

Monteggia Fracture in Children A Review of 30 cases—

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Abstract Purpose : The aim of this study was to review the behavior and treatment results of Monteggia fracture in children.

Study Design : The charts and radiographs of patients with a Monteggia fracture who were younger than 16 years old were reviewed retrospectively.

Results : 33 patients were admitted with a Monteggia fracture, from 1995 to 1999. Of these 30 (90.9%) complete records and radiographs were reviewed. There were 22 boys and 8 girls, with an average age of 6.6 years (range 1.5 to 15.8 years). When the child was treated within 3 days after injury, all radial head dislocation could be successfully reduced by the close method except one with an intact annular ligament which prevented close reduction. The ulnar fracture was reduced by the close method in 20 cases, and by open reduction in 10 cases. 25 (83.3%) patients returned for clinical assessment. The average follow up was 4 years. The Bruce Scoring System was used to assess the injured elbow. 24 (86%) had excellent or good results, and 1 (4%) had fair results. The child with fair results had delayed treatment until 16 days after injury. 20 cases were treated with intramedullary K wire fixation for the ulnar fracture with no significant complication.

Conclusions and Clinical Relevance : The most important factor for achieving good results with a Monteggia fracture is not to miss the diagnosis. Intramedullary K wiring for the ulnar fracture is safe and effective. An excellent result is expected when a Monteggia fracture in children is treated promptly and appropriately.

Introduction

Monteggia first described a fracture in the ulna with concomitant dislocation in the radial

head. Conservative treatment with close reduction and casting has been considered to be the standard way to treat this injury³⁾⁶⁾⁷⁾. However, various authors have indicated that certain

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a/b

Fig. 1.

a : The preoperative AP and lateral view of the injured elbow.

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b : The postoperative AP and lateral view of the same elbow treated with close reduction and intra medullary K wire fixation for the ulnar fracture.

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Table 1. The Bruce Scoring System

Item	Maximum score
ROM=60 (% impairment×0.6)	60
Pain	30
Hyperextension 2 if <5, 1 if 5-10, 0 if >10	2
Loss of carrying angle 2 if <5, 1 if 5-10, 0 if >10	2
Appearance patient's perception	2
Objective assessment of appearance	2
Radiological union	2

Monteggia lesions may not be amenable to non operative treatment¹⁾²⁾. More aggressive treatment with open reduction and operative fixation may be required in some cases to ensure satisfactory outcome¹⁾⁴⁾⁵⁾.

This report describes the behaviour and treatment results of Monteggia fracture dislocations treated at our institute between 1995 and 1999.

Methods

This was a retrospective review of all children below 16 years of age admitted to the Prince of Wales Hospital of Hong Kong SAR, from 1995 to 1999, with a Monteggia fracture dislocation. The records and radiographs were examined. The demographic data were noted.

The treatment method of first choice for the radial head dislocation was close reduction, and if that failed, then treatment proceeded with open reduction. The ulnar fracture was reduced in a similar fashion followed by casting or internal fixation. The mode of internal fixation could be plating, lag screw fixation or intramedullary K-wiring (Fig. 1). The assessment for the treatment outcome used the Bruce Scoring System (Table 1) for the elbow injury.

Results

From 1995 to 1999, 33 patients were admitted to the Prince of Wales Hospital with a Monteggia fracture dislocation in the elbow. 30 (90.9%) records and radiographs were reviewed.

The male to female ratio was 2.75 to 1. The average age was 6.6 (range from 1.5 to 15.8) years.

There were 17 patients Bado's type I, and 13 with Bado's type III fracture. Among these 30 patients, 27 patients (90%) could be treated with close reduction resulting in a stable radiocapitellar articulation. These 27 patients were all treated within 3 days after injury. One patient with early treatment needed open reduction for the radial head; the operative finding

Table 2. Results according to the Bruce Scoring System

Bruce Score	Result	number in Present series
96 to 100	excellent	23
91 to 95	good	1
81 to 90	fair	1
< - 80	poor	0

was that the annular ligament was intact and was blocking the radial head from getting back into the reduced position. The other 2 patients required open reduction for the radial head, and both of these had delayed treatment.

Concerning the ulnar fracture, 10 of the 30 cases required open reduction. A total of 20 cases received intramedullary K-wire fixation for the ulnar fracture with no significant complication.

25(83.3%)patients returned for a clinical assessment. The average follow-up duration was 48 months. Table 1 shows the Bruce Scoring System used. Table 2 shows the results according to the Bruce Scoring System. 24(96%)had excellent or good results. 1(4%) case with delayed treatment on Day 16 had fair results.

Discussion

Child Monteggia fracture dislocation can be satisfactorily treated with close reduction and casting. In fact, our series demonstrated that the radial head could be put back to the reduced position by the close method in 90% of cases.

However, operative treatment should be considered in certain situations especially when the ulnar fracture has been found to be unstable after reduction. In such circumstances, internal fixation should be performed. 20 cases in this series had been treated with intramedullary K-wiring, and this was shown to be a safe and effective way of fixing the ulnar fracture. The timing of treatment is important as far as the clinical outcome is concerned. If the patient is treated promptly and appropriately, the result can be expected to be satisfactory in most cases.

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