Anterior Knee Pain

CHAPTER 28

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Anterior knee pain is the most common presenting symptom in many physiotherapy and sports physician practises.[1] It contributes substantially to the 20–40% of family practise consultations that relate to the musculoskeletal system.[2] Two common causes of anterior knee pain in sportspeople are patellofemoral pain and patellar tendinopathy. The anterior knee anatomy is depicted in Figure 28.1.

In this chapter, we first outline a practical approach to assessing the patient with anterior knee pain, particularly with a view to distinguishing the common conditions; we then detail their management. The chapter concludes with an outline of other causes of anterior knee pain such as fat pad impingement, which may mimic features of both patellofemoral pain and patellar tendinopathy.

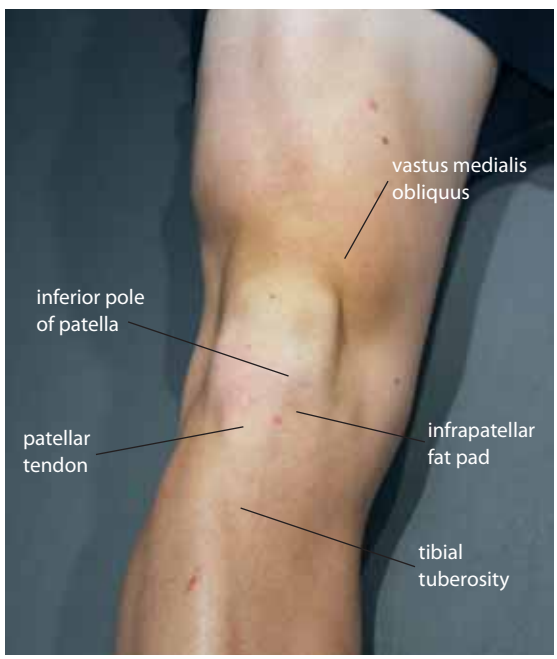
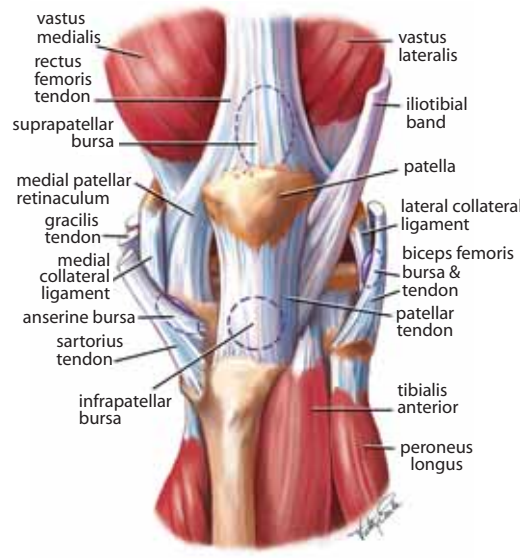


Figure 28.1 Anterior aspect of the knee

(a) Surface anatomy

Clinical approach

Distinguishing between patellofemoral pain and patellar tendinopathy as a cause of anterior knee pain can be difficult as their clinical features can be similar. Furthermore, on occasions, the two conditions may both be present. The causes of anterior knee pain are listed in Table 28.1.



(b) Anatomy

Table 28.1 Causes of anterior knee pain

Common	Less common	Occasionally seen/specific populations	Not to be missed
Patellofemoral pain	Synovial plica	Sinding-Larsen–Johansson lesion	Referred pain from the hip
Patellar tendinopathy	Pre-patellar bursitis	Tenoperiostitis of upper tibia	Osteochondritis dissecans
	Quadriceps tendinopathy	Stress fracture of the patella	Slipped capital femoral epiphysis
	Infrapatellar bursitis	Osgood-Schlatter lesion	Perthes' disease
	Patellofemoral instability		Tumor (especially in the young)
	Fat pad impingement		

History

There are a number of important factors to elicit from the history of a sportsperson with the general presentation of 'anterior knee pain'. These include the specific location of the pain, the nature of aggravating activities, the history of the onset and behavior of the pain, and any associated clicking, giving way or swelling.

Although it may be difficult for the patient with anterior knee pain to be specific, the area of pain often gives an important clue as to which structure is contributing to the pain. For example, retropatellar or peripatellar pain suggests that the patellofemoral joint (PFJ) is a likely culprit, lateral pain localized to the lateral femoral epicondyle indicates iliotibial band friction syndrome (Chapter 29), and inferior patellar pain implicates the patellar tendon or infrapatellar fat pad. The patient who presents with bilateral knee pain is more likely to have patellofemoral pain or tendinopathy than an internal derangement of both knees.

The type of activity that aggravates the anterior knee pain also aids diagnosis. Consider two contrasting scenarios that both describe pain at the infrapatellar region. In one case, precipitating activities, such as basketball, volleyball, high, long or triple jumps, involve repetitive loading of the patellar tendon. This suggests the diagnosis of patellar tendinopathy. On the other hand, if a swimmer presented reporting pain following tumble turning or vigorous kicking in the pool, where there had been no eccentric load on the tendon but a forceful extension of the knee, the practitioner should suspect an irritated fat pad. The mechanism of injury and the aggravating features are critical to accurate diagnosis.

The onset of typical patellofemoral pain is often insidious but it may present secondary to an acute traumatic episode (e.g. falling on the knee) or post other knee injury (e.g. meniscal, ligament) or knee surgery. The patient presents with a diffuse ache, which is usually exacerbated by loaded activities, such as stair ambulation or running. Sometimes patellofemoral pain is aggravated by prolonged sitting ('movie-goer's knee'), but sitting tends to aggravate pain of patellar tendinopathy so is not diagnostic of patellofemoral pain. Pain during running that gradually worsens is more likely to be of patellofemoral origin, whereas pain that occurs at the start of activity, settles after warm-up and returns after activity is more likely to be patellar tendinopathy. Table 28.2 is an aid to clinical differentiation of patellofemoral pain, patellar tendinopathy and fat pad impingement. As these conditions can coexist, accurate diagnosis can be challenging.

A history of recurrent crepitus may suggest patellofemoral pain. A feeling that the patella moves laterally at certain times suggests recurrent patellofemoral instability. An imminent feeling of giving way may be associated with patellar subluxation, patellofemoral pain or meniscal abnormality, although frank, dramatic giving way is usually associated with anterior cruciate ligament instability (Chapter 27). Nevertheless, giving way due to muscle inhibition, or due to pain, is not uncommon in anterior knee pain presentations.

A history of previous knee injury or surgery may be important, for example, patellofemoral pain is a well-recognized complication of posterior cruciate ligament injury (Chapter 27). An injury that is associated with an effusion may result in inhibition of the vasti (reduced magnitude and onset of timing on EMG). This inhibition appears to be more profound in the vastus medialis obliquus (VMO), especially at smaller knee effusion volumes.[3] Preferential inhibition of the VMO has the potential to set up an imbalance in the medial and lateral forces on the patella, predisposing to patellofemoral pain. Significant knee swelling is rare in primary anterior knee pain and generally suggests additional intra-articular abnormality. However, a small effusion may be present with patellofemoral pain.