Post Traumatic Elbow Release
Blane Sessions, MD
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Disclosure

• Nothing to disclose in regards to this talk

Disclosure – But.....
Focus of Talk

- Contractures due to stiff elbow
- So-called simpler contracture

Not going to Focus on

Non-Unions
- Have to Address Non-union

Retained Hardware
- Remove HW and address contracture

Factors for Elbow Contracture

- Congruity of the joint
- 3 articulations in Synovial Lined Cavity
- Close relationship of Joint capsule and Ligaments to soft tissue
Factors for Elbow Contracture

Minor Trauma

- Joint Capsule becomes thickened and non-compliant
- Prolonged Immobilization

Who are candidates?

<table>
<thead>
<tr>
<th>Normal Range of Motion Reference Values</th>
<th>Typical Range of Motion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elbow</td>
<td>Extension/Flexion 0/145</td>
</tr>
<tr>
<td>Forearm</td>
<td>Pronation/Supination 70/85</td>
</tr>
<tr>
<td>Wrist</td>
<td>Extension/Flexion 70/75</td>
</tr>
<tr>
<td></td>
<td>Radial/Ulnar 20/35</td>
</tr>
</tbody>
</table>

2 Essential Functions of Elbow?
Who are candidates?

CANDIDATES

- Flexion contracture of at least 25° to 30°
- Flexion of less than 110° to 115°

Who are candidates?

Essential Factors

- Soft Tissue Coverage
- Congruous elbow with adequate Ulnohumeral joint Space
- Xray/CT SCAN TO ASSESS
- Surgery delay of 3-4 months from initial injury
  - Plateaued Recovery

Contraindications

- Patients unwilling/Cant to do Post-Op rehab
  - I.e. Adolescents, Prisoners
- Incongruous Ulnohumeral Joint
  - May cause more pain
- Those will other causes of pain
  - I.e Ulnar Neuropathy; Severe OA
Splinting – 2 types
Dynamic Splints
• Constant Tension applied to Soft tissue over long period of time (23 hrs/day)

Splinting – 2 types
Static Progressive Splints
• Enables Passive progressive Stretching
• Shorter Period of time
• Higher Patient Satisfaction

Suggestions with Splinting
• Start Sooner than Later
  • Within 1 month
• Elbow Improvement
  • 20 degrees/week
SURGICAL APPROACHES

Approach - Concepts
ELBOW FLEXION
Posterior Soft Tissue Release
- Joint Capsule
- Triceps Tenolysis
Anteriorly
- Impingement btw Coronoid Fossa and Coronoid
- Also Must have Concavity above Capitellum laterally for Radial Head

Approach - Concepts
ELBOW EXTENSION
Posteriorly
- Impingement btw Olecranon and Olecranon fossa
Anteriorly
- Excise Anterior Joint Capsule
- Remove Adhesions btw Brachialis and Humerus
Surgical Approach

**LATERAL**
- Access to all 3 Elbow Articulations
  1. Ulnohumeral
  2. Radiocapitellar
  3. PRU
- Disadvantages
  - No access to Ulnar Nerve
  - No access Posteromedial ulnohumeral joint

**MEDIAL**

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Surgical Approach – Lateral

**Step 1**
- Release of Posteromedial Capsule
- “Soft Spot” – Proximal to LCL complex
- Excise Loose Bodies in sulcus

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Surgical Approach – Lateral

**Step 2**
- Stay Posterior
- Posterior Capsule Excised
- Burr/Debride Olecranon Fossa
- Excision Olecranon Tip
Surgical Approach – Lateral

**Step 3**
- Exposure Anteriorly
- Brachialis Reflected Anteriorly and release adhesions

**Step 4**
- Anterior Capsulectomy
  - Thick Strip going Lateral to Medial
- Clear Radial and Coronoid fossa
  - BURR/Rough
- Ok to Take some Coronoid

**Step 5**
Assess Forearm Rotation
- Radiocapitellar Joint
- PRIJ
Surgical Approach – Medial

Step 6
Ulnar Nerve Decompression
• In-situ
• Anterior Transposition (if need to release Medial)
• Recommended with Preoperative Elbow Flexion
  • Less than 90° to 105°

Post Operatively - Regimen

Start Immediate Passive ROM
Stative Progressive Elbow Bracing
NSAIDS for 1 month
• Med Heterotopic Ossification
• Limits inflammation of the joint

Complications

• Ulnar Neuropathy
  • Quick to release
• Patient Expectations
  • Motivated
  • 1 year or longer

Expectations Ahead!
Results

Post-Traumatic Contracture of the Elbow: Operative release using a lateral collateral ligament sparing approach.
Cohen and Hastings, JBJS Br 1998

- 22 Patients
- Median Age – 35 (15-72)
- Follow up avg. – 29 months

Increase in Motion
- Ulnohumeral 74° to 129°
- Increase in FA rotation 135° to 159°

3 cases of Transient Ulnar Sensory Neuropathy
1 case of Median Sensory Neuropathy

The Column Procedure. A limited lateral approach for extrinsic contracture of the elbow.
Monsat and Morrey, JBJS 1998

- 37 Patients
- Median Age – 41 (5-68)
- Follow up avg. – 43 months

Increase in Motion
- Ulnohumeral 49° to 94°
- 89% patients improved

2 cases of Transient Ulnar Sensory Neuropathy
2 cases of Hematoma
Health Status after Open Elbow Contracture Release
Lindenhovius et al. JBJS Sept 2010

- 22 Patients with Open Elbow Release
- DASH/SF-36/Pain Scores
  - Preoperatively
  - 1 year Postoperative

“CONCLUSIONS: Health status and disability scores improve after open elbow contracture release, but the improvements do not correlate with the improvement in elbow motion”

- Pain was a strong predictor of the final general health status and arm-specific disability

Thank You and Geaux Tigers!