Partial Menisectomy of an Intercollegiate Mid-Fielder Soccer Player

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OBJECTIVES

- Give background on Meniscus Tears
  - MOI
  - Signs and Symptoms
  - Differential Diagnosis
  - Limitations of Rehabilitations
- Describe surgery techniques
- Describe phases of rehabilitation
  - Baseline measurements and goals
  - Specific exercises

EVALUATION
The Meniscus: Defined

- The meniscus are C-shaped discs of fibrocartilage interposed between the condyles of the femur and tibia. ¹
- Purpose?

Identify General Anatomy

Meniscus Tears: History²

- Acute onset
- Pain: Lateral or Medial jointline
- "Giving-out" type of sensation
- Mechanism: tibial rotation combined with flexion and a varus or valgus stress
- Predisposing condition: repetitive motion can degrade the lateral meniscus.
Meniscus Tears: Inspection
- Swelling along joint line or in the popliteal fossa
- Over 24-48 hours joint effusion may occur
- Gait: knee may be restricted in full extension

Meniscus Tears: Palpation
- Pain along joint line
- Crunch, locking, or clicking sensation with flexion or extension
- Decreased range of motion

Meniscus Tears: Testing
- Mc Murray's Test
- Apley’s compression/distraction Tests
- Differential Diagnosis:
  - Patellofemoral dysfunction
  - Meniscal cysts
  - OCD
Limitations

- Typically, ACL and MCL injuries are accompanied by meniscal lesions.
- MRI’s are the key diagnostic tool.
- Increased arthritis of the joint.
- Resistive exercises can lead to a painful arc of motion.

SURGERY

Menisectomy

- An arthroscopic surgery removing torn pieces of meniscus.
- Goals of surgery:
  - “Avoid Scuffing!”
  - “Keep in Shape!”
  - “Don’t Rock the Boat!”
  - “Keep Your Eyes Pealed!”
Classification of Meniscal tears\textsuperscript{1,3}

- Longitudinal (Vertical)
  - Small VL tear of the posterior third of the left lateral meniscus
  - Double VL tear of the left medial meniscus

- Longitudinal (Vertical)
  - The probe shows extra laxity of the meniscus signifying a posterior third tear of the medial meniscus

- Longitudinal (vertical) meniscectomy approaches
  - (Left, top) long tear
  - (Left, bottom) posterolateral tear
  - (Right, top) short posterior 1/3 tear
Flap

- Anteriorly based flap tear of the medial meniscus.
  - Possibly an old longitudinal tear split in half.

- Posteriorly based flap tear in the same medial meniscus.

- Flap tear approaches. The top two are for posteromedial flap tears
  - The bottom left is an inferior "leaf" flap
  - The bottom right is an anterior based flap tear

Horizontal (Cleavage)

- Horizontal "fishmouth" tear of the lateral meniscus.
- Horizontal tear approach

- Transverse (Radial)
  - Wavy edge of the free edge of the right lateral meniscus

- Transverse (radial) tear approach
  - The top three are a posterior portion of a midlateral transverse tear
  - Tear of the posterior 1/3 medial meniscus
Degenerative (Multiple Plane)

- This is a tearing at several angles.
- This can occur when the original meniscus tear is ignored.
  - Years of wearing increases amount of tears.

REHABILITATION

PHASE 1: Objectives

- Reduce swelling
- Decrease pain
- Begin pain-free ROM
- Establish Patient Goals
  - Soccer Midfielder
  - Intercollegiate athlete
  - Other sports commitments?
  - Age?
  - Attitude?

- (short term)
  - Get 70% ROM in 3 weeks
  - Maintain 95% CV endurance by weeks 2-3

- (long term)
  - Return to play 8-10 weeks
  - Full range of motion by 7 weeks
  - Regain 80% quad strength by 6-8 weeks
Phase 1

- Modalities:
  - Ice 15 min swelling
  - Tens Unit 15 min pain
  - UBE 15 min cv endurance

Phase 2

- Goals
  - 85% ROM bilaterally compared
  - 65% Quad strength returned
  - 90+ degrees of flexion
  - 5-0 degrees extension

Exercises

- Warm-up: Range of Motion
  - Active extension
  - Active flexion
    - 20 times each motion

- Try Bike
  - Start athlete rocking
  - Initial movement can be reverse pedaling

- Leg extensions
  - OKC
  - 1-2 sets of 10 holding "pain-free" force for 6 seconds
Exercises 4, 5, 6, 7, 8

- **Leg Abductions**
  - Have athlete in seated position on an elevated table
  - Place knees 12 inches apart with a resistive band around the distal femur of both legs
  - Spread legs and hold for 6 seconds
  - 1-2 sets of 10 reps

- **Leg Adductions**
  - In same position, with a soccer ball between the knees
  - Squeeze the ball for a 6 second hold
  - 1-2 sets of 10 reps

- **Straight leg raises**
  - Athlete is seated or lays supine then raises the leg keeping the knee as straight as possible
  - Hold the raised position for 5 seconds
  - 1 set of 10 reps

- **Step downs**
  - Start with a 4” step
  - Lateral, forward, and backward movements off the step
  - Concentrate on patella straight and knee flexing over toes, and feet facing ahead
  - Do exercise in front of a mirror

Progressions 4, 5, 6, 7, 8

- **Leg Extensions (Hamstring Curls)**
  - With weight or resistance

- **Abduction**
  - Increase reps, increase hold time, increase resistance

- **Adduction**
  - Squeeze ball between knees while in a ¼ wall squat
Progressions

- Standing straight leg raise
  - Increase reps, increase weight, add a single leg squat when the opposite is in the leg raise position
- Step Downs
  - Increase height, increase reps, add ankle weight, have the athlete do patterned stepping
Phase 3

Goals:
- 100% ROM
- 100% Muscular Strength
- 100% CV Endurance
- 100% Confidence
- Functional Movements can be executed
- Return to play with Physician release

Exercises 4, 5, 6, 7, 8

- Bike
  - 20 minutes
- Defensive stance slides
  - With resistive band around knees
  - 2x 20 yards
  - Keep core tight, knees inside feet, back straight, and gluts down
- Two feet hopping
  - Keep soccer ball on ground with athlete standing next to it.
  - Have athlete jump laterally over ball
  - Focus on landing in athletic stance (knees bent)
  - Have athlete jumping over the ball at different directions

Exercises 4, 5, 6, 7, 8

- 40 yard sprints
  - Add direction changes
  - Zig-Zag running around cones (with soccer ball)
  - Cross-over cutting
  - In between sprints have athlete jog back to start
- Multidirectional Lunging
  - Start at 12 o’clock then rotate every 2 hours.
- Lunge walking 10 yards 2 times per set
- Agility Ladder
  - Ins and Outs (quick steps)
  - Bounding over two-three rungs
Exercises 4, 5, 6, 7, 8

- Single leg squats
  - On a uneven disc

- Single leg stance on uneven surface
  - Trampoline, foam discs
  - Have the athlete attempt hopping from one foot to the other
  - Focus on landing, and core tightness

- Hamstring and Quad curls
  - Progress weight, sets, and reps

- Sit-Ups with Soccer Ball
  - Place the ball between the knees of the athlete then have them flex knees 90 degrees and hips 45 degrees

VIDEO OF EXERCISES
Phase 4

Goals:
- Maintenance of all aspects
- Prevention of the same or similar injury
- Participate at 100%

Exercises4,5,6,7,8
- The athlete should be able to participate in practices with team at this stage
- Keep a running regimen on a 5-6 day basis per week
- Continue proprioceptive exercises 2 times a week.
  - BAPS board balancing
- Stretch hamstrings, quads, and calf post workouts to continue flexibility

References
References

9. Thank you to Ana Lozoya and Wilcox Rehabilitation and Physical Therapy staff for their contributions!!