ARTHROSCOPIC TREATMENT OF ANTERIOR IMPINGEMENT OF THE ANKLE

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We report the results of the arthroscopic treatment of anterior ankle impingement in 13 consecutive subjects. Our patients were treated conservatively for an average period of 30 months, ranging from 2 to 120 months. They did not respond to corticosteroid infiltrations, NSAIDS or physical therapy. Debridement consisting of the removal of the bony spurs with a burr and shaving of hypertrophic synovial tissue was carried out. All 13 patients were reviewed 3 to 41 months after the operation, with a mean follow-up of 19 months. Of the ankles, 92% showed good (38%) or excellent (54%) results. Only one ankle rated fair. Out of the 13 patients, 10 went back to their preoperative sports after a mean of 4 months. We had no complications. In patients where conservative management fails, arthroscopic debridement of the anterior ankle compartment is an effective treatment.

Keywords : arthroscopy ; ankle ; impingement ; synovitis.
Mots-clés : arthroscopie ; cheville ; conflit.

INTRODUCTION

Anterior impingement of the ankle occurs in dorsiflexion when hypertrophic synovial folds are trapped between exostoses of the anterior distal tibia and talar neck. This condition, commonly seen in athletes, football players and ballet dancers, was first described by Morris in 1943 (11) and later by McMurray in 1950 (10). They believed that the exostoses were in fact traction spurs, due to repeated strain on the anterior capsule, e.g. as by kicking a football with the foot in equinus.

In contrast to this hypothesis, O'Donoghue stated in 1957 (12) that the spur formation was the result of repeated direct bone-to-bone trauma between the lower tibia and talar neck during forcible ankle dorsiflexion. Good results were reported after open spur resection through anterolateral and medial arthrotomy. We report the results of arthroscopic removal of bony spurs and partial synovectomy in 13 consecutive subjects.

MATERIALS AND METHODS

Between January 1990 and May 1993 more than 50 ankle arthroscopies were performed for various conditions, of which anterior ankle impingement was diagnosed in 13 cases. The patients were aged between 18 and 48 years with a mean of 32 years. A large male predominance of 12 males and only one female was found. All of them were football players, except one basketball player. The dominant ankle was affected in 69% of the cases.

Diagnosis

Patients complained of pain in 13, swelling in 10 and instability in 6 cases. The "anterior impingement test" causing a shooting type of pain, located at the anterior talotibial sulcus on forcible passive dorsiflexion of the ankle was of great clinical diagnostic value. Limitation of plantar flexion, anterior joint pressure pain and swelling are usually found.

The diagnosis was confirmed by lateral radiographs, showing anterior tibial and occasionally corresponding talar neck exostoses (fig. 1). The typical impingement exostosis is not accompanied by degenerative changes such as joint space narrowing or marginal osteophytes. However, ligamentous or capsular calcifications may be observed.

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Fig. 1. - Lateral radiograph of ankle showing anterior tibial and corresponding talar neck exostoses.

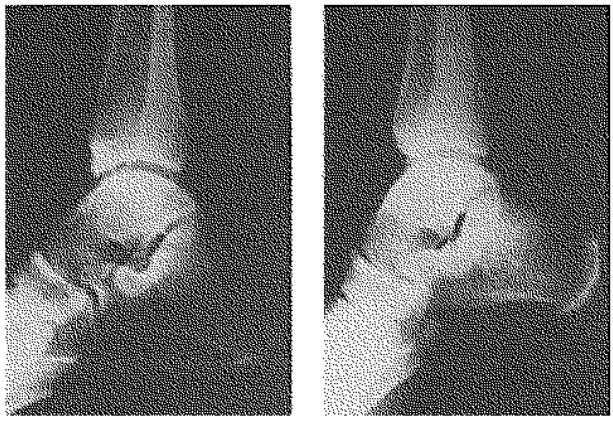

Fig. 2a. Lateral radiograph of ankle showing large anterior tibial exostosis.
Fig. 2b. Postoperative lateral radiograph of the same ankle, showing complete removal of the exostosis.

Our patients were treated conservatively for an average period of 30 months, ranging from 2 to 120 months. They did not respond to corticosteroid infiltrations, non-steroidal antiinflammatory drugs or physical therapy. One patient had an arthrotomy twice, without significant improvement.

Arthroscopic procedure

Ankle arthroscopy was performed under general or spinal anesthesia. The upper leg was placed horizontally in a thigh holder with the lower leg hanging down. The tourniquet at thigh level was inflated after exsanguination. Skeletal traction was never necessary and is only used in our department for posterior pathology in a tight ankle.

The joint was distended with 10 ml of saline before making the classic anteromedial and anterolateral portals (4). Care was taken to incise just the dermis and to spread the subcutis with a small hemostat, thus avoiding damage to subcutaneous structures such as small vessels and nerves.

The joint was entered with a blunt trocar to protect the cartilage from scarring. A 4.5-mm 30° video-arthroscope was used. An anterior synovectomy was carried out with a full-radius resector to get a panoramic view of the anterior joint borders, followed by the removal of the tibial bony spurs with a burr down to healthy bone (fig. 2a-2b). If present, talar neck exostoses were resected as well. Working and viewing portals were switched to get the best exposure during the procedure.

An attempt was made to perform all the arthroscopic work through two cannulas, which remained in place during the whole procedure. It is our belief that in this way, subcutaneous leakage of irrigation fluid and repeated trauma to the soft tissues can be minimized, thus avoiding neurovascular complications.

The incisions were closed with Steristrips. A Robert-Jones bandage was applied for 24 hours, after which partial weightbearing was encouraged. Full weightbearing was allowed after one to two weeks, according to comfort. The majority of the patients had a short course of antiinflammatory drugs. After 4 to 6 weeks, noncontact sports such as biking and running with adapted shoes, were gradually resumed.

The results were determined by subjective and functional analysis on a 4-point scale evaluating pain, swelling, stiffness, postoperative improvement, limp, activity level and instability (table I). The final result is the lowest rating in any category.

Table I. — Scoring systems used to assess results

	Excellent	Good	Fair	Poor
Subjective				
Pain	None	Mild	Moderate	Severe
Swelling	None/minimal	With exercise	Mild with ADLs	Moderate
Stiffness	None/minimal	Mild deficit	Painful deficit	Minimal motion
Functional				
Improvement	Normal	Greatly improved	Improved	Unchanged/worse
Limp	None	Slight	Moderate	Severe
Activity	No limits	Minor limits	Moderate	Limited
ADLs				
Instability	None	Occasional	Limits frequent	Incapacitating

ADL = Activities of Daily Living.

Table II. — Subjective and functional assessment of treatment

	Excellent	Good	Fair	Poor
Subjective				
Pain	7 (54%)	5 (38%)	1 (8%)	0 (0%)
Swelling	11 (85%)	2 (15%)	0 (0%)	0 (0%)
Stiffness	8 (62%)	5 (38%)	0 (0%)	0 (0%)
Functional				
Improvement	7 (54%)	5 (38%)	1 (8%)	0 (0%)
Limp	11 (85%)	2 (15%)	0 (0%)	0 (0%)
Activity	8 (62%)	4 (30%)	1 (8%)	0 (0%)
Instability	12 (92%)	1 (8%)	0 (0%)	0 (0%)
Final Rating				
	7 (54%)	5 (38%)	1 (8%)	0 (0%)

RESULTS

All 13 patients were reviewed 3 to 41 months after the operation with a mean follow-up of 19 months. Out of the 13 patients, 10 returned to their preoperative sports after a mean of 14 weeks. They believe they are able to reach their preoperative sports level if they really want to. However, only 8 patients are actually doing so.

All patients went back to work after a mean of 4 weeks postoperatively (range 1 to 10 weeks). Of the ankles, 92% showed good (38%) or excellent (54%) results. Only one ankle rated fair (8%) (table II). All but one patient stated that they would have the operation done again.

Complications

The ankle is surrounded by neurovascular and tendinous structures which are at risk during portal placement and operative arthroscopic procedures. Therefore, complication rates are reported to be higher in ankle arthroscopy. Fortunately, we did not note any complications, thanks to, we believe, meticulous technique as explained above.

DISCUSSION

It is widely accepted that anterior traction spurs are the result of repetitive minor trauma to the anterior ankle capsule. This was the hypothesis

of Morris (11) and McMurray (10). Naming the condition athlete's ankle and footballer's ankle respectively, they made clear that these traction spurs need many years of ankle-loading activity to develop. These authors stressed the absence of accompanying degenerative joint space narrowing. In 1960, the condition was described in ballet dancers by Brodelius (3).

The anterior impingement syndrome (15) is to be distinguished from anterolateral ankle impingement, which is in most cases caused by a single ankle inversion injury (2, 5, 17).

Once large exostoses have developed around the anterior ankle joint, conservative treatment is likely to fail, forcing the athlete to give up sports. McMurray in 1950 (10) and McDougall in 1955 (9) were the first authors to report good results after open spur resection, followed by the successes of other surgeons (3, 6, 12, 15).

Arthroscopic procedures have the reputation of being less traumatic and of permitting early mobilization. This was confirmed in several arthroscopic bony spur removal series (13, 14). Unfortunately, a high complication rate is reported in ankle arthroscopy (1, 8). We feel that many complications can however be avoided by meticulous technique and reliable equipment.

To our knowledge, recurrence has not been reported. This may be explained by the need for long-lasting high-level sports activity to produce the spurs.

CONCLUSIONS

Anterior impingement of the ankle is a well-known condition in athletes, football players and dancers. In patients where conservative management fails, arthroscopic debridement of the anterior ankle compartment is a safe and effective treatment. Return to the previous sports level is possible.

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SAMENVATTING

P. REYNAERT, G. NELEN, G. GEENS. Arthroscopische behandeling van anterieure impingement van de enkel.

De auteurs rapporteren over de resultaten van arthroscopische verwijdering van anterieure tibiale en talaire exostosen bij 13 opeenvolgende patiënten.
Onze patiënten werden preoperatief gedurende gemiddeld 30 maanden conservatief behandeld. Infiltraties met corticosteroieden, NSAIDS of kinesitherapie brach-

ten geen verlichting. De 13 patiënten werden 3 tot 41 maanden na de ingreep teruggezien met een gemiddelde follow-up van 19 maanden.
Tweeennegentig % van de enkels deden het goed (38%) tot zeer goed (54%). Wij vonden slecht één matig resultaat. Tien patiënten hervatten hun sport gemiddeld 4 maanden na de arthroscopie.
Er werden geen complicaties gezien.
Bij patiënten met een anterieur impingementsyndroom van de enkel waar een conservatieve aanpak faalt, is een arthroscopische behandeling veilig en meestal succesvol.

RÉSUMÉ

P. REYNAERT, G. NELEN, G. GEENS. Traitement arthroscopique du conflit antérieur de la cheville.

Les auteurs décrivent les résultats de résections arthroscopiques d'exostoses tibiales et astragaliennes antérieures chez 13 patients successifs.

Les patients ont été traités médicalement en moyenne 30 mois avant l'intervention. Il n'avaient pas répondu aux infiltrations de corticoïdes, aux AINS ou à la kinésithérapie.
Les 13 patients ont étés revus entre 3 et 41 mois après l'intervention soit en moyenne 19 mois.
Quatre-vingt douze % des chevilles avaient un bon (38%) ou très bon (54%) résultat. Nous notons un seul résultat moyen.
Dix patients (77%) ont repris le sport en moyenne 4 mois après l'arthroscopie.
Nous n'avons noté aucune complication.
Chez les patients avec un conflit antérieur de la cheville où le traitement conservateur échoue, l'arthroscopie est un traitement sûr et efficace.