Dorsal Locked plate fixation of distal radius fractures

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Introduction

Distal radius fractures are common injuries

Management options remain varied and widely debated in the literature.

Correct management is essential to improve the eventual clinical and functional outcome
Fracture fixation

The goal of treatment is to return the patient to his/her previous level of function.

Integrity of the osseous, articular and ligamentous structures is needed to maintain motion and transmit load.

Recommendation 3

- We Suggest Operative Fixation For Fractures With Post-reduction Radial Shortening >3mm, Dorsal Tilt >10 Degrees, Or Intra-articular Displacement Or Step-off >2mm As Opposed To Cast Fixation.
- Strength Of Recommendation: Moderate
Recommendation 4

- We Are Unable To Recommend For Or Against Any One Specific Operative Method For Fixation Of Distal Radius Fractures.
- Strength Of Recommendation: Inconclusive

David M. Lichtman, MD, et al. Treatment of Distal Radius Fractures
*J Am Acad Orthop Surg* 2010;18: 180-189
Fracture fixation

Methods of fixation:

- Open reduction and internal fixation
  - Volar
  - Dorsal
  - Fragment specific
- Kirshner Wire
- External Fixation
  - Wrist spanning
  - Non spanning
- Intramedullary fixation

Dorsal Plate Fixation

- Direct visualization of Articular surface to ensure anatomical reduction
  • Assessment of intercarpal ligaments.

Prev high complications were reported

Dorsal Plate Fixation

New Design:
- polished surface, tapered edges, low profile locking screw heads

New reports show good outcome even with compromised bone stock and locking screws allows the early motion as VLP

Aim

Assess and compare the functional and radiological results in ps treated with,
Dorsal locking plate (DLP),
Volar Locking Plate (VLP)
Fragment Specific fixation (FSF)
Methods

Pts presented to TBH with complex intra-articular distal radius fractures had C.T scan of the radius according to the fracture pattern either had VLP or FSF or DLP

Dorsal locking plate was used for following indications,

1. Dorsal Barton fractures
2. Comminuted dorsal rim fracture of the distal radius
3. Suspected SL ligament injury with distal radius
Surgical procedure

Long. incision dorsal distal forearm, just ulnar to the Lister tubercle. Full-thickness skin flaps are elevated off the extensor retinaculum.

EPL tendon is then exposed and retracted radially.

Second and fourth compartments are then sharply elevated in radial and ulnar directions.

Capsulotomy of the radiocarpal joint.
Theatre set-up
## Results:
### Mechanism of Injury

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall from height</td>
<td>4</td>
</tr>
<tr>
<td>Fall (ground level)</td>
<td>2</td>
</tr>
<tr>
<td>Motor Vehicle Accident:</td>
<td></td>
</tr>
<tr>
<td>Car</td>
<td>1</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Assault</td>
<td>1</td>
</tr>
<tr>
<td>Mountain bike</td>
<td>1</td>
</tr>
</tbody>
</table>
Patient -FSF
DLP – SL injury
4 wk old fx
## Results

<table>
<thead>
<tr>
<th></th>
<th>Fragment Specific</th>
<th>Volar plating</th>
<th>Dorsal Plating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number</strong></td>
<td>10 (60)</td>
<td>10 (44)</td>
<td>10</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>41(20-78)</td>
<td>42.8</td>
<td>38.0</td>
</tr>
<tr>
<td><strong>Tourniquet</strong></td>
<td>69 (40-120)</td>
<td>60.7</td>
<td>57.3</td>
</tr>
<tr>
<td><strong>Radial Height</strong></td>
<td>11.8(5.2)</td>
<td>12.1(9)</td>
<td>11.5(8.4)</td>
</tr>
<tr>
<td><strong>Radial inclination</strong></td>
<td>21.0(15.3)</td>
<td>20.3(17.1)</td>
<td>19.9(14.2)</td>
</tr>
<tr>
<td><strong>Palmer Tilt</strong></td>
<td>9.8(-8.3)</td>
<td>9.4(-7)</td>
<td>10.6(-6.8)</td>
</tr>
<tr>
<td><strong>DASH</strong></td>
<td>19</td>
<td>17</td>
<td>20</td>
</tr>
</tbody>
</table>
Conclusion

Fixation of the distal radius fractures with dorsal plate allows direct visualization of joint cartilage to obtain anatomic reduction and assessment of intercarpal ligaments.
Conclusion

Earlier dorsal radius implants had high complications but the new design and locking screws may allow stable fixation to get early range of movements as with other methods of fixation.