

HIP AND KNEE PAIN

THE MAJORITY OF KNEE AND HIP DISEASES AND SYNDROMES CAN BE DIAGNOSED OR SUSPECTED WITH A FOCUSED HISTORY AND EXAMINATION

Table 278-1 Suggested Clues for the Differential Diagnosis of Hip and Knee Pain

Determine the location of the pain to narrow down the potential diagnosis.
Determine the activities that bring on the pain.
The knee "giving out" or "buckling" generally is due to pain and reflex muscle inhibition rather than an acute neurologic emergency. This complaint may also represent patellar subluxation or ligamentous injury and joint instability.
Poor conditioning or quadriceps weakness generally causes anterior knee pain of the patellofemoral syndrome; therapy should address this weakness.
Locking of the knee suggests a meniscal injury, which may be chronic.
A popping sensation or sound at the onset of pain is reliable for a ligamentous injury.
A recurrent effusion after activity suggests a meniscal injury.
Pain at the joint line suggests a meniscal injury.

IMAGING:

- HISTORY AND PHYSICAL EXAM ARE **SUPPLEMENTED BY IMAGING**
- For the majority of soft tissue injuries or overuse syndromes, radiographs are not particularly useful
- MRI is the test of choice and provides great detail about soft tissue, meniscal, cartilaginous, ligamentous, tendinous and bony abnormalities → usually ordered on an outpatient basis (i.e. NOT IN ED)

REGIONAL NERVE ENTRAPMENT SYNDROMES:

MERALGIA PARASTHETICA:

- Compressive inflammation OF THE LATERAL FEMORAL CUTANEOUS NERVE → the nerve enters the thigh near the ASIS and is subject to a variety of recurrent, minor traumatic events
- Symptoms include pain to the hip area, thigh or groin along the anterior/lateral aspect of the thigh, burning or tingling or hypersensitivity to light touch
- Obvious treatment is to remove the source → often repetitive hip flexion, add NSAIDS and potentially local injections

OBTURATOR NERVE ENTRAPMENT:

- Usually follows trauma and pelvic fractures → focal tenderness is noted at the site of the entrapment of the abdominal cutaneous nerve
- Exercise-induced medial thigh pain may be the predominant syndrome
- Surgery may be required

ILIOINGUINAL NERVE ENTRAPMENT:

- Arises from the lumbar plexus and passes through the psoas muscle to reach the groin, scrotum or labia → entrapment results from hypertrophy of abdominal wall muscles or with pregnancy
- Pain increases by hip hyperextension

PIRIFORMIS SYNDROME:

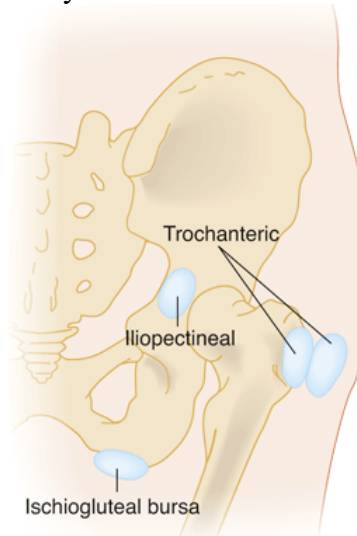
- Irritation of the sciatic nerve as it passes close to piriformis → pain in the area of the buttocks and hamstrings made worse by sitting, or squatting
- Hip flexion and internal rotation exacerbate the symptoms
- Treatment is conservative

PSOAS ABSCESS:

- It is thought that psoas is susceptible to abscess due rich blood supply and proximity to overlying retroperitoneal lymphatic channels
- Staph aureus implicated in 80% cases
- Symptoms include abdominal pain radiating to the hip, flank pain, fever and LIMP
- Presentation may be insidious
- Ask the patient to raise their hip against your hand → causes pain
- Diagnosis confirmed by CT
- Treatment is IV antibiotics and surgical consultation for percutaneous drainage most commonly

SPECIFIC BURSAL SYNDROMES OF THE HIP:

- Bursae are self-contained flat sacs lined with synovium that reduce friction between tissues
- Causes of bursal pain include inflammation, infection, rheumatologic disorders and crystalline disease
- There is huge overlap in cell counts of bursal fluid with inflammation and infection
- Locations of most commonly involved bursae shown below



TROCHANTERIC BURSITIS (POSTEROLATERAL HIP PAIN):

- Lies between gluteus maximus and posterolateral greater trochanter
- Commonly seen in older women
- Pain on lying on affected side
- Examination reveals pain over greater trochanter and pain to resisted abduction

ILIOPSOAS BURSITIS (GROIN PAIN):

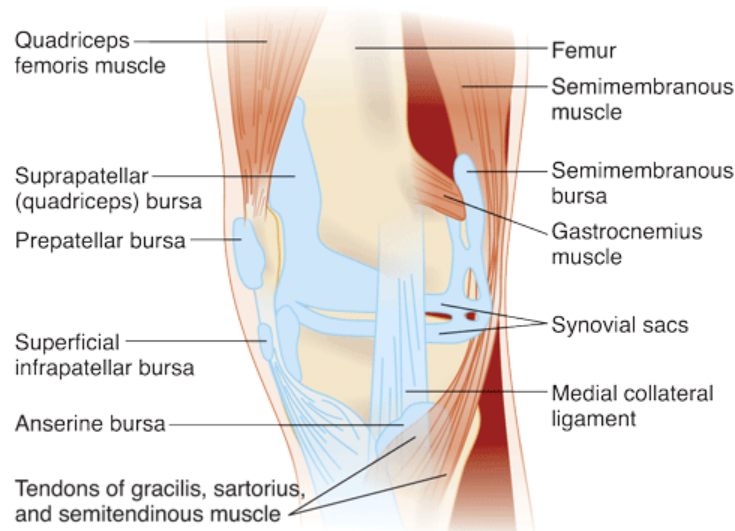
- Largest bursa in the hip
- Pain to extension of the hip, which can be reduced with flexion → think also tendinitis, hernias, adenopathy or psoas abscess

ISCHIAL OR ISCHIOGLUTEAL BURSITIS (POSTERIOR/GLUTEAL PAIN)

- “WEAVER’S BOTTOM” → exacerbated by sitting on a hard surface for long periods → occurs in sedentary individuals

SPECIFIC BURSAL SYNDROMES OF THE KNEE:

- BURSAE OF THE KNEE SHOWN BELOW



PES ANSERINE BURSITIS (ANTEROMEDIAL KNEE PAIN):

- This bursa lies deep to the three tendons that insert on the medial aspect of the tibia it is commonly seen in obese women with OA of the knee, in runners and other forms of overuse
- Presents with anteromedial pain and focal swelling

PREPATELLAR BURSITIS (PAIN ANTERIOR TO THE PATELLA):

- AKA “housemaid’s knee”, nun’s knee → relates to mechanism of inflammation through repetitive kneeling on hard surfaces
- Pain is mild with restricted range of motion due to swelling

- Occasionally swelling is so significant that it must be differentiated from a joint effusion or septic bursitis



TREATMENT OF BURSTITIS:

- Treatment aimed at suspected cause
 - For inflammatory causes → rest, heat and time with NSAIDs are the basis of conservative treatment.
 - Steroids may be needed occasionally → do not inject steroids into tendons → predisposes them to rupture
- If infection suspected → admit for IV antibiotics

MYOFASCIAL SYNDROMES (OVERUSE):

HIP:

SNAPPING HIP SYNDROME:

- A snapping sound is heard and popping sensation felt as the ITB slips over the greater trochanter
- Patient's can voluntarily cause the snap with hip flexion and extension
- Need to exclude intra-articular foreign body as cause

FASCIA LATA SYNDROME (LATERAL THIGH PAIN):

- Potential cause of pain in lateral thigh
- Athletes will develop pain in anterior groin and point tenderness over anterior iliac crest

KNEE:

PATELLOFEMORAL SYNDROME (RUNNER'S KNEE, ANTERIOR KNEE PAIN):

- Major cause of anterior knee pain
- Three typical causes:
 - Focal trauma (least common)
 - Overuse
 - Abnormal patellar tracking as it moves in the patellar groove
 - Major contributor to abnormal tracking is WEAKNESS OF THE QUADRICEPS MUSCLES
- Pain is gradual in onset and non radiating, usually unilateral
- If lifting the patella away from the knee while passively bending and straightening the knee relieves pain, then the patellofemoral joint is the likely cause of pain
- Treatment involves conservative measures, with emphasis on physio and strengthening of the quadriceps

ILIOTIBIAL BAND SYNDROME (LATERAL KNEE PAIN):

- Common in distance runners/cyclists
- ITB inserts on the lateral femoral and tibial condyles → stabilises the joint in extension
- Typified by tenderness to palpation over lateral epicondyles
- Treatment → rest, decreased running distance, strengthening abductors of hip, stretching

POPLITEUS TENDINITIS:

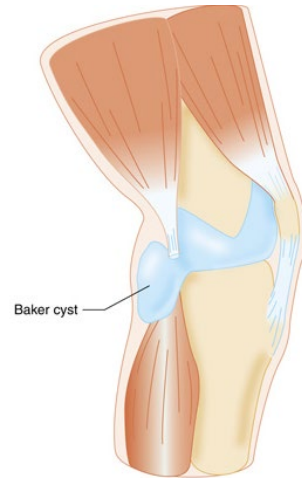
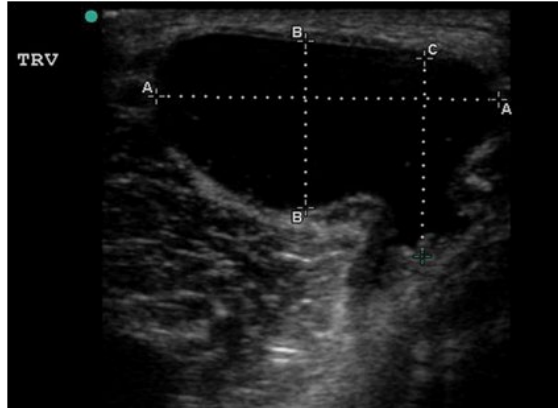
- POSTERIOR LATERAL KNEE PAIN common with excessive use of quadriceps
- Worsened by running downhill
- Treatment is rest and eventual quadriceps rehabilitation, aided by ice/NSAIDS

PATELLAR TENDINITIS (JUMPER'S KNEE, ANTERIOR/SUPERIOR PAIN):

- Any activity that involves jumping can result in focal pain, typically at the inferior pole of the patella or proximal portion of the tendon
- Exacerbated by running (especially uphill), standing from sitting → can progress to discomfort at rest
- Treatment → rest, ice, NSAIDS
- STEROIDS ARE CONTRAINDICATED

POPLITEAL (BAKER) CYST (POSTEROINFERIOR KNEE PAIN):

- Develops posteriorly and inferiorly to the knee as a distention of a local bursa and frequently communicates with the knee
 - Associated intra-articular pathology is common
- Popliteal DVT can be confused with the pain and swelling but can also coexist
- US is useful for evaluation and identifying other conditions (DVT, aneurysm, vascular tumours)
- Excision may be required after full evaluation



BONE/ARTICULAR DERANGEMENTS (DIFFUSE/VARIED JOINT PAIN)

OSTEONECROSIS:

- Bone infarction caused by ischaemia (avascular necrosis) can be idiopathic, but most often follows trauma

Table 278-2 Conditions Associated with Avascular Necrosis of the Femoral Head

Traumatic
Femoral neck fracture
Hip dislocation
Occult or minor trauma
Nontraumatic
Sickle cell disease
Collagen vascular diseases
Alcohol abuse
Renal transplant
Systemic lupus erythematosus
Dysbarism
Chronic pancreatitis
Exogenous steroid administration
Cushing disease
Caisson disease
Gaucher disease
Renal osteodystrophy
Idiopathic

- Plain radiographs are helpful → mottled densities to severe collapses of the femoral head. Joint replacement may be required



OSTEOMYELITIS:

- An infection of the bone by bacteria or fungus, resulting in bony changes and destruction
- It develops by spread of infection from contiguous structures in 80% of instances or by haematogenous spread in 20%
- RISK FACTORS:

Table 278-3 Risk Factors, Likely Infecting Organism, and Recommended Initial Empiric Antibiotic Therapy for Osteomyelitis

Risk Factor	Likely Infecting Organism	Recommended Initial Empiric Antibiotic Therapy*
Elderly, hematogenous spread	<i>Staphylococcus aureus</i> , including MRSA, gram-negative bacteria	Vancomycin, 1 gram IV, plus piperacillin-tazobactam, 3.375 grams IV or imipenem, 500 milligrams IV
Sickle cell disease	<i>Salmonella</i> , gram-negative bacteria, (<i>S. aureus</i> becoming more common)	Ciprofloxacin, 400 milligrams, consider vancomycin, 1 gram IV
Diabetes mellitus, or vascular insufficiency	Polymicrobial: <i>S. aureus</i> , <i>Streptococcus agalactiae</i> , and <i>S. pyogenes</i> plus coliforms and anaerobes	Vancomycin, 1 gram IV, plus piperacillin-tazobactam, 3.375 grams IV, or imipenem, 500 milligrams IV
Injection drug user	<i>S. aureus</i> including MRSA, and <i>Pseudomonas</i>	Vancomycin, 1 gram IV
Developing nations	<i>Mycobacterium tuberculosis</i>	See Chapter 70, Tuberculosis
Newborn	<i>S. aureus</i> including MRSA, gram-negative bacteria, Group B <i>Streptococcus</i>	Vancomycin, 15 milligrams/kg load, then reduce dose, plus ceftazidime, 30 milligrams/kg IV every 12 h
Children	<i>S. aureus</i> including MRSA	Vancomycin, 10 milligrams/kg every 6 h, plus ceftazidime, 50 milligrams/kg every 8 h
Postoperative with or without retained orthopedic hardware	<i>S. aureus</i> and coagulase-negative staphylococci	Vancomycin, 1 gram IV
Human bite	Streptococci or anaerobic bacteria	Piperacillin-tazobactam, 3.375 grams IV, or imipenem, 500 milligrams IV
Animal bite	<i>Pasteurella multocida</i> , <i>Eikenella corrodens</i>	Cefuroxime, 500 milligrams IV if known <i>P. multocida</i> , piperacillin-tazobactam, 3.375 grams IV or imipenem, 500 milligrams IV

- Pain at the site is UNIVERSAL and may be accompanied by warmth, erythema and swelling
- MRI is the preferred imaging modality (95% sensitivity) but bone biopsy is the gold standard
- Blood cultures may identify the causative agent, but when these are negative, bone biopsy is needed to ID causative organism
- ENSURE COVERAGE FOR STAPH AUREUS, which is the most common causative organism

Empirical therapy

For empirical therapy of osteomyelitis, use:

di/flucloxacillin 2 g (child: 50 mg/kg up to 2 g) IV, 6-hourly.



For patients hypersensitive to penicillin (excluding immediate hypersensitivity, see [Table 2.2](#)), use:

cephazolin 2 g (child: 50 mg/kg up to 2 g) IV, 8-hourly.



For patients with immediate penicillin hypersensitivity (see [Table 2.2](#)), use initially:

vancomycin 1.5 g (child less than 12 years: 30 mg/kg up to 1.5 g) IV, 12-hourly (adjust dosage for renal function and monitor blood concentrations, see [Dosing and monitoring of vancomycin](#); slow infusion required).



Adjust therapy according to culture and susceptibility results.

Suggested duration of therapy for osteomyelitis caused by MSSA or MRSA (Table 2.3)

Age group (infection type)	Duration of antibiotic therapy (modified by clinical response)	
	<i>Intravenous (minimum) [NB1]</i>	<i>Total duration (completed with oral antibiotics)</i>
neonates (acute)	4 weeks	4 weeks (all IV)
children (acute)	3 days	minimum 4 weeks
adults (acute)	4 weeks [NB2]	minimum 6 weeks
children (chronic)	may not be necessary	many months
adults (chronic)	2 weeks	many months

OSTEOCHONDRITIS DISSECANS (KNEE PAIN):

- A portion of the joint surface cartilage separates from the underlying bone
- Rare, seen most often in adolescents and is of unclear origin
- The lateral portion of the medial femoral condyle is most often involved
- Patient will present with pain and swelling
- Arthroscopic repair of the lesion or removal of associated loose bodies is required if conservative therapy fails

PAGET DISEASE (OSTEITIS DEFORMANS):

- A chronic disorder resulting in enlarged, deformed and weakened bones from overactive breakdown and reformation
- Hip is involved in 50% cases
- Disease is familial
- Patients complain of pain and have elevated ALP
- Treatment is symptomatic and involves medications that slow the rate of bone turnover (calcitonin, bisphosphonates)
- Surgery is required for fractures/severe arthritis

OSTEITIS PUBIS (MIDLINE PELVIC/GROIN PAIN):

- Considered in athletes with pain in the region of the pubis
- Also occurs in and following pregnancy, and after bladder and prostate surgery
- Pain with any movement of the legs
- Waddling gait
- Symptoms may resolve completely over a period of months with rest and NSAID use
- Rarely, arthrodesis of the pubic symphysis may be required with local debridement