

Arthroscopy of the ankle joint. List of indications, realistic expectations.

Summary

Based on the results of a retrospective study of 116 patients with diagnostic and surgical arthroscopy of the ankle, we present the technique, the results, the complications, and the indications for ankle arthroscopy. The average age of the patients was 33 years (range: 10-70). At time of follow-up the patients were examined clinically as well as radiologically. The results were scored according to an ankle score containing the criteria pain, function, swelling, range of motion and athletic activity.

The overall score significantly increased from 50.1 preoperatively to 73.7 postoperatively. Comparing the different criteria the score parameters pain and function improved significantly, whereas the other parameters did not show significant improvements. A significant improvement was also shown in a visual analogue scale (35.6 to 69.5).

The relatively high number of neurologic complications was especially striking, in 16 cases we found a temporary neurologic deficit.

Introduction

The arthroscopy of the ankle joint as diagnostic and therapeutic procedure seems to become more and more popular. At the beginning of the Seventies the arthroscopy of the knee joint became established whereas the ankle joint arthroscopy was adopted a little more than 10 years ago. The increasing experience in ankle joint arthroscopy was followed by arthroscopic examination of other joints besides the knee and ankle. Two questions are arising: Does this procedure put to a good purpose and is it of benefit in each case? Which are the risks and complications having to be expected? The availability of non-invasive diagnosis has to be taken into consideration answering these questions (2).

By now the arthroscopy of the ankle joint became a standard procedure in many institutions. Usually by using a 30° optic the instruments introduced in knee arthroscopy are suited for the ankle joint inspection (3,4,5,8,9,10,12,13,16,17).

The purpose of this study is to evaluate our results critically and to reveal the complications. With consideration of our findings the indication lists in the literature for ankle joint arthroscopy are discussed.

Material and Methods

Patients

In 116 patients we performed an arthroscopy of the ankle joint. 87 patients were followed up to a mean period of 38.4 months after arthroscopy (SD:21.35). The patients age ranged from 10 to 70 years (mean age: 33 y.). The indications are presented in [Fig. 1](#). 69% of the patients had suffered from trauma, 4 patients had applied for retirement preoperatively.

For the assessment we included the clinical and radiological examination as well as Bray's ankle score (in 7) with the criteria pain (50 p.), function (15 p.), range of motion (10 p.) need for crutches (10 p.), swelling (10 p.) and sport activity (5 p.).

Statistical evaluation was performed by SPSS-PC and Student t- or Chi2- test.

Arthroscopic Instruments and Technique

The procedure is performed using a standard 30° optic and a video system. In our experience, there is no need for a smaller scope. A joint distraction is not performed routinely in order to avoid loss of range of motion and soft tissue or neurovascular injuries by the external fixation. In case of arthroscopic arthrodesis of the ankle joint the joint distraction is of benefit particularly since the external fixation can be used for osteosynthesis and controlling the position (9,11,20,21,22).

The portal for the scope is established by distension of the joint to provide the safe distance to the neurovascular structures. After a superficial skin incision in the region of the anterolateral portal the subcutaneous tissue and tendons are spreaded to the joint capsule by a vessel clamp, the scope is inserted into the joint by a blunt trocar.

Through this anterolateral portal a first inspection of the ventral joint compartment can be performed ([Fig. 2](#)). Then the anteromedial portal is established. The anterior portals allow the inspection of and operative intervention on the ventral joint. We don't use an antero-central approach to the joint since the anterolateral and anteromedial portals allow to inspect the ventral joint compartment completely. By manual distraction the posterior joint compartment can be inspected, the posterior portals are only helpful with special indications (3).

Results

The overall score significantly increased from 50.1 (SD: 21.5) preoperatively to 73.7 (SD: 19.2) postoperatively ($p < 0.05$). The improvement was high significant concerning the criteria pain and function ($p < 0.01$), low significant concerning the sport activities ($p < 0.05$). The other parameters did not show significant improvement ([Fig. 3](#)).

A significant improvement was also found for the self-assessment of the patients in the visual analogue scale: it increased from 35.6 points preoperatively to 69.5 postoperatively.

15% of our patients complained a marked restriction in professional activities at the time of follow up. Disability for work lasted 32 days on average in the postoperative period. 40% of the patients had to give up their sport activities or had to change in kinds of sport postoperatively.

The x-ray taken preoperatively and by the time of follow up were checked for pathologic findings. The postoperative x-ray investigation showed a remarkable increase of osteoarthritis of the ankle joint ([Fig.4](#)). No or minimal radiological signs of osteo-arthritis were found in only 25% of the patients, whereas osteoarthritis grade III and IV was present in 40% of the patients at the time of follow up.

A relatively high rate of neurologic complications was striking, in 16 patients a nerval irritation, mainly of the N. cutaneous dorsalis and Ramus calcaneus dorsalis medialis occurred temporary, in no case these deficits were permanent.

Discussion

In the literature wide-ranging lists of indications for arthroscopy of the ankle joints are published. Beside painful osteochondritis, osteochondral fractures, rheumatoid arthritis and acute ligamentous tears (3), the arthroscopy of the ankle joint is often performed as a diagnostic procedure. The list of indications is still expanding as well as the numbers of arthroscopies of the ankle joint is constantly increasing. The reflection on the explorative procedures missing a clear preoperative diagnosis has to be critically. With consideration of benefit and costs preceding non-invasive diagnostic procedures by ultrasound, CT and MRI can be helpful for preoperative evaluation and might avoid an invasive arthroscopic examination with its risks and possible complications. The arthroscopic joint evaluation is often not sufficient to get a definitive diagnosis in unclear preoperative findings and in these cases it cannot be followed by adequate arthroscopic therapy.

According to our experience the best indications for arthroscopy of the ankle joint seem to be loose bodies, rheumatoid arthritis and joint infections. The procedure is also of benefit in osteoarthritic changes, local synovitis of the ventral joint compartment and osteochondritis dissecans (OD). In regard of extend and stage of the OD a retrograde drilling can be performed arthroscopically. In opposition to other authors ([Tab. 1](#)) we feel that severe degeneration and unclear preoperative diagnosis are contraindications for arthroscopy.

Attention should be paid to the high rate of neurologic complications. Unlike the knee and shoulder arthroscopy the ankle joint arthroscopy claims the surgeon's attention to the anatomic structures in close relation to the portals. In order to avoid injuries of the neurovascular structures the joint is distended by a lavage solution (Purisole), after a superficial skin incision the subcutaneous layer is carefully spreaded to the capsule using a vessel clamp. For saving the nerval structures and tendons we dropped the central approach to the joint.

The rate of postoperative complications, mainly of nerval injuries varies in the literature. Small (19), who published the results of 10262 arthroscopic operations documented a complication rate of 0.7% for arthroscopies of the ankle joint. In contrast Sprague et al. (18) found 17 cases of neurologic complications in 70 ankle

joint arthroscopies (24% complication rate). Similar to other authors (5,14) we found a complication rate in between this extreme range with 18.8%. It is surprising that in regard to the anatomic conditions neurologic complications after arthroscopy of the ankle joint are rarely published in the literature. The reason seems to be the fact that only few surgeons who are versed in arthroscopic operations perform ankle joint arthroscopy. In the future the increase of ankle joint arthroscopies by inexperienced surgeons will probably lead to an increase of complications. A very careful consideration of the benefits and the risks for each patient is therefore important. All the more attention has to be taken while establishing the portals as well as in patient's information concerning possible complications.

Literature

fig. 1

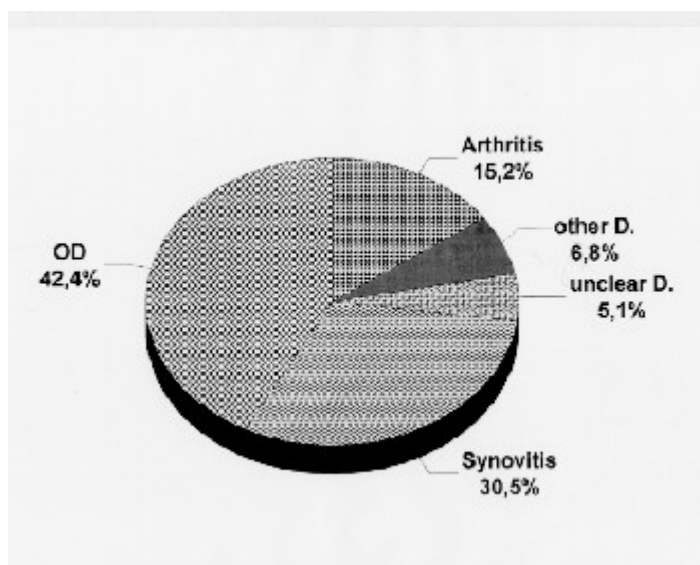


fig. 2

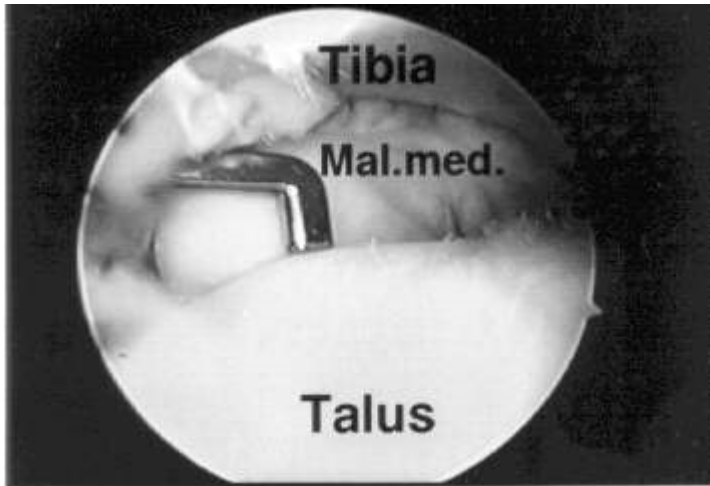


fig. 3

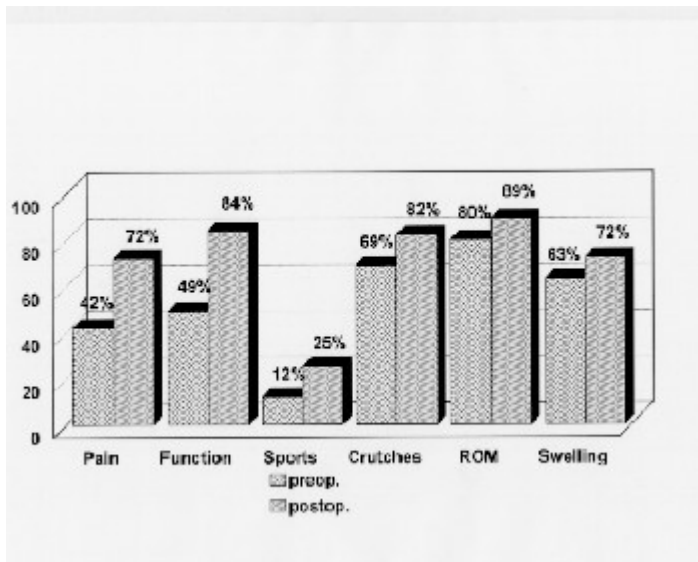


fig. 4

