We describe a technique for arthroscopy of the wrist which is carried out without traction and with the arm lying horizontally on the operating table. The wrist is not immobilised, which makes it possible to assess the extent of instability after a ligamentous tear. In a prospective study of 30 patients we compared this technique with conventional wrist arthroscopy, performing the new method first followed by conventional arthroscopy.

The advantages are that the horizontal position of the arm allows the surgeon to proceed directly from arthroscopic diagnosis to treatment, and that no change of position is required for fluoroscopy.

In terms of diagnostic sensitivity, we found our technique matched that of conventional arthroscopy. We had no difficulty in carrying out minor surgical procedures such as debridement and suturing.

We now use an arthroscopic technique which makes it easier to assess instability of the wrist. During the procedure the forearm lies freely on the operating table, without distraction. We undertook this prospective study to compare the diagnostic sensitivity of the two techniques.

Patients and Methods

There were 30 patients (22 men, eight women) with a mean age of 38.7 years. Degenerative disease was present in 11, and 19 had been injured. Two consecutive wrist arthroscopies were undertaken on each of the 30 patients, thus giving a total of 60 procedures.

First, arthroscopy of the wrist was carried out without distraction. The patient’s arm lay freely on the operating table (Fig. 1). A small rolled towel was placed under the wrist allowing unrestricted movement in all directions. On completion of the arthroscopy, the patient’s fingers were placed in sterile finger traps, the arm suspended and traction of 3 kg applied. A second arthroscopy was undertaken with distraction, verifying the initial findings and ensuring that nothing had been missed.

All patients were discharged on the day of operation. Treatment as required continued for three weeks to six months afterwards. All patients were followed up for a mean period of 10.1 weeks.

In all cases, an arthroscope of 2.4 mm diameter and 30° angle of vision was used to carry out a standard examination of both the radiocarpal and intercarpal spaces. A brachial plexus block was employed and a tourniquet was applied. The conventional dorsal 3-4 and 4-5 portals and the midcarpal radial portal were marked. The accuracy of the location of the portals was verified by inserting a needle at an angle of 10° to 20°, parallel to the surface of the radial joint. The wrist was distended with 5 to 7 ml of Ringer’s lactate solution. Using a type-11 blade we made an incision, then widened it with fine scissors. The nearby extensor pollicus longus tendon was marked with a sterile pen.

Holding the wrist in 10° to 20° of flexion, the assistant briefly applied traction as the trocar was passed through the dorsal 3-4 portal. A fluid pump maintained constant pressure of 150 mmHg. This allowed visualisation of the radial aspect of the radiocarpal joint without distraction.

To overcome the crista radii so that the trocar could pass
Arthroscopy carried out on the left wrist without distraction. The wrist rests freely on a small rolled towel.

to the ulnar side, the assistant again briefly applied traction. Without further distraction, the ulnar compartment became freely accessible to both the arthroscope and the probe from the dorsal 4-5 portal. To gain access to the intercarpal space, the wrist was held in 30° of flexion, without applying traction. An incision was made 1 cm distal to the dorsal 3-4 portal and widened with small scissors.

In principle, gaining access to a particular joint space requires moving the wrist and the carpal bones away from the arthroscope. If access of the probe to the intercarpal row is necessary, a midcarpal ulnar portal is established under arthroscopic control, and the location checked with a needle. Lunotriquetral or scapholunate instability is best seen from this view, since the edges of these bones present clear landmarks. The midcarpal radial portal provides a view of the scaphotrapezoid-trapezium joint. The extrinsic ligaments are clearly visible and ligamentous tension can be tested with a probe. Any instability can be assessed by stressing the wrist in any direction and carrying out specific tests for instability.

All arthroscopic procedures were videotaped.

Results

In all 30 patients, the second examination under distraction confirmed the diagnoses made at arthroscopy without distraction. No condition was missed; no further surgery was found to be necessary. We diagnosed nine ligamentous injuries and eight cases of abnormality of the articular disc. In eight patients there was a severe and in six a minor cartilage lesion. Four patients had damage related to fracture of the radius or a carpal bone. One patient had a ruptured tendon. We did not experience difficulty with small surgical procedures in the absence of traction. We carried out two debridements and sutured a Palmer type-IB lesion of the articular disc lesion.

At the second examination, we noted some superficial scuffing of cartilage as would be expected after conventional arthroscopy. Other than this, we found no evidence of iatrogenic damage. There were no complications.

Discussion

In this method of arthroscopy of the wrist the arm lies horizontally on the operating table and no traction is applied. The diagnostic results appear to be identical to those obtained at conventional arthroscopy. Minor surgical procedures can be performed easily. Since passive movement in all directions is possible, any instability can be visualised and assessed. The risk of damage to carpal bones or cartilage is reduced because the wrist is not immobilised. Furthermore, with the wrist horizontal the surgeon can proceed directly from arthroscopic diagnosis to treatment. It is not necessary to change the position of the patient, the instruments or the equipment to undertake fluoroscopy or percutaneous pinning. Similarly, it is easy to proceed to arthroscopically-controlled osteosynthesis of an intra-articular fracture of the radius.

We anticipate that this technique will be adopted in more complex procedures such as arthrotomy, limited arthrodesis or ligamentoplasty. Our excellent experience with this technique has led us to abandon the use of traction in wrist arthroscopy.

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References