ORIGINAL RESEARCH PAPER

Volume-8 | Issue-7 | July - 2019 | PRINT ISSN No. 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

CHALLENGING CASE OF SEGMENTAL FRACTURE OF THE RADIAL SHAFT WITH A ULNA SHAFT FRACTURE – STABALISED IN THE SAME SITTING WITH PLATEOSTEOSYNTHESIS AND BONE GRAFTING

Orthopaedics

Dr. Vijaynarasimman Reddy Professor and Head, Department of Orthopaedics, Sree Balaji Medical College and Hospital, No. 7, Works Road, New Colony, Chromepet, Chennai - 600044, Tamilnadu, India

Dr. Varun Manek* Post Graduate, Department of Orthopaedics, Sree Balaji Medical College and Hospital, No. 7, Works Road, New Colony, Chromepet, Chennai-600044, Tamilnadu, India *Corresponding Author

Miit Manek Undeer Graduate Student (MBBS), , Department of Orthopaedics, Sree Balaji Medical College and Hospital, No. 7, Works Road, New Colony, Chromepet, Chennai - 600044, Tamilnadu, India

ABSTRACT

Diaphyseal fractures involving the radius and ulna, so called "both-bone" or "double-bone" forearm fractures are common orthopaedic injuries. These injuries can result in significant loss of function if inadequately treated. As the upper extremity serves to position the hand in space, loss of forearm motion and/or muscle imbalance resulting from a poorly treated fracture can be particularly debilitating.[1] Preservation of the anatomic relationships of the proximal and distal radioulnar joints as well as the interosseous space is critical to preserving function.

In rehabilitation of patients with severe injuries of the forearm, restoration of osseous stability must precede any repairs of severed nerves or transfers of tendons.[2]

The fractures of both bones forearm are one of the commonest fractures found and can be treated by different methods. The accepted management for fractures of both bones forearm is open reduction and internal fixation using compression plating. The present study is undertaken to verify the claims made by the authors of dual plating of segmental fractures and DCP for other fracrure.[3]

This study aims at achieving the stability of the fixed fractures with the aim of early mobilisation of the affected wrist and elbow joint so as to prevent shoulder hand syndrome.

KEYWORDS

both bone, forearm fractures; segmental fractures; radius and ulna shaft fractures

INTRODUCTION :-

Forearm bone fractures are commonly encountered in today's industrial era. Various treatment modalities were introduced from time to time and each of them had some edge over the previous one. Continuing this process of revolution and based on many years of experience with compression plating and promising results obtained with so called internal fixation, an implant system has been developed which combines the two treatment modalities.[4]

Despite the combination of these different treatment techniques no compromises were made with regard to application as a compression plate or as a bridging device in the form of an internal fixation.[5] LCP (Locking compression plate) is a product of these combinations and is in line with the latest plating techniques, the aim of which is to achieve the smallest surgical incision and to preserve blood supply to the bone and adjacent soft tissues and stability at the fracture site. [6]

Forearm fractures can present as a result of low-energy trauma, such as falls, sporting injuries, and low-velocity gunshot injuries, or high-energy trauma, such as falls from a height, motor vehicle crashes, and high-energy gunshot injuries. Local pain and deformity are the rule, often accompanied by soft-tissue injury corresponding to the energy of the injury. [7]

The basic principles of AO fracture fixation were followed and applied :-[8]

1. Fracture reduction and fixation to restore anatomical relationship.

2. Fracture fixation providing absolute or relative stability, as required by the patient, the injury, and the personilty of the fracture.

3. Preservation of the blood supply to soft tissues and bone by gentle reduction techniques and careful handling.

4. Early and safe mobilization rehabilitation of the injured part and the

CASE REPORT :-

A 63 year old man, presented to our hospital with a road traffic accident and sustained injury to his left forearm with multiple laceration and deformity and not being able to mobilise his left forearm, wrist.

He was assessed in the casualty for other injuries and after getting appropriate clearances from the casualty and general surgery department and neurosurgery clearance to rule out other life threatening injuries, was admitted under ortho department for further management.

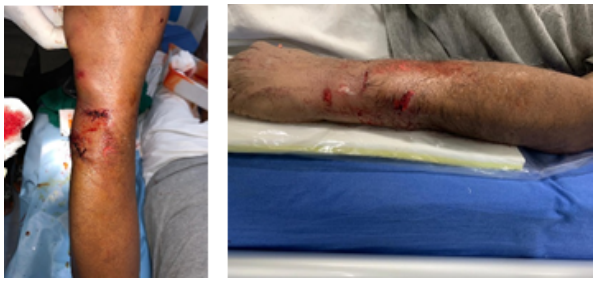

fig. 1 – sutured wound in casualty

Primarily, the lacerated wound present over the dorsal aspect of the forearm was treated with a thorough wash and primary debridement with primary suturing attempted in a minor OT set up.

fig. 2 pre op x ray of full length forearm ap and lateral view

The patient was then temporarily splinted with a below elbow slab for

the same after it was confirmed by an x ray that the patient is suffering from a both bone diaphyseal fracture of the left forearm (segmental fracture of the radial shaft and diaphyseal fracture of the ulna).

A CT revealed the actual pattern of the fractures in question.

Acoording to AO classification system the radius was classified as type 2R2C.

And ulna was classified as 2U2. .
The radial shaft was found to be extending into the metaphyseal region also involving up to the intra-articular part of the wrist.

After clearance from medicine and anaesthesia department for the fitness of surgery, the patient was taken up for surgery under general anaesthesia.

Fig. 3, Ct scan of the pre op of the forearm.

Under supine position and parts painted and draped, under sterile aseptic precautions, with side arm board, and the shoulder being abducted on the arm board, the segmental fracture of the radial shaft was first approached through a modified henry's approach for the distal radius and the distal radial shaft.

The incision length was about 10 cm with the landmarks being the biceps tendon proximally and the distal one being the radial styloid.

Since the fracture was in the distal third of the radial shaft, an interval between brachiaoradialis and flexor carpi radialis muscle was developed. The radial artery lying deep to the brachioradialis in the middle part of the forearm and between the tendons of brachioradialis and flexor carpi radialis distally. It was identified and secure and safely retracted medially.

The forearm was then pronated and radius was exposed just lateral to the edge of the flexor carpi radialis tendon and the pronator quadratus, which becomes visible when the forearm is supinated.

The bone was reached and exposed and with blunt dissection, the bone was further exposed and released of all the tendons overlying it.

The site of the segmental fracture was reached and was taken care of so that the fracture fragment doesn't loose its blood supply.

The fracture fragments were reduced with bone holding forceps and a distal radius T shaped long plate was used to reduce the intra-articular fragment on the volar side and an Asian DCP used on the lateral aspect of the radius to fix the segmental portion to the proximal part. The DCP used to fix the fragment laterally and another plate used anteriorly to make a stable construct.

The wound was closed in layers with drain kept in situ, and the ulna was approached.

With the elbow in flexed position, through a standard ulna approach, the ulna was reached subcutaneously and the fracture was reduced, and fixed using a DCP, and the wound was closed in layers with the drain kept in situ.

The deep dissection that was essentially carried out for the ulna was between the fibers of flexor carpi ulnaris and the extensor carpi ulnaris muscles.

Fig. 4 – post OP Xray OF forearm ap and lateral

While on the cast, the patient was encouraged to perform shoulder and elbow mobilisation exercises and active finger movements as much as tolerated by the patient himself.

At the end of 5 weeks, the cast was removed and wrist mobilisation exercises were encouraged with continuation of the shoulder and elbow exercises.

The follow up was up to 2 months and was fond to be satisfactory with near normal range of motion at the wrist joint and almost near normal movement at the proximal radioulnar joint.

DISCUSSION : -

The primary goal of this case was to reaffirm the need for fixation of segmental fractures of the forearm, either radius or the ulna so as to achieve near normal movement for the patient an early mobilisation so as to reduce the morbidity of the patient.

The most important aspect of treating a segmental fracture is essentially to carefully dissect and preserve the blood supply of the segmental part and achieve acceptable reduction.

Also taking care of the wound since it's a double incision method of fracture fixation is of utmost importance along with prevention of shoulder-hand syndrome.

The results were based on Anderson et al, scoring system and in their study there were 17 (85%) patients with excellent results, 3 (15%) patients with satisfactory results.

The case report was consistent with the finding of BY THOMAS G. GRACE, M.D.t, ALBUQUERQUE, NEW MEXICO, for fixation of segmental fracture of the forearm.

CONCLUSION : -

Fixing the fracture early, with appropriate meticulous dissection and preventing the delay is the need of the hour in fixing the segmental fractures of the forearm with dual plateosteosynthesis and bone grafting and a close follow up of the most probable complications for example wound healing, must be anticipated well in advance and a proper protocol to deal with it should be kept in mind.

REFERENCES :-

[1] Evans EM. Fractures of the radius and ulna. J Bone Joint Surg Br 1951;33(4):548–61.
[2] Knight RA, Purvis GD. Fractures of both bones of the forearm in adults. J Bone Joint Surg Am 1949; 31(4):755–64. Fig. 11. Radial fracture following removal of hardware. Fig. 12. Fracture following removal of 4.5 mm hardware. 150 MOSS & BYNUM
[3] Sage FP, Smith H. Medullary fixation of forearm fractures. J Bone Joint Surg Am 1957;39(1):91–8.
[4] Sargent JP, Teipner WA. Treatment of forearm shaft fractures by double-plating: a preliminary report. J Bone Joint Surg Am 1965;47(8):1475–90.
[5]. Morgan, William J. and Thomas P. Breen: Complex fractures of forearm. Hand clin 1994, 10(3);375-390
[6]. F Leung – Locking compression plate in the treatment of forearm fractures : a prospective study journal of orthopaedic surgery 2006
[7]. Leung F Chow SP:Locking compression plate in the treatment of forearm fractures A prospective study. J Orthop Surg(Hong kong). 2006 Dec;14(3):291-4
[8]. L.D. Anderson, Sisk.D, Tooms.RE and Park W.I Compression plate fixation in acute diaphyseal fractures of the radius and ulna J. Bone Joint Surg. Am., Apr 1975; 57: 287.