

The Interest of Surgical Treatment in The Management of Olecranon Fractures

Rachid Maanouk*, Oudghiri D, Baroudi A, El Ghadraoui R, Abid H, El Idrissi M, El Ibrahimy A, Elmrini

Department of Orthopedic II, University Hospital Center HASSAN II Fez, 30000 fez, Morocco

DOI: [10.36347/sasjs.2020.v06i03.018](https://doi.org/10.36347/sasjs.2020.v06i03.018)

| Received: 03.03.2020 | Accepted: 15.03.2020 | Published: 27.03.2020

*Corresponding author: Rachid Maanouk

Abstract

Original Research Article

Olecranon fractures are the most common fractures of the elbow. Their treatment is surgical each time there is a displacement, because only the osteosynthesis allows an anatomical reduction, a stable assembly and an early rehabilitation which is very important for the functional result. We reviewed a series of 98 cases of olecranon fractures, treated surgically in the traumatology and orthopedics II department of University Hospital Center HASSAN II Fez, between January 2009 and December 2019. The type of osteosynthesis was a Tension-band wire fixation in 93 cases, a screwed plate in 4 cases, and cortical screw in 1 case. The final results were satisfactory in 80% of the cases, the complications were dominated according to the functional classification of Mayo Clinic by the stiffness of the elbow (6.25%).

Keywords: Olecranon, surgery, fracture.

Copyright @ 2020: This is an open-access article distributed under the terms of the Creative Commons Attribution license which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use (NonCommercial, or CC-BY-NC) provided the original author and source are credited.

INTRODUCTION

Olecranon fractures are the most common joint fractures of the elbow. The sequelae are dominated by stiffening of the elbow. The failure of initial bone reconstruction is all the more derogatory as it concerns the articular surfaces and imposes an often complex reconstruction and rehabilitation program, the results of which are limited by the occurrence of post-traumatic osteoarthritis.

We have opted for the radiological classification of MERLE AUBIGNE. The evaluation of the final results was based on the Mayo Clinic Functional Classification.

The objective of our study is to

- * specify the clinical and evolutionary particularities.
- * show the value of surgical treatment in the management of olecranon fractures

MATERIAL AND METHODS

This is a retrospective study that focuses on the analysis of 98 cases of olecranon fracture, treated surgically in the traumatology and orthopedics II department of the Hassan II University Hospital center between January 2009 and December 2019.

RESULTS

We report a retrospective study of 98 cases of olecranon fracture surgically treated. The follow-up varies between 12 months and 3 years, with an average follow-up of 14 months. These are 89 men and 9 women. The average age is 29 years old. Right-sided involvement is predominant with 67%, compared to 33% for left-sided lesions. (Figure 1).

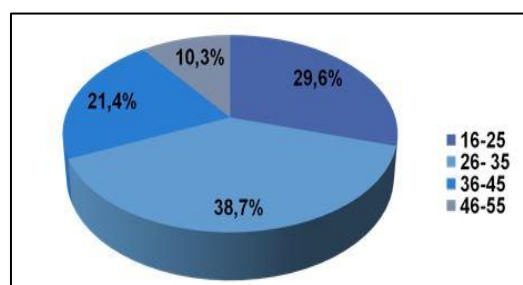


Fig-1: Distribution of patients by age

AVP are incriminated in the majority of cases (46%), followed by aggression (28%) and falls with (26%). The skin opening was classified according to the classification of CAUCHOIX and DUPARC. It was noted in 14 patients with stage I in 10 cases and stage II in 4 cases (figure 2). We did not find any cases in our series of vascular attacks. We found 5 cases of paresthesia of the territory of the ulnar nerve

Associated lesions they were noted in 6 patients

- * Dislocation of the homolateral elbow + fracture of the radial head: 2 cases
- * Fracture of the contralateral humeral palette: 1 case
- * Cranio-facial trauma: 2 cases
- * fracture of the left tibia: 1 case

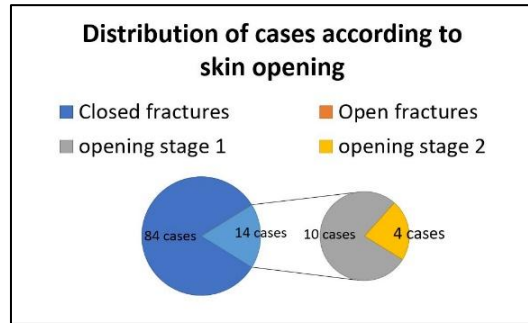


Fig-2: Distribution of cases according to skin opening

Among all the classifications of olecranon fractures, we have opted for that of MERLE AUBIGNE, it includes 3 types according to the location of the fracture line (figure 3):

Type I: Fracture of the apex or olecranon beak (32 cases)

Type II: Middle part fracture (43 cases)

Type III: Base fracture (23 cases)

The fracture was simple in 76 cases and complex or comminuted in 22 cases.

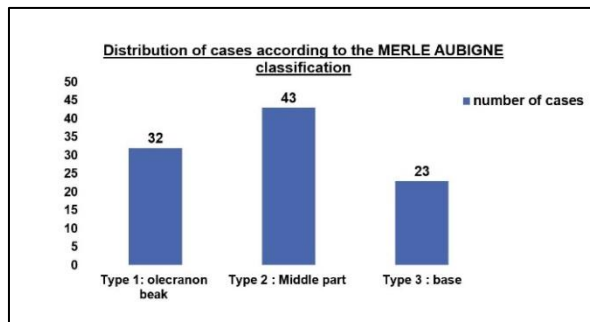


Fig-3: Distribution of cases by the classification of MERLE AUBIGNE

All patients received surgical treatment. The type of osteosynthesis was a guy line in 93 cases, a screw plate in 4 cases, a cortical screw screwing in 1 case (figure 4).

Associated gestures: a suture with transposition of the ulnar nerve was performed in 5 cases. Rehabilitation was started from the 1st week post-operatively. And it was delayed until the 3rd week for 3 cases with a comminuted fracture.

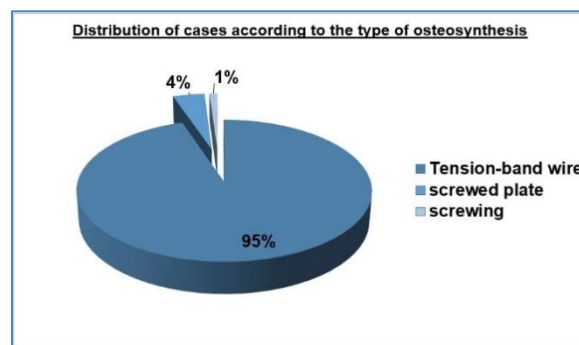


Fig-4: Distribution of cases by the type of osteosynthesis

There were 2 cases of late sepsis that required removal of the osteosynthesis material. We found a single case of non-union requiring a resumption of surgery by spongy bone graft with a good radio-clinical course.

No case of vicious cal was observed. In our series, we noted 03 cases of stiffness (3%) due to the absence of nearby specialized Rehabilitation centers as

well as the low socio-cultural level and the lack of resources of the Patients who did not allow early and appropriate treatment.

The results were assessed according to the functional classification of the Mayo Clinic; mobility of the elbow in extension flexion and pronosupination, residual pain and extension force of the elbow (Tables 1).

Table-1: Results according to the type of osteosynthesis

Results	Very good (%)	Middle (%)	Bad (%)
Tension bande Wire fixation (93 cas)	90,33 %	9,67 %	-
Screwed plate (4cas)	75 %	25 %	-
Screwing (1 cas)	100 %	-	-



Fig-5: Preoperative front (A) and side (B) radiography of an olecranon fracture



Fig-6: Post-operative front (D) and profile (C) radiography of an olecranon fracture treated by Tension-band wire fixation

DISCUSSION

Olecranon fractures are the most common fractures of the elbow. They occur mainly in young and active men, while they are rare in children. The most frequent etiologies are falls and AVP, by a direct or indirect mechanism.

Skin opening remains frequent in fractures of the olecranon, testifying to a direct and violent shock which affects the prognosis of these fractures by exposing them to the risk of infection. These lesions are extremely rare and are seen only exceptionally in violent and complex trauma [2,4].

Lesions of the post-traumatic peripheral nerves are variously appreciated, they vary between 0 and 4% (1.5) and mainly concern the ulnar nerve. Staged osteoarticular lesions of the same limb often complicate treatment and postoperative operations, thus hampering rehabilitation. They represent 33% for GICQUEL [6], 32% for LINS [3].

The diversity of therapeutic methods proposed in the treatment of olecranon fractures illustrates the difficulty of trying to standardize them.

Table-2: Results of the tension bande wire fixation in different studies of littérature

studies	Number of cases	Tension bande ware fixation	% of Very good and good Results
Doursounian [1]	52	38 (73%)	87%
CHALIDIS [8]	62	62 (100%)	85,5%
Our study	98	93 (94%)	89%

However, each technique retains its place for its indications. Simple or eight strapping is not recommended. Screwing is reserved for low fractures with oblique lines. The screwed plate is indicated in the event of comminuted fractures. Tension bande wire fixation simple technique and applicable to all varieties of fractures. Surgical treatment whenever there is a displacement, allows an anatomical reduction, a stable

assembly and an early rehabilitation which is of capital importance for the functional result (table 2).

Orthopedic treatment also keeps an indication in the elderly osteoporotic subject for whom a limited objective is aimed [7]. Complications of fractures of the olecranon are dominated by stiffness; hence the importance of early mobilization (table 3).

Table-3: Complications reported by the different series

Studies	Elbow stiffness	Non-union	Infection	Secondary Displacement
HUTEN (76 cases)	1%	5%	3%	5,5%
MENKOUR (68 cases)	4,4%	1,5%	2,5%	4%
CHALIDIS (62 cases)	3,5%	2%	-	2,5%
Notre série (98cas)	3,06%	1%	2%	0

CONCLUSION

The review of our cases and those of the literature encourages us to continue in the path of osteosynthesis, nevertheless adapting the indications to the type of fracture and using the most codified technique, while keeping in mind the notion formulated by MERLE AUBIGNE in 1968: "osteosynthesis shows superiority over non-bloody treatment, but only when a perfect reduction has been followed by a fairly solid structure allowing immediate active mobilization".

REFERENCES

- Doursounian L, Prevot O, Touzard RC. Osteosynthesis by tension band wiring of displaced fractures of the olecranon. In Annales de chirurgie. 1994, 48(2): 169-177.
- Allieu Y, Vidal J. Fractures de l'extrémité supérieure des deux os de l'avant-bras. Encycl. Med. Chir. 1977.
- LINS RE. Pediatric elbow traumatismes Orthop Clin North Am-01. 1999; 30(1): 119-32.
- Aouam E, Mouden A, Moulay I. Les traumatismes complexes fermés du coude chez l'adulte: à propos de 33 cas Maroc Médical VIII. 1986. N.; 1:47-50.
- KHALED B. Fractures de l'olécrâne (à propos de 40 cas) Thèse Méd Casa. 1997; N°147.
- Gicquel PH, De Billy B, Karger CS, Clavert JM. Olecranon fractures in 26 children with mean follow-up of 59 months. Journal of Pediatric Orthopaedics. 2001 Mar 1;21(2):141-7.
- Parker MJ, Richmond PW, Andrew TA, Bewes PC. A review of displaced olecranon fractures treated conservatively. Journal of the Royal College of Surgeons of Edinburgh. 1990 Dec;35(6):392-4.
- Chalidis BE, Sachinis NC, Samoladas EP, Dimitriou CG, Pournaras JD. Is tension band wiring technique the "gold standard" for the treatment of olecranon fractures? A long term functional outcome study. Journal of orthopaedic surgery and research. 2008 Dec;3(1):9.
- Menkour M. Fractures de l'olécrâne (à propos de 68 cas). Thèse Méd Casablanca. 2003; N° 105.
- Huten D. Les fractures de l'extrémité supérieure des deux os de l'avant-bras chez l'adulte. Conférences d'enseignement. 1991; 40: 123-154.