Evaluation of Diagnostic Procedures for Ulnar Sided Wrist Pain: 25 Years of Experience

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Introduction

- Due to the complex anatomy and biomechanics of the wrist, diagnosing and treating its pathology can be difficult

- Common pathologies of the wrist:
  - Triangular Fibrocartilage Complex (TFCC Tears)
  - Lunotriquetral Interosseous Ligament (LTIL) Tears
  - Ulnar Impaction Syndrome (UIS)
Diagnostic Options Available:
- Physical Examination
  - Ulnocarpal Joint Tenderness (UCT) Exam
  - LT Laxity Test
- X-Ray
- Arthrogram
  - Radiocarpal (RC) and Midcarpal (MC)
- MRI
- Bone Scan
To evaluate the diagnostic tests for Ulnar Sided Wrist Pain defined specifically as a positive diagnosis of TFCC tear, LTIL Tear, and UIS syndrome
Materials and Methods

- Retrospective study
- Computer search of patients seen between 1996 and 2006
  - 385 patients identified with diagnostic codes for sprains, instability, and laxity of the wrist
  - 147 patients selected based on initial chief complaint of USWP
Materials and Methods

- **Sensitivity** and **Specificity** determined for:
  - Physical Examinations
    - Ulnocarpal Tenderness Test and LT Laxity Test
  - Arthrogram
    - Radiocarpal and Midcarpal
  - Bone Scan
- **Ulnar Variance**
  - Determined for specific pathology
  - Standard PA vs Gripping PA
- **Arthroscopy was used as the gold standard**
Protocol

Pt presents with unresolved USWP

History
Traumatic history?
Onset: Acute or Insidious?

Physical Examination
+/− w/ twisting and/or gripping
+/− w/ loading the wrist
Radiating into ring and little fingers or up the forearm
Not related to numbness or tingling

Conservative Management:
Cock-up splint
NSAIDs x 3 weeks

Effective
Symptoms resolved: No further tx

Ineffective

Diagnostic Tests

Radiology
Bone Scan

Arthrogram
Arthroscopy
Results

- 68 Females and 66 Males
  - Mean age: 41.4 years
- Cause of Injury
  - MVA: 31%
  - Overuse: 20%
  - Fall on Outstretched Hand (FOOSH): 15%
  - Idiopathic/unknown: 34%
- Mean Duration of symptoms: 9.8 months
<table>
<thead>
<tr>
<th>Test</th>
<th>n</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>False Positives</th>
<th>False Negatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCT</td>
<td>94</td>
<td>0.72</td>
<td>1</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>LT Laxity</td>
<td>68</td>
<td>0.56</td>
<td>0.41</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>Bone Scan</td>
<td>90</td>
<td>0.73</td>
<td>0.27</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td>RC Arthrogram (TFCC)</td>
<td>90</td>
<td>0.92</td>
<td>0.98</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>RC Arthrogram (LT)</td>
<td>90</td>
<td>0.53</td>
<td>0.97</td>
<td>1</td>
<td>27</td>
</tr>
<tr>
<td>MC Arthrogram (LT)</td>
<td>70</td>
<td>0.83</td>
<td>0.85</td>
<td>4</td>
<td>7</td>
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</table>
# Results

<table>
<thead>
<tr>
<th>Type of x-ray</th>
<th>LT Tear</th>
<th>TFCC Tear</th>
<th>LT+TFCC</th>
<th>UIS</th>
</tr>
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<tbody>
<tr>
<td>Standard</td>
<td>1.69</td>
<td>1.46</td>
<td>1.50</td>
<td>2.56</td>
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<tr>
<td>Gripping PA</td>
<td>3.55</td>
<td>3.19</td>
<td>3.33</td>
<td>4.44</td>
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</tbody>
</table>
Conclusion

- **UCJ Tenderness** is specific, but less sensitive
- LT Laxity test was neither sensitive nor specific
- Gripping PA view shows true Ulnar Variance
- **Bone Scan** is sensitive but not specific for pathology, useful to rule out UIS
- **RC Arthrogram**s are very sensitive and specific for TFCC tears but **MC Arthrogram**s are better diagnosing for LTIL tears
- **Arthroscopy** remains the gold standard