ELSEVIER

Operative Techniques in

Sports Medicine

Elbow Arthroscopy Basics: Positioning, Portals, and Diagnostic Arthroscopy

Benjamin S. Miller, MD, and Edward Rhett Hobgood, MD

The arthroscope has proven itself to be the ideal tool for evaluation and treatment of intra-articular pathology about the elbow. Advances in elbow arthroscopy have enabled surgeons to treat a broad spectrum of disorders that were once thought to be unsafe through arthroscopic techniques. Although technically demanding, recent advances in surgical technique, arthroscopic equipment, and an improved understanding of neurovascular and joint anatomy have made this procedure safer and more effective. Understanding the anatomy of the elbow, as well as the principles and techniques of elbow arthroscopy, allows a surgeon to perform these procedures safely and effectively. Portal placement and knowledge of the pertinent anatomy involved in each specific portal leads to successful surgery with minimal risk. The process and sequence of an elbow scope is visited in this article as well as discussion of pertinent anatomy, positioning, and technique.

Oper Tech Sports Med 22:132-141

KEYWORDS elbow, arthroscopy, diagnostic, anatomy, portals, elbow scope

Introduction

Advances in elbow arthroscopy have enabled surgeons to treat a broad spectrum of disorders in a minimally invasive manner. Although technically demanding, recent advances in surgical technique, arthroscopic equipment, and an improved understanding of neurovascular and joint anatomy have made this procedure safer and more effective.

The indications for elbow arthroscopy are continually evolving. In previous years, elbow arthroscopy was mainly used for removal of loose bodies,[1-7] synovectomy,[8,9] lysis of adhesions,[10,11] excision of osteophytes,[12,13] debridement of osteochondritis dessicans lesions,[5,14-16] radial head resection,[17] plica excision,[18,19] instability,[20] septic arthritis,[21] and diagnostic arthroscopy for complex elbow pain.[5] More recently, these indications have been expanded to include autograft replacement for osteochondritis dissecans, treatment of lateral epicondylitis, and reduction and fixation of fractures of the radial head, capitellum, and distal humerus. Elbow arthroscopy can also be useful in the treatment of posterolateral instability.[22] Understanding of the anatomy of the elbow, as well as the principles and techniques of elbow arthroscopy, allows a surgeon to perform these procedures safely and effectively.

Mississippi Sports Medicine & Orthopaedic Center, Jackson, MS.

Address reprint requests to E. Rhett Hobgood, MD, Mississippi Sports Medicine & Orthopaedic Center, 1325 E Fortification St, Jackson, MS 39202. E-mail: rhetthobgood@msmoc.com

Patient Positioning

Supine

Once the patient is positioned supine on the operating table, the operative extremity is lateralized on the operating table so that the shoulder is placed at the edge of the bed. The operative extremity is placed in 90° of shoulder abduction, 90° elbow flexion, and neutral forearm rotation and a nonsterile arm tourniquet is applied. The arm is suspended as illustrated in Figure 1. The supine position offers the advantage of early conversion to an open procedure if necessary and provides quick access to the patient's airway. Disadvantages of the supine position include the necessity of a suspension setup and the inability to easily visualize and work in the posterior compartment. Another disadvantage is that the arm is not rigidly stabilized in this suspended manner and requires an assistant to provide stability during the procedure (Fig. 1).

Lateral Decubitus

The aim of this position is to take advantage of the benefits of both the supine and prone position while avoiding the major

 http://dx.doi.org/10.1053/j.otsm.2014.02.015
1060-1872//

Figure 1 Clinical photo of supine positioning of arm in suspension for elbow arthroscopy as described in the article. (Color version of figure is available online.)

pitfalls inherent to each setup. A beanbag is used to place the patient in the lateral decubitus position. An axillary roll is appropriately placed. The operative extremity is positioned over an arm holder or over a padded bolster with the shoulder internally rotated and flexed to 90°. The elbow is maintained in 90° of flexion (Fig. 2).

The elbow is maintained in the prone position thus affording the advantages of the prone position. Patient positioning is simplified with respect to prone positioning, and airway maintenance is easily monitored with adequate exposure for the anesthesiologist. Disadvantages include the need for a padded bolster and the potential inconvenience of repositioning should a need for an open procedure arise.

Prone

The prone position is an additional method of positioning. The greatest benefit of the prone positioning is the excellent access to the posterior compartment of the elbow. Direct visualization of the ulnohumeral joint from the posterior angle is essential to allow the surgeon to excise the necessary excess bone to gain increased range of motion and decrease posterior impingement. The face and chest are padded and supported by a foam airway or head positioner and padded chest rolls. The nonoperative extremity is positioned in 90° of shoulder abduction and external rotation with the elbow in 90° of flexion. Often a special arm holder is used to optimize positioning of the operative arm. The arm holder as seen in Figure 3 allows the surgeon to flex and extend the elbow to maximize the

Figure 2 Lateral positioning of arm in elbow arthroscopy as described in the article. (Color version of figure is available online.)

surgeon's versatility to perform desired procedures. A nonsterile arm tourniquet is applied and the arm is place in 90° of shoulder abduction and neutral rotation. The arm is supported at the middle humeral level by a padded arm holder attached to the operating table allowing for flexion and extension of the arm during arthroscopy (Fig. 4).

Figure 3 Example picture of arm holder. (Modified with permission from Steinmann and Scott.[23]) (Color version of figure is available online.)