

Case Report

Isolated middle third fracture of radius in 11 year child: Management

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Abstract: Isolated radial shaft fractures in children are unusual in clinical practice. If there is fracture the degree of angulation is measured and accordingly managed. An 11 years boy came to the casualty department with the history of fall on outstretched hand, diagnosed to have fracture shaft of radius. X ray examination of the right forearm revealed fracture of the midthird of the shaft of the radius, with volar angulation of 23° (180-157) and interosseous angle of 15.3°(180-164.7) (Fig 2). Tried for closed reduction and immobilization under sedation, the reduction was not achieved. Patient was again operated by open reduction internal fixation of the fracture using dynamic compression plate and screws, and we corrected the angulation to near normal status. Postoperatively wound healed well, range of motion exercises started two days after the surgery and patient achieved full range of motion by two weeks. Radiologically the fixation was satisfactory and at four weeks fracture was united. In conclusion, isolated middle third fracture of radius in children below fourteen years with volar/ dorsal/interosseous membrane angulation of more than fifteen degrees and rotational angulation of more than thirty degrees should be managed by surgical methods to get the near normal anatomy of the bone to get near normal range of motion. And to get rid of cosmetic problems even a relatively small angular deformities, which are clinically significant to be corrected surgically.

Keywords: Angular deformity, radius, internal fixation, children

INTRODUCTION

Isolated radial shaft fractures in children are unusual in clinical practice. If there is fracture the degree of angulation is measured and accordingly managed. By Sarmiento *et al.* [2] fracture angulation of 15 to 30 degrees led to 40 to 90 degrees supination losses when the deformity was in the middle third of the forearm and 30 to 80 degrees pronation losses when in the distal third [1]. In isolated midshaft radial fractures, more than 30 degrees of malrotation was a threshold for significant losses of around approximately 15 degrees in motion [3].

CASE REPORT

An 11 years boy came to the casualty department with the history of fall on outstretched hand while playing with complains of pain, swelling and deformity in the right forearm. Examination of the right forearm shows tenderness swelling and deformity of the mid third of forearm. X ray examination of the right forearm revealed anteromedial angulated fracture of the mid third of the shaft of the radius, Anteroposterior was 23° (180-157) (Fig 1) and interosseous angle of 15.3°(180-164.7) (Fig 2). Tried for closed reduction and

immobilization under sedation, the reduction was not achieved. Patient was again operated by open reduction internal fixation of the fracture using dynamic compression plate and screws, and we corrected the angulation to near normal status (Fig. 3). Postoperatively wound healed well, range of motion exercises started two days after the surgery and patient achieved full range of motion by two weeks. Radiologically the fixation was satisfactory and at four weeks fracture was united.

DISCUSSION

By Trousdale *et al.* noticed that many of the pediatric (less than 14 years old at time of injury) patients with forearm fractures had malunion [4]. Meier also reported significant range-of-motion deficits in association with pediatric forearm malunion [5]. Matthews *et al.* studied Range-of-motion losses due to deformity using adult cadaveric forearm specimens. 10-degree deformities of either bone individually resulted in little or no measurable motion loss (in the range of 3 degrees or less). In case of both bones were angulated 10 degrees in either dorsal, volar and toward the interosseous membrane, larger motion losses were documented than individual bone (approximately 10

degrees pronation and 20 degrees supination). Significantly greater losses of motion occurred when one or both bones were angulated more than 20 degrees (approximately 40 degrees for both pronation and supination). Some of the 10-degree angulated specimens demonstrated cosmetically unacceptable deformity [6]. These findings indicate that relatively small angular deformities can be clinically significant. The influence of fracture level on forearm motion was provided by a series of experiments conducted by Sarmiento *et al.* [2], fracture angulation of 15 to 30 degrees led to greater supination losses when the deformity was in the middle third of the forearm (40 to 90 degrees) and greater pronation losses when in the distal third (30 to 80 degrees) [1]. In isolated midshaft radial fractures, more than 30 degrees of malrotation was a threshold for significant losses in motion (approximately 15 degrees) [3]. In our case the volar angulation of 23° (180-157) (Fig 1) and interosseous angle of 15.3° (180-164.7) (Fig 2), was corrected to near normal status by open reduction and internal fixation.



Fig. 1: Pre op-Anteroposterior view



Fig. 2: Pre op-Lateral view



Fig. 3: Post op X-ray

CONCLUSION

Isolated middle third fracture of radius in children below fourteen years with volar/dorsal/interosseous membrane angulation of more than fifteen degrees and rotational angulation of more than thirty degrees should be managed by surgical methods to get the near normal anatomy of the bone to get near normal range of motion. And to get rid of cosmetic problems even a relatively small angular deformities which are clinically significant to be corrected surgically.

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