Introduction

Severe elbow arthritis, especially in the younger population, is a difficult problem to manage. Arthroscopic debridement with capsular release can provide temporary relief. Total elbow arthroplasty (TEA) is associated with an unacceptably high failure rate in active patients. Interposition arthroplasty is an alternative for younger, more active individuals, who want to minimize these limitations.

Purpose

• To present a novel surgical technique utilizing arthroscopy to assist in joint preparation and graft placement for interposition arthroplasty of the elbow. This technique does not utilize the need for hinged external fixation due to preservation of the MCL.
• To present short-term clinical outcomes for 4 patients who received this surgery by the senior author (MEB).

Methods

• After IRB approval, a retrospective chart review was performed on 4 patients with surgery performed on their elbows by the senior author (MEB).
• Patients were contacted to perform an American Shoulder and Elbow Society (ASES) Elbow Specific and Disabilities of the Arm, Shoulder, and Hand (DASH) Score.

Indications, Contraindications, and Surgical Technique

• Indications: Refractory inflammatory or primary elbow arthritis
• Contraindications: Infection, poor bone stock
• Positioning: Lateral Decubitus Over Tibial Post with Sterile Upper Arm Tourniquet
• Medial Incision for Ulnar Nerve Transposition
• Standard Elbow Arthroscopy Portals
  • Direct Lateral
  • Direct Medial (under visualization)
  • Proximal Lateral
  • Posterior Lateral or Central Posterior
• Prepare Unconstrained and Radiacippellum Joints
  • Remove loose bodies and prominent osteophytes.
  • Release, if necessary, anterior joint capsule
  • Lateral Approach to the Elbow (Kocher Interval)
  • Take down Posterior ½ of Common Extensor Tendon and LCL from Origin
• Measure Dimensions of Joint with Arthroscopic Assistance
• Achilles Allograft Measured (A) and Cut According to Dimensions
• Heavy Non-Absorbable Braided Locking Sutures Placed at 4 Corners and Central Anterior and Central Posterior Margins of Graft (B)
• Corresponding Orientation of Sutures are Brought Out of Portals with Arthroscopic Assistance (C)
  • Anterior/Posterior Medial Sutures Adjacent to Capsule and MCL
  • Anterior/Posterior Central Through Posterol Portals
Graft Oriented into Joint (D)
  • Medial to Lateral Passage of Graft
  • Anterior and Posterior Central Sutures are Tied with Arthroscopic Assistance
• Medial Sutures Tied Over Medial Capsule
• Graft Orientation Confirmed Arthroscopically
  • Repair LCL Using Heavy Non-Absorbable Braided Suture Drenched Through Bone Tunnel at the Isometric Point
  • Lateral Graft Sutures Tied Over Repaired LCL
  • Layered Wound Closure Followed by Elbow Splinting at 90°
• No Hinged External Fixation Necessary Due to Intact MCL/Repaired LCL

Results

Table 1. Short Term Outcomes After Surgery

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>Indication</th>
<th>Follow-Up (years)</th>
<th>(Flex-Ext) [Pronosup]</th>
<th>Outcome Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DASH</td>
<td>ASES-E</td>
</tr>
<tr>
<td>1</td>
<td>48</td>
<td>Post-Traumatic OA</td>
<td>2.5 (50-120)</td>
<td>N/A/ converted to TEA</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>62</td>
<td>RA</td>
<td>3 (20-140)</td>
<td>33</td>
<td>73</td>
</tr>
<tr>
<td>3</td>
<td>55</td>
<td>Post-Traumatic OA</td>
<td>6 (0-140)</td>
<td>13</td>
<td>65</td>
</tr>
<tr>
<td>4</td>
<td>63</td>
<td>Post-Traumatic OA</td>
<td>3 (30-120)</td>
<td>35</td>
<td>50</td>
</tr>
</tbody>
</table>

Summary Points

- Three out of four patients with short-term follow-up have had acceptable outcomes.
- The one patient that failed had persistent pain was converted to TEA. That same patient continues to have pain after an apparently successful TEA.
- This technique does not need hinged elbow external fixation due to goal of minimizing soft tissue disruption by leaving the MCL intact.
- This is a viable salvage option for younger, demand patients with severe elbow arthritis that do not want the restrictions of TEA.

References