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Case Report

Bryan and Morrey type IV intra-articular fracture of the distal extremity of the humerus treated surgically with anterior access: case report☆

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ABSTRACT

Within the context of elbow-level trauma, fractures with a coronal line at the distal extremity of the humerus are rare and result from indirect axial trauma with the arm extended. These are difficult-to-treat intra-articular fractures, since they require stable anatomical reduction in order to maintain joint congruence and diminish complications such as stiffness. This paper reports a case that occurred in a young man who suffered a fall from a ladder that resulted in a Bryan and Morrey type IV intra-articular fracture of the humerus. The injury was treated surgically by means of an anterior access, using osteosynthesis with two Herbert screws that were inserted from anterior to posterior.

Fratura intra-articular da extremidade distal do úmero tipo IV de Bryan e Morrey tratada cirurgicamente com acesso anterior: relato de caso

Palavras-chave:
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Cotovelo
Parafusos ósseos
Capitelo
Tróclea

RESUMO

No contexto dos traumatismos ao nível do cotovelo, as fraturas com traço coronal da extremidade distal do úmero são raras e resultam de trauma axial indireto no membro superior estendido. São fraturas intra-articulares de difícil tratamento por demandar redução anatômica e estável para a manutenção da congruência articular e redução das complicações como rigidez. Reporta-se neste artigo um caso ocorrido em um jovem do sexo masculino, vítima de queda de escada que resultou em uma fratura intra-articular do úmero distal tipo IV de Bryan e Morrey e que foi submetido a tratamento cirúrgico por via de acesso anterior e osteossíntese com dois parafusos de Herbert inseridos de anterior para posterior.

☆ Work developed at the Orthopedics and Traumatology Service of Santa Casa de Belo Horizonte, Belo Horizonte, MG, Brazil.

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Introduction

Fractures of the capitellum and their variants extending to the trochlea are rare and account for around 1% of the fractures at elbow level and 6% of the fractures at the level of the distal humerus.[1,2] This injury pattern results from a shearing force transmitted from the proximal extremity of the forearm bones to the proximal extremity of the humerus by means of axial loading. These are intra-articular fractures that require careful treatment and anatomical reduction in order to diminish the complications, such as joint stiffness.[3]

Case report

The patient was a 16-year-old right-handed male who suffered a fall from a ladder in which his left hand took the force of the impact on the ground. This resulted in axial transmission of energy through the extended left arm. In the admission examination at the emergency service, significant local pain was noted, with increased volume and limitation of left elbow movement. There were no skin injuries. Neurovascular examination of the extremity did not demonstrate any abnormalities. The initial radiographic evaluation revealed fracturing of the distal extremity of the left humerus, without good characterization of the pattern (Figs. 1 and 2). In lateral view, the "double arch sign" could be seen (Fig. 2).[4] To define the fracture pattern and enable better preoperative planning, a tomographic evaluation was made. This defined the coronal outline, extending from the capitellum to the trochlea in a single fragment (Figs. 3 and 4). In the light of the imaging study, the fracture was classified as type IV according to the classification of Bryan and Morrey,[1] as modified by McKee et al.,[4] or as type 13 B3.3 according to the AO classification.[5]

After the initial evaluation had been made, from which provisional plaster-cast immobilization was performed and other injuries and comorbidities were ruled out, surgical treatment was indicated. The patient was kept in hospital for care, and to await scheduling of the operation at the same public orthopedic and traumatology service.

After a hospital stay of 14 days, the surgical treatment was performed. It was decided to use an anterior access in the elbow, on a proximal internervous plane between the

Fig. 1 – Anteroposterior radiographic view, which does not show the fracture pattern clearly.

Fig. 2 – Lateral radiographic view showing fracture with displacement and double-arch sign.

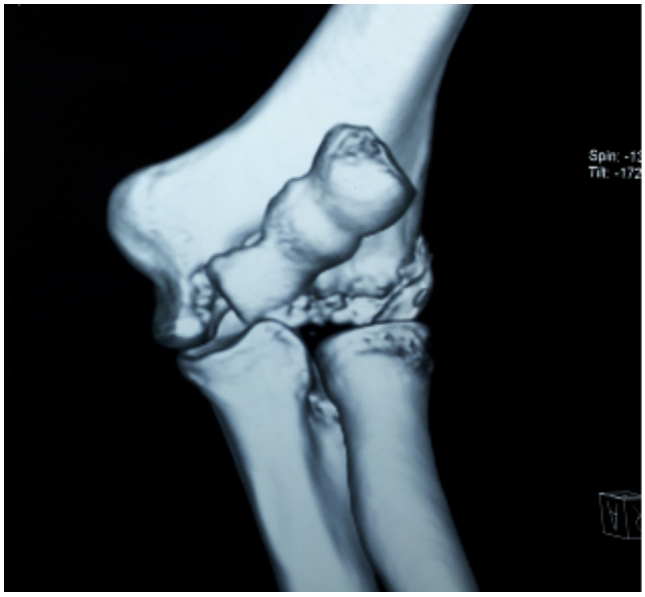

Fig. 3 – Three-dimensional tomographic reconstruction in anterior view showing displaced bone fragment.