroscopy, MRI

Joint Restoration in Adolescents

- Ignorance
Joint Restoration in Adolescents

- MRI
  - Quittmaier et al. (cont'd)
  - Described:
    - The limited available evidence, methodological inconsistencies in imaging techniques, and lack of standardized grading criteria used in current studies prevent clear conclusions regarding the diagnostic and specific staging equivalency of MRI with arthroscopy.
    - However, a case study supports the use of MRI to assess the stability or integrity of the lesion. Given the benefits of the use of MRI in a non-invasive tool to display specific lesion properties and assess clinical outcomes of treatment, there is a pressing need for high-quality, systematic, and thorough studies related to the clinical utility of MRI for the accurate assessment of the knee joint.

Joint Restoration in Adolescents

- OCD
  - Treatment:
    - Multiple proposed treatment algorithms
      - All primarily based upon presence of symptoms, status of chondral injury, and the stability of the lesion.
    - Arthroscopic lesion stable
      - Partially intact: Conservative treatment
      - Complete: Arthroscopic (even if considered progression on radiography)
      - Conservative treatment
    - Biologic:
      - Non-operative
      - Arthroscopic or open CRF for salvageable lesions
      - Fixation with bio-absorbable pins or screws, chondrocyte, stem cells, bone graft
      - All with or without bone grafting

Joint Restoration in Adolescents

- Treatment cont'd
  - Symptomatic lesions:
    - Partially damaged, stable
    - Conservative
      - Non-operative due to lack of prospective studies for the efficacy of treatment
    - Conventional care includes activity modification or period of rest (protected weight bearing)
  - Surgical treatment
    - Conventionally has been offered to patients who remain symptomatic after a period of conservative care (1-3 months)
    - EGM: clinical qualitative recommendations are indicative

Joint Restoration in Adolescents

- OA
  - Quittmaier et al. (cont'd)
  - The clinical utility and diagnostic performance of MRI for identification and classification of bone lesions were discussed.
  - METHODS:
    - A systematic search was performed in December 2015 with use of PubMed, EMBASE (from 1980), and OVID (from 1980), and MEDLINE (from 1966), and EMBASE (from 1980 databases).
  - RESULTS:
    - Seven studies, four Level II and three Level III investigations, met the specified inclusion criteria. No randomized controlled trials were identified. Because of inconsistencies between imaging techniques and methodological shortcomings of many of the studies, a meta-analysis was not performed.
Joint Restoration in Adolescents

- Benefits of adolescent bone: Younger bone is more pliable, easier to reshape, and heals faster.
- Surgical techniques: Bone grafts, distraction osteogenesis, and growth plate manipulation.
- Follow-up care: Regular assessments for bone growth and development.
- Outcome measures: Radiographic and functional assessments.

Joint Restoration in Masters Athletes

- Meniscal disease: Estimated 700,000 - 1,000,000 meniscal surgeries performed per year.
- The loss of meniscal function is associated with increased risk of OA.
- Increased in prevalence with age.
Joint Restoration in Masters Athletes

- Conclusion
  - Meniscal allograft is a good surgical option for patients with meniscal deficient knee pain and dysfunction
  - Demonstrate reasonable short, mid, and long term outcomes
  - Degenerative changes within a meniscal deficient knee may not represent an absolute contraindication to MAC

Thank you!!!