



ELSEVIER

ORIGINAL ARTICLE

Open surgical elbow contracture release after trauma: results and recommendations

Jack M. Haglin, BS^a, David N. Kugelman, BS^a, Anthony Christiano, MD^a,
 Sanjit R. Konda, MD^{a,b}, Nader Paksima, DO, MPH^{a,b}, Kenneth A. Egol, MD^{a,b,*}

^aTrauma Division, Orthopaedic Department, NYU Hospital for Joint Diseases, New York, NY, USA

^bTrauma Division, Orthopaedic Department, Jamaica Hospital Medical Center, Queens, NY, USA

Background: Post-traumatic elbow contracture is a debilitating complication after elbow trauma. The purpose of this study was to characterize the affected patient population, operative management, and outcomes after operative elbow contracture release for treatment of post-traumatic elbow contracture.

Methods: A retrospective record review was conducted to identify all patients who underwent post-traumatic elbow contracture release performed by 1 of 3 surgeons at one academic medical center. Patient demographics, injuries, operative details, outcomes, and complications were recorded.

Results: The study included 103 patients who met inclusion criteria. At the time of contracture release, patients were a mean age of 45.2 ± 15.6 years. Contracture release resulted in a significant mean increase to elbow extension/flexion arc of motion of $52^\circ \pm 18^\circ$ ($P < .0005$). Not including recurrence of contracture, a subsequent complication occurred in 10 patients (10%). Radiographic recurrence of heterotopic ossification (HO) occurred in 14 patients (14%) after release. Ten patients (11%) elected to undergo a secondary operation to gain more motion.

Conclusion: Soft tissue and bony elbow contracture release is effective. Patients with post-traumatic elbow contracture can make significant gains to their arc of motion after contracture release surgery and can expect to recover a functional elbow arc of motion. Patients with severe preoperative contracture may benefit from concomitant ulnar nerve decompression. HO prophylaxis did not affect the rate of HO recurrence or ultimate elbow range of motion. However, patients must be counseled that contracture may reoccur, and some patients may require or elect to have more than one procedure to achieve functional motion.

Level of evidence: Level IV; Case Series; Treatment Study

© 2017 Journal of Shoulder and Elbow Surgery Board of Trustees. All rights reserved.

Keywords: Elbow contracture; elbow release; contracture release; open elbow arthrolysis; ulnar nerve; elbow stiffness

This study was approved by the Institutional Review Boards of NYU School of Medicine (IRB Study i14-01987) and of the Jamaica Hospital Medical Center (IRB Study 684848-1).

*Reprint requests: Kenneth A. Egol, MD, 301 E 17th St, Ste 1402, New York, NY 10003, USA.

E-mail address: Kenneth.Egol@nyumc.org (K.A Egol).

Post-traumatic joint contracture is a well-recognized complication after elbow trauma.^{44,54} The elbow joint is particularly susceptible to contracture as a result of its distinctive anatomy; specifically, the presence of 3 separate articulations within a single synovial cavity, the abundance of vulnerable soft tissue required for joint stability, and the proximity of the brachialis muscle to the anterior capsule, which predisposes the joint to contracture.^{41,55} However, the exact causes of

post-traumatic stiffness are multifarious and can be anatomically classified as intrinsic or extrinsic.¹⁸ Intrinsic stiffness is the result of intra-articular injuries, such as articular cartilage degeneration or the loss of bony articular congruence and impingement, and extrinsic stiffness is typically associated with the contracture of local extra-articular soft tissue, thickening of the joint capsule, symptomatic hardware, or local heterotopic ossification (HO) formation.^{34,39}

Given the debilitating nature of elbow contracture, restoring a functional arc of motion is the primary goal when treating such cases. An early physical therapy or dynamic or static progressive splinting program, or both, may restore functional motion in some patients with extrinsic elbow contracture and should be pursued before surgical intervention.^{10,36,46} However, surgery will likely be indicated if nonoperative treatment proves ineffective for returning functional motion.

Any operative plan to treat stiffness should address all pathologic structures contributing to the loss of motion. Several surgical techniques have been described, including arthroscopic capsular release^{19,21,22,27,37} or open capsulectomy using an anterior,⁴⁸ posterior,⁵ medial,⁶ or lateral^{3,14,17,25,30,31,55} approach. In addition to surgical variability, there is contradicting evidence with regard to the efficacy of prophylaxis for HO recurrence in the form of radiation therapy or nonsteroidal anti-inflammatory drug (NSAID) administration after HO excision procedures about the elbow. Given the relatively small patient cohorts among the current elbow release case reports, the purpose of this study was to report the indications, techniques, and patient outcomes of open surgical release after post-traumatic elbow contracture in a large cohort of patients.

Materials and methods

Patients

A retrospective record review was conducted to identify all patients who underwent an open, post-traumatic elbow contracture release performed by 1 of 3 orthopedic surgeons at the New York University Langone Medical Center between 2005 and 2016. All patients included in this study were treated for an established elbow contracture with a preoperative flexion/extension arc of less than 100°. Before being indicated for surgical release, all patients were first prescribed a supervised physical therapy and splinting regimen and failed to respond. Patients with contractures stemming from burns, advanced bony articular injury requiring arthroplasty, or fracture nonunion/malunion were excluded, as were patients with less than 6 months of clinical follow-up after surgical release. For all remaining eligible patients, complete records and radiographs were retrieved and reviewed.

Collected data included patient demographics, initial injuries, initial treatments, operative details, outcomes, and complications. Patient demographics included sex, body mass index, age, mechanism of initial injury, and type of initial injury. Time from initial injury to release was also recorded. Collected operative details included surgical approach of the capsulectomy and all concomitant procedures, including HO excision, removal of hardware, and ulnar neurolysis. Any preoperative instance of ulnar neuropathy, a common finding

in elbow contracture, was noted. Elbow flexion/extension and forearm rotation were measured preoperatively and at all postoperative follow-up assessments. Lateral and anteroposterior radiographs of the affected elbow were obtained prior to surgery and at all follow-up visits. This retrospective data collection was performed by 2 independent observers (J.M.H. and D.N.K.) not involved with patient care.

Operative technique

All patients were treated with an open elbow capsulectomy where the approach was dictated by the location of contributing pathologic blocks to motion, the incision sites of initial surgery, or the need for neuropathy treatment, or all three. Surgery was performed under regional or general anesthesia. All patients were placed supine or in lateral decubitus, and a sterile tourniquet was placed. Prophylactic antibiotics were administered.

Prior surgical incisions were used when possible. A lateral column, medial, or combined approach was used. When a patient was indicated for ulnar nerve neurolysis for treatment of preoperative symptoms of neuropathy, a posterior with a medial flap approach was preferred given the clear ulnar nerve visualization it allows. However, most patients were treated through a lateral column approach because of its ease of access to posterior HO, symptomatic hardware, and surgeon preference (Fig. 1).

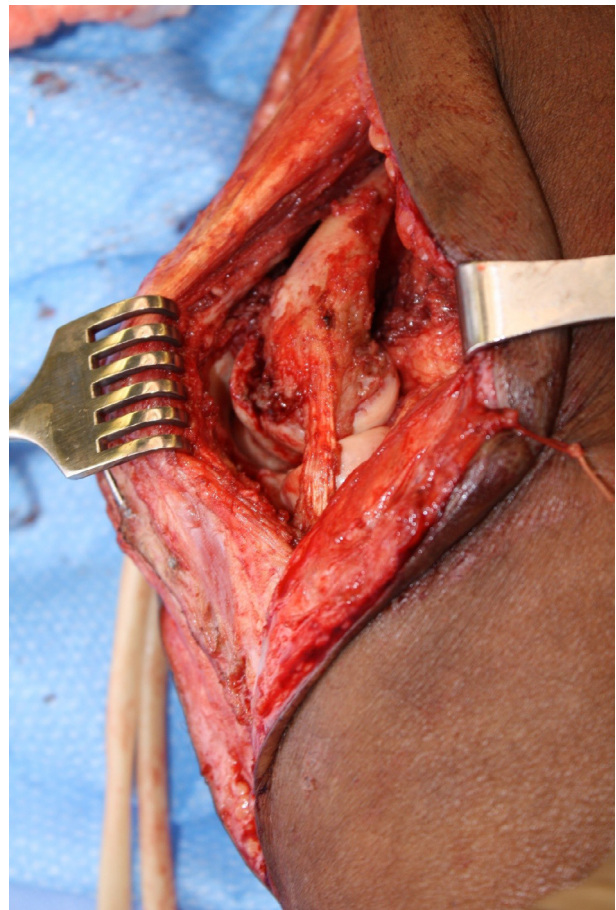


Figure 1 Laterally based approach through a posterior incision open capsular release with maintenance of the ulnar band of the lateral collateral ligament.

Download English Version:

<https://daneshyari.com/en/article/8800995>

Download Persian Version:

<https://daneshyari.com/article/8800995>

[Daneshyari.com](https://daneshyari.com)