Rehabilitation and Outcomes of Hip Arthroscopy in Athletes

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Disclosures

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Acknowledgments

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Introduction

• Hip arthroscopy is the treatment of choice for:
  • Labral tears
  • Femoroacetabular impingement (FAI)
  • Cartilage injuries.
• Good to excellent short-term and mid-term results have been consistently reported in the literature.

Introduction

• Rehabilitation is critical to good outcomes in any surgical procedure
• Return to play is the major goal for any athlete

Introduction

• FAI and labral tear can lead to significant dysfunction for the athlete
• Surgical correction of the hip can allow restoration of pain free function following a supervised rehab program
Introduction

- Initial phases of rehab are typically dictated by the specific procedure performed

- Return to play is more sports-specific
  - Contact sports
  - Overhead athletes
  - Pivoting sports
  - Combination

Considerations

- Level of play
  - Professional, collegiate, high school, recreational athletes
- Timing/season
  - Surgery typically timed to optimize return to play
  - Different considerations for specific athlete
- Pre-surgical conditioning

20 yo collegiate Division I ice hockey player

- CAM + pincer FAI with labral tear
- Hip arthroscopy labral repair, femoroplasty, acetabuloplasty, capsular closure
- Articular cartilage intact

Rehabilitation

0-3 Weeks

- Early phases aim to restore pain-free motion
- Progress weight-bearing over 3-4 weeks
- Limit flexion, external rotation 3-4 weeks
- Heel slides, isometrics, initial core stabilization

0-7 days

- On your own or with trusted PT
- NON WEIGHT-BEARING/TOE TOUCH WB WITH CRUCHES Activities of daily living. No lifting (over 15 lb.)
- Bike 20 minutes (no resistance, raised seat to avoid forced hip flexion)
- Ankle/Calf Pumps/Glute Sets/ Quad Sets/Knee ROM/ Stretching of non-operative leg Supine Flat and Supine Hook-lying Isometric Adduction Squeezes
- Begin Kegel exercises 1 to 2 times per day.

1-3 Weeks

- After first post-operative appointment
  - NON WEIGHT-BEARING/TTWB WITH CRUCHES Hip PROM (**NO EXTERNAL ROTATION, NO FLEX>90)
  - LE Isometrics : ie : (Quad/ Hamstrings/ Adductors/ Abductors/Glutes)
  - Knee ROM (heel slides)
  - Core Stabilization Level 1 (Transverse Abdominus Contractions, Marching)
  - Multifidus Side Bends
  - Supine Leg Roll, Standing Leg Roll (IR Only)
  - Opposite Leg LE Stretching (knee to chest, Adducted Piriformis Stretch*NOT ER)
  - Upper Body seated theraband work for core (with TAC)
  - McGill curl-ups

- PROGRESS IF: Minimal Pain with day 7-21, Activities ROM regained to WNL/Near WNL
### Rehabilitation

#### 3-6 Weeks
- Continue phase I
- Bike with resistance
- Full weight-bearing
- Hip bridge
- Progress core stabilization
- Mini squats
- Clam shells
- Alter-G walking progression (50% WB)

#### 7-12 Weeks
- Continue phase II
- LE Stretching (Hip Flexor, Quadratus Lumborum, Joint Mobs)
- Side Planks (modified) and progress
- Initiate Elliptical/Stair Master
- AlterG jog progression at 50% (8 weeks)
- Begin Mini-Squat Progression
- Progress trunk strength (trunk, low back, side support progression)
- Regain AROM WNL
- Calf Raises, step ups, progressive TherEx

### Rehabilitation

#### 3-5 months
- Continue Previous Strengthening/Stretching
- Bridge Progression to Swiss Ball
- CKC Progressive Strengthening (Step Downs, Single Leg Squats, Lunges, Lateral Side Stepping, monster walks)
- Jogging Progression at FWB (interval jogs)
- Hamstring strengthening/curls
- Initiate Plyometric Exercises

#### Labral Repair +/- FAI
- Return to Play Following Hip Arthroscopy
  Lee S, Kuhn A, Draovitch P, Bedi A

### Labral Repair +/- FAI

#### Weeks 0–2
- Focus on decreasing soft tissue swelling and restoring gliding of adjacent tissues
- Stationary bicycle for 20 min/d (up to twice a day)
- ROM progression – Stool rotations (AAROM Hip IR), pelvic tilts, supine hip roll over, limit external rotation to <20°
- Hip isometrics (no flexion): prone leg curls, prone abdominal/gluteal/quad hamstring/ dorsiflexion isometric holds, quadruped hand heel rocks with stable core, supine bridges
- Neuromuscular electrical stimulation to quadriceps with short arc quadriceps if indicated or appropriate
- Sustained stretching for psoas with cryotherapy (2 pillows under hips)
- Gait training every session to prevent the development of poor motion

#### Weeks 2–4
- Progress weight bearing: wean off crutches at weeks 3–4
- Progress hip ROM as tolerated: bent knee fall outs (week 4), stool rotations for ER (weeks 3–4), hip hiking (week 4)
- Gluteal/piriformis stretching
- Progress core and hip strengthening (avoid hip flexor tendonitis): bilateral cable column rotations (weeks 3–4)
- Step ups and downs starting with 4” box building to 8” box
- Begin proprioception/balance training: balance boards, single leg stance
- Aquatic therapy in low end of water
Rehabilitation

**Weeks 4–8**
- Progress strengthening: introduce hip flexion prone isometrics to AAROM, multi-hip machine (open and closed chain), leg press (bilateral→unilateral), single leg wall push, windmills, lawn mowers, resistive hip hikes (begin with doing all exercises as the stance leg first to ensure muscular strength, endurance, and neuromuscular control before the moving leg)
- Progress core strengthening: prone/side planks
- Progress proprioception/balance: standing rotations with rocker bottom boards
- Treadmill side-stepping (week 6)
- Elliptical (weeks 4–6)
- Hip flexor, gluteus/piriformis, and IT band stretching: seated eccentric hip flexor stretch
- 3-Point step with theraband progressing to side-stepping with theraband

**Weeks 8–12**
- Progressive hip ROM
- Progressive extremity and core strengthening using challenging surfaces or perturbations
- Endurance activities around the hip
- Dynamic balance activities

**Weeks 12–16**
- Progressive extremity and core strengthening
- Plyometrics: begin with in-place double leg progressing to single leg jumps, hops and bounds being sure to monitor sets, foot contacts, and rest between sets
- Begin treadmill or field running program
- Sport-specific agility drills
- Return to supervised modified weight room program
- Begin developing a time-based plan for return to activity and sport

Return to Play

**Football/Rugby**
- Running 3 months
- Weight room 3 months
- Agility drills 4 months
- Pivoting/ladder/cone drills 4 months
- Begin contact 4 months

**Ice Hockey**
- Condition skating 2 months
- Start/stop 3 months
- Forward/backward transition 3 months
- Shooting/puckhandling 3 months
- Advance to full contact 4 months

**Ice Hockey**
- Agility drills: ladder drills, 3 cone drill (works on change direction), 4 color drill (works on reaction time), fwd suicide, lateral suicide
- Football catch through ladder
- SL fwd hops, skaters (SL lateral hops)
- Low hurdles/tires
- Box jump progression
- 180 hops/jumps
- TRX exercises

**Ice Hockey**
- Agility drills: ladder drills, 3 cone drill (works on change direction), 4 color drill (works on reaction time)
- Slide board (reebok slide board)
- SL fwd hop, skaters (lateral SL hop)
- STAR balance on AIREX
- SL dead lifts
- TRX exercises
- Excel cord exercises
**Return to Play**

**Baseball**
- Initiate throwing program 3 months
- Batting tee 3 months/ Cage 4 months
- Grounders/ Pop ups/ Fly balls 4 months
- Pitchers mound 4 months
- Catchers crouch 4 months

**Baseball**
- Agility drills: ladder drills, fwd and lateral suicide while picking up balls
- Fielding balls: charging balls, catching pop ups, fielding hopping balls/grounders
- Cable column wood chops/reverse wood chops, lateral rotations (prep for bat swing)
- SL exercises

**Soccer**
- Dribbling 3 months
- Agility 3-4 months
- Juggling 3 months
- Ball against wall/ trampoline 3 months
- Passing drills 4 months
- Shooting drills 4 months

**Soccer**
- Agility drills: ladder drills, 3 cone drill (works on change direction), 4 color drill (works on reaction time)
- Resisted t-band kicks (both fwd and lateral)
- Dribbling with ball
- Short passes (progressing distance)
- Kicking ball against wall/trampoline
- Ball handling: first touch, give and go, half volley, volley, trapping, etc...

**Professional**
- More motivation for return to play
- Their job is to recover and return
- Access to equipment, PT, ATCs, etc at their fingertips
- Genetics

**Collegiate**
- Division I athletes same rules as professionals
- Timing may have flexibility (redshirt/ eligibility)
- Motivated for RTP and/ or next level
### Outcomes

**Return to sport after hip surgery for femoroacetabular impingement: a systematic review**
- Castarelli NC, Leunig M, Maffiuletti NA, Bizzini M
- 18 case series Level IV evidence
- 87% return to sport and 82% at same level
- Trend for professional return to same level vs collegiate and recreational athlete

### Outcomes

**Predictors of Length of Career After Hip Arthroscopy for Femoroacetabular Impingement in Professional Hockey Players**
- Menge TJ, Briggs KK, Philippon MJ
- AJSM July, 2016
- Hip arthroscopy for FAI in 60 players (69 hips)
- 40 (67%) continued to play professional hockey at minimum 5 years
- Negative predictors: Age, duration of symptoms

### Outcomes

**The demographic characteristics of high-level and recreational athletes undergoing hip arthroscopy for femoroacetabular impingement: a sports-specific analysis**
- Nawabi DH, Bedi A, Tibor LM, Megennis E, Kelly BT
- 228 high level and 334 recreational athletes
- High level athletes younger, male, and more frequently bilateral surgery
- Most common high level sports: soccer, hockey, football

### Outcomes

**Do professional athletes perform better than recreational athletes after arthroscopy for femoroacetabular impingement?**
- Malviya A, Paliobeis CP, Villar RN
- 40 professional and 40 recreational athletes
- Return to sport, training time, time in competition, mHHS, NAHS
- Return to sport PA 4.2 months RA 6.8 months
- Return to previous level: PA 88% RA 73%

### Outcomes

**Arthroscopy Up to Date: Hip Femoroacetabular Impingement**
- Khan M, Habib A, de Sa D, Larson CM, Kelly, BT, Bhandari M, Ayeni OK, Bedi A
- Arthroscopy 2016 Jan 32 (1): 177-89
- Comprehensive review and summary of articles published in Arthroscopy and AJSM for hip arthroscopy and FAI
- 60 studies in Arthroscopy and 44 in AJSM
- 71% Arthroscopy and 20% AJSM Level IV studies
- 81% used mHHS with improvement from 60 to 80 at midterm and 87 up to 24 months
- Arthroscopic intervention resulted in improvement in patient function in short-term (< 6 months) and mid-term (~24 months) for patients with symptomatic FAI and no degenerative changes

### Conclusions

**Rehabilitation after hip arthroscopy for FAI in athletes should follow procedure-specific protocols until in later phases of rehab**
- Once in later phases of rehab sports-specific activities predominate with goal being return to play
Conclusions

• Special considerations for professional and high level athletes regarding surgical timing and rehab goals/timelines
• Outcomes for hip arthroscopy for FAI in athletes show good to excellent results for short-term and mid-term
• There is a need for more Level I and II studies for short-term and mid-term outcomes

THANK YOU.