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Inveterate Elbow Dislocation: Surgical Reduction with Triceps Lengthening (A Case Report)

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ABSTRACT

Inveterate elbow dislocations remain common in developing countries. We report the case of a 17-year-old child who consulted us after six months of trauma to the left elbow. Clinical examination revealed a deformed elbow, locked in extension with a mobility sector of 5°. The Mayo Clinic Elbow performance score was sixty-six; the downstream vasculo-nervous examination was normal. The face and profile X-ray of the elbow showed a pure posterolateral elbow dislocation. We used the posterior medial para-tricipital and lateral approach, a first stage of arthrolysis was performed. A complete reduction was achieved by progressive and non-traumatic gentle maneuvers. Intraoperative elbow flexion was less than 80°, indicating a retraction of the triceps muscle, so a Z-lengthening plasty was necessary. This reduction was then fixed with two olecranon-humeral K-wires. At the third week, the plaster cast and K-wires were removed. The patient was subsequently referred to a physical therapist. After a ten-month follow-up, an undistorted and functional elbow with a gain of twenty-one points according to the Mayo Clinic score was obtained. Surgical reduction of a neglected elbow dislocation with triceps lengthening plasty, followed by a codified physical therapy program, results in a remarkable restoration of elbow function and stability.

Keywords: elbow, dislocation, inveterate, reduction, triceps.

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INTRODUCTION

Inveterate elbow dislocations are defined as dislocations not treated within three weeks of trauma¹, they are still frequent in developing countries. Stiffness of the elbow in a non-functional area is the main cause of the consultation. We report the case of a neglected dislocation of the elbow reduced to open focus. The objective of our work was to present our experience in the surgical reduction with tricepsplasty of an inveterate dislocation by posterior approach.

CASE REPORT:

Child H.H, 17 years old, presented with a trauma of the left elbow following a fall from a horse. The patient was simply immobilized by a Jbira elbow in extension for 15 days. Six months later, the patient consulted for elbow stiffness. Clinical examination revealed a deformed elbow with loss of anatomical relief, locked in extension, with a mobility sector of 5° in activo-passive and normal pronosupination (Figure 1). The Mayo Clinic Elbow performance score was sixty-six, the downstream vasculo-nervous examination was unremarkable. The standard X-ray of the elbow, front and side, showed a posterolateral dislocation of the left elbow, associated with heterotopic ossifications classified as type II according to the Hastings classification. We also note the absence of associated fractures (Figure 2).



Figure 1: Clinical aspect of the elbow.

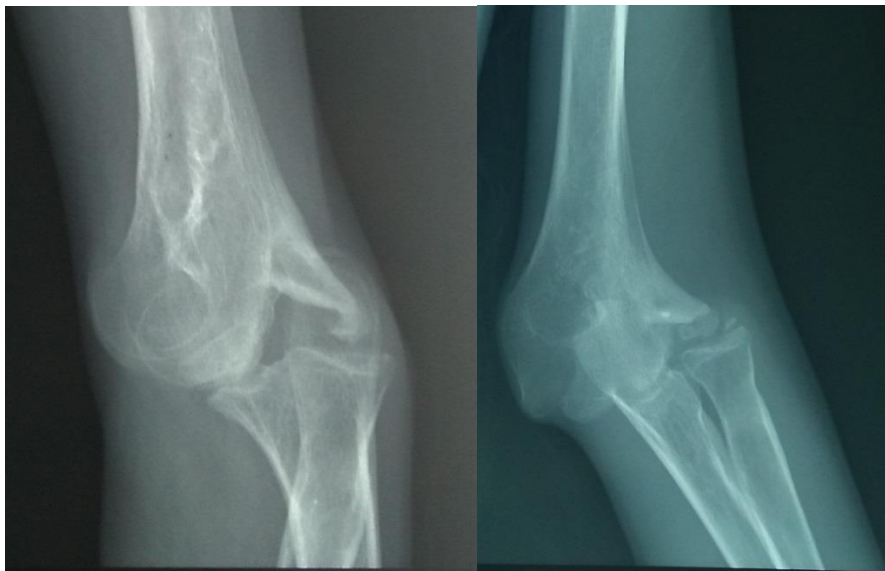


Figure 2: Elbow x-ray: posterolateral elbow dislocation with heterotopic calcifications

Under locoregional anaesthesia by axillary block, on an ordinary table, the patient is installed in lateral decubitus; the arm resting on a support, the forearm is at 90°, without pneumatic tourniquet

We used the posterior medial para-tricipital and lateral approach. Exploration confirmed the posterolateral dislocation with the presence of heterotopic ossifications and an olecranon fossa filled with fibrosis, with remodeling of the articular surfaces. A first stage of arthrolysis was performed, consisting of the resection of the periarticular ossifications, bone blocks and fibrous tissue, noting that the proximal insertions of the collateral ligaments were not resected. A complete reduction was achieved by gentle, progressive, non-traumatic maneuvers. Intraoperative elbow flexion was less than 80°, indicating a retraction of the triceps muscle, so a Z-plasty was necessary (Figure 3). This reduction was then fixed with two olecranon-humeral K-wires (Figure 4). After closure with a suction drain, a brachio-ante-brachio-palmar splint was made.



Figure 3: intraoperative image showing: reduction, Z triceps incision, and olecranon-humeral K-wires.

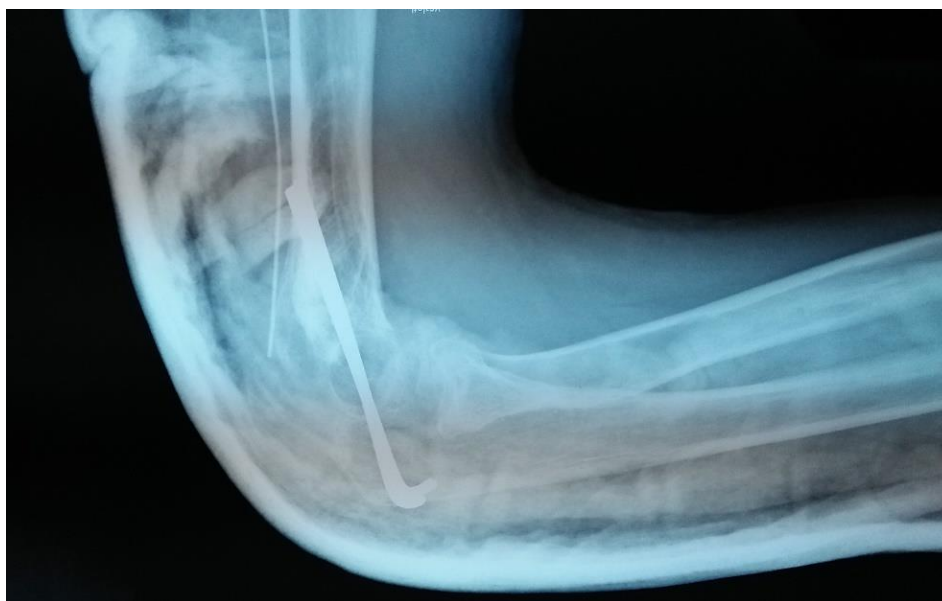


Figure 4: Postoperative control X-ray

The postoperative follow-up was simple. At the third week, the plaster splint and the K-wires were removed. The patient was then referred to a physiotherapist. After a ten-month follow-up, the elbow was stable and the hand-to-mouth and hand-to-head tests were possible. Flexion was 115° and extension was -30° . The pronosupination was normal. The Mayo Clinic Elbow performance score was increased by twenty-one points.

DISCUSSION:

After 3 weeks of trauma, soft tissue retractions and localized osteoporosis make closed reduction unsafe, with a risk of fracture². Fowles et al, in their study of 15 children with untreated posterior elbow dislocation, found that those seen within 2 months of trauma could regain functional elbow mobility without surgery, and they recommended a trial of bloodless reduction in such cases³.

Mahaisavariya and Laupattarakasem in their study recommended an open reduction without triceps lengthening to achieve better elbow flexion after negligent dislocation within 1 to 3 months⁴. The same authors in another series performed triceps lengthening with collateral ligament repair in 22 of 24 cases of neglected elbow dislocation for a period of 1 to 6 months

Some authors^{5,6} and in particular Martini⁷ have emphasized the adaptation of the dislocated elbow with time. Martini⁷ does not systematically operate on neglected elbow dislocations. Bloody reduction remains the frequent but not systematic indication. The author definitively refrains from operating when stiffness is at the limit of functional adaptation and may improve after a few weeks of rehabilitation. According to Dishino, elbow stiffening in children is rapid, and a bloody reduction must be performed early to avoid a more mutilating surgery later on⁸.

Morrey has grouped the various possible issues that need to be addressed⁹. These include: triceps retraction, collateral and capsular ligaments, ulnar nerve involvement, intra-articular fibrosis, and associated coronoid or radial head fracture in 30% to 40%.

Most authors recommend the posterior approach over the lateral approach combined with the medial approach¹⁰. In cases of significant retraction of the triceps, two main techniques have been proposed: Speed's V-Y tricepsplasty¹¹, which is the most commonly used¹², and Vangorder's technique¹³. The latter uses an Achilles tendon or fascia lata allograft after transection of the triceps. If primary elbow flexion is greater than 110 degrees, no triceps lengthening should be considered¹⁴.

Regarding the attitude towards the ulnar nerve, Silva regularly transposed the ulnar nerve in his series of inveterate dislocations¹⁵. Bruce and his colleagues recommend that the ulnar nerve be inspected and decompressed systematically in all cases in which bloody reduction is necessary¹⁶.

Instability after open reduction, resulting from release of the ligaments, capsule and triceps has often been noted by several authors¹⁷, therefore they have resorted to trans-articular pinning and casting at 90° flexion for 2 to 4 weeks postoperatively to maintain a stable elbow

CONCLUSION:

Surgical reduction of a neglected elbow dislocation with triceps lengthening plasty, followed

by a codified program of physical therapy, results in remarkable restoration of elbow function and stability. The early and correct management of acute elbow dislocations and easy access to care are the only means of preventing this type of injury.

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