Hand Surgery in Patients with Rheumatoid Arthritis

Jagdeep Nanchahal
Professor of Hand, Plastic and Reconstructive Surgery
Kennedy Institute of Rheumatology, Imperial College
and Charing Cross Hospital, ICHNT
Contrasting views of surgeons and rheumatologists

Alderman et al

*J Rheumatol* 2003, 30: 1464

*J Hand Surg* 2003, 28A: 3
70% of rheumatologists consider hand surgeons **deficient**
in understanding the medical options and
74% of hand surgeons........

Surgical management of the rheumatoid hand: consensus and controversy among rheumatologists and hand surgeons
Alderman et al. J Rheumatol 2003
Surgeons and rheumatologists have minimal interdisciplinary training, communicate infrequently and significantly disagree on the indications for RA hand surgery.

Surgical management of the rheumatoid hand: consensus and controversy among rheumatologists and hand surgeons
Alderman et al, J Rheumatol 2003
**Effectiveness of rheumatoid hand surgery: contrasting perceptions of hand surgeons and rheumatologists**

Alderman AK et al, J Hand Surg, 2003 28A: 3

<table>
<thead>
<tr>
<th>Extensor synovectomy</th>
<th>Hand surgeons (%)</th>
<th>Rheumatologists (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevents tendon rupture</td>
<td>93</td>
<td>55</td>
</tr>
<tr>
<td>Prevents recurrence of synovitis</td>
<td>58</td>
<td>14</td>
</tr>
</tbody>
</table>
Extensor synovitis

Brown FE et al, JHS, 1988, 13A: 704

Incidence of tenosynovitis 50-60%, invasion in 50%

6yr post-op: recurrent tenosynovitis 6%

tendon rupture 5%
The wrist

- Affected in 95%
- Majority have DRUJ involvement
Typical wrist deformities:

- Carpal collapse
- Radial rotation
- Ulnar translocation
- Carpal supination
- Dorsal subluxation of ulnar head
Synovial proliferation causes:

- Cartilage degradation
- Ligamentous laxity
- Tendon involvement
Deformities because of ligamentous laxity
Patterns of wrist degeneration: ankylosis

(Simmen & Huber, 1992)
Patterns of wrist degeneration: osteoarthritis
Patterns of wrist degeneration
mutilans
Severity of wrist involvement

(Larsen et al, 1977)
DRUJ is inherently unstable

**Intrinsic**
- TFCC
- Radioulnar lig
- Ulnocarpal lig

**Extrinsic**
- ECU
- Pronator quadratus
- FCU
- Interosseous membrane
Synovitis at DRUJ
Wrist assessment

- Extensor synovitis
- Tendon rupture
- Pain
- DRUJ tenderness/instability
- Supination/pronation
- Flexion/extension
Aims of treatment

- Alleviate pain
- Improve function
- Retard progression
- Improve cosmesis

Deformity ≠ loss of function
Wrist surgery

- Excision of the distal ulna
- Limited wrist fusion
- Total wrist arthrodesis
  - Extensor synovectomy
  - Wrist joint synovectomy
Pronator transfer

(Ruby, 1996)
Effectiveness of rheumatoid hand surgery: contrasting perceptions of hand surgeons and rheumatologists

Alderman AK et al, J Hand Surg, 2003 28A: 3

<table>
<thead>
<tr>
<th>Excision of distal ulna</th>
<th>Hand surgeons (%)</th>
<th>Rheumatologists (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improves function</td>
<td>65</td>
<td>23</td>
</tr>
<tr>
<td>Improves pronation/ supination</td>
<td>72</td>
<td>23</td>
</tr>
<tr>
<td>Improves strength</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>Decreases pain</td>
<td>80</td>
<td>51</td>
</tr>
<tr>
<td>Prevents tendon rupture</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Studies assessing function

- Jackson et al 1974
- Rasker et al 1980
  - 4 point scale, subjective, 75%↑
- Rana et al 1973
  - Tests requiring forearm rotation, 93%↑
- Newman et al 1987
  - Turning tap/door knob, opening jar, pouring kettle, carrying shopping, 25%↑, 60% unchanged
Functional outcome following excision distal ulna

- Prospective study 20 patients: 23 wrists
- ROM measured
  - pre-op
  - 3 mo
  - 1 year
- Jebsen hand function (Jebsen et al 1969)
  - sub-group of 7 patients
Pain and Power at 1 year

- Grip strength: 15kg to 18kg (p=0.049)
- Pain score (VAS): 7 to 2 (p<0.0001)
Ext synovectomy + excision of distal ulna:

- Reduces pain
- Increases grip strength
- Improves forearm rotation + wrist extension, reduces flexion
- Improves function

*J Hand Surg 28B: 531-6*
Wrist arthroplasty
Limited wrist arthrodesis

(Chamay, 1983)
(Della Santa & Chamay, 1995)
Total wrist arthrodesis
Flexor synovitis presentation

- Pain
- Carpal tunnel syndrome
- Swelling
- Triggering
- Loss of function
- Swanneck
- Active ROM < Passive
- Tendon rupture
Flexor synovitis treatment

- Steroid injection
- Synovectomy
- Carpal tunnel release
- Tendon reconstruction
- Swanneck correction
Metacarpophalangeal joints assessment

- Pain
- Synovitis
- Flexion/extension
- Ulnar drift
- Volar subluxation
- Intrinsic tightness
- Deformities reversible/ fixed
Metacarpophalangeal joints

Treatment

- Synovectomy and soft-tissue realignment
- Arthroplasty
- Swanson
Effectiveness of rheumatoid hand surgery: contrasting perceptions of hand surgeons and rheumatologists
Alderman AK et al, J Hand Surg, 2003 28A: 3

<table>
<thead>
<tr>
<th>MCP joint arthroplasty</th>
<th>Hand surgeons (%)</th>
<th>Rheumatologists (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improves function</td>
<td>83</td>
<td>34</td>
</tr>
<tr>
<td>Decreases pain</td>
<td>92</td>
<td>59</td>
</tr>
<tr>
<td>Improves aethetics</td>
<td>95</td>
<td>67</td>
</tr>
<tr>
<td>Improves function</td>
<td>33</td>
<td>24</td>
</tr>
</tbody>
</table>
MCPJ Swanson arthroplasty
long-term results
Finger deformities
Boutonniere

- Central slip attenuation
- Tightening of oblique reticular ligament
Boutonniere

- Actively reversible
- Passively correctable
  - Capner splint
  - Soft tissue procedure
- Reduced passive ROM
- Therapy
- Joint destruction
  - Fusion/arthroplasty
Finger deformities

Swanneck

- **Extrinsic** (long extensor overactivity)
- **Intrinsic** (intrinsic overactivity)
- **Articular** (failure of palmar stabilisers of MCPJ)
Rheumatoid thumb

Nalebuff classification

I boutonniere
  • MCPJ synovectomy and EPL re-routing/ MCPJJ fusion

III swanneck
  • CMCJ arthroplasty

IV gamekeeper’s thumb

V MCPJ volar plate attenuation
Complications of RA surgery

- Retrospective review of 129 RA hand/wrist procedures
- Effects of MTX and steroids
### Published post-op infection rates following RA surgery

<table>
<thead>
<tr>
<th>Study</th>
<th>Infection Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sany et al 1993</td>
<td>0%</td>
</tr>
<tr>
<td>Hämäläinen et al 1984</td>
<td>1.7%</td>
</tr>
<tr>
<td>Grennan et al 2001</td>
<td>7.2%</td>
</tr>
<tr>
<td>Bridges et al 1991</td>
<td>7.5%</td>
</tr>
<tr>
<td>Carpenter et al 1996</td>
<td>9.5%</td>
</tr>
<tr>
<td>Garner et al 1973</td>
<td>13%</td>
</tr>
</tbody>
</table>

Authorial copyright. Distributed by London Osteopathic Society for personal use.
Infective complications

- Minor (erythema/ pin track infections)
- Occurred within first 4 weeks post-op.
- Resolved with simple treatment
- No long-term disability
General principles

- Team approach
- Optimal medical treatment
- Early referral - hand is unique
- Systematic assessment
- Assess individual needs