



# An Update on Ankle Arthroscopy: Current Evidence and Practical Recommendations for 2020

# 18

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## 18.1 Introduction

When talking about innovations and progress in the field of arthroscopy, we have to focus on indications and technological improvement. The basic principle of looking in the joint did not change over the year, but technical innovations makes it possible to visualize more and to perform more specific procedures. The synergy with the industry makes that equipment can be invented to perform many surgical procedures which were impossible to do before. Off course being able to get a tool does not automatically mean that it is wise to use it, and we should always remain critical.

Due to many innovations more and more procedures can be done arthroscopically, also in the ankle joint. However, we have to focus on the fact whether it is really an improvement to perform that specific procedure (arthro)scopically compared to the classical open technique. If a successful open procedure can be done scopically it does not automatically mean that it is superior to do so. For the early ages the switch from open to arthroscopic was immense, for instance meniscal removal with large incisions to the option now to perform an arthroscopic repair. For many proce-

dures however it remains to be proven that arthroscopic treatment indeed is better than open.

## 18.2 Cartilage Repair

Specifically for the ankle we see that there is more focus on cartilage repair arthroscopically. The treatment of osteochondral lesions of the talus (OLT) is one that still can be improved with results reaching 85% in the smaller defects [1]. We see a change going from the classical debridement and bone marrow stimulation to techniques (preferably arthroscopic) to restore the cartilage as much as possible. In the literature, we see an immense increase of interest in biological additions to enhance the healing of talar osteochondral defect in the ankle [2].

The Amsterdam Foot and Ankle group posed the technique of Lift, Drill, Fill, and Fix (LDFF) to preserve the original cartilage and reported their initial results to be good [3, 4]. This technique can be performed all arthroscopically.

Adding PRP or BMAC during the arthroscopic procedures to enhance healing potential of the debrided OLT, literature regarding PRP is not conclusive [5]. Perhaps since many differences in PRP exists [6]. BMAC have been extensively studied in animal models, showing to be promising [7, 8]. Studies report on adding BMAC to

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debridement and curettage improves the outcome [9, 10]. However comparing BMAC tot MACI, the latter shows to be perhaps a better option as shown by the Rizolli group [11].

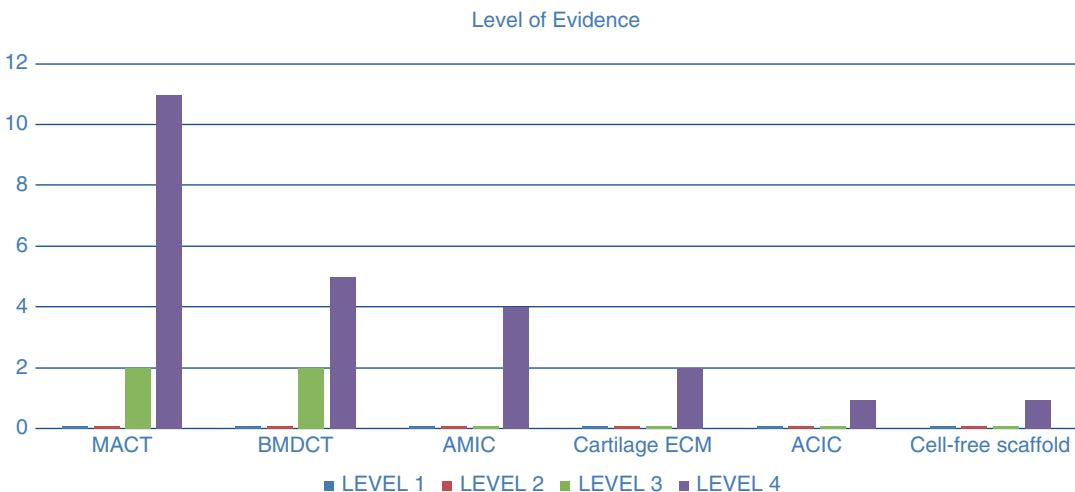
Several types of scaffolds are available now, all having limited available evidence [12]. The matrix-induced autologous chondrocyte transplantation (MACT) is a second generation ACI technique using a collagen type I/III bilayer membrane seeded with cultured autologous chondrocytes. The disadvantage of this system is that it is a two-stage procedure. Bone marrow derived cell transplantation (BMDCT) is a one-step system in which concentrated bone marrow aspirate is secured with a hyaluronic based scaffold. Autologous matrix-induced chondrogenesis (AMIC) is a one-stage procedure in which BMS with porcine collagen type I/III scaffold is used. This technique can be done completely arthroscopic as described by Baumfeld reporting on the results of an all arthroscopic AMIC procedure showing it to be a reliable and reproducible procedure [13] (Fig. 18.1).

Most important for the coming years is that we start to perform multicenter studies comparing these different options. For now, there are options on the markets for which no publication exists for OLT, yet they are used in the field.

### 18.3 Ankle Instability

Another upcoming area in ankle surgery is the arthroscopic treatment of ankle instability. Many publications occurred regarding the surgical options to restore the ankle ligaments arthroscopically in which the ESSKA-AFAS Ankle Instability Group played a major role [14–18]. Most important after reporting on publishing many technical and anatomical studies and ‘how to do it’ consensus strategies [15, 19–23] also the results are being published [24–27] in which especially the French Arthroscopic Society should be praised for the effort of publishing the outcome of a national prospective series of arthroscopic ligament reconstruction in the ankle [25].

The next challenge will be to prove the superiority of the arthroscopic reconstruction, despite the fact that as arthroscopic surgeons we are convinced that it is a better option, we still have to define it is better. Especially since the arthroscopic surgeries are often more costly as more specialized equipment is needed. A recent systematic review from Song comparing the reported outcome of arthroscopic lateral ankle ligament reconstruction to the golden standard being the well-documented open procedure showed no significant difference in outcome



**Fig. 18.1** Number of publications and evidence on scaffold bases OCD treatment of the ankle

between these procedures in early outcomes [28]. However, only one level 1 study could be found, and the total of studies included was 4 with only 207 surgical repairs. A previous Systematic review of Guelfi used different criteria including more studies and did not show a difference between open and arthroscopic repair of the ankle ligaments [29]. The most recent publication of Li also did not show superiority of the arthroscopic procedure over the open option [30]. We as surgeons have to define how we will measure and prove that one option is better than the other.

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## 18.4 Arthroscopic Assisted Fracture Care

An upcoming field seems to be the use of arthroscopic assistance during the surgical treatment of ankle fractures. Chen et al. reported on the findings of arthroscopy during ORIF of the ankle fractures finding up to 92% of loose bodies in supination type fractures which would otherwise have been unnoted [31]. However, retrospective descriptive series like these provide valuable information on the amount and type of concomitant injuries in ankle fractures, it remains unclear whether the patients benefit of adding arthroscopy to the ORIF and whether the extra effort is cost-effective.

A large database study from the United States comparing over 32,000 ORIF procedures with or without arthroscopic assistance on reoperation rate and reported complications [32]. As with many database studies we have no clue what really happened to these patients and what the real outcome is. Even not the reason why only 0.8% of these 32,000 had arthroscopic-assisted ORIF. The conclusion of the authors that arthroscopy does not add to the outcome of ORIF cannot be made on the presented data, but the proof that it does have a positive effect is also lacking from literature.

Arthroscopic assistance in fracture care might be beneficial, but still needs to be proven.

## 18.5 Needle Arthroscopy in Outpatient Setting

Needle arthroscopy which can be performed in the outpatient setting is one of the recent advances which is a major topic of discussion, now mainly for the knee but the same discussion could be held for the ankle joint. Should we go back to invasive diagnostics now that we are in an era where the quality of imaging is enormously improved and still expected to improve. Some authors really advocate going back to invasive, justifying it by degrading the amount of invasiveness [33], Amin justifies the use by doing a cost-effectiveness analyses with a Markov model trying to prove that the use of a needle arthroscopy is justified [34]. Chapman et al. stated it to be a benefit that now a diagnostic arthroscopy is not necessary [35]. However, after the needle arthroscopy is performed and shows a problem, still regular arthroscopy is needed [35]. Gill showed that needle arthroscopy shows more detailed information than MRI, other authors confirmed this [36–38].

However finding details not found on MRI may not automatically mean that they need surgery and result in a better outcome. This is yet to be investigated. Besides that, we have to realize the role of the industry trying to bring this product to the market, and most of the pro studies are indeed sponsored studies. Although the discussion now focusses mainly on knee and shoulder we have to realize that for the ankle the same discussion exists. Especially since for several indications in the ankle, diagnostic arthroscopy is still considered the gold standard [21, 39].

Also, there is more focus on the anatomical structures we can reach with ankle arthroscopy and the correlation of arthroscopic interpretation to anatomical dissection. Dalmau-Pastor showed in an anatomical study for instance that medial and lateral ankle ligaments can be well identified and reached with the dorsiflexion non-distraction anterior ankle arthroscopy [40]. Besides that, we need to redefine what is normal and not normal, since we do not want to address non-pathological

variations thinking they are abnormal. Research projects like Lubberts et al. are becoming more important by helping us to define when an arthroscopic finding is relevant [39]. In this study they developed an algorithm defining how to classify a syndesmosis as stable or unstable during arthroscopic investigation.

## 18.6 Discussion

In the orthopedic field, more and more traditional (arthroscopic) procedures which have been basic treatment options are now questioned whether they really are more efficient than nonoperative treatment. For instance, arthroscopic treatment of the degenerative knee or subacromial decompression are now considered to be non-superior to conservative care after well-conducted multicenter randomized clinical trials.

The main practical recommendation is that we have to prove how successful our (arthroscopic) surgery is by documenting all procedures, preferably by joining forces and conducting large multicenter randomized clinical trials.

We have to keep in mind that with the right tools we can do almost anything, but we should always be aware if the procedures we perform really benefit the patient.

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