CONSERVATIVE MANAGEMENT of EXTRAARTICULAR DISTAL RADIUS FRACTURES in ELDERLY ANDROW

Andrew Gamal Bouliš#1, Hazem Abd El Hameed Abd El Hameed1, Karim Ibrahim Okasha Abdallah1, Marwan Shams Eldin Mohamed2 & Mohamed Mostafa Ali Mohamed3
1Department of Orthopaedics, Faculty of Medicine, Cairo University, Cairo, Egypt
2Department of Orthopaedics, Faculty of Medicine, Helwan University, Cairo, Egypt
3Department of Orthopaedics, Al-Helal Hospital, Cairo, Egypt
#1andrew.gamal@kasralainy.edu.eg

Abstract:
Extraarticular distal radius fractures in the elderly is a common problem. Many authors discussed treatment options including conservative and operative management. Conservative management yielded excellent functional results with high patient satisfaction without exposure to the surgical risks.

Keywords: Distal radius fractures – Elderly fractures – Fragility fractures- Wrist fractures – osteoporotic fractures

INTRODUCTION
In old patient, Wrist commonly fractures were arm fracture and representing about 2.5 : 10 / 1000 every 12 months (1, 2).

Despite of expecting outcome wrist fractures functionalities might not be devastating as for hip or vertebral fractures, where hand is fundamentally to performing basic and instrumental ever day activity, Many functional degrees affectations should expect few investigations exposed to that of hip fracture (3). Several evidences referred to association between fracture types and received treatments (4–8).

Aim of our work
Assess the Conservative management of wrist fractures and its outcomes on daily basic activities in geriatric population.

Pathophysiology of osteoporotic bone
Osteoporotic fracture occur spontaneously or minimal trauma resulting from day-to-day activity (9). Early discovering to impaired bone qualities are very crucial in preventing osteoporotic fracture. Several investigations were reported that, osteoporosis is under-diagnosed (10), and opportunities for starting bone modulating therapies pre osteoporotic fractures occurrences is missing up to 84% of patients (11).BMD up to 60% of variation in bone fragilities (13), which related to it is inability to depict differences in bone substances compositions and structure designs. All characteristics influenced on bone strength to large extent (14).
Trabecular bone mass and strength are reduced throughout osteoporosis, Scarce trabecular tissue which remains is more heterogeneous, with trabecular tissues region. (13)

Best fracture load predictors are measure of cortical bone mass, cortical area and cortical width.(14) Fracture risks in case who associate with certain geometrical feature. (14)

Epidemiology
Wrist fractures represented 8-10/ 1000 person per years (1) while with incidence of hip fracture represented 7 / 1000 person per years. (15) Wrist fractures commonly observed in women less than 75 years, while hip fracture became commonly in women above 75 years. (16) Wrist fractures have risks factor for included lower bone mineral densities, where were no previous oestrogen using, histories of 2 or more falls in preceding year, and previous fractures post 50 years. Poor cognitive status increasing wrist fracture risks to women above 75 years. (17)

Mechanism of injury
Wrist fractures common outcome from falls sustained while walk and occurred when people are still healthy, actives, and independent. (17) The different characteristics of wrist fractures are generally agreed to be influenced by hand position at impact time, the type of surface with which it makes contact, and the velocity of the force. Added to this the quality and strength of the bone will influence the severity of the fracture. (18)
Clinical Evaluation
Eliciting the symptoms of a fracture of the distal radius is usually straightforward with a history of a fall on to outstretched hands or occasional higher-energy injury. Pains and swelling surround wrist were invariable features and with displacement the patient may also complain of a visible deformity. Specific questioning should include any paresthesia or numbness in the fingers to exclude any median or ulnar nerve injury. Pain evidences in limb should be sought to diagnose an ipsilateral injury. (18)

A thorough neurologic examination of the hand should be performed as acute carpal tunnel syndrome (CTS) may require prompt treatment. It is also important to remember that distal radius fractures may be complicated by acute compartment syndrome and the symptoms and signs of this condition should also be sought. (18)

Fernandez Type I Fracture: Bending fracture: The thin metaphyseal cortex fails owing to tensile stress, with the opposite cortex undergoing a certain degree of comminution (extraarticular Colles or Smith fractures) (19)

Instability Prediction
Many factors are associated with re-displacement following closed extraarticular distal radius fracture manipulations. Lafontaine and colleagues define 5 “instability parameters” and illustrated linear relationships among instability parameters and ultimate fracture collapse with closed treatments, (20) as follows:
1) Age
Above eighty years with displaced distal radius fracture were 3 time more to had instability than those less than thirty years. (20)

2) Initial fracture displacement
Higher initial displacement degree above 20 degree.(20)

3) Metaphyseal dorsal comminution
Metaphyseal defect evidenced by plain radiographs and computerized tomography increasing instability chances. (20)

4) Ulnar fracture. (20)

5) Articular radiocarpal fracture. (20)

6) Displacement following closed treatment (21)
Lafontaine et al reported that, cases with 3 to 5 parameters need surgical intervention throughout earlier stages. (20) Any patient with 3 or more of those criteria was excluded from our study.

Patients and Methods
We conducted a prospective study with minimum follow up of 3 months to assess functional outcome after casting of distal radius fractures.

A total of 60 geriatric patients with wrist fractures were followed up for 16 to 30 weeks with mean follow up period of 22 weeks. Agee maneuver of reduction was used followed by below elbow cast (Fig.3)
Cast was removed at 6 weeks, FU with Quick Dash score was used to estimate functionality at 3 months.

RESULTS

Wrist fractures were considered as commonly arm fractures in old people. Where Incidence varies ranged 2.4 : 10 / 1000 / year (1, 2). Many wrist fractures risks had observed as low bone mineral densities, no previous oestrogen used, history of 2 or more falls yearly, and previous fracture post 50 years. Poor cognitive status increased wrist fracture risks for women above 75 years. (17)

A) Average age: All patients were above 60 years with mean age 62.5
B) Sex: 38 of the patients were females.
C) QuickDASH score

The mean of the whole group is 15 (95% confidence interval 12.96-16.5). Mean and standard deviation is shown in table 1.

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservative</td>
<td>6.6-20.7</td>
<td>15</td>
</tr>
</tbody>
</table>

D) Incidence of Complications:

1) Major complications
No major complications that required reoperation were reported in the study. No tendon rupture/adhesion, nerve lesion.

2) Minor complications
All minor complications encountered in the study were treated medically and resolved.
Chronic regional pain complex occurred in 10 patients and was treated by physiotherapy (galvanic stimulation), vitamin C and D administration in addition to advising patient to use their hands in daily activities.

Carpal tunnel syndrome manifestations (numbness and parasethia) were mild and were treated by neurotonics (vitamin B complex).

**CONCLUSION**

We recommend conservative management for all those low demand patients with extra articular wrist fractures as we obtained good functional results for those low demand patients with conservative management. There is no need to expose them for all the known risks of surgical management.

**REFERENCES**


