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# A New Mode of Treatment For Complex Fractures of Lower End of Radius – Our Experience.

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***Abstract***
***Background:*** *The fractures of lower end of radius are very important, because they constitute one of the common fractures and the function of the hand depends on the correct management of these fractures. If the management is improper then patient may have a deformed and painful hand which will adversely affect their livelihood.*
***Materials & Methods :*** *30 patients were selected for this prospective study. These patients attended the Department of Orthopaedics and Traumatology during the period October 2014 to November 2014. Strict inclusion and exclusion criteria were adhered to.*
***Results:*** *Our results were comparable with several of the earlier studies done internationally.*
***Conclusions:*** *1. Peri-articular locking plate gives excellent results in the fixation of these problematic fractures.*
*2. Proper surgical technique, prompt postoperative care and personal physiotherapy will lead to successful outcome in most of these fractures.*
***Keywords:*** *Periarticular fracture lower end radius, Locking compression plate.*
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## I. Introduction

Fractures of the distal radius are the most frequent fractures encountered by orthopedic trauma surgeons accounting for 17.5% of all adult fractures.[1] Sex and age influence the distal end radius fractures. These are common in all age groups. Most common in older females due to osteoporosis, simple fall from standing height can cause fracture. In younger age groups the road traffic accidents and injuries due to outside sport activities may cause distal end radius fractuPes.[2]

Incidence of distal radius fractures was in rising trend for the last 5 decades[3 4]. This trend is also present in INDIA & U.S, in age group of 60-70 years females and about 300-400 cases per 100000 people years. The overall lifetime risk is 15% and these are the first most common fractures in post menopause. These fractures also indicate future possible fragile fractures of hip and spine. Distal radius fractures crush the mechanical foundation of man's most elegant tool, the hand. No other fracture has a greater potential to devastate hand function. Fractures of the distal radius are extremely common and large majorities are well treated non operatively. However, recent critical evaluation of fracture patterns and results of treatment have demonstrated the need for surgical intervention in fractures demonstrating instability with/without articular incongruity.

The initial treatment of distal radius fractures with conservative methods of casting was improved with introduction of using k-wires. Later it was followed with dorsal plating. Due to the complications associated with dorsal plating like extensor tendon injuries and lack of adequate soft tissues on dorsal side, volar plating became popular. The initial use of traditional plates like T-buttress plate and Ellis non locking plate have complications in achieving stable fixation in comminuted fractures and osteoporotic bones. These are overcome by use of locking plates.

The development of locking-plate technology has changed the way in which many fractures are managed. A locking plate has a number of theoretical advantages over the conventional non-locking implant, not least of which is improved fixation in osteoporotic bone. No other area of fracture management has been affected as much by the emergence of technology as the treatment of fracture of the distal radius[5]

The need for fixed-angle or periarticular plates arose from the failure of conventional buttress plates to achieve stable fixation. Conventional screws toggle as purchase on the weak bone of the distal fragment is usually

poor. Fixed-angle implants do not depend on screw purchase, they depend on direct bone support through an interference effect.

Volar and dorsal fracture fixation constructs require different implant architecture. Dorsal fracture fixation is usually performed with at least two orthogonal implants. Volar plating, by virtue of precise peg distribution, allows a single plate to provide the same dorsal stability as with multiple dorsal implants. Most distal radius fractures are dorsally displaced. Support of the dorsal aspect of the articular surface is of primary importance, hence the distal tilt of the pegs.[6]

The Because LCP are mainly used in the periarticular region of bone, which has a specific anatomy, it is essential to have pre-shaped implants for various periarticular regions in order to achieve a perfect match. With advances in laser scanning technology, it is now possible to map the anatomy of various bones more precisely in order to achieve detailed information about bone surface morphology. This has helped in developing anatomically pre-shaped implants that are improved over previous LCPs, which were unnecessarily large and ill-fitting to the bone surface. As a result, anatomically pre-shaped (peri articular) plate systems are becoming increasingly popular[7].

Recently, there has been an increasing trend toward use of a periarticular plate for treatment of complex fractures of the distal part of the radius. Periarticular locking plates have the biomechanical properties of internal and external fixators, with superior holding power because of fixed angular stability through the head of locking screws, independent of friction fit and if treated by minimally invasive osteosynthesis has the advantage to provide biological fixation.[8]

Hence we in the Osmania General Hospital made study of these fractures treated with Periarticular Volar locking plate and to assess the outcome of surgical management of distal radius fractures.

**Aims:** Evaluate the results of fracture distal end radius with peri articular plating by volar locking plate.

**Objectives**

1) To study the incidence, mechanism of injury and displacement in various types of fracture of distal end of radius.
2) To make a prospective study of 30 cases of fractures of lower end of radius managed with periarticular plating by volar locking plate.
3) To evaluate the functional and anatomical end results and complications of treatment.

**Criteria For Acceptable Reduction:**

Criteria for an acceptable reduction, and the optimum techniques to achieve and maintain reduction are not clear for all fracture types in all age groups. The main extra-articular criteria include the volar tilt, radial inclination, and the radial height. Although extra-articular criteria are important, there is a great deal of evidence that the most important criteria for success is intra- articular reconstruction, that is the accurate restoration of articular surface. The largest tolerable articular step-off is 2mm.

Loss of the normal palmar tilt, decreased radial inclination, and radial shortening cause the loss of articular congruity leading to poor functional outcome Displacement of >2mm, shortening of >5mm, and dorsal angulation of > 20˚ have shown to cause an increased incidence of arthritis, decreased wrist motion, 50% decrease in grip strength and wrist instability in the long run. Residual deformity also can affect the distal radioulnar joint, leading in some cases to persistent pain and loss of forearm rotation. In a laboratory study, the effects of four common types of radial deformity on distal radioulnar joint mechanics were investigated. Radial shortening caused the greatest disturbances in kinematics and the greatest distortion of the triangular fibrocartilage. Decreased radial inclination and dorsal angulation of >20˚ have shown to cause and increased incidence of arthritis, decreased wrist motion, 50% decrease in grip strength and wrist instability in the long run.

Residual deformity also can affect the distal radioulnar joint, leading in some cases to persistent pain and loss of forearm rotation. In a laboratory study, the effects of four common types of radial deformity on distal radioulnar joint mechanics were investigated. Radial shortening caused the greatest disturbances in kinematics and the greatest distortion of the triangular fibrocartilage. Decreased radial inclination and dorsal angulation caused intermediate changes, whereas dorsal displacement produced minimal changes. Radial deformity by itself did not produce distal radioulnar joint dislocation.

**Evaluation of operation results:**

For a good evaluation of the immediate results provided by the radiographs, it is indispensable to use objective criteria with angles and millimeters.

On radiographic examination (PA view), the normal (or anatomically reduced) radius shows the following.

- The bistyloid line (BSL) is tilted at +10 – 15 on the horizontal line;
- The radial angulation (RA) is tilted ar +21 – 24 on the horizontal line;

- The ulnar variance (UV) is normally equal to -2mm (the negative value is taken when the level of the ulnar head is located above the level of the inferior edge of the sigmoid notch)

**An imperfect reduction is characterized radiographically by the following :**

- The bistyloid line (BSL) becomes horizontal or inverted to negative values (-10˚)
- Radal angulation (RA) also tends to be horozontal or even inverted, to a measurement of -10˚
- The ulnar variance (UV) becomes positive (+4), indicating a compression of the distal part of the radius on to the proximal radius
- A radio-ulnar diastasis (d) may be noted eventually, indicating a rupture or a tearing of the triangular fibrocartilage.

**On lateral radiographs the normal criteria is;**

- Palmar tilt (PT) is +15˚. The articular surface of the radius is oriented downwards and slightly forwards.

**An imperfect reduction is characterized by;**

- Tilting to neutral or with dorsal angulation. The measurement of the palmar tilt (PT) is -10˚, which indicates a dorsal or posterior tilt. Even a zero value for the palmar tilt indicates a posterior tilt;
- When the UV becomes positive, it allows measurement of the degree of compression of the distal fragment

**Indications For Open Reduction And Internal Fixations**

1. More than 2mm residual articular step-off (after closed or percutaneous treatment).
2. The presence of a die-punch fragment.
3. Shearing fractures such as Volar Barton's fractures

Open reduction and internal fixation should preferably avoided in severely comminuted fractures as the fixation is not stable and in elderly patients with osteoporotic bone. Surgery should be delayed in the presence of massive soft tissue swelling and localized sepsis.

**Frykman's Classification Of Distal Radius Fractures[9]**

| Fractures | Distal Ulna Fracture Absent | Distal Ulna Fracture Present |
|---|---|---|
| Extra – Articular | I | Ii |
| Intra-Articular | | |
| Radiocarpal Joint | Iii | Iv |
| Radioulnar Joint | Iv | Vi |
| Radiocarpal And Radioulnar Joint | Vii | Viii |

**Radiographic Assessment :**

Check X – ray were taken at 6 weeks to assess consolidation or collapse at the fractures site and to note any displacement. The fracture was considered united when clinically there was no tenderness, subjective complaints, and radiologically when the fracture line was not visible. Fractures, which healed by 4 – 6 months, without any additional operative procedure were considered as delayed union. Fractures, which did not unite after 6 months, or those that needed additional operative procedure to unite were considered as non union. Malunion was defined as more than 5mm radial shortening, more than 15˚ of volar tilt or more than 10˚ dorsal tilt, and more than 4mm of radial shift . Arthritic changes were graded according to the system described by Knirk and Jupiter[14]. Regular follow up was done at an interval of 6 weeks, 3 months, 6 months, and 12 months. The follow up ranged from 5 months to 12 months (average 8.25 months).

Following criteria were considered in evaluating and comparing the study done.

**Lidstrom's criteria for anatomical results:[12]**

| | |
|---|---|
| EXCELLENT | No significant deformity.<br>Dorsal angulation not exceeding neutral position.<br>Radial shortening less than 3mm |
| GOOD | Mild deformity.<br>Dorsal angulation 1 to 10 degrees.<br>Radial shortening 3 to 6 mm. |
| FAIR | Moderate deformity.<br>Dorsal angulation 11 to 14 degres.<br>Radial shortening 7 to 11mm. |
| POOR | Severe deformity.<br>Dorsal angulation> 15 degrees.<br>Radial shortening >12mm. |

**Lidstrom's criteria for functional end results:[49]**

| | |
|---|---|
| Excellent | No deformity.<br>No residual disability.<br>Full wrist and fore arm movements<br>No loss of strength. |
| Good | Minimal deformity<br>Minimal disability.<br>Loss of motion up to 20 degrees.<br>Mild decrease in strength. |
| Fair | Moderate deformity<br>Moderate disability<br>Loss of motion up to 40 degrees<br>Moderate loss of strength |
| Poor | Gross deformity<br>Gross disability<br>Gross wrist and fore arm movement restriction.<br>Severe loss of strength. |

**Post op follow up.**

| | FLEXION | EXTENSION. | ULNAR DEVIATION | RADIAL DEVIATION | FOREARM-SUPINATION. | FOREARM-PRONATION |
|---|---|---|---|---|---|---|
| 10 DAYS | 10 | 10 | - | - | 10 | 15 |
| 2 WEEKS | 15 | 15 | - | - | 20 | 25 |
| 4 WEEKS | 20 | 30 | 5 | 5 | 35 | 35 |

Complication: Nil
Lidstrom's criteria for functional end result: EXCELLENT.

**[COMPLICATIONS OF DISTAL RADIUS FRACTURES**

**EARLY**

- Difficult reduction; unstable reduction maintained only by extreme position
- Depressed major articular components
- Distal radioulnar subluxation, dislocation
- Median or ulnar nerve stretch, contusion or compression (common 13%)
- Acute carpal tunnel syndrome
- Post reduction swelling; compartment syndromes.
- Errors in external fixation causing peripheral nerve injuries
- Tendon damage
- Tendon dysfunction syndromes (early)
- Associated carpal injury

**INTERMEDIATE AND LATE:**

- Loss of reduction and secondary deformity.
- Malunion and secondary intercarpal collapse deformity
- Radiocarpal arthrosis – inadequate articular surface reduction
- Distal radioulnar dislocation and arthritis
- Pain dysfunction syndrome – stiff hand; shoulder – hand syndrome NSD (0.1 – 2.6%)
- Median nerve compression; carpal tunnel syndrome (23%)
- Occasionally ulnar or radial nerve compression.
- Tendinous adhesion in the flexor compartment
- Extensor pollicis longus tendon rupture.
- Non union.

## II. Materials And Methods

Ours was a prospective study of 30 post operative patient outcomes of distal radius fractures treated by ORIF with periarticular plating by volar locking plate. This study was conducted under the DEPARTMENT of ORTHOPAEDICS, OSMANIA GENERAL HOSPITAL, HYDERABAD, during the period October 2014 to November 2016. Patients who came to the OPD and emergency department of OSMANIA GENERAL HOSPITAL and have fulfilled the criteria as described below and have given their informed consent for the present study.

**Inclusion criteria:**

- All patients aged between 18-65 years of age group
- All patients having closed distal end radius fractures All distal end radius fractures with intraarticular extension
- Displaced intraarticular and extraarticular distal end radius fractures
- Injuries less than 1 week old.
- Patients who are available for follow up.

**Exclusion Criteria :**

- Distal end radius fractures associated with other injuries like carpal bone and forearm injuries.
- Open fractures.
- Injuries more than 1 week.
- Distal end radius fractures associated with neurovascular deficit.
- Pathological fractures.

## III. Results

In our study of Fixation of fracture distal end radius with periarticular plating total number of 30 cases operated and followed up. Period of follow up was one year.

**Age Prevailance**

(n=30): In our study more than maximum cases belongs to >50 years i.e 10(33.33%), 8(26.66%) belongs to age group between 30-40 years,8(26.66%)between 40-50 years and 4(13.33%) between 20-30 years.

Table 01

| AGE | NUMBERS | PERCENTAGE |
|---|---|---|
| 21-30 | 4 | 13.33% |
| 31-40 | 8 | 26.66% |
| 41-50 | 8 | 26.66% |
| >50 | 10 | 33.33% |

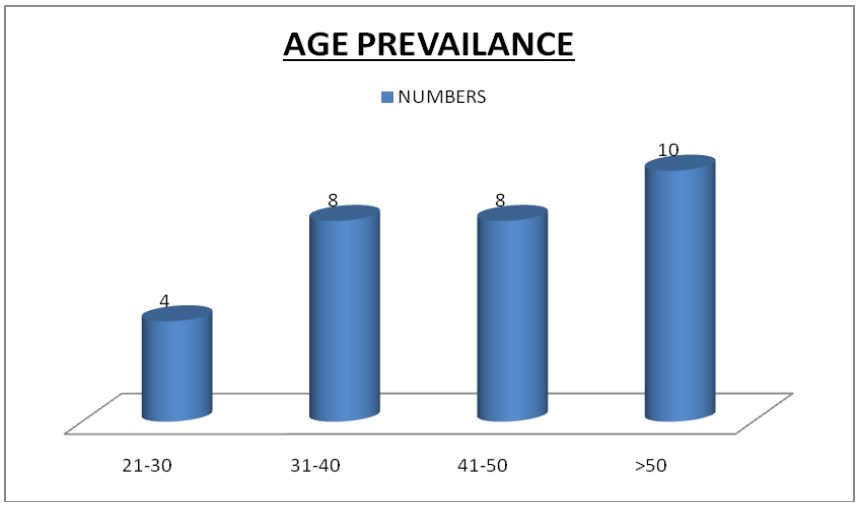



Table 02

**SEX PREVAILANCE**

(n=30):

In our study male predominance i.e. 20(66.6%) and 10(33.3%) are female, RTA increase might predispose male for this fracture.

| SEX | NUUMBERS | PERCENTAGE |
|---|---|---|
| MALE | 20 | 66.66% |
| FEMALE | 10 | 33.33% |

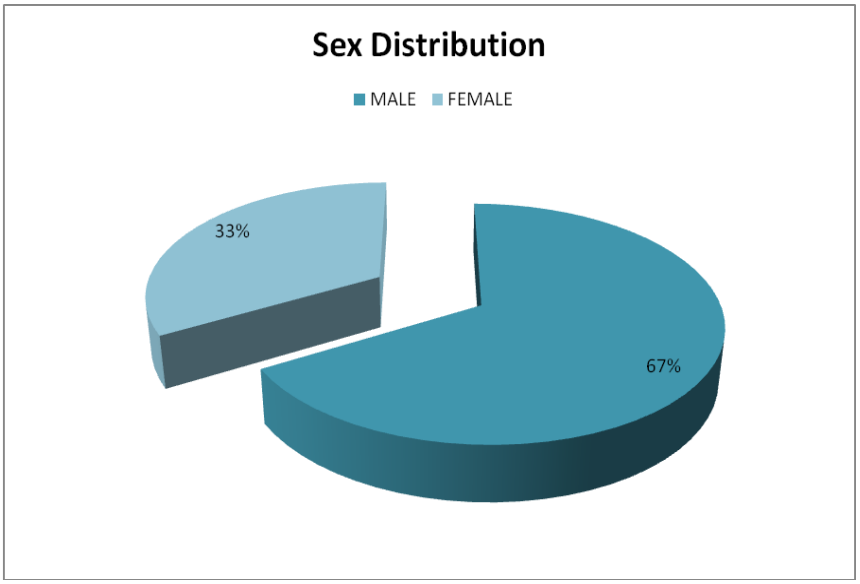



**Table 03**

**Side Prevailance**
(n=30):
In our study 12( 40% ) were injured on right and 18(60%) on left with slight predominance on non dominant hand.

| SIDE | NUMBER | PERCENTAGE |
|---|---|---|
| RIGHT | 12 | 40% |
| LEFT | 18 | 60% |

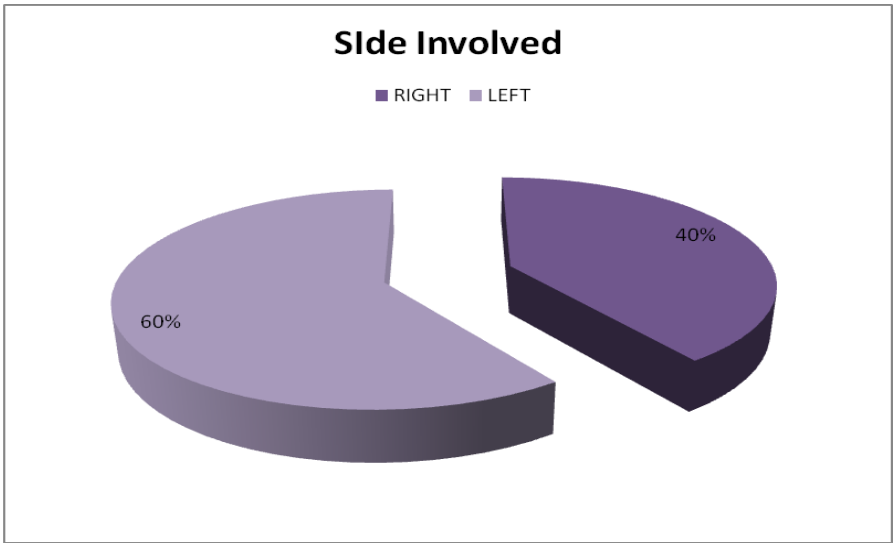



**Table 04**

**Mode Of Injury**
(n=30):

RTA is the mode of injury in 17(56.66%) patient and fall on out stretched hand in 13(43.33%) cases.

| MODE | NUMBER | PERCENTAGE |
|---|---|---|
| RTA | 17 | 56.66% |
| FOH | 13 | 43.33% |

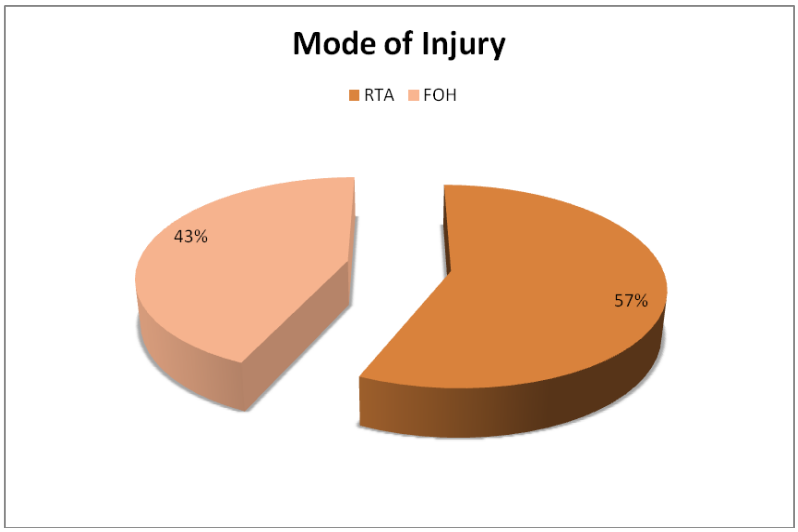



**Table 05**

**Fryckman's Grading**
(n=30):
In our study 16 (53.33%) patient had fracture of ulnar styloid indicating injury to triangular fibro cartilage attachment.

| FRYCKMAN'S GRADE | NUMBER | PERCENTAGE |
|---|---|---|
| I | 1 | 3.33% |
| II | 3 | 10% |
| III | 5 | 16.66% |
| IV | 4 | 13.33% |
| V | 4 | 13.33% |
| VI | 4 | 13.33% |
| VII | 4 | 13.33% |
| VIII | 5 | 16.67% |

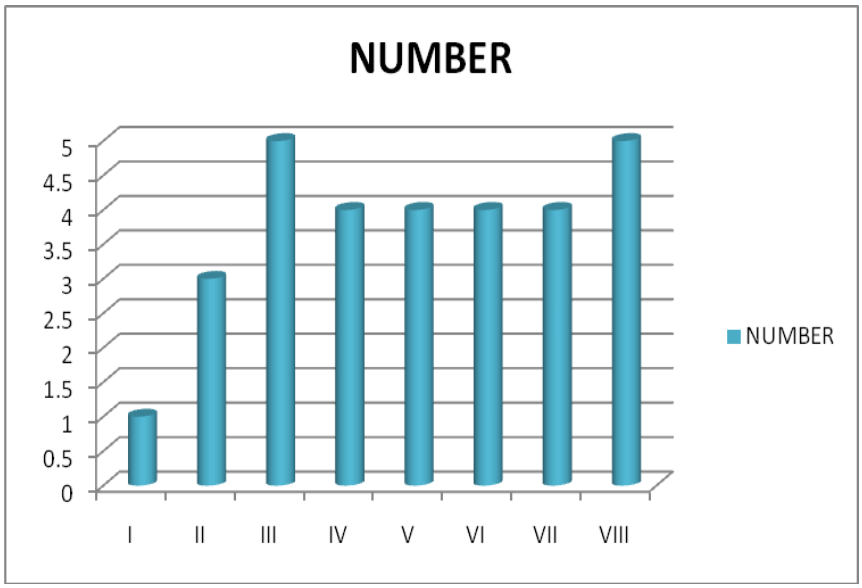



**Table 06**

**Anatomical Results**
(n=30):
Considering Lindstrom's criteria anatomically 18(60%)patients has excellent results.6(20%) have good,6(20%) have fair anatomical results.

| RESULTS | NO. OF PATIENTS | PERCENTAGE |
|---|---|---|
| EXCELLENT | 18 | 60% |
| GOOD | 6 | 20% |
| FAIR | 6 | 20% |
| POOR | 0 | 0 |

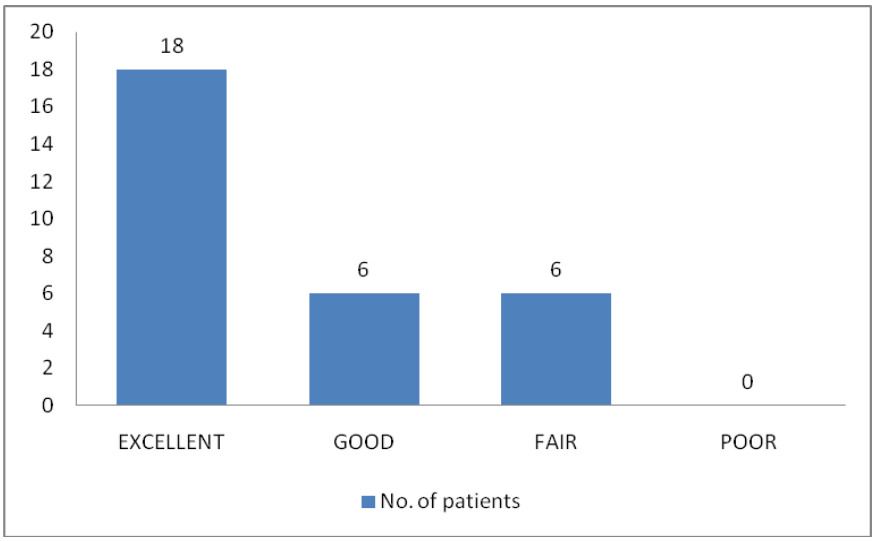
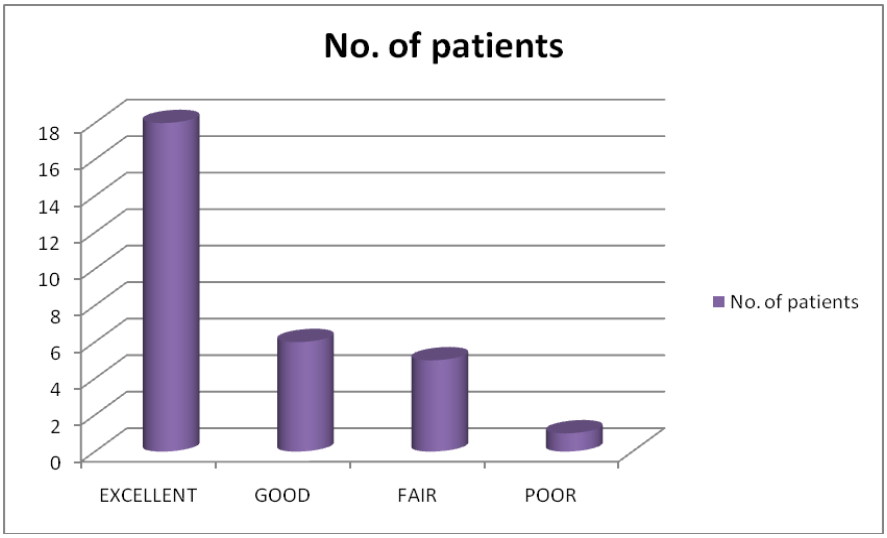



**Table 07**

**Functional Results**
(n=30):
Functionally 18(60%) patients has excellent results, 6(20%) has good, 5(16.66%) has fair and 1(3.33%) has poor results.

| Results | No. Of Patients | Percentage |
|---|---|---|
| Excellent | 18 | 60% |
| Good | 6 | 20% |
| Fair | 5 | 16.67% |
| Poor | 1 | 3.33% |




**Complications:**
Stiffness: 2/30
Malunion: 1/30
Residual pain: 1/30
Hand grip loss: nil
Nerve compression: nil
Considering complications 2 has stiffness,1 malunion, 1 persistent pain .

## IV. Discussion

More than 190 years have passed since Colles described the fracture of the distal end of the radius. It is remarkable that this common fracture remains one of the most challenging of the fractures to treat. There is no consensus regarding the description of the condition and the appropriate outcome. Distal radius fractures are the most frequently seen upper extremity fractures. The main objective of its treatment is the re-establishment of anatomic integrity and functioning. In unstable intra-articular fractures, re-establishment of intra-articular integrity of the wrist and maintaining the radial length are often not possible with closed methods. In such cases, where an open positioning is required, various surgical methods and fixation materials can be used. A better understanding of wrist anatomy and functioning through the studies conducted in the recent years, as well as the increasing expectations of patients have expanded the borders of surgical treatment. Besides, improvements in fixation materials have provided new opportunities. Today, open positioning and plate fixation are the widely recognized surgical methods. Locked plates are in the process of replacing conventional support plates. While facilitating the positioning, those anatomical plates with screw-plate interlocking feature used as peri-articular plates have more biomechanical strength against forces applied on the fracture surfaces. Because of their biomechanical strength, locked plates are preferred in osteoporotic and/or multiple fractures. However, there is no consensus neither about how to approach to distal radius nor the positioning of the plate. During the recent years, volar approach has become more popular. [13]

The present study was undertaken to assess the functional outcome of operative management of distal radial fractures using peri articular plating with volar locked compression plate. We evaluated our results and compared them with those obtained by various other studies utilizing different modalities of treatment. Our study is compared with studies done previously by Dr Gyaneshwar tank et al[14] and KK Wong et al.[15]

**Our analysis is as follows:**

1. Study done over 30 patients shows that 4 patients belongs to age group between 21 to 30 years, 8 patients belongs to age group between 31-40 years, 8 patients belongs to age group between 41-50 years and 10 patients belongs to age group more than 50.

| **Variable** | **DR. Gyaneshwar Tank. University Of Seychelles American Institute Of Medicine**[54] | **KK Wong, KW Chan, TK Kwok, KH Mak.** Department Of Orthopaedics And Traumatology, Kwong Wah Hospital.[55] | Our Study(Study Done At OGH) |
|---|---|---|---|
| Avg. Duration Of Follow Up | Two Years | One Year | One Year |
| Mean Age | 42.6 Years | 58.6 Years | 43.133 Years |

2. During the comparison regarding sex distribution 20 patients were male and 10 patients were female.

| **Variable** | **Dr. Gyaneshwar Tank. University Of Seychelles American Institute Of Medicine** | **KK Wong, KW Chan, TK Kwok, KH Mak.** Department Of Orthopaedics And Traumatology, Kwong Wah Hospital | Our Study.(Study Done At OGH) |
|---|---|---|---|
| Male | 18(60%) | 16(54 %) | 20(66.6 %) |
| Female | 12(40%) | 14(46%) | 10(33.3%) |

3. The mechanism of injury was RTA in 17 patients and fall on out stretched hand in 13 patients.

| **Variable** | **Dr. Gyaneshwar Tank.University Of Seychelles American Institute Of Medicine** | **KK Wong, KW Chan, TK Kwok, KH Mak.** Department of Orthopaedics and Traumatology, Kwong Wah Hospital | Our study.(study done at OGH) |
|---|---|---|---|
| **Mode of injury R.T.A** | 18 (60%) | 19(64%) | 17(56.66%) |
| **Fall** | 12(40%) | 11(36%) | 13(43.33%) |

4. Ulnar Styloid Fracture

| **Variable** | **DR. Gyaneshwar Tank. University Of Seychelles American Institute Of Medicine** | **KK Wong, KW Chan, TK Kwok, KH Mak.** Department of Orthopaedics and Traumatology, Kwong Wah Hospital | Our study.(study done at OGH) |
|---|---|---|---|
| Ulnar styloid # | 9(30%) | - | 16(53.33%) |

5. Residual Deformity

| **Variable** | **DR. Gyaneshwar Tank. UniversityOf eychelles American Institute Of Medicine** | **KK Wong, KW Chan, TK Kwok, KH Mak.** Department of Orthopaedics and Traumatology, Kwong Wah Hospital | Our study.(study done at OGH) |
|---|---|---|---|
| Residual deformity | 2(6%) | - | 1(3.33%) |

6. Anatomical result were excellent in 18 patients, good in 6 patients , fair in 6 patients and poor for no patient. Lidstrom's criteria used for anatomical results.

| **Variable** | **DR. Gyaneshwar Tank. University Of Seychelles American Institute Of Medicine** | **KK Wong, KW Chan, TK Kwok, KH Mak.** Department of Orthopaedics and Traumatology, Kwong Wah Hospital | Our study.(study done at OGH) |
|---|---|---|---|
| Anatomical score of healed fracture | Excl:21(70%<br>Good: 4(13%)<br>Fair: 4(13%)<br>Poor: 1(4%) | Excl: 20(66%)<br>Good: 8(26%)<br>Fair: 2(8%) | Excl: 18(60%)<br>Good: 6(10%)<br>Fair: 6(30%)<br>Poor: 0 |

**Functional Results**

Functional result were excellent in 18 patients, good in 6 patients, fair in 5 patients and poor for one patients. Lidstrom's criteria[16] used for functional results.

| **Variable** | **DR. Gyaneshwar Tank. University of seychelles American institute of medicine** | **KK Wong, KW Chan, TK Kwok, KH Mak.** Department of Orthopaedics and Traumatology, Kwong Wah Hospital | Our study.(study done at OGH) |
|---|---|---|---|
| Functional end result of healed fracture | Excl: 22(73%)<br>Good: 5(16%)<br>Fair: 3(10%) | ExcL: 20(66%)<br>Good: 7(23%)<br>Fair: 2(8%)<br>Poor: 1(3%) | Excl: 18(60%)<br>Good: 6(20%)<br>Fair: 5(16.66%)<br>Poor: 1(3.33%) |

7. Complications came across during the plate fixation were stiffness in two patients, malunion in one patients and persistent pain in one patient.

| **Variable** | **DR. Gyaneshwar Tank. Universityof seychelles American institute of medicine** | **KK Wong, KW Chan, TK Kwok, KH Mak.** Department of Orthopaedics and Traumatology, Kwong Wah Hospital | Our study.(study done at OGH) |
|---|---|---|---|
| Complication<br>STIFFNESS:<br>MALUNION:<br><br>RESIDUAL PAIN:<br>HAND GRIP LOSS:<br>NERVE COMPRESSION:<br>DRUJ Disruption: | <br>3(10%)<br><br>0<br><br>0<br><br>0<br><br>1<br><br>0 | <br>-<br><br><br><br><br><br><br><br><br><br> | <br>2(6.66%)<br><br>1(3.33%)<br><br>1(3.33%)<br><br>0<br><br>0<br><br>0 |

## V. Summary

In the present study 30 cases of fracture lower end radius were followed, the follow up done for anatomical and functional result restoration. 20 patients were male and 10 patients were female.4 patients belongs to age group between 21 to 30 years, 8 patients belongs to age group between 31-40 years, 8 patients belongs to age group between 41-50 years and 10 patients belongs to age group more than 50. While considering the side involved 12 patients had right side and 18 patients had left side injury. There is slight predominance of the non dominant hand. The mechanism of injury was RTA in 17 patients and fall on out stretched hand in 13 patients. This indicates that the fracture incidence increasing in young population, as they are more prone for accidents. Accident most of time will be high velocity injury causing comminution and instability at fracture site.

Anatomical results were excellent in 18 patients, good in 6 patients , fair in 6 patients. Lidstrom's criteria used for anatomical results.Functional results were excellent in 18 patients, good in 6 patients , fair in 5 patients and poor for one patient. Lidstrom's criteria used for functional results Complications came across during the plate fixation were stiffness in two patients, malunion in one patient, persistent pain in one patient.Comparison of the present study done with the studies done in past by Dr. Gyaneshwar Tank, university of Seychelles, American institute of medicine and K.K Wong, K.W Chan, T.K Kwok, KH Mak , Department of Orthopaedics and Traumatology, Kwong Wah Hospital.

## VI. Conclusion

1. Distal radial fractures are more common in patients past 5th decade mostly owing to osteoporosis and frequent falls.
2. Male preponderance is due to their involvement in heavy manual labour, outdoor activities and riding vehicles. Most of the fractures in the younger individuals is due to motor vehicle accidents or high energy trauma which are usually intra-articular and displaced.
3. Volar approach provides both access with minimal surgical trauma on distal radius and fixation with a better adaptation to surrounding tissues preventing the complications associated with dorsal approach.
4. Peri articular Volar locking plate for radius lower end fractures is the good choice for treatment of radius lower end injuries. Locking screw and locking plate mechanics are put into consideration for fixation.
5. There are less incidence of malunion and the deformity if the fixation done by locking plate. There is very minimal risk of nerve compression, stiffness, fracture redisplacement ,infection after volar locking plate fixation.
6. Proper, planned post surgical rehabilitation give full range of movements and good results.

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