



POSNA

The Core Curriculum

Patellofemoral pain syndrome

Objectives

1. Define patellofemoral pain syndrome, and list other terms used to describe the same constellation of clinical symptoms
2. Describe symptoms and physical findings characteristic of patellofemoral pain syndrome
3. Describe imaging studies useful for the evaluation of patellofemoral pain syndrome
4. Discuss treatment of patellofemoral pain syndrome
5. Discuss prognosis of patellofemoral pain syndrome

Discussion point

1. Of what value is bracing for patellofemoral pain syndrome?
2. What are indications for surgery for patellofemoral pain syndrome

Discussion

Patellofemoral pain syndrome (PFPS) is one of many terms used to describe pain in the region of the patellofemoral articulation. Chondromalacia was previously used to describe this entity until arthroscopy revealed that anatomic chondromalacia had little relation with patellofemoral pain. Anterior knee pain can include other etiologies such as patellar tendinitis, Osgood-Schlatter syndrome, and overuse syndromes. Patellar subluxation refers to a physical or radiographic finding. Patellar malalignment is a reasonable term, as patellofemoral pain appears primarily secondary to some degree of patellar malalignment. PFPS is a relatively common complaint in the skeletally immature, most common in adolescents, but it is not rare in preadolescence. The symptoms are usually well localized to the peripatellar region. Giving way is a common complaint. The so-called movie theater sign - pain with prolonged sitting, is unusual in children. A history of trauma or dislocation is certainly pertinent. A careful physical exam is key. The patient should be observed walking, and an assessment of rotational and angular alignment during gait is performed. The rotational profile of Staheli is performed with the patient in the prone position. Quadriceps tightness is also assessed in this position, normally the heel should be able to be brought to or very near the buttocks. The patellar tendon and tibial tubercle can be palpated in the prone position, with the knee flexed. With the patient supine, posterior pressure on the patella with the knee flexing and extending can give information regarding the location of a problem with a certain area of the patella. Quadriceps strength can be assessed by flexing the contralateral hip and knee and maintaining the extended knee 6 inches off the table against the resistance of the examiner's hand. Palpation of the patella, lateral and medial retinaculum, and patellar tendon is done. The examiner attempts to lift the lateral patellar facet away from the lateral condyle. Ligamentous stability is assessed, along with a check for tenderness at the origin of the medial patellofemoral ligament.

Patellar mobility is evaluated by attempting to displace the patella medially and laterally. The popliteal angle is measured. The Ober test is performed. Tracking is assessed with the patient sitting with the knee over the table, the screw-home mechanism is assessed, and the Q angle noted. Apprehension with lateral stress is noted.

Plain radiography can be very helpful. An axial view, such as the Merchant view, and standing laterals in complete extension and 30 degrees of flexion will demonstrate patella alta or baja. A quick screen is to note whether the patella is longer than 1.2 times the height of the patella. CT and MRI have been helpful in further assessment. A properly positioned lateral view can reveal lateral tilt of the patella. Sonography can rapidly and inexpensively evaluate the cartilage contour, which is invariably different than the bone contour.

The mainstay of treatment for patellofemoral pain is quadriceps strengthening and hamstring stretching. Straight leg raises seem to be as good a method as any. Whether so-called open chain (for example, using just the terminal 30 degree arc of extension) or closed chain exercise is superior has not been settled. Either straight leg raises or short arc exercises in the terminal 30 degrees avoids patellofemoral contact. Bracing is of little biomechanical value, although it does sometimes appear to provide some symptomatic improvement. The outlook for PFPS is good if quadriceps strengthening is performed, and surgery is rarely necessary.

Arthroscopy is generally the next step if a conscientious exercise program fails, and imaging studies reveal a correctable lesion. If a lateral tilt is confirmed, a lateral release is generally performed. This procedure is more effective for tilt than subluxation. Either proximal or distal realignment procedures (or both) must augment lateral release for subluxation. The vastus medialis is often dysplastic inserting into the quadriceps tendon superior to the patella, if so, the vastus is transferred distally. Distal realignment is now carefully performed to avoid posterior displacement of the patellar tendon insertion. A number of procedures providing anterior displacement of the insertion are described to avoid this, but none are particularly suited to the skeletally immature. The Roux-Goldthwaite procedure has been in use for almost a century as a method of medial transfer of the patellar tendon insertion; little has been written on this since the favorable report of Chrisman and Snook a generation ago.

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