PATELLO-FEMORAL DISORDERS
& MANAGEMENT

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The most common Complaint of Patellofemoral Joint disorder is Anterior Knee pain which is a challenging Problem

Patellofemoral malalignment must not be considered a synonym for Anterior Knee pain.

Patellofemoral symptoms fall into two general categories:

• Instability
• Pain

Overlap of Pain and Instability does occur, but most often, symptoms are more directly caused by one or the other.

The history and physical examination, complemented by imaging studies, are helpful in defining as precisely as possible the origin of the patient’s complaint.
PATIENTS FIRST

HISTORY

- Age
- Work & Sporting activities
- Pain
  - Where, when, what, how
  - Pain control measures
- Relevant Previous Surgical History
- Previous management
- Patient EXPECTATIONS
Patient Reports that

• the patella either dislocated (requiring a reduction)
• or shifted laterally (partial dislocation with spontaneous reduction)

❖ Such injuries are typically associated with weight bearing and torsional trauma.
❖ Do not confuse patellar instability with reports of the knee “giving way” or buckling.
❖ Such symptoms typically include the knee collapsing into flexion and are more likely caused by
  ❖ Quadriceps insufficiency secondary to pain,
  ❖ Deconditioning, or
  ❖ Secondary joint effusion.
Radiologic differentiation between tilt and subluxation in Skyline view of Knee
Clinically relevant patellar position relative to the trochlea

A - Axial view demonstrating medial and lateral translation and patellar rotation (commonly called tilt).
B - Coronal view demonstrating internal and external rotation (commonly called spin)
C - Sagittal view demonstrating flexion.
For acute first time dislocations, the Classic treatment is Conservative.

The immediate goals are to reduce inflammation, relieve pain, and stop activities that place excessive loads on the Patellofemoral joint and restore full Range of Motion.

- Treat the knee in a splint with immobilisation
  - maximum 3 weeks
- Quads Strengthening and Hamstring Stretches
- Patellar Bracing or Taping – to restore proper alignment, by stopping lateral patella motion
- Indications for Surgery
  - irreducible dislocations
  - osteochondral Fracture
  - MPFL avulsion
  - Recurrent Dislocations
Patellofemoral Pain

- Patellofemoral Pain commonly Occurs as
  - Pain during prolonged Flexion
  - Pain when going up or down Stairs
  - Pain around or behind Patella

- Nature of Pain
  - Constant, Not Activity Related
  - Sharp & Intermittent Pain
  - Activity related Pain
**Patellofemoral Pain**

- **Constant Pain, Not Activity Related**

**Possible Diagnosis**

- **Sympathetic mediated Pain**
  - Evaluate for signs and symptoms of Sympathetic dysfunction

- **Referred Radicular Pain**
  - Examine hips, lumbar spine, and Saphenous nerve

- **Postoperative Neuroma**
  - Focal tenderness reproducing symptoms, especially over scars
Possible Diagnosis

- Loose bodies
- Unstable Chondral pathology (Chondral Flaps)

- Effusion likely with loose body
- Differentiate from true patellar instability by history and by examining for Patellofemoral ligament laxity
- Investigations X-Ray, MRI
- Management
  - Arthroscopy & Removal of loose bodies
  - Arthroscopy & Chondroplasty
Possible Diagnosis

1. Articular Tissue Overload
   - Post-traumatic Chondromalacia or Arthrosis
   - Degenerative arthrosis from chronic Malalignment

2. Inflammatory Arthritis's, Myalgia's

3. Soft-tissue overload without patellar malalignment
   - Patellar tendinitis
   - Quadriceps tendinitis
   - Pathologic Plica syndrome
   - Fat pad syndrome
   - ITB syndrome
   - Early lateral patellar compression Syndrome
Clinical Features
✧ Focal tenderness over the involved structure

Investigations
✧ MRI for soft tissue assessment
✧ CT scan when, alignment suspected

Management
✧ Rehabilitation
✧ Arthroscopic or open treatment for tendinosis or other specified pathology,
✧ Lateral release if patellar tilt present, without instability and minimal chondrosis
Medial Plica with Cartilage Damage

Lateral Release
Clinical Features

- Effusion
- Crepitus with passive flexion/extension;
- Pain with direct articular compression in various degrees of flexion

Investigations

- Radiographic assessment including patellar axial MRI, CT with or without arthrogram
- Bone scan

Management

- Rehabilitation,
- Realignment with Chondroplasty or resurfacing procedures to unload pathologic lesions,
- Arthroplasty in end-stage conditions
Iwano’s osteoarthritis (OA) classification system (based on axial x-rays)

Stage I - mild OA; the joint space measures at least 3 mm.
Stage II - moderate OA; the joint space measures less than 3 mm, but no bony contact can be seen.
Stage III - severe OA; patellar-trochlear bony contact occurs in less than one quarter of the joint surface.
Stage IV - very severe OA; the joint surfaces entirely touch each other.
Clinical Features
✧ Examine other joints and typical systemic symptoms to confirm
✧ Typically Polyarthritis

Investigations
✧ Serologic testing

Management
✧ Pharmacologic agents
✧ Surgery for Symptoms
The traditional concept of trying to achieve isolated VMO exercise
   - not supported by extensive and persuasive recent literature

Both open kinetic chain exercise (non–weight-bearing) versus closed chain exercise (weight-bearing) have been tried in a group of patients with anterior knee pain

Both types of exercise produced improvements in strength, pain relief, and return to function, however the closed chain exercises produced less pain, better functional improvement and less subjective clicking.

Patellar taping has generated much interest, with studies showing pain relief, alterations in the timing of VMO contraction, and increased exercise tolerance.
Non-Surgical Management

- Any nonsurgical program must include activity modifications, important to get the patient back within his or her envelope of function.
- Particular attention also should be paid to flexibility, especially of the quadriceps, a common deficit in these patients.
- Strengthening must be done without causing pain and may often be facilitated by patellar taping.
- Nonsurgical management should be pursued until both the clinician and patient are certain that a plateau has been reached in the level of pain and function.
- This usually requires at least 3 months of careful and compliant rehabilitation.
Because of the success of nonsurgical management, surgery for anterior knee pain is not necessary in most patients.

Successful surgical treatment requires an accurate diagnosis.

Surgical planning should include taking particular care to ascertain whether there are symptoms of patellar instability or signs of Patellofemoral malalignment on physical examination and imaging studies.
Surgical Management

Arthroscopy & Chondroplasty
✧ Before concluding that the anterior knee pain is caused by chondromalacia of the patella, other causes must be ruled out
✧ Isolated lesions of the articular cartilage of the Patellofemoral joint
✧ Arthroscopic debridement of Outerbridge grade 2 & 3 Chondral lesions can be useful
✧ Traumatic Chondral lesions 60% good/Excellent results, Atraumatic only 40%

Lateral Release
✧ Most patients with pain and a tight lateral retinaculum can be effectively treated nonsurgically.
✧ Indications for the procedure were anterior knee pain with evidence of a tight lateral retinaculum on examination and radiological evidence of Patellar Tilt
Procedures to restore cartilage integrity

✧ have not met with widespread success.
✧ Efforts are ongoing to evaluate the usefulness of autologous chondrocyte implantation and osteochondral transfers
✧ Only relatively small numbers of cartilage-restoring procedures in the Patellofemoral joint have been reported, and *overall results are mixed*
✧ Experience has shown that careful evaluation and correction of Patellofemoral alignment must be included in any surgical procedure
✧ Less aggressive procedures, such as Chondroplasty, Microfracture, or Abrasion, may be equally advantageous and should be considered first-line treatments.
ARTICULAR CARTILAGE REPAIR

1. Arthroscopic biopsy
   - Biopsy of healthy cartilage

2. Operation
   - Collagen graft sutured over cartilage lesion
   - Chondrocytes injected under graft into cartilage lesion

3. Cartilage cells sent to laboratory, millions of chondrocytes grown

4. 2

5. 3
PATIENTS FIRST

SURGICAL MANAGEMENT

Patellofemoral arthroplasty

✧ Can be considered in the presence of true end-stage arthrosis

✧ Resurfacing of the Patellofemoral joint should be done
  ✧ only in low-demand patients
  ✧ after very careful clinical evaluation
  ✧ Clearly shows that this articulation is the sole cause of symptoms

✧ Special care is needed at the time of surgery
  ✧ to ensure that the extensor mechanism is well aligned
Despite the prevalence of anterior knee pain, much is unknown regarding the etiology, pathomechanics, and management of the many of its causes. To label this set of disorders as “Patellofemoral syndrome” is worrisome, because it may deter some clinicians from trying to reach a precise diagnosis. Particularly promising developments include Dynamic MRI and advances in nonsurgical management in treating the entire extremity, with particular emphasis on the key role of the hip muscles in controlling femoral position. Currently, nonsurgical management remains the most predictable method of treatment.