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Original Research Paper

Orthopaedics

EVALUATION OF RESULTS OF CLOSED NAILING OF BOTH BONE FOREARM FRACTURES

Dr Kaushlendra Kumar	Asst Prof. Department of Orthopaedics, MGM Medical College, Kishanganj, Bihar
Dr Arnab Sinha*	Asst Prof. Department of Orthopaedics, Katihar Medical College, Katihar, Bihar *Corresponding Author
Dr Ajay Kumar Mahto	Prof.and Head Department of Orthopaedics, Katihar Medical College, Katihar, Bihar

ABSTRACT

Forearm skeleton in humans is adapted more for mobility than stability and plays an important role in upper extremity function. The arc of Rotation is probably the most important factor for forearm. The use of intramedullary devices to stabilize fractures is not new. A study of 18 cases of diaphyseal fracture of both bones forearm fixed with intramedullary square nails was done to find out the applicability of square nails in the closed manner under C-arm control. Evaluation of the results in terms of functional outcome using the Grace and Eversman Criteria was done. 13 patients were females and 5 patients were males. 3 of the fractures were caused by direct blow, 6 were by fall on outstretched hand and 8 were due to road traffic accidents and remaining 1 was an occupational injury.14 patients had fractures on right side and 4 on left side.Short oblique fractures were the most common type of fracture in the present study.There was 1 case with superficial infection at the ulnar entry site that subsided with oral antibiotics for one week. No implant breakage or irritation due to nail or implant back-out was seen.Union was defined as the presence of bridging bone or trabeculae spanning the fracture site. The patients were also evaluated clinically for fracture site tenderness and pain on rotation. The average time to union was 13 weeks (10-24 weeks).There was one case of delayed union, which subsequently showed radiographic union at 24 weeks. There was no loss of flexion or extension in any of the patients as compared to the other arm. Pronation and supination was restricted in three patients. Out of the 18, 7,7,4 and 0 patients had Excrellent, good, acceptable and unacceptable results respectively. Intramedullary nailing is a viable option for diaphyseal both bone fractures and comes with the advantages of preserving the fracture hematoma,decreased chances of infection (as it is a closed procedure and uses the least amount of periosteal stripping) and cosmetically better. It also has lower refracture rates after implant removal.

KEYWORDS : both bone fracture forearm, square nailing, plating

INTRODUCTION:

Forearm skeleton in humans is adapted more for mobility than stability and plays an important role in upper extremity function. The arc of Rotation is probably the most important factor for forearm. Plate osteosynthesis is the most commonly used technique for the treatment of diaphyseal forearm fractures in adults.

The use of intramedullary devices to stabilize fractures is not new. Ivory pins, the Küntscher nail, the Rush nail, and Ender nails have all been in use. Nailing of the forearm, beginning with Schöne, predates nailing of the femur and tibia. Its slower technical development appears to be due to anatomic problems of the radius, the interdependence of the two bones, and the strong torque loads from pronators and supinators. Sage used prebent triangular nails for the fixation of radius fractures with good results. Talwarkar designed and performed fixation of both bones of forearm fractures with flexible square nails.

MATERIAL AND METHODS:

A study of 18 cases of diaphyseal fracture of both bones forearm fixed with intramedullary square nails was done to find out the applicability of square nails in the closed manner under C-arm control. Evaluation of the results in terms of functional outcome using the Grace and Eversman Criteria was done Inclusion criteria: 1. age more than 18 years 2. patient not subjected to any other form of treatment and 3. closed fractures without neurovascular deficit. Exclusion criteria: 1. Compound fractures 2. Comminuted fractures 3. Neurovascular injury at presentation 4. Single bone fractures.
Results: 13 patients were females and 5 patients were males. 3 of the fractures were caused by direct blow, 6 were by fall on outstretched hand and 8 were due to road traffic accidents and remaining 1 was an occupational injury.14 patients had fractures on right side and 4 on left side.Short oblique fractures were the most common type of fracture in the present study.

There was 1 case with superficial infection at the ulnar entry site that subsided with oral antibiotics for one week. No implant breakage or irritation due to nail or implant back-out was seen.

Union was defined as the presence of bridging bone or trabeculae spanning the fracture site. The patients were also evaluated clinically for fracture site tenderness and pain on rotation. The average time to union was 13 weeks (10-24 weeks).There was one case of delayed union, which subsequently showed radiographic union at 24 weeks.

There was no loss of flexion or extension in any of the patients as compared to the other arm. Pronation and supination was restricted in three patients.

Out of the 18, 7,7,4 and 0 patients had Excrellent, good, acceptable and unacceptable results respectively.

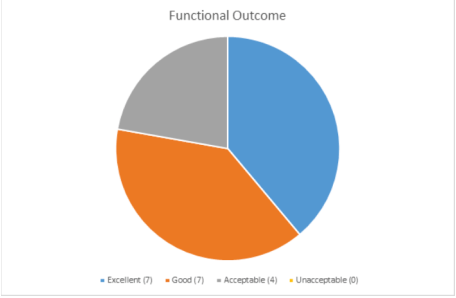
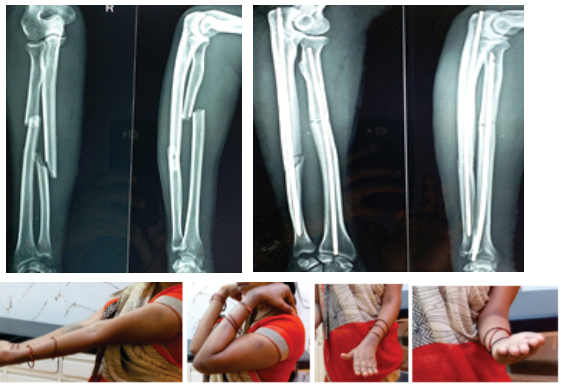
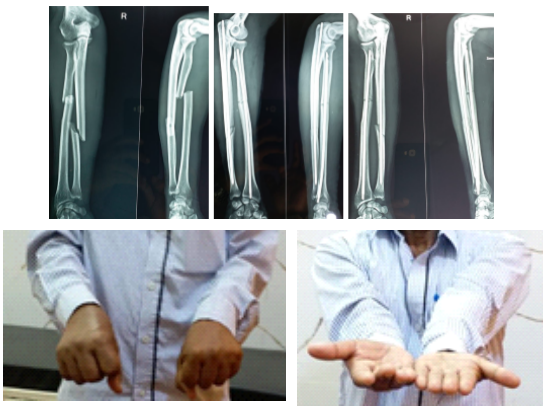


Chart 1 : Result

Case Illustrations:



Case 1



Case 2

Case 3

Case 4

CONCLUSION:

Intramedullary nailing is a viable option for diaphyseal both bone fractures and comes with the advantages of preserving the fracture hematoma,decreased chances of infection (as it is a closed procedure and uses the least amount of periosteal stripping) and cosmetically better. It also has lower refracture rates after implant removal.

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