

Case Report: Use Of Carbon Fiber Intramedullary Nail And External Fixation Assistance For Treatment Of Osteoid Osteoma

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ABSTRACT

TITLE: Case Report: Use Of Carbon Fiber Intramedullary Nail For Treatment Of Osteoid Osteoma

BACKGROUND: This is a case presentation on the novel use of a carbon fiber intramedullary femoral nail for stabilization after resection of a posterior femoral cortical osteoid osteoma. A 36-year-old male presented with symptoms and radiographic studies consistent with an osteoid osteoma of the posterior cortex of the midshaft of the femur. The patient preferred surgical resection to radiofrequency ablation and underwent a marginal resection of the osteoid osteoma and fixation with a carbon fiber intramedullary nail for stabilization. During the healing phase, radiographic studies could be obtained visualizing callus healing at the site of the osteoid osteoma with the radiolucent intramedullary nail in place.

OBJECTIVE: To show the utility of radiolucent carbon fiber fixation in oncological surgery to facilitate postoperative diagnostic studies for tumor pathology and assessing osseous healing, without compromising osseous fixation.

RESULTS: The patient had a successful treatment of his osteoid osteoma with a minimal intercallary resection and went on to heal fully without complication. The symptoms of the osteoid osteoma were eliminated immediately postoperatively and final pathology confirmed the diagnosis of osteoid osteoma. The nail was extracted 1 year postoperatively without incident and the patient had full return to function.

CONCLUSIONS: A carbon fiber intramedullary nail is a valid treatment option for stabilization of long bones after resection of benign bone tumors, such as osteoid osteoma, while allowing visualization of the site of surgery.

Case Report

A 36 year old male presented with persistent dull, aching pain in the mid-portion of the left thigh, which was worst at night for over 1 year. The pain responded significantly to both aspirin and non-steroidal anti-inflammatory when used diagnostically. Plain radiographs, CT scan and MRI scan were consistent with the presumptive diagnosis of osteoid osteoma. The patient preferred surgical resection to radiofrequency ablation and underwent a marginal, fixator-assisted intercallary resection of the osteoid osteoma and internal fixation with a carbon fiber intramedullary nail for stabilization (Carbofix, Herzeliya, Israel). Pathological examination of the specimen confirmed the diagnosis of osteoid osteoma.

The patient had no complications postoperatively and had complete resolution of the osteoid osteoma specific pain immediately after surgery. The patient was able to begin full weight bearing and physical therapy immediately postoperative. The site of the resection was visualized in follow up with serial radiographs showing maintenance of alignment and a robust healing callus. One year postoperatively, radiographs showed remodeling at the site of resection without evidence of hardware failure or recurrence of pain or tumor related symptoms. The carbon intramedullary nail and locking screws were removed without complications 1 year after the index surgery and the patient has had a return to full function with resolution of symptoms from osteoid osteoma.

Financial Disclosures

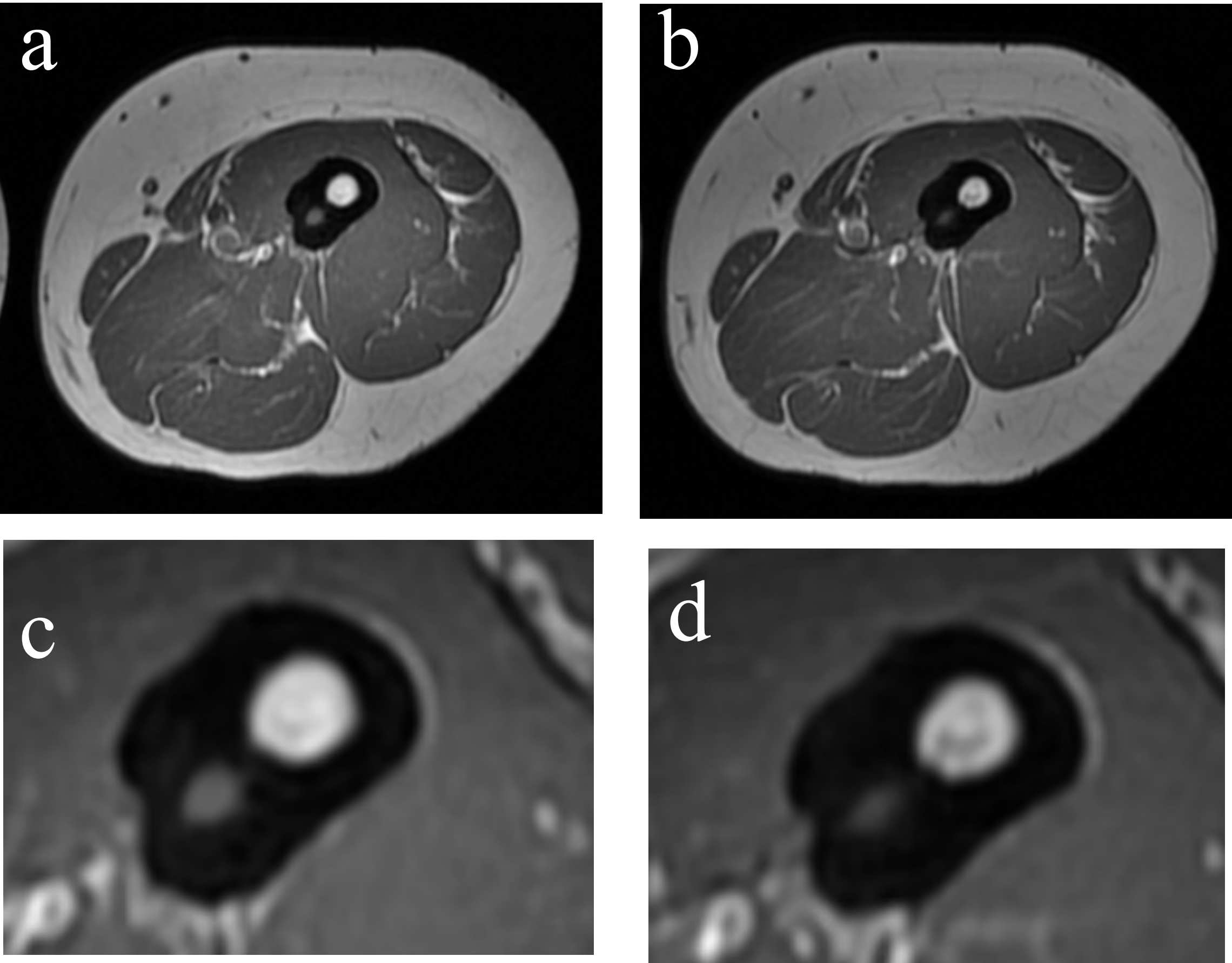
- Paid consultant for Modernizing Medicine, Inc., an electronic medical record company.
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Preoperative Imaging

Plain Radiographs (Images a-b) AP and lateral views of the left femur demonstrate a thickened posterior and femoral cortex and a cortical lytic lesion posteriorly.

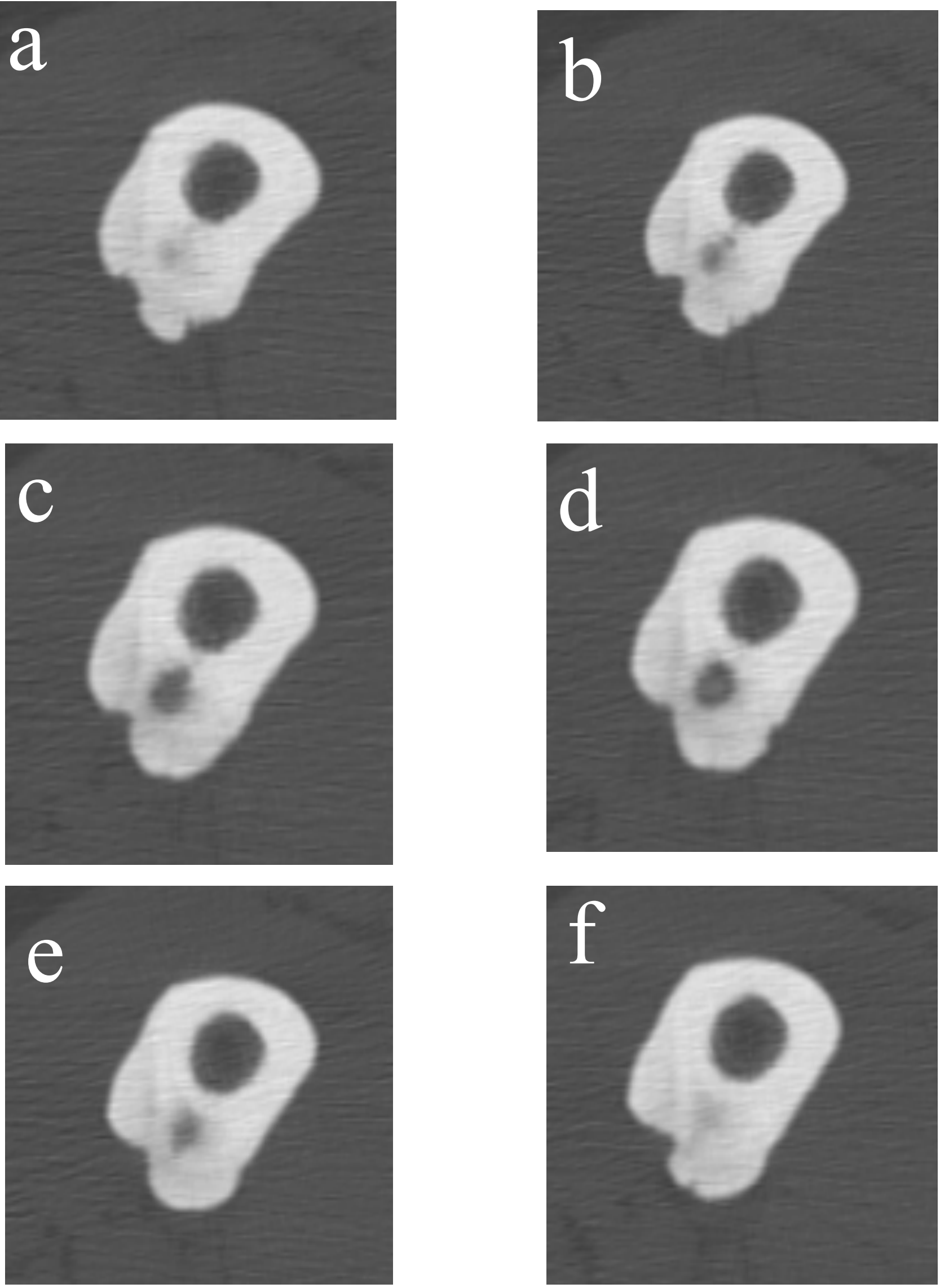


MRI Scan (Images a-d) Images a and b are T1 weighted axial images of the left femur (5mm thickness, 3Tesla) demonstrate a cortically-based posterior femoral lesion with thickening of the cortex and central lucency. Images c and d are zoomed views of a and b.



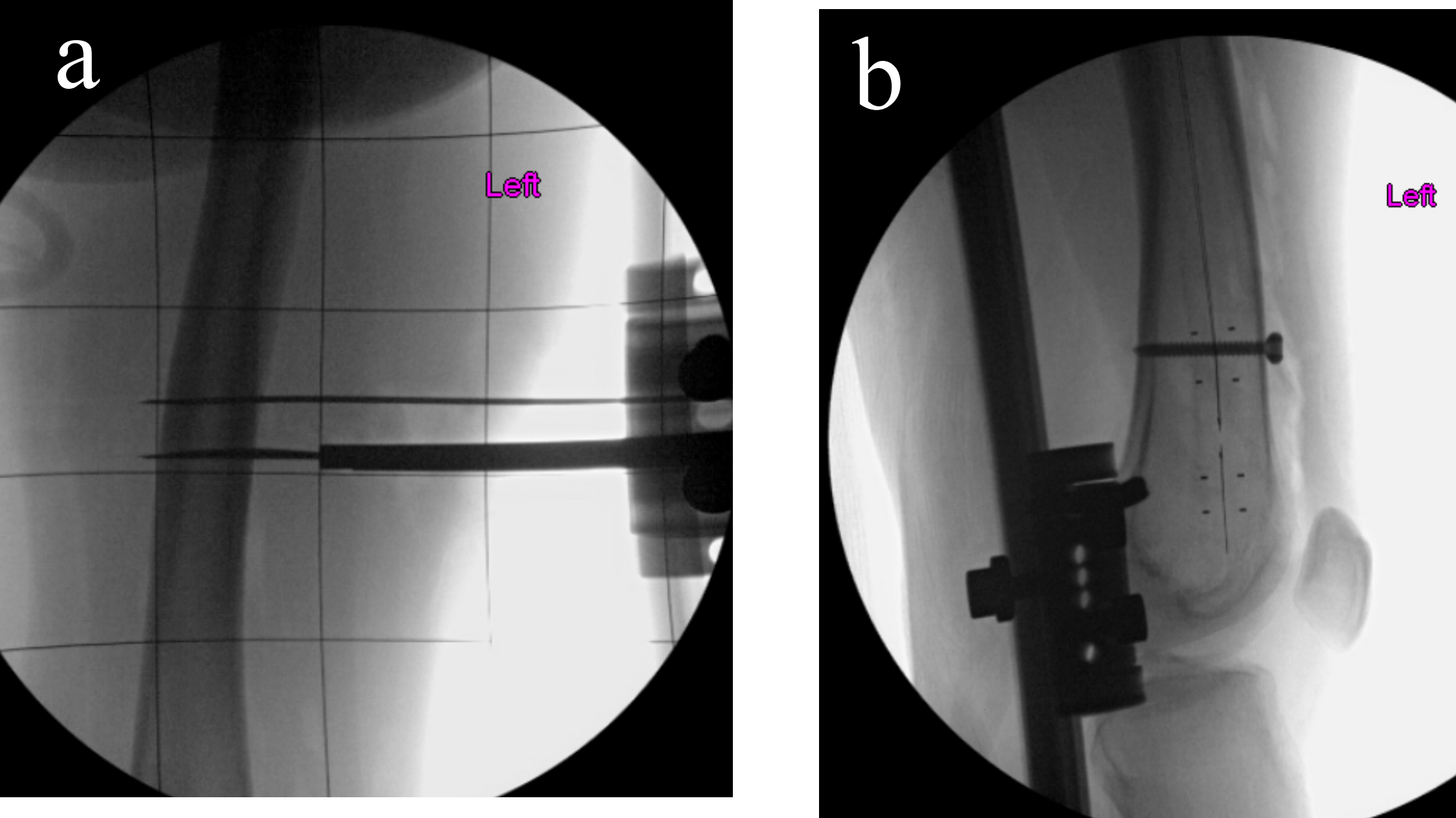
Preoperative Imaging

CT Scan (Images a-f) Axial images of the left femur (4mm thickness), show a cortically based posterior cortex lesion with thickening of the cortex and lytic lesion



Intraoperative Imaging

Flouroscopy: A & B: Show the external fixator serving the dual purpose of stabilizing the femur after osteotomy facilitating intramedullary nail placement and serving as a guide for resection to align both proximal and distal osteotomies parallel to each other.



Carbofix Femoral Nail

Postoperative Imaging

Plain Radiographs: A & B: AP and lateral views of the left femur 2 weeks postoperative demonstrating a well aligned femur with the carbon fiber IMN in place and 4 locking screws. C and D: AP and Lat views 1 year postoperative with remodeled callus at the site of resection and osteotomy.

