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Case report

# Lumbar chance fracture after direct anterior total hip arthroplasty

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ABSTRACT

This report describes a patient with ankylosing spondylitis (AS) who underwent total hip arthroplasty (THA) by the direct anterior approach and sustained a L4-5 extension fracture dislocation with neural deficits. A magnetic resonance imaging revealed an epidural hematoma at the site of the fracture causing critical stenosis. The patient was taken to the operating room for a L3-S1 posterior decompression with L2-pelvis posterior spinal fusion. AS and diffuse idiopathic skeletal hyperostosis create a stiff spine that predisposes to fractures because of the larger moment arms experienced than normal spines. The arthroplasty surgeon performing THA should be aware and take precautions to reduce stress on the spine.



## Introduction

Patients with ankylosing spondylitis (AS) have a 25%-50% occurrence of hip arthropathy and typically have a younger age of onset of their hip involvement [1]. AS and diffuse idiopathic skeletal hyperostosis (DISH) disease progression makes the spine susceptible to fracture and neurologic injury even after low energy injuries [2-4]. Long-term results of total hip arthroplasty (THA) have been well described in patients with AS with 70% survival at 30 years [1], and with high function and good self-reported outcomes [5].

Recent studies have shown lower immediate postoperative pain and improved functional recovery when the direct anterior approach (DAA) is compared with the posterior approach [6-9]. The use of special tables can assist with this approach by allowing independent manipulation of the leg to facilitate exposure and insertion of the femoral stem. To our knowledge, there are no studies specifically looking at DAA THA in AS and DISH patients.

This paper describes a 68-year-old male patient with AS who underwent a THA through the DAA with the use of a Hana table (Mizuho, OSI, Union City, CA). Although there were no apparent intraoperative complications, the patient was diagnosed with a L4-5 extension-distraction fracture with neurologic injury that was subsequently treated with decompression and fusion. The purpose of this article is to report this unique complication.

## Case history

A 68-year-old male with a significant history for AS underwent left THA. The patient had normal preoperative neurosensory examination and lumbar spine films taken 1 year prior that revealed extensive ankylosis without fracture (Fig. 1). The anterior THA operation with the use of a special table proceeded without complication with a noncemented acetabular and hydroxyapatite coated stem (Fig. 2). The patient had postoperative pain in his left hip on postoperative day (POD) 1, but was able to ambulate with physical therapy. Physical therapy was limited on POD 2 when the patient reported paresthesias and poor proprioception. The patient's pain continued to worsen and began to report progressive low back pain and weakness in L4 nerve distribution bilaterally during ambulation. Because of worsening of symptoms, lumbar films were taken on POD

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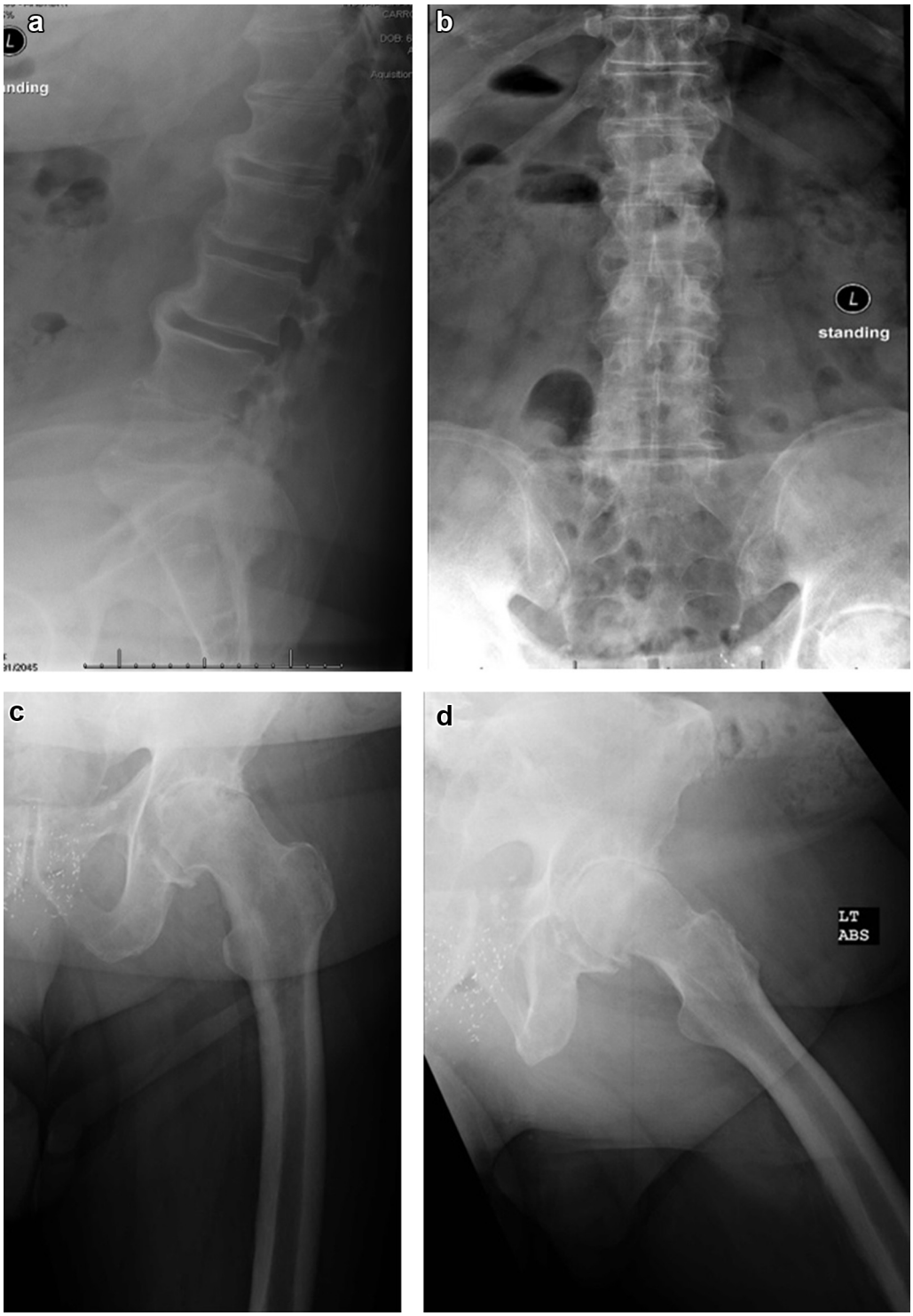


**Figure 1.** Preoperative images of the patient. (a) Lateral lumbar spine, (b) anteroposterior (AP) lumbar spine, (c) AP left hip, and (d) lateral left hip.

8, which revealed an unstable L4-5 chance fracture (Fig. 3a). An orthopaedic spine consult was obtained, computed tomography/magnetic resonance imaging revealed an epidural hematoma and severe stenosis within the canal. Once medically cleared, the patient returned to the operating room for an L2-S1 decompression and L2-pelvis posterior spinal fusion. The patient tolerated this operation well and had improved strength and sensation, but with residual weakness in the tibialis anterior bilaterally. While in rehabilitation, he developed back pain and radiographs revealed loss of fixation from the L2 and L3 pedicle screws (Fig. 3b and c). The patient underwent posterior spinal fusion from T10-pelvis with decompression at L1-L3 (Fig. 3d and e). The patient followed-up with minimal pain, but residual weakness in the L4 nerve root distribution bilaterally. His postoperative films were stable at 5 and 8 months (Fig. 3f). At the