



Special Issue Review

# A beginner's guide to tendoscopy around the ankle

## Die Tendoskopie der Sehnen um das obere Sprunggelenk – eine Anleitung

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Received 11 November 2016; accepted 20 December 2016

Available online 18 January 2017

### KEYWORDS

Tendoscopy;  
Tendon;  
Technique;  
Approach;  
Ankle

### SCHLÜSSELWÖRTER

Tendoskopie;  
Sehne;  
Operative Technik;  
Zugang;  
Oberes Sprunggelenk

### Summary

Tendoscopy refers to endoscopy of the tendon's synovial sheath. The technique is used for both diagnostic and therapeutic purposes and has certain advantages over the open techniques, including limited soft tissues trauma and blood loss and a decreased postoperative morbidity. These result in a faster rehabilitation regime which is especially important for patients who have undergone tendon surgery. This article is a review of the common operative approaches and techniques for tendoscopy around the ankle. Advances in the arthroscopic instrumentation and a growing experience and familiarity with small joint arthroscopy have led to the establishment of tendoscopy as an increasingly popular operative technique. The early clinical results of tendoscopy of the tibialis posterior, peroneals, flexor hallucis longus and Achilles tendons are promising. Especially in the case of localized pathology, tendoscopy seems to offer clear advantages over open techniques. However, these promising clinical results will need to be further evaluated in large patient series and high quality clinical studies.

### Zusammenfassung

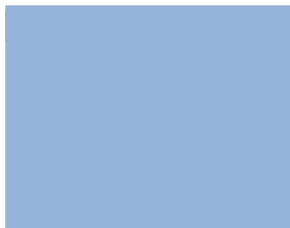
Die Tendoskopie beschreibt die Endoskopie der Sehne in der Sehnenscheide. Die Technik bietet dabei sowohl die Möglichkeit der Diagnostik als auch des therapeutischen Vorgehens. Die Vorteile der Tendoskopie gegenüber dem offenen Vorgehen sind das geringe Weichteiltrauma, die geringe postoperative Morbidität und geringerer Blutverlust.

Für den Patienten bedeutet das eine schnellere Rehabilitation und Mobilisation, welche insbesondere bei sehnenchirurgischen Eingriffen sehr wichtig ist.

Der vorliegende Artikel zeigt eine Übersicht über die jeweiligen Zugänge und Indikationen der Tendoskopie im Bereich des OSG und Rückfußes.

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Die Verbesserung der technischen Instrumente als auch die sich jetzt darstellend zunehmende Erfahrung in der Tendoskopie hat zur Etablierung der Technik geführt. Die klinischen Ergebnisse der Tibialis-posterior- als auch der Hallucis-longus-Sehne, Achillessehne und Peronealsehnen sind vielversprechend. Insbesondere lokalisierte Pathologien zeigen einen deutlichen Vorteil im Vergleich zum offenen Vorgehen. Größere Studienserien sind jedoch notwendig, um den klinischen Vorteil weiter unterstreichen zu können.

## Introduction

Tendoscopy refers to endoscopy of the tendon's synovial sheath. The term was introduced by Niek van Dijk, a pioneer of the technique, and has been applied to all the tendons crossing the hindfoot. Tendoscopy of the tendons around the ankle has become an increasingly popular technique for both diagnostic and therapeutic purposes. Since the first reports, around twenty years ago, a number of surgeons have embraced and developed tendoscopic procedures expanding their indications and refining the relevant techniques.

The evolution of tendoscopy from an experimental to an established operative technique has been based on three important factors:

- A series of high quality cadaveric and imaging studies clarified details about the tendons' anatomy, vascularization, interconnections and relationships with nerves and vessels. This enabled accurate descriptions of safe endoscopic techniques regarding portal placement and interventions [1].
- Secondly, improved instrumentation with arthroscopes of different degrees and diameters, mini probes, scissors, retrograde knives, and various shaver systems enabled for better visualization and interventions on the hindfoot tendons [2].
- Thirdly, the familiarity of a new generation of surgeons with ankle arthroscopy made tendoscopy a natural addition to their armamentarium, rather than a gigantic leap in their technical skills.

Advantages of tendoscopy over open procedures include minimal soft tissue trauma, low post-operative morbidity (especially with regards to postoperative pain), less blood loss, shorter hospital stay, faster rehabilitation and mobilization, low costs, decreased complication rates and a superior cosmetic result. If needed, such as in the event of a major tendon rupture, the procedure can be easily converted to an open or mini open exploration of the tendon at the exact level of the pathology [3].

The first publications describing tendoscopy techniques were a case report about stenosing posterior tibial tenosynovitis and a series of 40 patients including the peroneal, anterior tibial and Achilles tendons [4,5]. Since then, there have been reports about tendoscopy of virtually all the tendons crossing the ankle joint. However, the most frequent application of the method and largest published series refer to four tendons mainly: the peroneals, the Achilles, the flexor digitorum longus, and to a lesser degree the posterior tibial tendon.

In this article, tendoscopy of these different tendons will be discussed individually. The focus will be on the operative technique and special considerations for each tendon's anatomy. The anatomy of each tendon has been previously described in great detail, therefore mainly tendoscopy related anatomic features will be highlighted. The scope of the review is to introduce tendoscopy to orthopaedic surgeons in a step by step simple manner, rather than an exhaustive review of all reported techniques and procedures. The surgeon who is interested in using the method is strongly encouraged to attend relevant special cadaveric courses before performing their first procedures. A thorough knowledge of the local anatomy and experience in small joint arthroscopy are important prerequisites for a safe and effective tendoscopy.

## Technique – general

Tendoscopy can be performed in an outpatient setting. Tourniquet use is desirable and the procedure can be performed under either general, epidural, regional or local anesthesia. Regional anesthesia in the form of peripheral blocks such as the popliteal block has certain advantages including long postoperative analgesia. On the other hand, local anesthesia offers the option of a dynamic examination of the tendon in real-time, active range of motion [1].

Patient positioning and choice of arthroscope will be discussed for each tendon individually as different rules apply. For every tendoscopy however,

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