MATERIAL AND METHOD

The subjects of this study were the patients of fracture lower and radius of all ages except children attending out patient (OPD) or emergency of department of orthopaedics M.I.B. Medical College Jhansi from 1\textsuperscript{st} July 1997 to 31\textsuperscript{st} October 1998.

CRITERIA FOR SELECTION OF CASES

The percutaneous pinning was done in patients with
1. Extra articular displaced fractures lower end radius which were reducible but unstable.
2. Intra articular undisplaced fractures.
3. Intra - articular displaced fracture which were reducible and stable.

The selected subjects were subjected to through clinical and radiological examination as per performa attached

MATERIAL

The patients preoperative evaluation
1 - General Interrogation.
   a) Name, age, sex, occupation and address.
   b) Mode of injury
   c) Duration of injury.
   d) Complete clinical examination for fitness to general anaesthesia / Brachial block.
e) Routine investigation Hb, TLC, DLC, blood sugar.
f) Radiological examination
   x-ray forearm with wrist AP & Lateral view of affected limb.

IMPLANT & INSTRUMENTS

1) Kirschner wire smooth (1.5mm to 2mm)
2) T-Handle or max page
3) Nipper (wire cutter)

METHOD
The first aid treatment was provided to the patient in emergency or out patient department. A well padded below elbow dorsal plaster slab was given. The operation was done as early as possible.

PRE-OPERATIVE PREPARATION

The part was prepased by shaving the forearmand hand full asepsis was observed.

STEPS OF OPERATION
ANAESTHESIA

General anaesthesia or regional block was given.
-- Patients was supine shoulder was abducted 90° and elbow flexed at 90°.
Fig: Showing the site of insertion of K-wires.
Schematic cross section of the distal part of the radius and ulna demonstrating the extensor canals and the starting points for both Kirschner wires.
-- The normal uninjured wrist was examined to have an idea about radial length.
-- Part was painted & draped.
-- Longitudinal manual traction was given for few minutes. It disimpacted the fracture fragments and allow gentle reduction by minimal manipulation. Hyperextension flexion maneuvers were not done to avoid further comminution.
-- The reduction was maintained in proration and reduction of distal radio-Ulnar joints was checked.

The first Kirschner is inserted at the tip of the radial styloid process just dorsal to the first extensor canal, in the anatomical snuff box proximal to the radial artery, aiming to cross the fracture line in both planes. This requires about a 45° angle with the long axis of the radius on the Posteroanterior view, and aiming the wire 10 degree dorsally on the lateral view. The second Kirschner wire is inserted into the dorsal-Ulnar corner of the distal part of the radius between the fourth & fifth extensor canals. The correct line of aim that is required to cross the fracture is about 45° on the postero-anterior view and 30° volar ward on the lateral view.

Both Kirschner wires are advanced to just penetrate the cortex of the proximal fragment. The accuracy of the reduction and of the placement of the Kirschner wires is again assessed clinically. The stability is finally evaluated by observing the effect on the fracture site of flexion and extension of the wrist clinically.
With satisfactory fixation, no motion is elicited at the fracture site when the wrist is flexed and extended 45°. Both Kirschner wires are then cut and allowed to retract subcutaneously.

A sterile 5×5 cm gauze sponge is placed over each pin site, and padded with cotton and a below elbow plaster slab is applied for one week the wrist being positioned in neutral. Permanant posteroanterior and lateral radiographs are made.

POST OPERATIVE MANAGEMENT

-- Post operative x-ray was done.
-- If it is satisfactory patients will be discharged on next day.
-- With advice for finger movements and keep limbs in elevation.
-- Antibiotic for two days and supprtive treatment was given.

FOLLOW UP

-- Patients was called after one week for active movement of fingers.
-- At four weeks plaster was removed and wrist and finger exercise done.
-- And at 6-8 weeks Kirschner wires was removed.
-- After one- two weeks of removed of wires , stitches was removed.
Evaluation of results by subjective and objective evaluation clinical assessments:

1. Pain
2. Functional impairment
3. Deformity
4. Range of movements

POINT SYSTEM USED TO EVALUATE END RESULTS OF HEALED COLLES FRACTURES

Result :
Residual deformity :--

<table>
<thead>
<tr>
<th>POINTS</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prominent ulnar styloid</td>
<td>1</td>
</tr>
<tr>
<td>Residual dorsal tilt</td>
<td>2</td>
</tr>
<tr>
<td>Radial deviation of hand</td>
<td>2 to 3</td>
</tr>
</tbody>
</table>

Point Range :-

0-3

SUBJECTIVE EVALUATION

Excellent -- No pain, disability or limitation of motion 0

Good -- Occassional pain, slight limitation of motion , no disability 2

Fair -- Occassional pain, slight limitation of motion , feeling of weakness in wrist, no particular disability if careful activities slightly restricted. 4
Pain, limitation of motion, disability, activities more or less markedly restricted.

Point range 0-6

**OBJECTIVE EVALUATION**

<table>
<thead>
<tr>
<th>Loss of dorsiflexion</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of ulnar deviation</td>
<td>3</td>
</tr>
<tr>
<td>Loss of supination</td>
<td>2</td>
</tr>
<tr>
<td>Loss of palmar flexion</td>
<td>1</td>
</tr>
<tr>
<td>Loss of radial deviation</td>
<td>1</td>
</tr>
<tr>
<td>Loss of circumduction</td>
<td>1</td>
</tr>
<tr>
<td>Pain in distal radioulnar joint</td>
<td>1</td>
</tr>
<tr>
<td><strong>Point Range</strong></td>
<td><strong>0-5</strong></td>
</tr>
</tbody>
</table>

**Complication**

**Arthritic change**

<p>| Minimal | 0 |
| Minimal with pain | 3 |
| Moderate | 2 |
| Moderate with pain | 4 |
| Severe | 3 |
| Severe with pain | 5 |
| Nerve complication (median) | 1 to 3 |
| Poor finger function due to cast | 0 to 5 |
| <strong>Point Range</strong> | <strong>0 to 5</strong> |</p>
<table>
<thead>
<tr>
<th>END RESULT</th>
<th>POINT RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>0 to 2</td>
</tr>
<tr>
<td>Good</td>
<td>3 to 8</td>
</tr>
<tr>
<td>Fair</td>
<td>9 to 20</td>
</tr>
<tr>
<td>Poor</td>
<td>21 and above</td>
</tr>
</tbody>
</table>
RADIAL ANGLE
NORMAL RANGE - 16° - 28°
AVERAGE - 22°

RADIAL LENGTH
NORMAL RANGE - 8 - 12 mm
AVERAGE - 10 mm

PALMER TILT
NORMAL RANGE - 5° - 15°
AVERAGE - 10°