

A 7-year-old boy has been complaining of left hip pain for the past 8 months. Over recent weeks, he has developed a limp. When you examine his gait, you note that he takes short steps with his left leg. On physical examination, his left hip has significantly limited range of motion, and there is atrophy of the left proximal thigh muscle. X-ray of the patient's pelvis is shown below:



Which of the following is most likely responsible for this patient's condition?

- ☐ A. Slipped epiphysis
- ☐ B. Bone infection
- ☐ C. Osteonecrosis
- ☐ D. Muscle dystrophy
- ☐ E. Synovitis
- ☐ F. Malignancy

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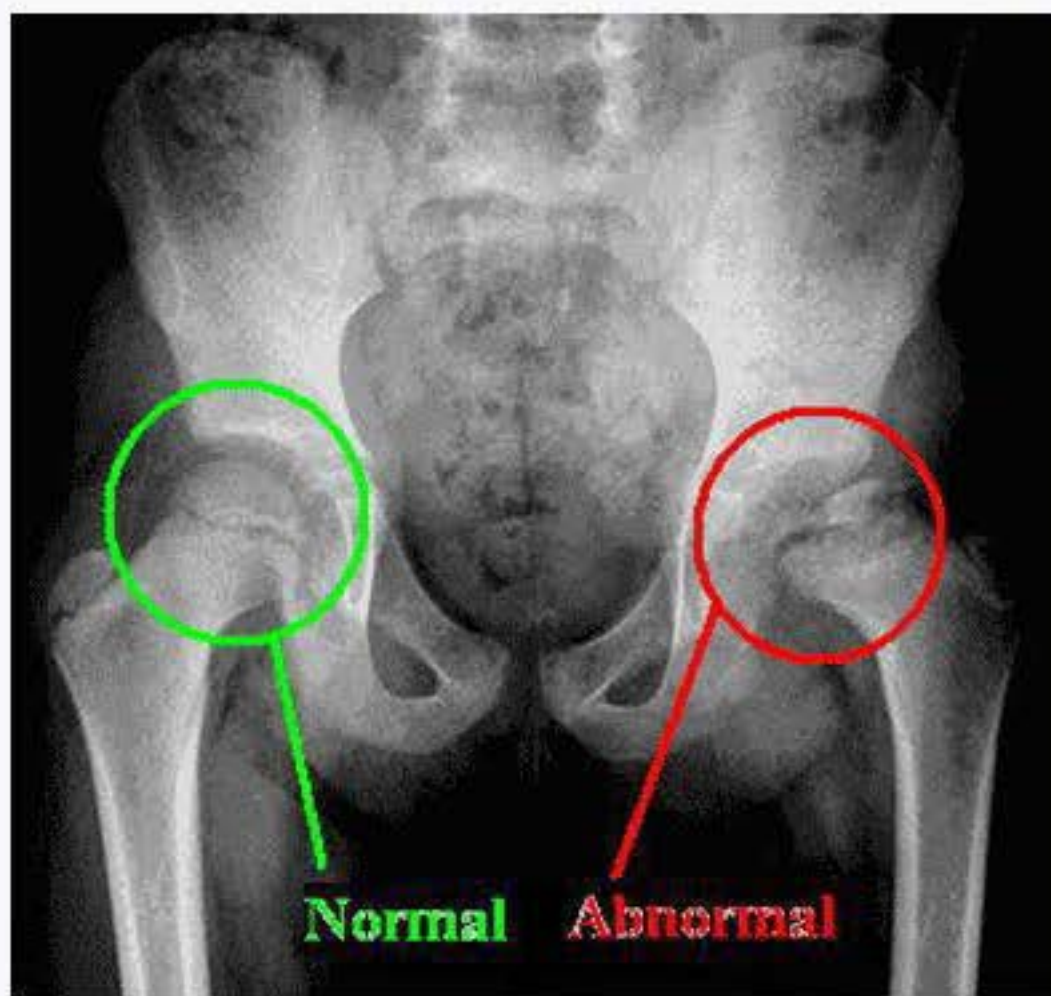
- ☐ A. Slipped epiphysis [19%]
- ☐ B. Bone infection [1%]
- ☒ C. Osteonecrosis [75%]
- ☐ D. Muscle dystrophy [1%]
- ☐ E. Synovitis [1%]
- ☐ F. Malignancy [3%]

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Explanation:

User Id: [REDACTED]

X-ray of this patient's pelvis shows a flattened and fragmented left femoral head. The alternating regions of lucency and density reflect replacement of necrotic bone by new bone. Compare the circled regions below:



These clinical and radiographic findings are characteristic of idiopathic avascular necrosis of the femoral capital epiphysis, or Legg-Calvé-Perthes disease. This condition most commonly affects boys between ages 4 and 10, with a peak incidence between 5 and 7. The classic presentation is hip, groin or knee pain plus an antalgic gait. In general, these patients are managed conservatively with observation and bracing, though surgery may be indicated in cases where the femoral head is not well contained within the acetabulum.

(Choice A) In slipped capital femoral epiphysis (SCFE), the metaphysis and proximal femur slip relative to the epiphysis at the epiphyseal plate. The capital femoral epiphysis remains structurally intact within the acetabulum. The classic presentation is an obese adolescent male with complaints of pain.

(Choice B) In pediatric patients, the most common etiology of osteomyelitis is hematogenous seeding by *S. aureus*. The infection tends to affect the metaphysis, with epiphyseal sparing. Radiographic evidence of osteomyelitis is subtle early in the course of the disease.



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(Choice D) Duchenne muscular dystrophy, the most common childhood myopathy, causes proximal muscle weakness and calf pseudohypertrophy. The disease progresses to complete immobility by early adolescence. Joint radiographs are usually normal.

(Choice E) Transient synovitis of the hip is a common cause of limp in otherwise healthy children. There are no associated radiographic abnormalities.

(Choice F) Osteosarcoma is a primary bone cancer that produces a finding called Codman's triangle in the metaphyses of long bones. Ewing sarcoma is a primary bone cancer that causes similar radiographic findings, but which tend to affect the diaphyses of long bones.

Educational objective:

Unilateral subacute hip pain in a male child coupled with a progressive antalgic gait, thigh muscle atrophy, decreased hip range of motion, and collapse of the ipsilateral femoral head on plain pelvic x-rays are findings suggestive of idiopathic avascular necrosis of the femoral capital epiphysis (Legg-Calvé-Perthes disease).