Walk It Off… Or Not?

A Practical Approach to the Child Who Won’t Bear Weight

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Walk It Off… Or Not

By the end of this session, participants will be able to:

1. Develop a structured approach to evaluating a child presenting with limp or refusal to bear weight.
2. Differentiate septic arthritis and osteomyelitis from more common benign causes such as transient synovitis and viral myositis.
3. Apply clinical features and laboratory data to risk-stratify children with suspected septic arthritis.
4. Recognize red flags that warrant urgent imaging, specialty consultation, or hospital admission.
5. Outline appropriate management and follow-up strategies for children who are safe for outpatient care.

Walk It Off… Or Not

- No conflicts of interest to declare.

The Limping Child

- Common in the ED. Often benign … But occasionally:
  - septic arthritis
  - osteomyelitis
  - fracture
  - malignancy
- Key challenge:
  - **Who can walk it off — and who cannot?**

Case A:

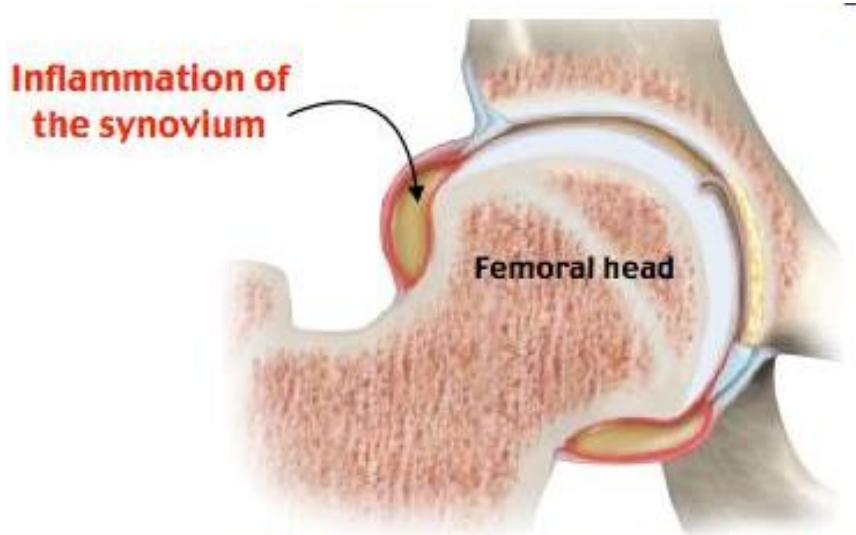
- 11 yo M
  - Left hip pain x 2/7
  - Recent febrile illness x 3/7
  - One episode vomiting
  - No trauma
- OE:
  - 37.2C 83 106/58 98% RA
  - Limping, painful ROM L hip
- Who would order labs?
- Who would order imaging?
- Who would discharge?
- Differential?

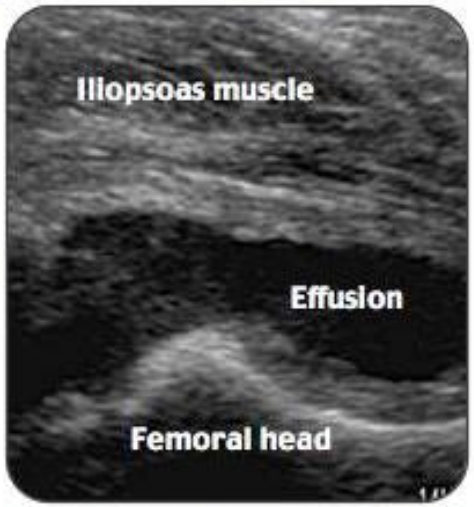
- **INVESTIGATIONS:**
- WBC 8.6, neut 5.5, Hb 127, plt 370
- ESR 25, CRP sent
- Blood culture sent
- US – no effusion
- XR – no fracture seen, nil acute

- **Dx: Transient Synovitis**
- DC home

Transient Synovitis

- Common cause of limp in children.
- Typical features:
  - age **3–10 years**
  - **recent viral illness**
  - mild hip pain / limp
  - usually **afebrile or low fever**
  - **able to bear some weight**
- Course:
  - self-limited
  - improves over **3–7 days**





- Most common cause of acute hip pain in children aged 3-10 yrs
- Often preceded by URI
- Supportive care with NSAIDs
- Associated with Legg-Calvé-Perthes

Case B

- 5 yo F
  - Recent URI x 4/7, fever x 3/7
  - WIC: “GAS pharyngitis” > on amox
  - Bilateral calf pain
- OE:
  - 37.7 C HR 116 R 20 105/73 99% RA
  - Hesitant but able to walk in plantar flexion
  - Normal sensation, reflexes
- Who would order labs?
- Who would order imaging?
- Who would discharge?
- Diagnosis?

- **INVESTIGATIONS:**
- WBC 2, ANC 0.5
- CK 500
- Flu swabs negative
- UA clear
- Cultures sent

- Diagnosis:
- **Benign Acute Childhood Myositis**
- DC home

Benign Acute Childhood Myositis

- Classic features:
- • age **5–10***
  • recent **viral illness (often influenza)**
  • **sudden bilateral calf pain**
  • refusal to walk / tiptoe gait
- Labs:
  - **CK elevated (1000-4000)***
  - **leukopenia common**
- Course:
  - dramatic presentation
  - **resolves in 3–5 days**

Who bounces back?

Child A

- 11 yo with hip pain
- Recent febrile illness
- Imaging and labs normal

Child B

- 5 yo with calf pain
- Recent URI, GAS pharyngitis
- CK 500, WBC 2.0 (neut 0.5), flu negative

Child A

- 11yoM RTER 9 days later, worsening pain, unable to walk
- 37.6C HR 88 109/61 99% RA
- Taking OTC analgesia ++, no fevers noted
- WBC 16.6, neut 14.4, plt 576
- ESR 29, CK 41, (Prev ESR 25 and CRP 29.9)
- Prev culture negative. Repeat cultures drawn
- +++ pain with ROM
- XR – normal. No local US avail

Child A

- Transferred to HSC for US/ further work up.
- US: No effusion
- Repeat labs: WBC 17.5, neut 15, plt 531, ESR 46, CRP 71
- Ortho: “not septic arthritis. ?psoas abscess ?OM”
- Admitted peds pending MRI
- MRI: multifocal areas of enhancing bone marrow changes involving the sacrum, SI joint, distal femur, prox tibia. No abscess or collections seen.
- DDx: **Consider multifocal osteomyelitis vs inflammatory bone disease (eg CRMO)**

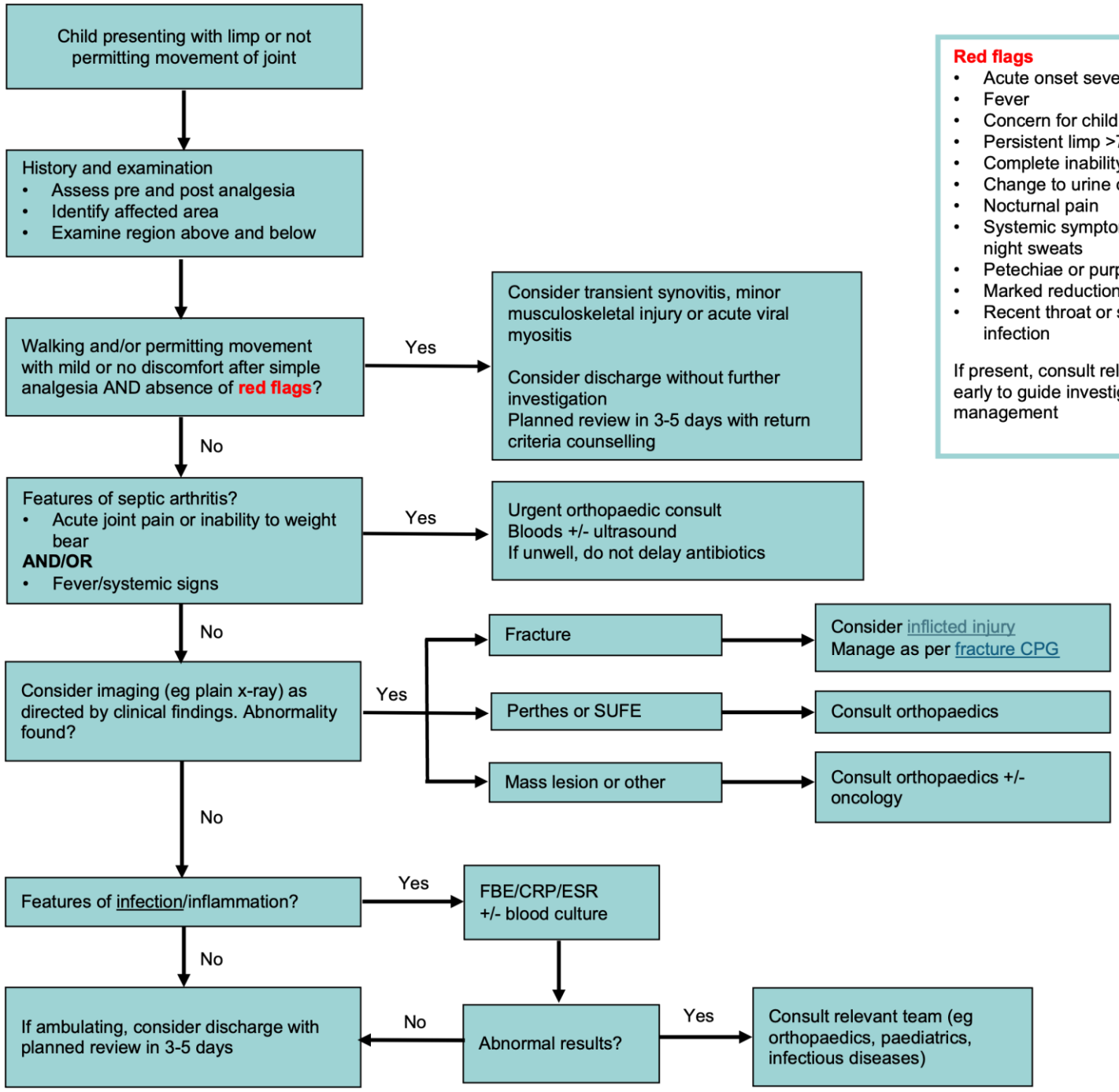
Final Diagnosis

- Blood cultures + MSSA (both MAHC and HSC)
- Dx: Subacute multifocal osteomyelitis and septic L SI joint
- Full body MRI – no other new areas.
- ECHO – Stills murmur, no vegetations
- Ortho: “non surgical mgmt.”
- ID: “15d Ancef 2g TID then 2 months Keflex 1500mg qAM, 1000mg qnoon and 1500mg qhs. “
- Rheum: “unlikely CNOM, CRMO.” Followed as outpatient.
- Full recovery

Approach to the Child Who Won’t Bear Weight

- Where to start?

Approach to the Child Who Won't Bear Weight



Approach to the Child Who Won't Bear Weight

- 1) Is the child sick?
- 2) What is the pattern of the pain?
- 3) What investigations are needed?

Most limping children are benign - the challenge is identifying the few who are not.

1) Is the child sick?

RED FLAGS

- Fever >38.5°C
- Ill appearance
- Severe pain
- Refusal to move the limb
- Persistent inability to bear weight >7d
- Night pain / systemic symptoms
- Concern for non-accidental trauma
- Recent throat/skin/strep infection
- Petechia or purpura

Concern for:

- **Septic arthritis**
- **Osteomyelitis**
- **Malignancy**
- **Trauma**

2) What is the pattern of the pain?

Pattern	Key Diagnoses to Consider	Exam Clues
Muscle	Viral myositis, rhabdomyolysis, pyomyositis	**Bilateral calf pain,** muscle tenderness, pain with aROM/stretch, normal joint ROM
Joint	Septic arthritis, transient synovitis, JIA, Reactive arthritis	Painful ↓ **ROM**, joint irritability, refusal to move joint, in position of comfort
Bone	Osteomyelitis, fracture (toddler's #), Legg-Calve-Perthes, SCFE, Tumor	**Focal bony tenderness,** pain w percussion/WB, preserved ROM early

Common causes of limp / difficulty walking in children

All Ages – Always Consider	
Trauma: fracture, hemarthrosis, soft tissue injury **Infection**: septic arthritis, osteomyelitis, discitis	**Neuro/ Malignancy**: Guillain-Barré syndrome, Muscular dystrophy, Intracranial pathology, malignancy **Systemic/Inflammatory**: dermatomyositis, polymositis, serum sickness, sickle cell

TODDLERS (1–3 yrs)	CHILDREN (4–10 yrs)	ADOLESCENTS (11–16 yrs)
Red flags: Non-accidental trauma Septic Arthritis **Common:** Transient synovitis Toddler's fracture ** **Classic:** Developmental dysplasia of the hip Juvenile idiopathic arthritis IgA vasculitis (HSP) **Other** Hemophilia Benign acute childhood myositis	**Red Flags:** Osteomyelitis **Common:** Transient synovitis **Classic:** Legg-Calvé-Perthes disease** Juvenile idiopathic arthritis **Other** Rheumatic fever IgA vasculitis (HSP) Hemophilia Benign acute childhood myositis	**Red Flags:** Slipped capital femoral epiphysis (SCFE) ** **Common:** Overuse injuries **Other:** Osteochondritis dissecans Inflammatory arthritis

3) What investigations are needed?

- **Muscle:** CK ± urine dip
- **Joint:** X-ray → ultrasound → labs (CBC, ESR, CRP)
- **Bone:** X-ray → MRI

- XR – Fracture, SCFE, Perthes, Tumors
- US – will detect effusion
- MRI – best for osteomyelitis and deep infection

MD+CALC Search "QT interval" or "QT"

Kocher Criteria for Septic Arthritis

Distinguishes septic arthritis from transient synovitis in a child with an inflamed hip.

When to Use | Pearls/Pitfalls | Why Use

Non weight-bearing	No 0	Yes +1
Temp > 38.5°C / 101.3°F	No 0	Yes +1
ESR > 40mm/hr	No 0	Yes +1
WBC > 12,000 cells/mm3	No 0	Yes +1

# Criteria	Risk of Septic Arthritis
0	<1%
1	~3%
2	~40%
3	~90%
4	~99%

+ CRP >20mg/L

Disposition?

- **Consult Orthopedics**
  - Suspected **septic arthritis (HSC)**
  - **Osteomyelitis**
  - **SCFE**
  - Displaced fractures
  - Unclear diagnosis with inability to bear weight/ vs peds.
- Safe Discharge Reasonable if:
  - Child well appearing
  - Reassuring exam and imaging
  - Improving symptoms
  - Able to ambulate or expected to improve
  - Reliable follow-up
  - Examples: viral myositis, transient synovitis, minor trauma
- Always give **clear return precautions**.

Applying the framework

- Child A
  - Initially – not sick, joint, reassuring Ix, safe for DC home
  - Return – sick, joint vs bone, MRI -> Dx osteomyelitis/septic SI
- Child B
  - Not sick, muscle pattern, minimal Ix, safe for DC home

Walk it off… or not?

- Most limping children have benign causes
  - Transient synovitis, minor injury, viral myositis
- Red flags matter
  - Fever, inability to bear weight, severe pain
- Early presentations can look similar
- Use a structured approach
  - Sick? Red Flags?
  - Where is the pain? Pattern?
  - Targeted investigations
    - Understand limitations.
- Reassessment is critical.

Thank you!