

67 year-old female with bilateral femoral and tibial pain, history of bilateral knee arthroplasties several years prior

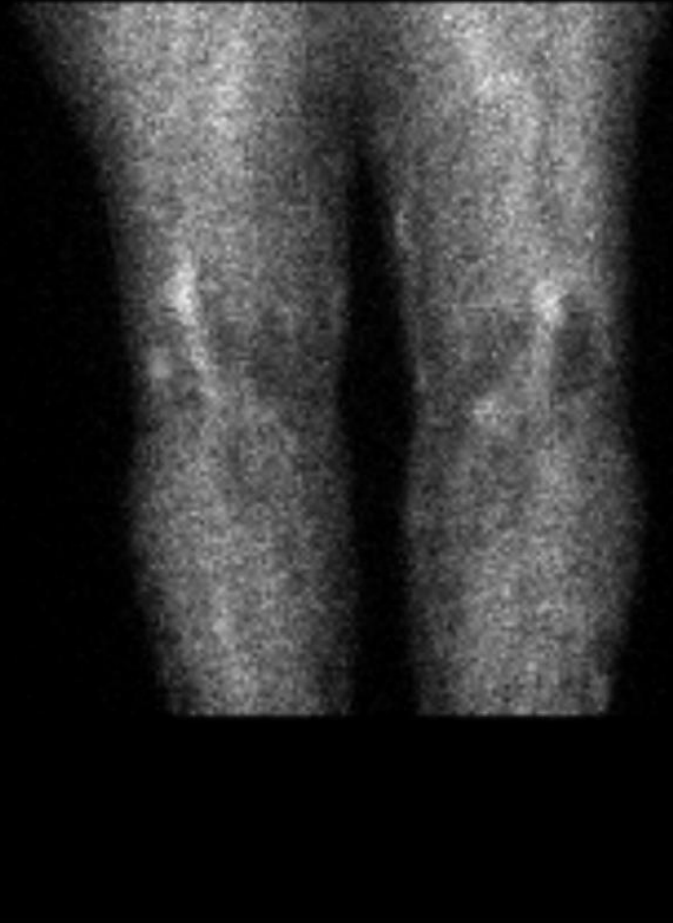
Ryan P. Joyce, MD
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BLOOD POOL OF KNEES

S



RT ANT LT



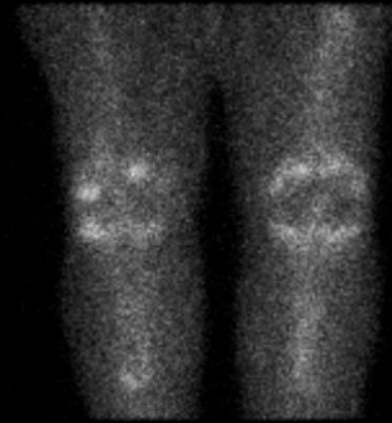
LT POST RT

DELAY KNEE STATICS
2.5HRS POST INJ.



RT ANT LT

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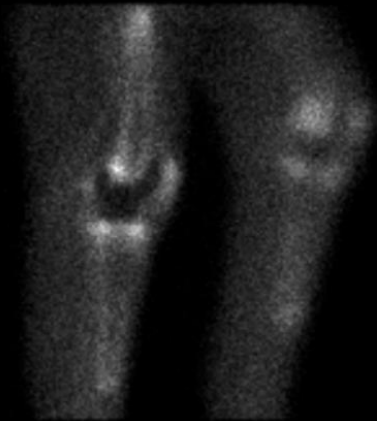


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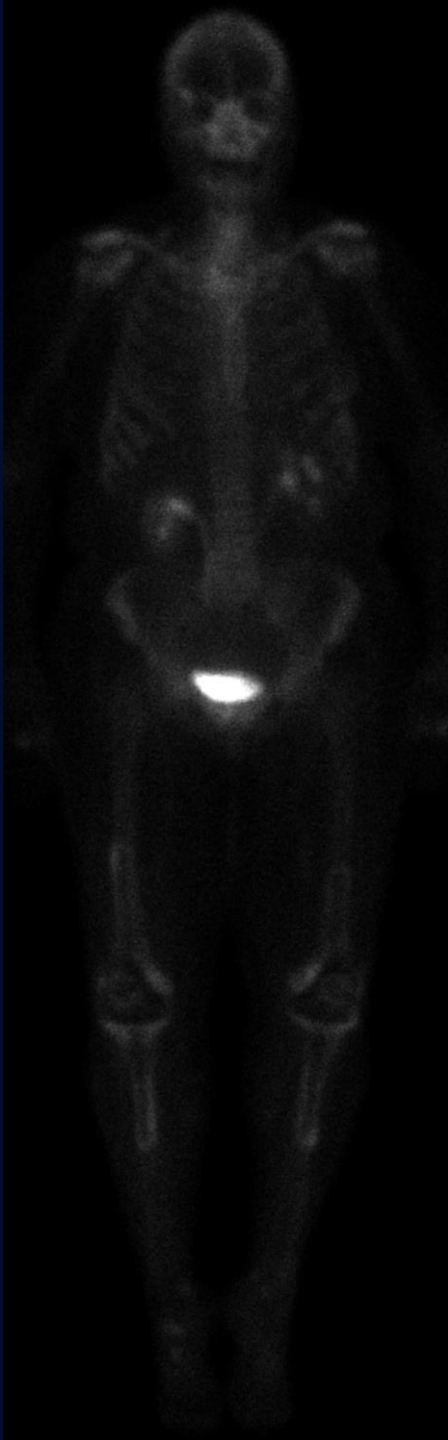


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LT LAT RT ME



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A large, stylized oak leaf graphic in a dark blue color, positioned on the left side of the slide. The leaf has a prominent central vein and several smaller veins branching off it. The leaf's edge is serrated.

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Prosthesis Loosening

Prosthesis loosening

Nuclear imaging findings:

- Diffuse periprosthetic uptake of tracer on skeletal scintigraphy suggest osteolysis from loosening or infection.
 - In many cases, loosening is first evidenced on nuclear scintigraphy by increased activity at the tip of the prosthesis, ≥ 1 year after placement.
- In-111 WBC scan can be utilized to help differentiate; infection should be avid whereas aseptic loosening should not.
- Fractures associated with prosthesis typically present with focally intense fusiform or linear activity along prosthesis.

Radiographic findings:

- Lucency at bone-prosthesis or bone-cement interface > 2 mm &/or has increased over prior images suggests loosening
- Knee: Thin lucency more common in tibial component
- Periprosthetic fracture
- Tilting of prosthesis suggests loosening and particle disease

Prosthesis loosening

- Major causes of loosening include micromotion over time and osteolysis (e.g., particle disease)
- Infection rate $< 1\%$ in primary joint replacement, increased to as high as 15% in revision shoulder arthroplasty
- Vast majority occur < 90 days post operation but may occur > 2 years delay

Prosthesis loosening

Clinical considerations:

- Most common signs/symptoms
 - Painful prosthesis may be due to mechanical hardware failure (e.g., improper alignment, particle disease/metallosis, loosening), infection, or periprosthetic fracture
 - Infection
 - Local: Increased pain or acute decreased range of motion in replaced joint, swelling, erythema, draining wound, fevers
 - Constitutional: Fevers, chills, night sweats, fatigue
 - Loosening
 - Chronic pain that may be exacerbated by weight bearing
 - Fracture
 - Acute pain initially, may become chronic
- Other signs/symptoms
 - C-reactive protein (CRP) or erythrocyte sedimentation rate (ESR) elevated in knee prosthesis infection
 - CRP and ESR elevated in hip prosthesis infection
 - Joint aspiration should be performed in suspected prosthesis infections
 - If nondiagnostic, perform nuclear imaging

BLOOD POOL OF KNEES

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LT POST RT

Diffuse periprosthetic uptake on blood pool, indicates hyperemia

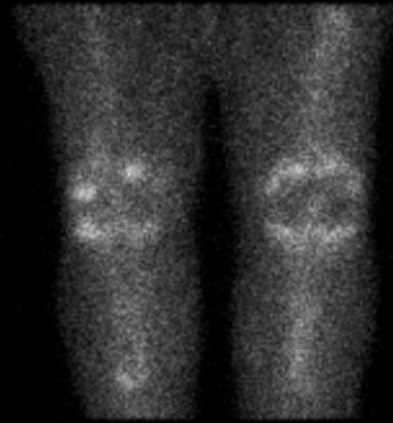
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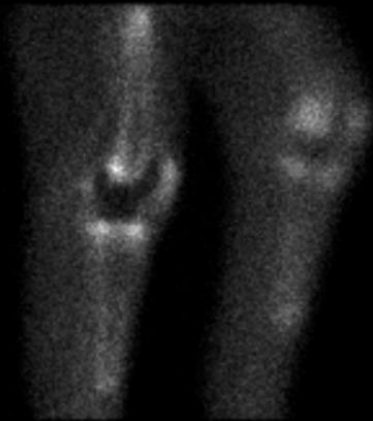
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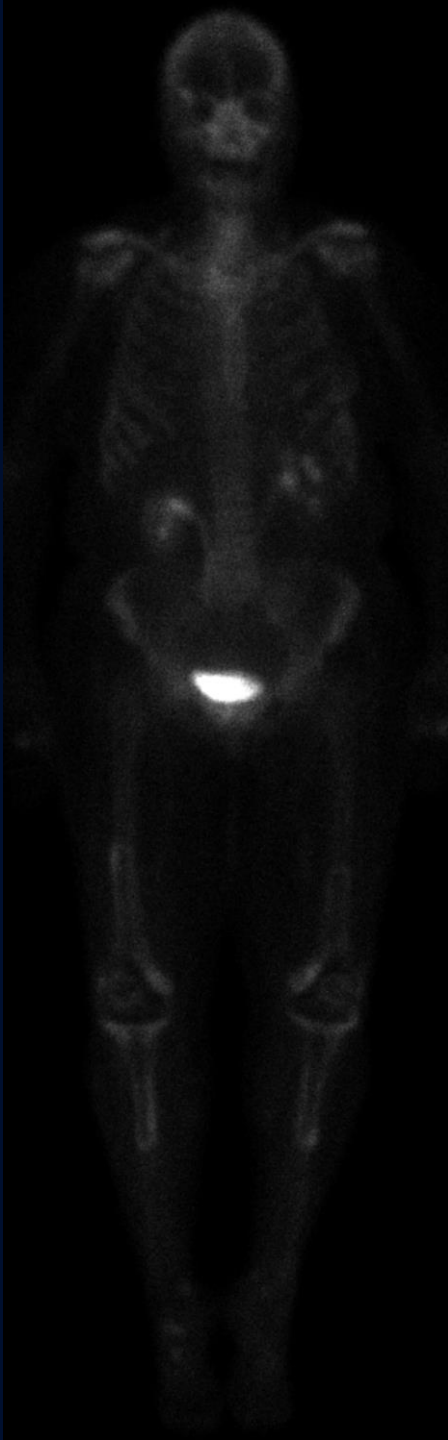


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LT LAT RT ME

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Diffuse
periprosthetic
uptake



Diffuse periprosthetic uptake

wt bearing



Periprosthetic
lucency and
prosthesis
migration

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