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Arthroscopic anatomy of the elbow

G. Cerulli[1], V. Buompadre[2], A. Caraffa[3], G. C. Aiesa[4], A. Rizzo[5]

Dirseğin artroskopik yapısı

Yazarlar, dirsek artroskopisi tekniklerini anlatmaktadırlar; bu girişimi gerçekleştirmek için gereken aletleri, kullanılan değişik giriş yerlerini ve eklem içi anatomisinin görünümünü belirtmektedirler.

Anahtar kelimeler: *Dirsek, artroskopi, anatomi*

The authors explain their tecnique of elbow arthroscopy, specifying the instrumentation that is necessary to perform this procedure, the different portals utilized and the visualization of the intraarticular anatomy.

Key words: *Elbow, arthroscopy, anatomy*

Rapid diffusion and advences in arthroscopy have promoted the utilization of this procedure in the elbow joint. After the first unsuccessful experience of Burman in 1931 (2) it was necessary to wait till the late 1970s (12) and 1980s (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13) when the technique of ellbow arthroscopy became established. Indications of this procedure are: loose bodies, synovial osteochondromatosis, osteochondritis dissecans, chip fractures of the coronoid process of the ulna, post-traumatic synovitis and rheumatoid synovitis.

Technique

Arthroscopy is done in the operating room with the patient under general or regional anesthesia and in supine position. A tournique is routinely used for control of hemostasis. The upper extremity is prepared in the usual manner from the midhumerus to the hand included and is held by an assistent. The joint is distended and the intraarticular bleading is reduced by an injection of 0. 5% marcaine with epinephrine 1-200. 000 through the first portal. With a no 11 blade knife an incision of about 5 mm of the elbow skin, subcutaneus tissue and capsule is done, than a trochar with a blunt obturator is entered into the joint. The irrigation and distention of the elbow is obtained using Ringer solution that arrived by gravity from two bags of 3 liters. The bags are directly connected with the sheath of the trochar. Then an arthroscope of 4 mm of diameter and with an angle of view of 30° is introduced. A hand-held camera is connected with the scope and the images are projected to a monitor. Many portals are reported in the literature; we routinaly utilize three lateral portals (Figur 1): the lateral, the antero- lateral and the postero- lateral. In selected cases a medial portal (Figur 2):the antero-medial is used.

Figur I: Illustrations of the three lateral portals

Figur II: Illustrations of the antero-medial portal

Lateral portal is localized with the elbow flexed at 90° in the area defined by the radial head, the lateral epicondyl and the tip of olecranon.

Antero-lateral portal: this approach is anterior to

(1) Director of Orthopaedic Clinical Professor Terni- Italy
(2) Orthopaedic Cliniacl assistents Terni-Italy

the radial head; more precisely it is located with the elbow at 90° of flexion about 3 cm distal to the lateral epicondyle and 1 cm anterior to the radial head.

Postero-lateral portal: this view localized, with the elbow extended, posterior and superior to the lateral epicondyle, about 2 cm proximal to the olecranon tip.

Antero-medial portal: this approach is placed, with the elbow flexed 90°, about 2 cm anterior an 2 cm distal to the medial epicondyle.

Arthroscopic anatomy

The lateral approach permits a good visualization of the intraarticular anatomy. Through the lateral portal is possible to observe the capitellum and the radial head (Figure III), particularly the latter and the radio-ulnar joint are well evaluated with the elbow flexed 90° and performing prono-supination of the forearm.Wiht this position of the joint, it is also possible to see the antero-lateral (Figure IV) and antero-medial portion of the capsule. The elbow extension gives a better view of the trochlear notch and greater sigmoid notch (Figure V).

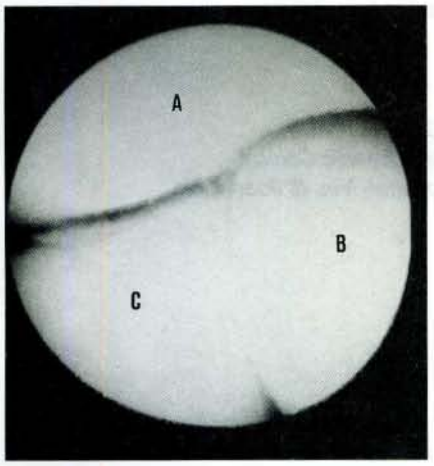

Figure III: Arthroscopic view of the elbow joint showing:
A.humerus
B radial head
C. and ulnar

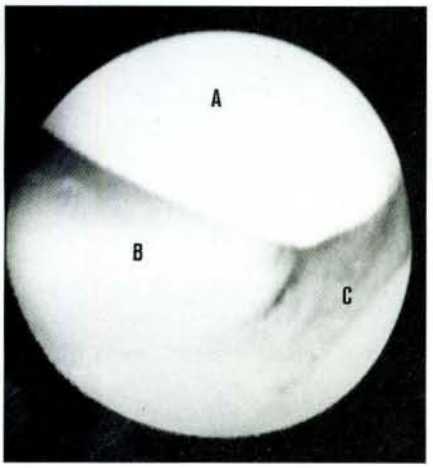

Figure IV: arthroscopic view of the elbow joint showing:
A. capitellum
B. radial head
C. and lateral capsule

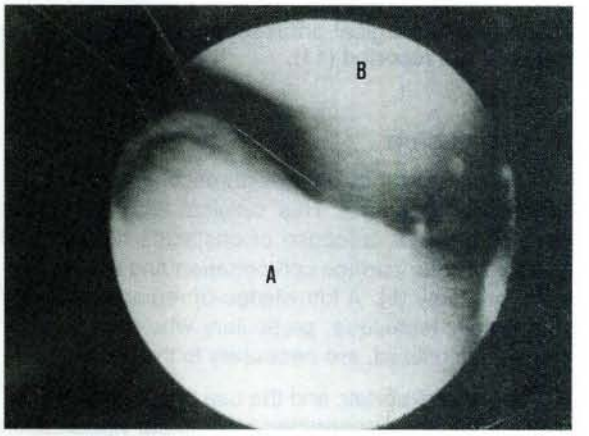

Figure V: arthroscopic view of the elbow point showing:
A. greater sigmoid notch
B. and troclear groove

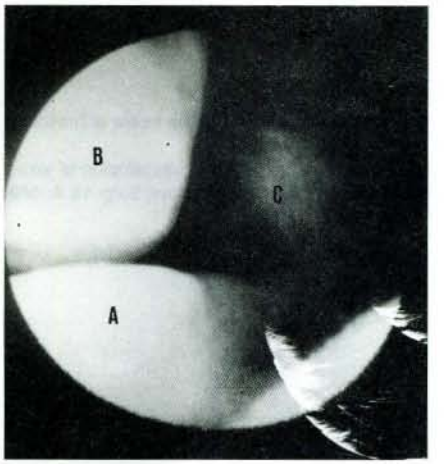

Figure VI: arthroscopic view of the elbow point showing:
A. olecranon tip
B. humerus
C. and olecranon fossa

Positioning the arthroscope through the antero-lateral portal permits the visualization of most of the humero-ulnar and radio-ulnar joint (Figure III). With the elbow in forced flexion the coronoid procces of the ulna is also visible.

The postero-lateral portal permits, with the elbow near to full extension, the view of the olecranon tip and the olecranon fossa (Figure VI).

The triangulation techinque is possible introducing the arthroscope through one of the lateral portals and the probe through one of others. We had no complications in our experience (31 cases of diag-

nostic and/or surgical arthroscopy) and in litterature very few are reported (11).

Conclusion

We can say that elbow arthroscopy is a well established procedure. This surgical tecnique is not easy to perform, because of obstacles represented by the articular surface conformation and the periarticular anatomy (6). A knowledge of regional anatomy and proper technique, particulary when the anterior portals are utilized, are necessary to the surgeon.

The lateral portals and the use of a 4 mm and 30° angle arthroscope permitted a complete visualization of the joint. If this procedure is done with the mentioned care, complications are very infrequent.

Undoubtedly, elbow arthroscopy represents a usefull procedure for the diagnosis and treatment of various elbow pathologies.

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Prof. Dr. G. Cerulli
Director or Orthopaedic Clinical
Terni-Civil Hospital- Via. di Joannucio
Terni- Italy