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Case Report

Pelvic migration of the helical blade after treatment of transtrochanteric fracture using a proximal femoral nail☆

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ABSTRACT

Proximal femoral nails with a helical blade are a new generation of implants used for treating transtrochanteric fractures. The blade design provides rotational and angular stability for the fracture. Despite greater biomechanical resistance, they sometimes present complications. In the literature, there are some reports of cases of perforation of the femoral head caused by helical blades. Here, a clinical case of medial migration of the helical blade through the femoral head and acetabulum into the pelvic cavity is presented.

Migração pélvica de lâmina helicoidal após tratamento de fratura transtrocantérica com cavilha proximal do fêmur

Palavras-chave:
Fraturas do fêmur
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RESUMO

As cavilhas proximais do fêmur com lâmina helicoidal representam uma nova geração de implantes usados no tratamento de fraturas transtrocantéricas. O desenho da lâmina fornece estabilidade rotacional e angular à fratura. Apesar da maior resistência biomecânica, por vezes apresentam complicações. Na literatura encontram-se descritos alguns casos de perfuração da cabeça femoral por lâminas helicoidais. Apresenta-se um caso clínico no qual ocorreu migração medial da lâmina helicoidal através da cabeça femoral e do acetábulo para a cavidade pélvica.

☆ Study conducted at the Centro Hospitalar de Trás-os-Montes e Alto-Douro, Departamento de Ortopedia e Traumatologia, Vila Real, Portugal.

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Introduction

Transtrochanteric fractures are a prevalent condition in the elderly. The incidence of this disease has increased considerably in recent years, as a result of population aging.[1] Improving the treatment of these fractures is essential for patient quality of life, reducing the length of hospital stay and promoting a quick recovery to pre-fracture functional status. There are many implants available for the treatment of such fractures. In stable AO 31-A1 transtrochanteric fractures, extramedullary devices (plates) can be applied, with favorable results.[2] However, in unstable AO 31-A2/A3 fractures, intramedullary implants have a biomechanical advantage,[2,3] with better transmission of the axial load. More recently, a new generation of proximal femoral nails with helical blades has been developed, featuring a larger contact area and compression between the blade and the cancellous bone, promoting better stability against varus collapse, especially in patients with osteoporotic bones.[4,5] Nonetheless, complications are sometimes observed, especially those related to fixation.[6–8] This study presents a case of perforation of the femoral head and the bottom of the acetabulum with pelvic migration of the helical blade.

Case report

An 88-year-old female, with a history of hypertension and heart failure, had a fall from her own height in 2014 with trauma in the left hip. A radiographic study revealed a left AO 31-A1 trochanteric fracture (Fig. 1). She was urgently treated with proximal femoral nail (10 mm × 170 mm, 130°) and antirotation blade (100 mm). Surgical procedure was uneventful. A helical blade was placed in the center-bottom position in the anteroposterior incidence (Fig. 2A) with a Parker's ratio (anteroposterior)[9] of 38 and slightly posterior in the lateral incidence (Fig. 2B) with a Parker's ratio (lateral) of 36. The calculated "tip-apex" distance[10] was 24 mm, and the cervicodiaphyseal angle was 136°. Postoperatively, the fracture was significantly reduced (Fig. 3). The patient was discharged to a rehabilitation institution, with the indication of ambulation with a walker and partial load. She was re-evaluated at an outpatient consultation on the second month postoperative, complaining of pain in the left hip and difficulty in mobilization; the patient denied new traumatic episodes. Radiographically, a perforation of the femoral head and the bottom of the acetabulum by the helical blade was observed, with intrapelvic migration Figs. 4 and 5). The material was extracted using the previous approach, uneventfully. The fracture evolved to varus malunion and allowed ambulation of the patient.

Fig. 1 – Transthrocantheric AO 31-A1 fracture on the left.

Discussion

The problem of rotational instability, followed by the varus collapse of the femoral head and by the cephalic

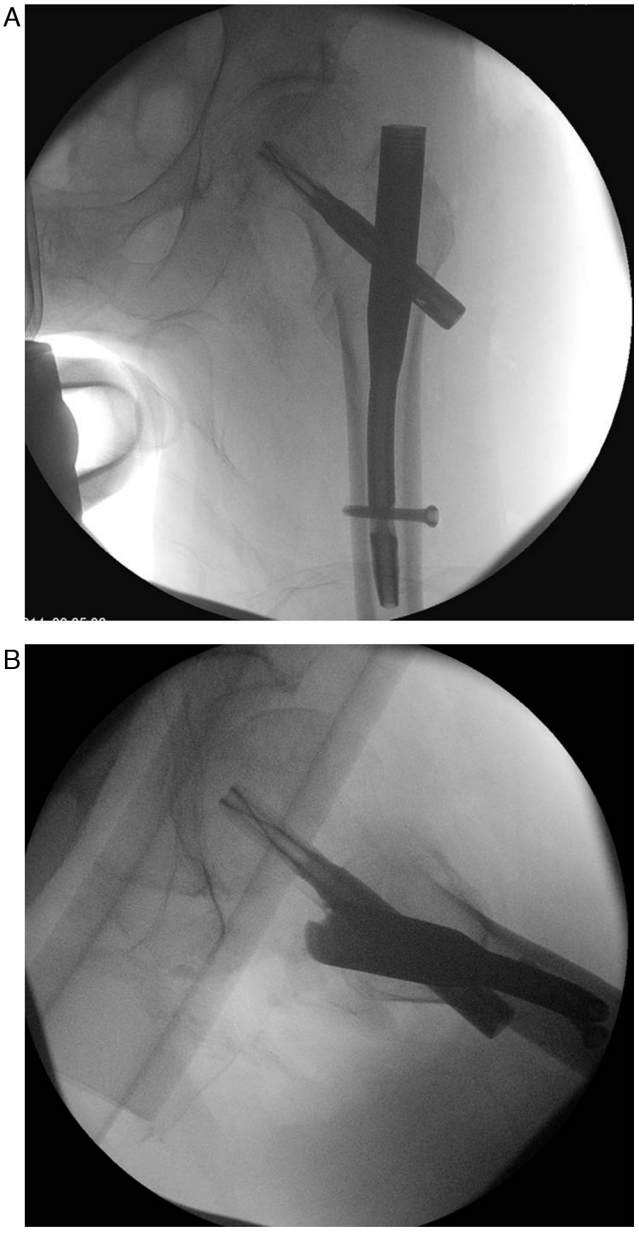

Fig. 2 – Intraoperative radiographic control: anteroposterior and profile.