Fracture of the neck of a femoral component in a total hip arthroplasty: a case report

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Summary. *Fracture of components of a total hip arthroplasty occur is a recognised complication. We report an unusual case in which the fracture occurred through the neck of a femoral component on a Lord type of total hip arthroplasty.*

Résumé. *Les complications décrites dans la chirurgie prothétique de la hanches sont la rupture des pièces, plus fréquemment de la tige fémorale. Les auteurs rapportent le cas d'une fracture de la tige au niveau du cône cervical sur une prothèse de Lord.*

Introduction

Fracture of the stem of a femoral component is relatively frequent [2, 7, 11, 12, 13]. The most common site is the middle [1, 3, 6, 10, 15] or proximal third third of the stem [8, 14]. We report a fracture through the neck of a femoral prosthesis; we are unable to find a similar case described in the literature.

Case report

A carpenter, 25 years of age, with aseptic necrosis of the femoral head was treated by a Lord type of total hip replacement.

Twelve years later, he complained of pain in the groin and trochanteric region after lifting a weight and was unable to walk.

Radiographs showed a fracture of the neck of the femoral component (Fig. 1). At revision, the acetabular cup showed wear of the polyethylene and was changed to a CLS 62. The stem of the femoral component was firmly fixed to bone and a femoral window was made to remove it. It was replaced by a 39 = 05 mm Wagner stem with a 28 mm ceramic head.

Discussion

The mechanism producing such a fracture is not clear, but various factors may be relevant. A significant correlation has been found between body weight and the risk of stem fracture [16], although others have not found this to be the case [14].

Improvements in implant design and in the materials used may contribute to a reduction of the risk of this complication [5, 9, 14]. The size of the implant is also important and larger stems have a smaller risk of fatigue failure at the expense of the sacrifice of more femoral bone [14]. A varus or valgus position may be significant [3, 6, 16]. Retroversion increases the torsion moment and increases the risk of fatigue [4, 15].

Most fractures have been reported in cemented components and are exceptional when cement is not used [8].

Study of the fracture surface by scattered electron microscopy showed spheres of Cr-Co-Mo with a different grade of welding with respect to the substratum. In Figs. 3a, b, cracks are seen in the welded areas between the substratum and the spheres. These areas increase tension because of their geometry and consequently are sites susceptible to propagation. These cracks can be the cause of fatigue fracture from torsion.

Fig. 1. Radiograph showing fracture of the neck of the femoral component at the level of the cone in a Lord total hip arthroplasty

Fig. 2. Photograph showing the fracture surfaces

Fig. 3 a, b. Scattered electron photomicrographs showing cracks in the welded areas between the spheres and substratum

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