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Management of type IIB and IIIB olecranon fractures. Case series

Mohammed Ali[a,*], Catherine Hatzantonis[b], Dimitrios Aspros[c], Nirad Joshi[d], D.I. Clark[e], Amol Tambe[e]

[a] Northumbria NHS Foundation Trust, United Kingdom
[b] Core trainee Trauma and Orthopedics, Royal Derby Hospital, United Kingdom
[c] Registrar Trauma and Orthopedics, Royal Derby Hospital, United Kingdom
[d] Royal Derby Hospital, United Kingdom
[e] Consultant Trauma and Orthopedics, Royal Derby Hospital, United Kingdom

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ABSTRACT

OBJECTIVES: to report and evaluate the functional outcome of plate fixation in comminuted olecranon fractures (Mayo types IIB and IIIB).
METHOD: 23 consecutive patients with comminuted fractures of the olecranon presenting to our unit Between Feb 2011 and Jan 2015, at a mean follow-up of thirty-six months. Main outcome measurements include radiographic healing, post-operative range of motion, complications, outcome score and patient satisfaction.
RESULTS: Our study included thirteen females and ten males with a mean age of 55(18–97). Fourteen were Mayo type IIB and nine were Mayo type IIIB. Eighteen patients had no complications post-operatively with good outcome with mean oxford score of 45, full rotational ROM and mean flexion arc of 20–130°. Five patients had range of motion between 40–90° with full rotational ROM and mean oxford score of 24. Two patients out of five required metal work removal. No non-unions were noted in our series.
CONCLUSION: Plate fixation of complex olecranon fracture is an effective, reliable method of treatment with low risk of non-union. Restoration of a functional flexion arc of movement can be expected with application of correct technique.

1. Introduction

Olecranon fracture is a fairly common injury. Olecranon fractures account for 5–7% of elbow fractures in adults but are much rarer in children [1]. It generally happens due to a direct force to the point of the elbow or a tumble onto an extended arm. Its subcutaneous location makes it vulnerable to direct trauma. Olecranon fractures could also take place following a strong triceps contraction against a fixed ulna. It can be as simple as non-displaced fractures or complex fractures with dislocation of the elbow joint. In most of the cases, plain radiographs are sufficient to confirm the diagnosis and plan the management. CT scan may be required, in some cases, to assess the severity of the injury and to plan fixation [2]. Fixation with Plate and screws is the gold standard treatment for comminuted fractures, fractures of Monteggia, fractures associated with dislocations and oblique fractures with distal extension affecting the coronoid [3,4]. Good recovery is anticipated with surgical fixation though the final outcome may depend on the intra-articular nature of the injury, multiple fracture fragments and the extent of the soft tissue injury.

We evaluated locking plate fixation of comminuted olecranon fractures in terms of bone union, surgical complications, long term outcomes and patients' satisfaction.

This case series has been reported in line with the PROCESS criteria [5].

2. Materials and methods

We retrospectively studied 23 patients with comminuted fractures of the olecranon. The mean follow-up period was 36 months ranging from 24 to 52 months.

There were thirteen females and ten males with mean age of fifty five years [range, 18–97 years]. The twenty-three patients had an open reduction and internal fixation using plate and screws, between February 2011 and January 2015. We use The Mayo classification system which classifies these fractures based on the stability, the displacement and the comminution of the fracture [6]. It is comprised of three types, and each type is divided into a comminuted and a non-comminuted subtypes (Fig. 1).

* Corresponding author at: Northumbria NHS Foundation Trust, United Kingdom.
E-mail address: Mohammed.ali17@nhs.net (M. Ali).

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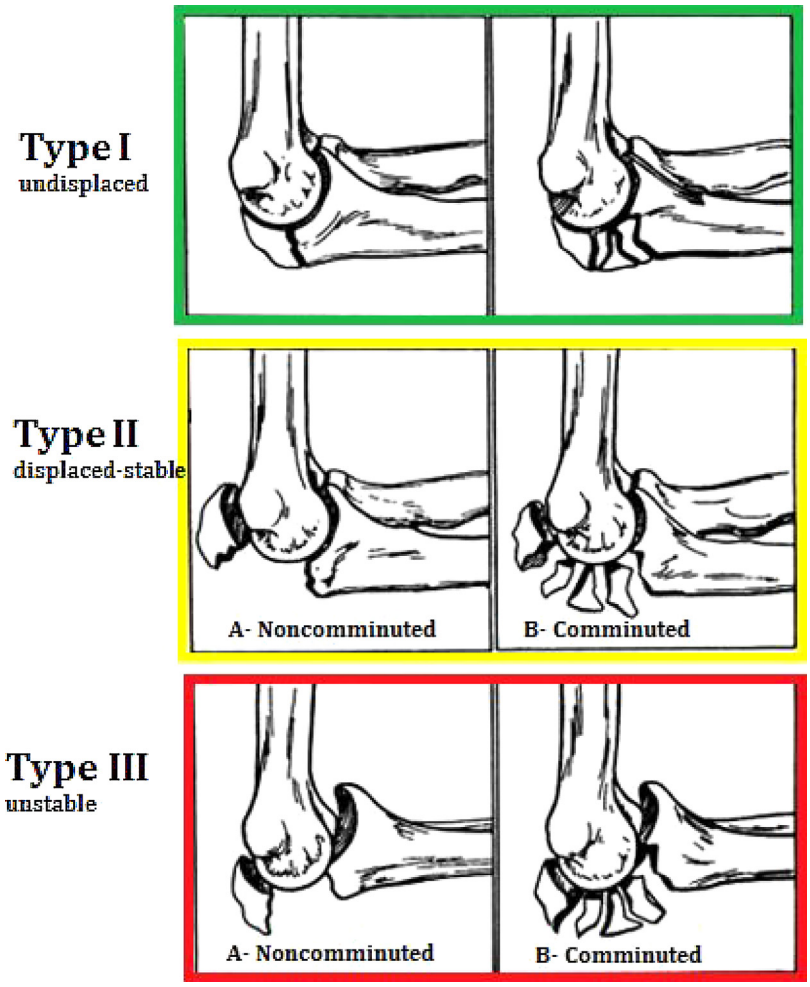

Fig. 1. shows Mayo Classification.

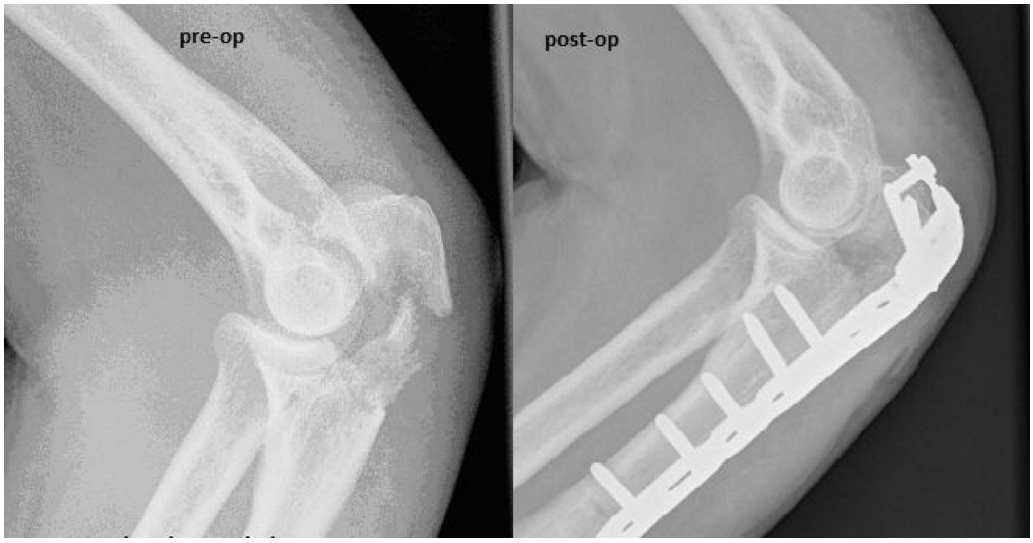

Fig. 2. type IIB fracture, had open reduction and internal fixation using plate and screws.

According to The Mayo classification system; fourteen patients had Mayo type IIB and nine had Mayo type IIIB (Figs. 2 and 3). All the radiographs were reviewed by the senior author.

Operations were performed either under general anaesthesia with local anaesthetic infiltration or regional block. The mean tourniquet time was 48 min. The fracture was exposed through a posterior curvilinear incision while the patient is in a lateral position. The C-arm was used intra-operatively to assess the reduction and the congruency of the joint. Ulnar nerve was protected throughout the procedure although not explored. For antimicro-