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Convservative Management of Patellofemoral Dysfunction

A. Acute Phase:

1. Control effusion
2. Decrease patellofemoral joint irritation
3. Get VMO under voluntary control
4. Increase joint mobility motion

Plan:

1. Rest from irritating activities: deep knee bends, stairs, hills, patellar weight bearing, prolonged sitting, etc.

2. Do not train through pain- work only to fatigue.

3. NSAIDS

4. Modality care for pain and inflammation:
   a. ice, compression, elevation
   b. neoprene patellar cut-out sleeves
   c. US, E-Stim, Iontophoresis

Modalities and rest to control effusion is an important consideration during this phase. Through the phenomena of reflex inhibition, muscle force output and EMG activity is decreased in the presence of knee effusion. There is a greater effect of this phenomena on the VMO than the Vastus Lateralis or Rectus Femoris. The VMO is inhibited with as little as 20-30 ml of effusion.

d. Electrical Stimulation/Biofeedback indications:

NMES: patients with VMO dysplasia, stretched medial structures, and decreased isokinetic quad strength.

Biofeedback: Patients who have a well developed vastus lateralis and normal isokinetic strength, but seem to have poor control of the lower extremity pronation-supination sequence and/or poor VMO timing, tone, and control.

- **5. Manual Therapy:**
  a. Passive patellar mobilizations to stretch tight retinacular structures. Medial patellar glide and or tilt in sidelying with varying degrees of hip and knee flexion.
  b. Manual resisted medial/superior glides of the patella.
  c. Flexibility Training: stretching of any structure that restricts lower extremity functional supination. i.e. medial hamstrings, ITB/TFL, gastroc/soleus. When tight, these structures increase the Q angle and lateral pull on the

Patella.

d. Friction Massage as indicated.

6. Correct Patella Orientation/Position- use of tape, brace to correct patella glide, tilt, rotation, and depression.

7. Exercise:

a. Submaximal to maximal intensity isometrics at multiple angles i.e. 60, 40, 30.
b. Manual medial glide to the patella during isometric extension. This will help to decrease pain and increase the VMO EMG activity.
c. Small wedge during QS may benefit patients with plica inflammation or infrapatellar fat pad because QS in full extension often aggravate these conditions. This wedge may also help with those patients with patellar maltracking and have need for increase congruity.

C. Subacute Care: This phase begins when the joint is comfortable, effusion is under Control, ROM is approaching normal limits, and there is good Voluntary control of the VMO.

Goals:

1. Normalize lower extremity biomechamics
2. Improve contractile capabilities
3. Control symptoms

Plan:

1. Continue modalities of necessity
2. Continue medications as indicated by physician
3. Continue retinacular and soft tissue stretching
4. Correct lower extremity malilignments that alter pronation/supination sequence in gait.
5. Exercise:

OKC: 90-45 degree to increase contact surface area and balance VMO/VL activity.

CKC: 0-30 degree to minimize PFJ reaction force and improve Congruence angle.

Open Kinetic Chain Exercise:

- Submaximal protected arc isokinetic exercise progressing toward full arc.
- Protected arc is 90-45 degree ROM or ROM free of crepitus and pain.
- Highest speeds of motion (VSRP) in which the patient can engage actuator are the preferred speed of motion. Higher speeds reduce PF compression forces.
- Be aware of sudden arrival at training speed in 60-45 degree range- this may cause a painful pinching of the synovium and irritation of the patellar arthrosis.

Closed Kinetic Chain Exercise:

- Mini-squats, lateral step-ups, stairmaster, shuttle, total gym, etc.

Return to Activity

1. Sport specific retraining and conditioning
2. Quadricep stretching to ensure minimal tightness will not increase the pressure on the patellofemoral articular cartilage surface.
3. Address eccentric deficits
4. Consider patellar bracing