

Pedestal sign in cementless total hip replacement

Dear Editor,

Stability of cementless hip components depends on the ingrowth of bone into porosities of the surface coating. However, clinical and radiographic examination of a stable total hip arthroplasty (THA) remains a challenge. The evaluation of a THA radiograph involves the recognition of various radiological signs that can indicate loosening of the implants. Amongst them is the Pedestal sign that is not well known and its presence can be an early predictor of implant failure¹.

A 76 years old woman with low back pain was referred to the outpatient orthopaedic clinic of our hospital. The patient eight years ago underwent left THA elsewhere. Her clinical evaluation revealed mild pain during passive motion of the left hip and she reported intermittent thigh pain during vigorous activities.

Anteroposterior plain x-rays of the left hip revealed a Pedestal sign below the tip of the femoral stem and a radiolucent line along the lateral side of the lower third of the stem (Figure 1). This combination of radiologic signs suggested possible instability of the prosthesis^{1,2}.

C-reactive protein and erythrocyte sedimentation rate were within normal range. Tc99m bone scan results confirmed aseptic loosening of the prosthesis and the patient underwent revision surgery. Two years post-operatively the patient remains pain free during all daily activities and no new signs of loosening are present.

The pedestal sign is an endosteal new bone formation below the distal end of the stem and it usually extends over 50% of the canal¹. Distal pedestal formation and calcar hypertrophy imply prosthesis-to-bone stress transfer away from the porous coating metaphyseal part of the implant and are associated with instability^{1,2}. The formation of this shelf of new bone is an apparent attempt to support the tip of the prosthesis.

Surprisingly the pedestal sign is not well known amongst radiologists and orthopedic surgeons. It is easy to identify and its clinical importance very high. Given its value in assessing the femoral stem's stability and predicting the need for revision surgery it should be in the mind of anyone who evaluates a THA radiograph.

References

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Conflict of interest

None.

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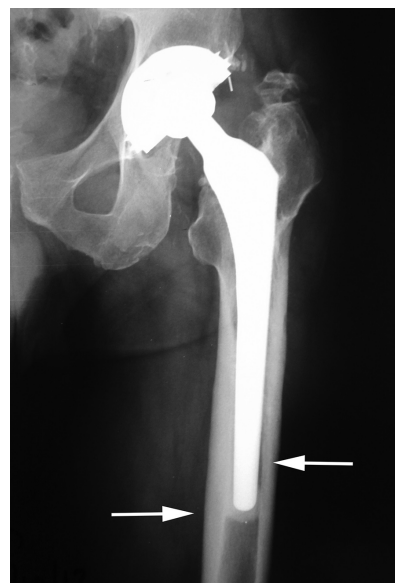


Figure 1: Anteroposterior radiograph of the left hip showing a total hip replacement. Note the pedestal sign just below the tip of the femoral stem and the radiolucent line along the lateral side of the lower third of the stem (arrows).