# Arthroscopic Outerbridge-Kashiwagi Procedure and Endoscopic Cubital Tunnel Release: Comparison with Arthroscopic Osteocapsular Arthroplasty


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# Mandatory Faculty Disclosure

**Disclosure of Financial Relationships**

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•**Conflicts of Interest**: The authors declare no conflict of interest

# Purpose

**Purpose** : The purpose of this study was to compare and analyze the clinical outcomes of arthroscopic osteocapsular arthroplasty and arthroscopic OK procedure

**Hypothesis** : Arthroscopic OK procedure with endoscopic cubital tunnel release would reduce surgical time and have advantages in terms of ROM recovery.

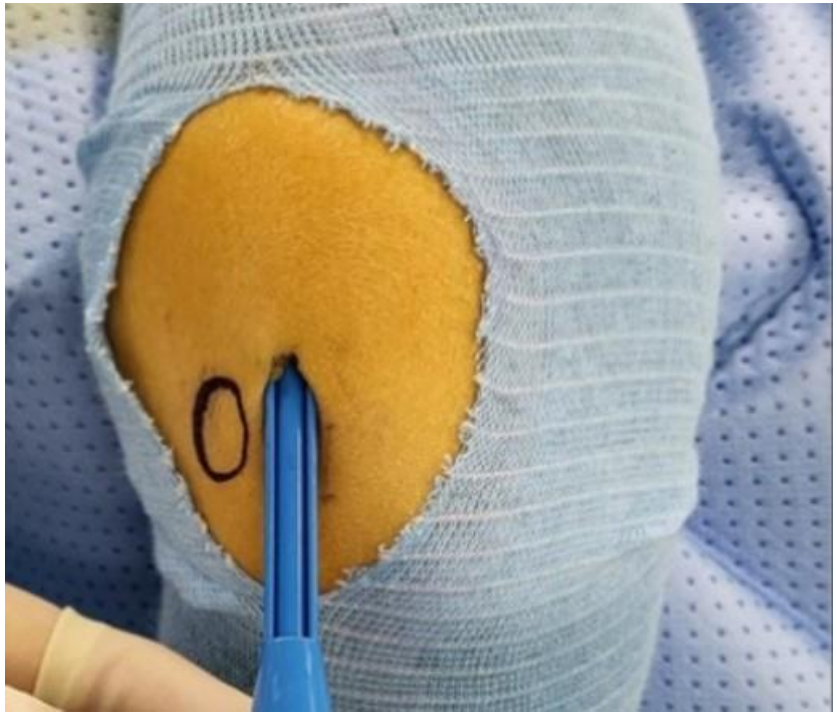
# Method

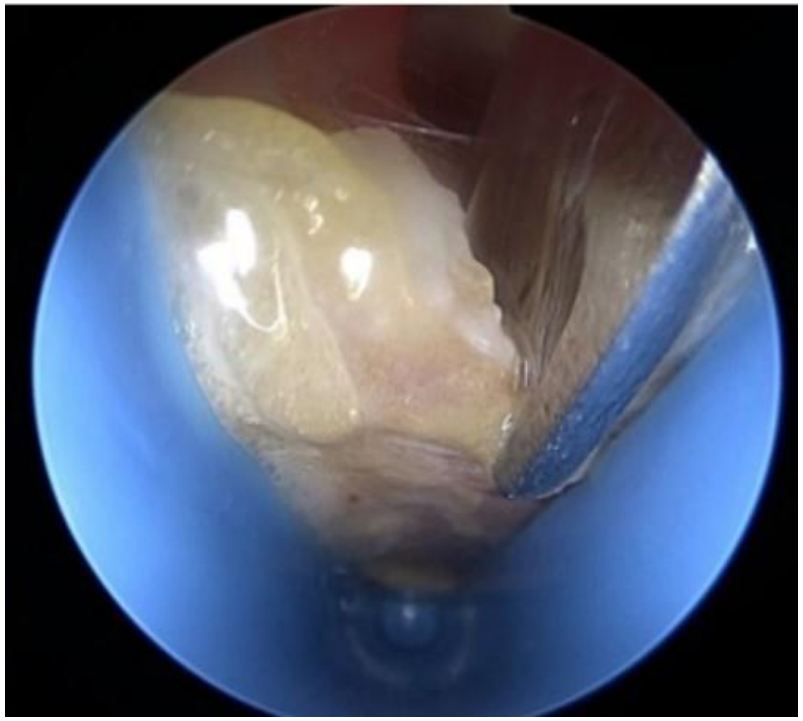
- Total of 53 cases who underwent arthroscopic elbow surgery due to limited range of motion (ROM) caused by elbow joint OA and loose bodies.

- Exclusion criteria
  - Neuromuscular disease, deformity of elbow joint, infections

# Surgical Technique

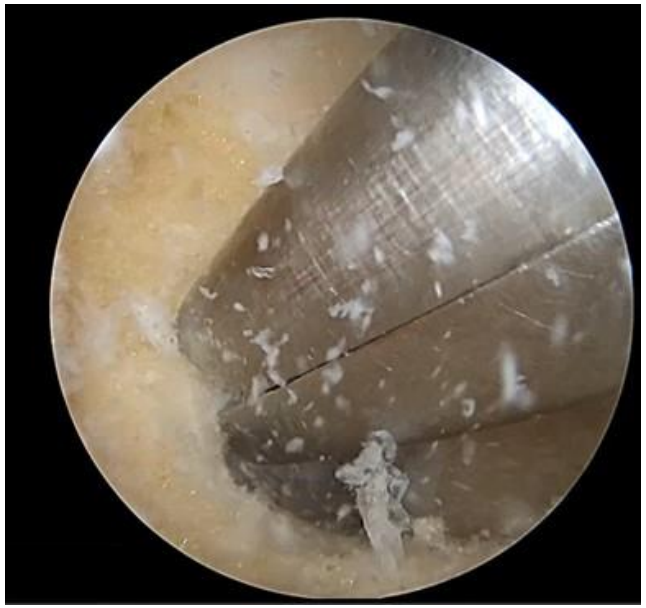
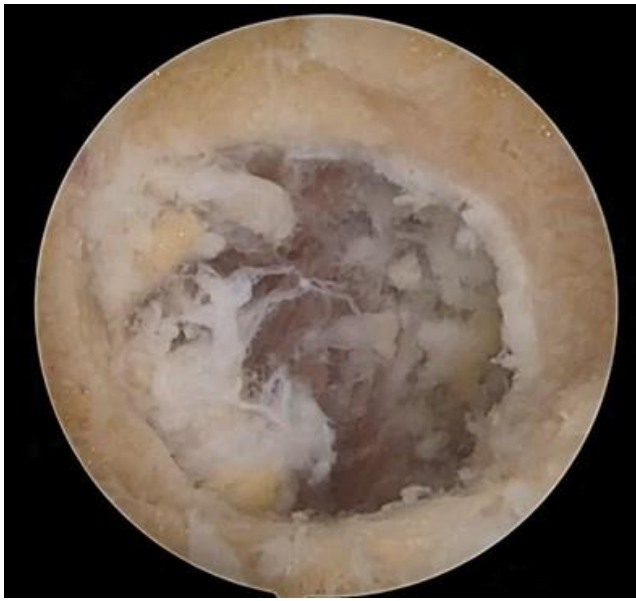
After making a 1.5cm incision, the ulnar nerve was identified, and a tunnel entrance was created. Subsequently, decompression was carried out using the Linvatec nerve decompression kit (Linvatec, FL, USA), while visualizing the procedure through an arthroscope





# Surgical Technique

Using a burr, the osteophyte on the olecranon was removed. A hole was then created in the center of the olecranon fossa using the burr, followed by expansion of the hole using a Kerrison rongeur, and the OK procedure was carried out.

# Measurements

- **Clinical measurements** : before surgery and one year after surgery
  - Mayo Elbow Performance Score (MEPS),
  - Visual Analog Scale (VAS) pain scores,
  - and range of motion (ROM)

# Results

| Variable | Arthroscopic osteocapsular arthroplasty (n=35) | Arthroscopic OK procedure (n=18) | p-value |
|---|---|---|---|
| Mean age | 53.1 ± 10.4 | 55.6 ± 8.9 | 0.21 |
| Gender (Male: Female) | 31:04:00 | 16:02 | 0.18 |
| Dominant arm: Non-dominant arm | 30:05:00 | 15:03 | 0.81 |
| Height (cm) | 168.1 ± 7.2 | 164.8 ± 8.4 | 0.65 |
| Weight (kg) | 73.4 ± 10.0 | 72.4 ± 11.1 | 0.81 |
| Body mass index | 25.9 ± 2.4 | 26.5 ± 2.7 | 0.62 |
| Smoking: Non-smoking | 12:23 | 07:11 | 0.78 |
| Preoperative ulna nerve neuropathy | 13 (37.1%) | 6/18 (33.3%) | 0.11 |
| Ulna nerve decompression | 21 (60.0%) | 10 (55.6%) | 0.64 |
| Surgical time (min) | 101.3 ± 34.2 | 75.6 ± 27.9 | <0.0001 |
| Mean follow-up (month) | 30.7 ± 5.7 | 29.9 ± 6.5 | 0.81 |

OK: Outerbridge-Kashiwagi

**Table 1:** Demographic data

# Results

| Variable | Arthroscopic Osteocapsular Arthroplasty (n=35) | Arthroscopic OK procedure (n=18) | p-value |
|---|---|---|---|
| VAS pain | | | |
| Preoperative | 8.1 ± 2.3 | 7.9 ± 2.1 | 0.25 |
| Postoperative | 1.3 ± 1.0 | 1.4 ± 1.1 | 0.26 |
| p-value | <0.0001 | <0.0001 | |
| MEPS | | | |
| Preoperative | 53.2 ± 9.6 | 55.2 ± 8.9 | 0.22 |
| Postoperative | 82.9 ± 7.5 | 82.3 ± 8.1 | 0.27 |
| p-value | <0.0001 | <0.0001 | |
| Flexion | | | |
| Preoperative | 106.6 ± 22.1 | 104.2 ± 28.4 | 0.19 |
| Postoperative | 127.4 ± 13.4 | 126.1 ± 15.2 | 0.28 |
| p-value | <0.0001 | <0.0001 | |
| Extension | | | |
| Preoperative | 31.8 ± 18.2 | 28.1 ± 16.5 | 0.39 |
| Postoperative | 9.3 ± 7.2 | 10.1 ± 6.6 | 0.37 |
| p-value | 0.04 | 0.02 | |
| Arc of motion | | | |
| Preoperative | 74.8 ± 29.4 | 76.1 ± 31.2 | 0.37 |
| Postoperative | 118.1 ± 10.4 | 116.0 ± 9.5 | 0.88 |
| p-value | <0.0001 | <0.0001 | |
| Transient nerve injury (n,%) | 3 (8.6%) | 1 (5.6%) | 0.79 |
| Heterotopic ossification (n,%) | 0 | 0 | - |
| Infection (n,%) | 0 | 0 | - |
| recurrence of stiffness (n,%) | 4 (11.4%) | 1 (5.6%) | 0.25 |

OK: Outerbridge-Kashiwagi, VAS: Visual Analog Scales, MEPS: Mayo Elbow Performance Score

Table 2: Clinical and Radiologic outcomes

# Limitations

- Non-randomized retrospective study.
- The relatively short follow-up period of one year makes it difficult to accurately evaluate complications such as stiffness recurrence.
- The limited number of cases increases the possibility of type II errors.

# Conclusion

- The Arthroscopic OK procedure with endoscopic cubital tunnel release were able to reduce surgical time when compared to Arthroscopic osteocapsular arthroplasty with open cubital tunnel release. The authors believe that these procedures facilitated easier debridement and that the reduction in surgical time is a significant result with implications for reducing perioperative complications.

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