Total Hip Arthroplasty: Classifying Periprosthetic Fractures

Dr M. Murray, Dr P. Sookur, Dr D. Dallili

Introduction

Total hip arthroplasty (THA) is a common and effective operation. However, as with all surgical procedures, complications can occur. Periprosthetic fractures are a common and important cause of morbidity and mortality affecting patients who have had a THA. The burden of periprosthetic fractures is increasing with larger volumes of total hip arthroplasties being performed. Diagnosis and management of periprosthetic fractures are complicated, and orthopaedic surgeons rely on imaging findings to guide the appropriate management approach to the injury. For a patient with THA presenting with hip pain, radiography of the hip is the initial modality of choice and is sufficient for diagnosis in the majority of cases. Delay in identification and appropriate definitive management of periprosthetic fractures is associated with high morbidity and mortality. At present, the Vancouver classification system for periprosthetic hip fractures is the most common classification system used by orthopaedic surgeons (Fig 3). It relies on three radiographic criteria to characterize these fractures and to help guide management decisions. Familiarity with the Vancouver classification system allows radiologists to both recognize and communicate the most clinically relevant imaging findings to the treating orthopaedic surgeon.[2]

Vancouver Classification System

Fractures are localized to one of three anatomic zones: trochanteric (Vancouver A1, and A2,3), femoral stem, including the medial buttress (Vancouver B1, B2, B3), and distal to the femoral stem (Vancouver C).

Vancouver A trochanteric fractures are further subdivided into fractures about the greater trochanter (A1,2,3) and lesser trochanter (A4,5).

Periprosthetic fractures isolated to the lesser trochanter are exceedingly rare and typically represent avulsion-type fractures of the iliopectineal tendon without disruption of the medial buttress of the femur. These fractures rarely compromise implant stability and are treated conservatively.

Vancouver B fractures are subdivided based on the stability of the prosthesis and the quality of the surrounding bone stock: B1 = stable prosthesis, quality bone stock; B2 = loose prosthesis, quality bone stock; B3 = unstable prosthesis, poor-quality bone stock.[2]

References