RESULTS OF SURGICAL TREATMENT OF DISTAL HUMERUS FRACTURES: ABOUT 100 CASES

ABSTRACT

Fractures of the humeral paddle constitute a serious accident of the elbow, compromising the function of the limb. Through this work we present a series of 100 surgically operated patients, in order to study the clinical and therapeutic particularities, the complications that occurred later and the long-term functional results according to the Mayo Clinic Elbow Score clinical score.

KEY WORDS: humeral pallet, surgical treatment.

INTRODUCTION

Humeral paddle fractures account for 2% of elbow fractures in adults. They can be secondary to high-energy trauma in young subjects, or following low-energy trauma in elderly subjects. The main objectives of the treatment are the anatomical restitutions of the articular profile for young subjects and the recovery of daily activities for elderly subjects. The treatment is surgical and the approach must be adapted to the particularities of the fracture.

MATERIAL AND METHODS

Our work concerns a retrospective study of a series of 100 cases of humeral paddle fractures treated over a period of eight years, from 2013 to 2020, with an average follow-up of 24 months [14-33 months]. of this work patients under the age of 17, pathological fractures and patients with incomplete medical records. All our patients benefited from two standard x-ray images of the elbow in front and in profile on their admission. The other views were requested according to the associated lesions.

RESULTS

Our series concerned 78 patients including 67 men and 33 women. Age ranged between 17 and 73, with an average age of 36. The mechanism of trauma was direct in 80%. The etiologies were represented by road accidents (41 cases) and falls (36 cases), sports accidents (16 cases) and seven cases of aggression. All the patients had presented to the emergency room with an attitude of the traumatized upper limb, the elbow in semi-flexion at 90°, with pain and total functional impotence of the affected limb.

Cutaneous openings observed in 16 patients. The opening was evaluated according to the CAUCHOIX and DUPARC classification. A case of injury to the humeral artery was noted and had benefited from a bypass with a venous graft. Ulnar nerve involvement was found in three cases. On the radiological level, the classification of the AO enabled us to find 27 cases of Type A, 32 cases of Type B and 41 cases of Type C (Fig.1a.bcd).

All our patients underwent surgical treatment with a LECESTRE-type plate (alone or consolidated with a 1/3 tube plate, by screwing or by pinning). The external fixator was used in three cases who presented with a stage II open fracture. The posterior trans-olecranon approach was used in more than 75% of patients, as opposed to the lateral, medial and trans-tricipital approaches in 25%. Functional rehabilitation of the elbow was started around the tenth day for types A and B and subtype C1. We observed four cases of superficial infection of the operative wound which progressed well under antibiotic treatment. A case of deep infection on osteosynthesis material with disassembly of the material and secondarily a septic pseudarthrosis, one case of postoperative paresthesia of the ulnar nerve which regressed after six months and seven cases of elbow stiffness. The radiological results showed a rate of 100% consolidation of the olecranon and 98% consolidation of fractures of the humeral paddle with, however, two cases of pseudarthrosis.

Fig.1: supra and intercondylar fracture type C2 A and B preoperative radiograph, C and D: postoperative radiological control.

Mayo Clinic Elbow score	AO Classification			percentage(%)
	A-type	B-type	C-type	
Excellent	22	7	8	37.00
Good	5	17	11	33
Average	4	6	15	25.00
Bad	0	1	4	5
Total	100			100

Table 1: Mayo Clinic score by type of fracture

Table 2: Comparison of our results with the series in the literature.

Series	Number of cases	Age (years)	Follow-up (months)	MES score (%)
Doornberg(15)	30	13-64	144-360	91
Sanchez Stella (16)	32	19-90	24	85
Shin(17)	35	18-94		93
Greiner(18)	14	21-83	12	91
Our series	100	17-73	24	81

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Fractures. Opera TechOrthop C 2013.

DISCUSSION

Humeral paddle fractures represent 1 to 2% of adult fractures (1) and 30% of elbow fractures (2). The overall incidence found is 5.7/100,000/1 year (3). The trauma is most often direct (door elbow), it can sometimes also be indirect by a fall on the palm of the hand, the radial head fracturing the humeral epiphysis (4). The polymorphism of these fractures has given rise to numerous classifications, none of which currently manages to synthesize the anatomical, prognostic and therapeutic criteria; They are mostly purely anatomical.

The cutaneous openings are seen especially at the level of the posterior and proximal face of the elbow joint (5) and have an impact on the prognosis of fractures of the humeral paddle by exposing them to the risk of infection, hence the interest of antibiotic therapy. well suited. The frequency of open fractures is evident in the different series, it is 33.3% for that of Hachimi (6) and 23.5% for ours.

Neurological examination of the three nerves (ulnar, radial and median) is crucial in order to determine preoperative neurological lesions. Nerve palsy usually regresses within a few weeks after surgical management (7). Ruan et al (8) reported a 24% incidence of preoperative ulnar neuropathy in a series of 117 type C fractures according to the AO classification.

The fracture of the humeral pallet can enter within the framework of a polytrauma where the vital emergency takes precedence and the management of the fracture becomes a deferred emergency. The association with other osteoarticular lesions represents 23.6% for Elhage, our results join the other series in frequency by an incidence of 25% of cases.

Diagnosis of these fractures is generally easy on standard AP and lateral X-rays (fig.1). CT is useful in patchy and very distal fractures. 3D reconstructions (10) show the morphology and position of the fragments and help in choosing the approach. CT may have its place in very comminuted fractures in the elderly to assess frontal and comminuted fractures directing management towards prosthetic surgery (9).

In our series, the treatment was always surgical and allowed reconstruction of the articular surfaces and the shape of the distal end of the humerus; the stable osteosynthesis made it possible to begin early rehabilitation.

Several approaches have been described in the literature, each adapted to the type of fracture, thus the posterior approach (11) is the only one which allows by a single incision the control of the two internal and external columns, the respect of the subcutaneous nerves , and the possibility of all technical gestures especially after the osteotomy of the olecranon, which earned it the qualification of the universal approach "Universal approach" (12-13) of the Anglo-Saxons. The anterior transposition of the ulnar nerve at the end of the operation makes it possible to isolate it from the osteosynthesis

material and to place it at a distance from the scar fibrosis (14), thus facilitating possible removal of material. Stiffness is the inevitable evolution of a traumatic elbow that is not mobilized quickly, The comparison of the functional results of our series with those of the literature is difficult because of the criteria taken into consideration in each study. We found satisfactory results in more than 70% of cases (table 2).

CONCLUSION

The progress made in the design and development of osteosynthesis material and the results obtained have made it possible to propose surgical techniques allowingearly rehabilitation, an essential complementary therapy to obtain good results (19). The place of orthopedic treatment has thus become very limited, and kept for very specific cases.

Consent :

Written informed consent was obtained from the patients for publication and any accompanying images.

Ethical Approval:

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

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