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Dr. Harsh Patel

Senior Resident, Department of Orthopaedics, GCS Medical College, Hospital and Research Centre, Ahmedabad, Gujarat, India

Dr. Vaibhav S Dangi

2nd Year Resident, Department of Orthopaedics, GCS Medical College, Hospital and Research Centre, Ahmedabad, Gujarat, India

Dr. Tejas R Patel

2nd Year Resident, Department of Orthopaedics, GCS Medical College, Hospital and Research Centre, Ahmedabad, Gujarat, India

Corresponding Author:

Dr. Harsh Patel

Senior Resident, Department of Orthopaedics, GCS Medical College, Hospital and Research Centre, Ahmedabad, Gujarat, India

Case study of humerus shaft fracture operated with modified ender nail

Dr. Harsh Patel, Dr. Vaibhav S Dangi and Dr. Tejas R Patel

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Abstract

Aim: A case report of 1-day old oblique fracture of distal one-third shaft of humerus treated with modified ender nail technique.

Method: A 40 years old female patient presented with 1-day old history of trauma to OPD with left arm pain and swelling. On x-ray there was oblique fracture of distal one-third shaft of left humerus with normal distal neuro-vascularity. The patient presented with a closed injury. The patient was planned to be operated with modified ender technique.

Result: The patient had full range of motion at elbow joint and good range of motion at 6 weeks.

Keywords: Humerus shaft, modified ender technique

Introduction

- The fracture of the shaft of humerus is common type of orthopaedic injury.
- Various complications are reported with modalities like functional bracing, Intramedullary nailing, plating and conventional elastic nailing.

We observed

- Better rotational stability
- Reduced soft tissue dissection
- Preservation of biology
- In time union
- Minimal complications

Why modifications

- Old technique of ender nailing is not credited in literature
- Backing out of nail, multiple surgeries
- Delayed union
- Non-union

Modifications

- Better entry site
- Specific contouring of each nail
- Indirect reduction
- Press-fit elastic rotationally stable fixation

Clinical presentation

A 40 years old patient presented in the OPD with left arm pain and swelling with normal distal neuro-vascularity. Patient had alleged history of trauma by fall 1-day ago.

On examination

The patient presented with a visible swelling over the left arm. There was visible ecchymosis over the extensor part of the arm of approximately 5 X 7 cm. On palpation tenderness was present over distal left arm. Crepitations present while passive movement of arm. The patient had restricted active mobility at elbow of 30 degree with no active movement at shoulder. The patient, on examination had normal distal neuro-vascularity. On radiological examination of an x-ray, there was distal one-third oblique fracture of left humerus.



Fig 1: X-Ray – AP view and lateral view

Management

Patient was admitted and examined. Patient was primarily managed with stabilizing the fracture with a U-Slab, and analgesics. After examination of the x-ray, the patient was planned for intramedullary nailing of humerus with modified ender nailing technique.

Based on the modified ender method, two intramedullary ender nails were inserted. The first nail was inserted laterally. Lateral entry was made through the fully cortical lateral condylar ridge by a 3.2 mm stiff drill pin. Following which, a 3.5 mm X 280 mm ender nail was contoured in a S- shaped configuration.

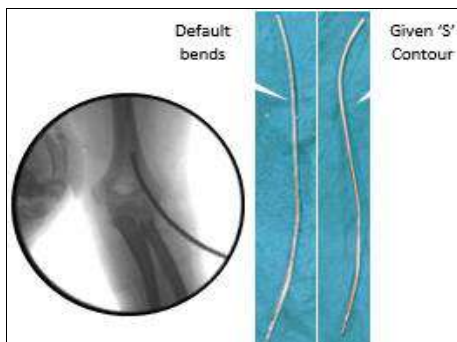


Fig 2: Lateral Ender Nail



Fig 3: Fracture reduction as the nail is rotated

After insertion of the nail, the nail was rotated. This led to gradual reduction of the fracture. A second nail was inserted laterally. This lateral entry was made at the proximal humerus under the greater tubercle by an entry AWL. An ender nail of size 3.5mm X 240 mm, which was contoured in a C- shaped configuration. Closure was done.



Fig 4: Post Operative X-Ray

Post-operatively, patient was advised full range of movement exercise of elbow. Pendulum exercise was initiated after a period of 15 day of immobilization at shoulder joint.

Result

At 1 month follow-up, clinically the patient was able to do shoulder abduction of 90° with full elbow mobility. Patient was promoted to do complete shoulder range of movement exercises.



Fig 5: 4-week follow-up



Fig 6: 10-week follow-up



Fig 7: 12 months follow-up

Discussion

Fracture went for complete healing. Patient had full range of movement including flexion, extension, internal rotation, over-head abduction and circumduction with optimum muscle power grade. Patient had no backed out nail, no nail irritation at entry site. No incidence of infection or non-union. Radiographic callus was seen after 4 weeks.

Our conclusion, based on this study, is that the modified ender nailing technique proves to be efficient in treatment of humoral shaft fractures and could avoid complications reported after conventional ender nailing. Being a closed method, preserving biology, stable press-fit elastic fixation and in-time union, this modified technique has additional advantages over other method of fixation.

Conflict of Interest

Not available

Financial Support

Not available

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