

The Emerging Role of Elbow Arthroscopy in Chronic Use Injuries and Fracture Care

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KEYWORDS

- Elbow arthroscopy • Fracture • Tennis elbow
- Medial collateral ligament • Thrower's elbow
- Lateral epicondylitis

Arthroscopy is emerging as an invaluable tool for diagnosing and treating elbow pathology. In addition to the advantages of less scarring, decreased risk of infection, less postoperative pain, and a more thorough visualization of the elbow joint, arthroscopy is particularly well suited to the treatment of athletes trying to minimize rehabilitation and inactivity.¹ Indications for elbow arthroscopy now extend well beyond diagnosis and loose body removal, and include the treatment of impingement, arthritis, contractures, fragment stabilization for osteochondritis dissecans (OCD), and treatment of certain fractures.

This article reviews the basic principles and techniques of elbow arthroscopy and their application to common sports-related conditions, such as valgus overload syndrome, medial collateral ligament (MCL) insufficiency, and the various causes of lateral elbow pain.

ANATOMY AND PORTAL PLACEMENT

Before surgery, a thorough examination under anesthesia is performed using the mini-fluoroscope to check for congruous joint motion and valgus, posterolateral, or anterior instability.² Elbow arthroscopy can be performed in the prone, lateral decubitus, or supine positions. The lateral decubitus position is popular, although the senior

author prefers the supine positioning using an arm holder (such as the McConnell arm holder; McConnell Orthopaedic Manufacturing Co., Greenville, Texas) to place the arm across the patient's chest for access to the posterior compartment or at the side for work in the anterior aspect of the elbow. This procedure allows the arm to be moved about and simplifies conversion to an open procedure, such as MCL reconstruction, if necessary (**Fig. 1**).

The major topographic landmarks, including the medial and lateral epicondyles, the radial head, the radiocapitellar joint, and the ulnar nerve are palpated and marked. The elbow is flexed and extended to confirm that the ulnar nerve avoids subluxation with flexion. Previous submuscular transposition of the ulnar nerve is an absolute contraindication to making a medial portal.³ Placement of a medial portal after the anterior subcutaneous transposition is permissible only if the nerve can be clearly palpated and the portal can be placed, using blunt dissection techniques, at a distance from the nerve. Care should be taken throughout the procedure to avoid levering instruments and potentially crushing the nerve.⁴

A tourniquet is routinely used. Injection of the joint with saline distends the capsule, which displaces the neurovascular structures and increases the ease and safety of portal placement.

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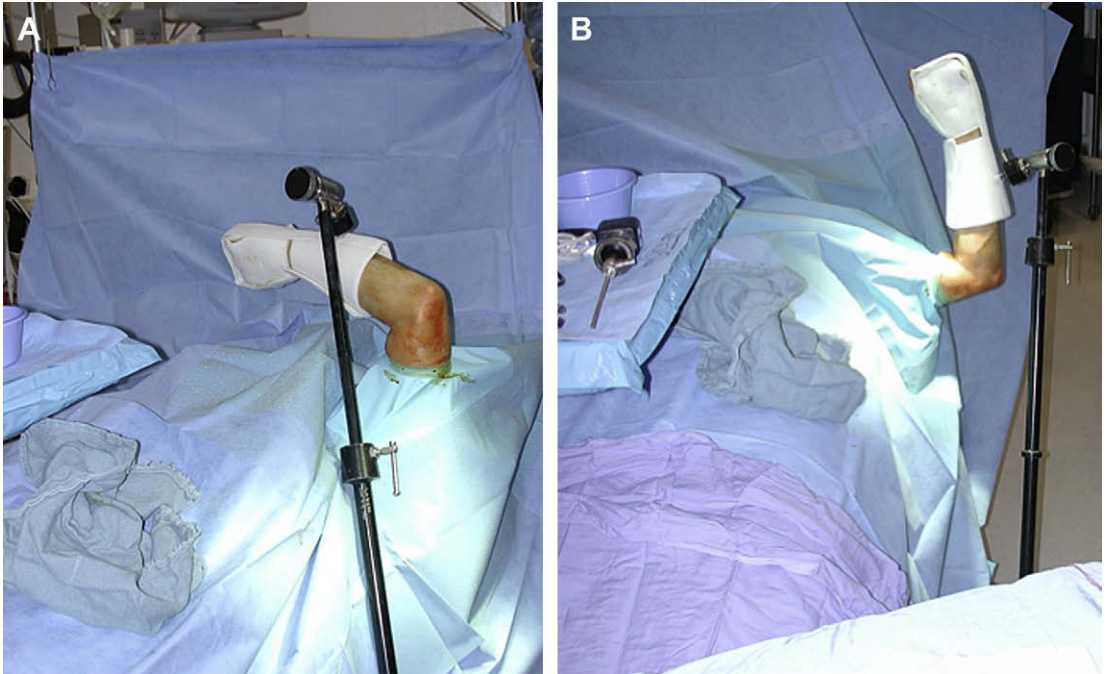


Fig. 1. The preferred patient positioning for elbow arthroscopy: supine with a McConnell arm positioner. (A) Position for access to the posterior compartment. (B) Position for anterior elbow access.

Low inflow pressure (25–30 mm Hg) is used to prevent fluid extravasation and soft tissue swelling. Retractors, rather than hydrostatic pressure, are used to increase exposure within the joint.³

The most commonly used portals include two medial portals, four lateral portals, and three posterior portals. Most of these portals are made by incising the skin with a #15 scalpel blade and bluntly spreading the subcutaneous tissues to protect the terminal branches of cutaneous nerves. Two exceptions to this are the transtriceps and posterolateral portals, which can be established with a #11 blade.

The two medial portals most commonly used are the proximal anteromedial and the anteromedial portals. The proximal anteromedial (or superomedial) portal is located just anterior to the intermuscular septum and 2 cm proximal to the medial epicondyle. The ulnar nerve, which lies 3 to 4 mm behind the septum, is at risk with this portal placement if it is placed too posteriorly.^{1,2} The anteromedial portal is established under direct visualization 2 cm anterior and 2 cm distal to the medial epicondyle, and is commonly placed to augment the proximal anteromedial portal when access to the medial recess is needed. The medial antebrachial cutaneous nerve lies 1 to 2 cm anterior and lateral to this portal, and is at risk for iatrogenic injury during placement. Portals should be

made close to the capsular insertion on the supracondylar ridges, as capsular tissue trapped between the portal and humerus is not only difficult to access but also decreases the joint volume, thus compromising exposure (**Fig. 2**).¹

There are four lateral portals used. The proximal anterolateral portal, located 1 to 2 cm proximal to the lateral epicondyle, provides accessory access to the medial recess of the elbow when instrumentation is required. The medial antebrachial cutaneous nerve is at greatest risk when establishing this route. The anterolateral portal is traditionally described as 3 cm distal and 2 cm anterior to the lateral epicondyle. The radial nerve is at risk of iatrogenic injury here. Moving the portal proximally into the sulcus of the radiocapitellar joint decreases this likelihood. The anterior radiocapitellar portal is slightly anterior and proximal to the radiocapitellar joint. As it lies closest to the radial nerve, direct placement should be made under direct visualization from a medial portal, and care should be taken to ensure that the trocar and cannula are not deflected anteriorly along the capsule toward the nerve. The direct lateral portal, or soft spot portal, is in the center of the triangle formed by the lateral epicondyle, olecranon process, and radial head. This portal allows visualization of the inferior capitellum and radioulnar articulation. During debridement of the posterior radiocapitellar joint through this portal, care

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