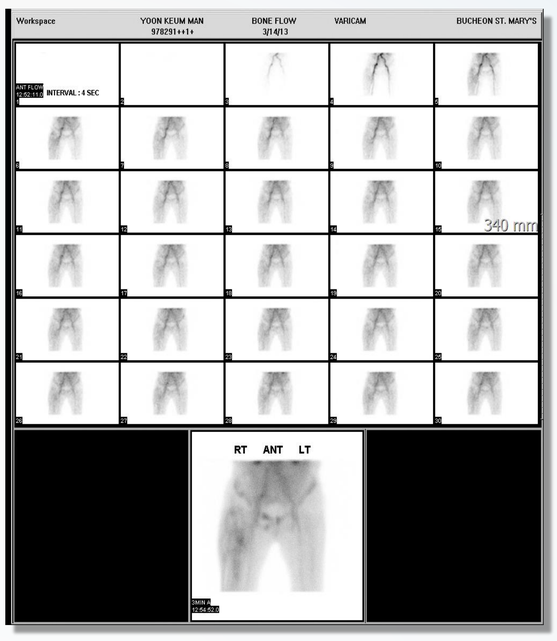
Antibiotic cement-coated tibia intramedullary nail for management of proximal femur osteomyelitis after proximal femoral nail antirotation fixation for subtrochanteric fracture: A case report

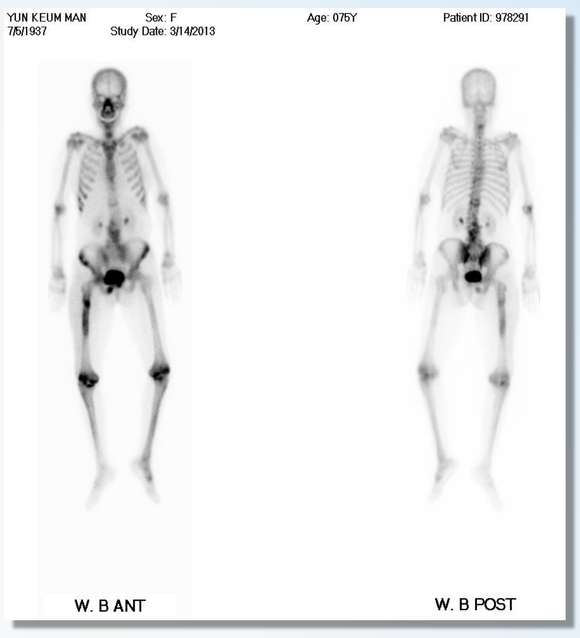
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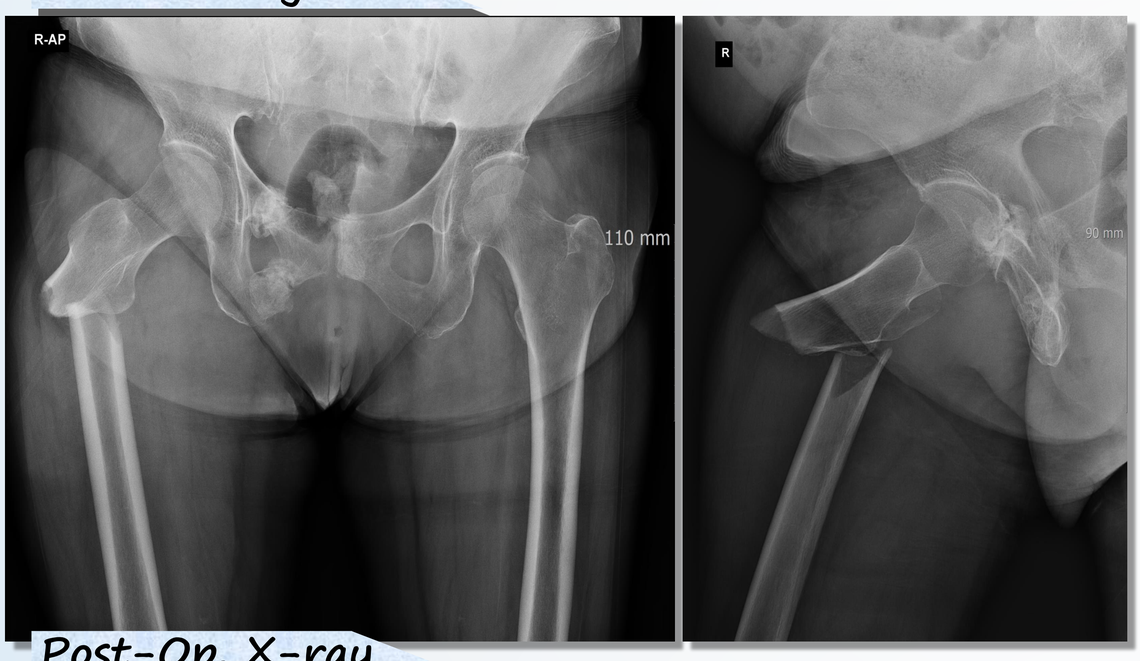
Present illness

A 79-year-old women with hypertension and osteoporosis presented to the emergency department with right hip pain after slipping and falling on a rainy day. She was taking risedronate for 7 years to treat osteoporosis without a drug holiday. Radiography showed a right atypical femoral subtrochanteric fracture, and internal fixation was performed using proximal femoral nail antirotation (PFNA). Autologous iliac crest bone graft was performed simultaneously, because of a high rate of atypical subtrochanteric fracture nonunion.





Initial X-ray



Operation record

Diagnosis

Chronic osteomyelitis, proximal femur, Rt.

OP title

Removal of PFNA & I/F c IM nail

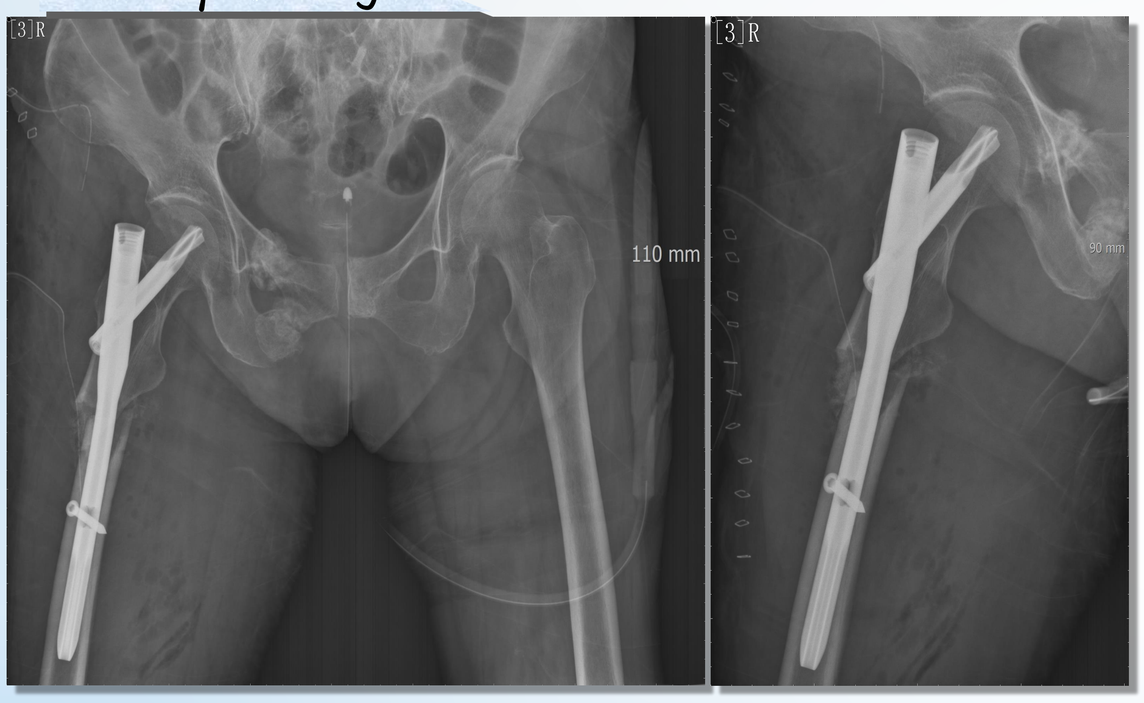
Curettage & Antibiotics impregnated cement beads insertion(x2)

Antibiotic impregnated tibial nail insertion





Post-Op. X-ray



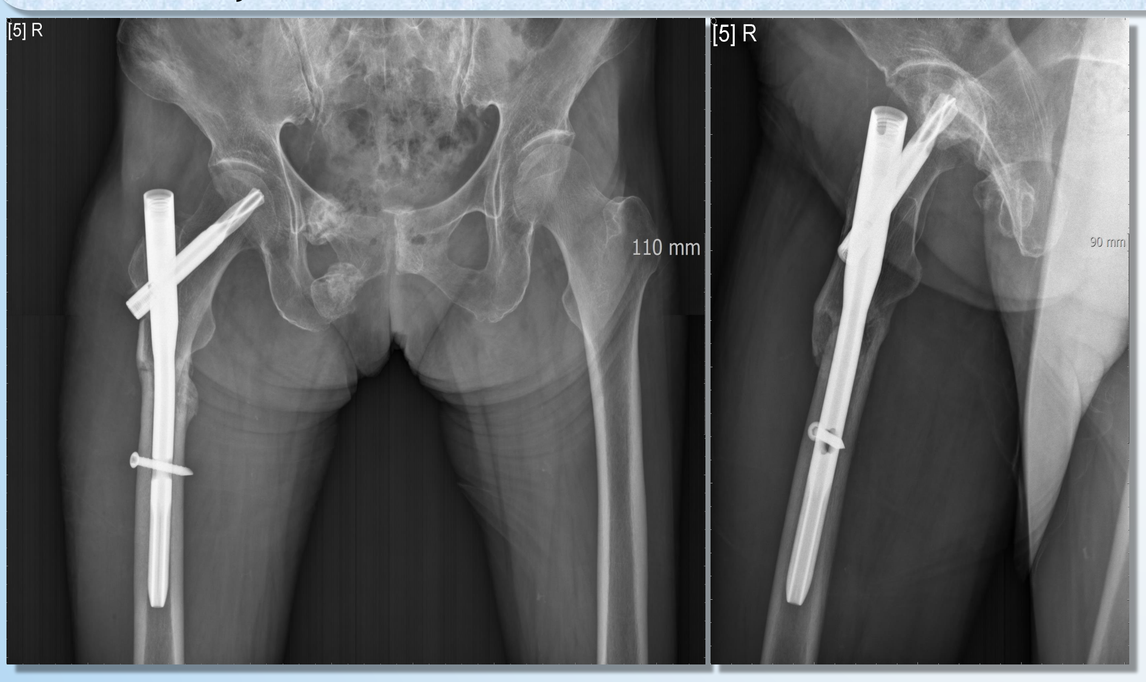
POD 3 years X-ray





POD 10 months

Approximately 10 months postoperatively, the patient presented to the hospital with local heat, pain, and swelling at the surgical site on the right hip. The patient had elevated erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) level: 103(0-15) and 192.5(0-5), respectively. X-ray showed some callus formation at the fracture site, but still a nonunion could be observed. A 3-phase bone scan confirmed chronic osteomyelitis at the surgical site, possibly extending to the intramedullary canal.



Discussion

Generally, patients with infected nonunions and in situ implants are treated using a certain process: First, the implant is removed, and curettage and debridement are performed using I.V. antibiotics, and/or an additional local antibiotic delivery system, such as antibiotics-impregnated cement beads or spacer. The fracture site must simultaneously be protected using an external fixator or splint/cast. After the infection disappears, the nonunion is treated using a stable internal fixation. The patient requires prolonged hospitalization between those two surgeries. Femoral fractures, especially, leads the patients to become bedridden, which increases the risk for several conditions, including pneumonia, sores, DVT, and general weakness. Using an antibiotic cement-coated intramedullary nail was considered to overcome that two-stage operation interval.

This case shows an attempt to insert a tibial intramedullary nail in the femur. Applying an antibiotic-loaded bone cement to a conventional femoral intramedullary nail causes the volume to become too large, which requires significant reaming of the femur for insertion, thereby weakening the bone. Stable fixation could not be achieved using an antibiotic cement-coated intramedullary K-wire. Conversely, infections may be controlled when bone cement is used without an intramedullary nail, but it can be difficult to successfully treat the nonunion. Therefore, in those cases, an antibiotic cement-coated tibial intramedullary nail could be a highly effective option.