

Systematic Review on Ankle Arthroscopy versus Conservative Modalities in Management of Ankle Impingement Syndrome

A Systematic Review of Literature

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By

Ahmed Ruby AbdelHamid AbdelAziz

M. B. B. Ch

Supervised by

Prof. Dr. Atef Mohamed Fathy Khaled

El-beltagy

*Assistant Professor of Orthopedic surgery
Faculty of Medicine - Ain Shams University*

Prof. Dr. Ahmed Salem Eid

*Assistant Professor of Orthopedic surgery
Faculty of Medicine - Ain Shams University*

Faculty of Medicine
Ain Shams University

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List of Abbreviations

Abb.	Full term
AOFAS	American Orthopedic Foot and Ankle Society
CRPS.....	Complex Regional Pain Syndrome
MR.....	Magnetic Resonance
MRI.....	Magnetic Resonance Imaging
US	Ultrasonography
VAS.....	Visual Analog Scale

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Abstract

Background: It has been well established that chronic ankle pain negatively affects the lives of patients. Soft-tissue and osseous impingement syndromes are now increasingly recognized as a significant cause of chronic ankle pain, the exact cause of this condition is debated but seems to involve osteophyte formation due to either repetitive microtrauma or macrotrauma associated with major injuries.

Aim of the work: to assess the outcome of ankle arthroscopy versus conservative modalities in management of ankle impingement syndrome.

Methods: A systematic literature search of the PubMed, Embase (classic), and Chochrane library databases, for articles that published from January 1990 to December 2015 was performed using the following inclusion criteria English language publications, human clinical trials, studies that reported on at least one of the chosen outcome measures which are patient satisfaction, time to return to full activity, AOFAS score, visual analog scale (VAS) score for pain, and complications, we found 9 studies met our inclusion criteria, data extraction was done which is consisted of population characteristics, in addition to the outcome measures.

Results: Nine articles were included in this systematic review. Overall, good results were found for arthroscopic treatment in patients with ankle impingement syndrome, patient satisfaction rates was reported in 5 studies, we reported high percentages of good to excellent satisfaction rates, ranging 74% to 94%, especially in patients treated with arthroscopy, Complication rates were 14.1%, as regard to patients treated with arthroscopy the rate was 13.2%, on the other hand the rate was 17.6% in those patients treated with injection therapy technique, conventional conservative modalities reported to be ineffective in treating ankle impingement except injection therapy technique in case of ankle soft tissue impingement.

Conclusion: Our systematic review showed that Patients may respond to conservative treatment modalities, especially ultra-sound guided injection mainly in soft tissue impingement type, arthroscopic debridement is the treatment of choice for patients of ankle impingement syndrome of both osseous and soft tissue nature with least morbidity and early return to function, and also it is noted to be superior to conservative modalities.

Key words: Ankle arthroscopy; Ankle impingement; Bony, Soft tissue impingement; Chronic ankle pain; Sport injury; Os trigonum, Osteophytes; Treatment, Conservative .

Introduction

Chronic ankle pain is a common clinical problem with a wide differential diagnosis. Soft-tissue and osseous impingement syndromes are now increasingly recognized as a significant cause of chronic ankle pain.^[1]

The ankle impingement syndromes are defined as pathologic conditions causing painful restriction of movement at the tibiotalar joint caused by osseous or soft tissue overgrowth or by the presence of accessory ossification centers. First described by Morris^[2] in 1943 and then by McMurray^[3] in 1950, who termed the condition “footballer’s ankle,” ankle impingement is now an established cause of ongoing ankle dysfunction, often following seemingly trivial trauma.^[4]

Impingement syndromes have been well described in the anterolateral, anterior, and posterior ankle, with more recent orthopedic and radiologic studies describing the less well-recognized entities of anteromedial and posteromedial impingement.^[5]

Ankle impingement is a common cause of ankle pain in athletic patients and is frequently associated with sporting activities involving repetitive forced dorsiflexion or plantar

flexion of the ankle. The exact cause of this condition is debated but seems to involve osteophyte formation due to either repetitive microtrauma or macrotrauma associated with major injuries.^[6]

Posterior impingement is typically a chronic problem of insidious onset affecting athletes who regularly undergo forced plantarflexion especially ballet dancers, jumping athletes, squash and football players. Football players are particularly affected because plantarflexion occurs not only on push off during sprinting and changing direction but also occurs during kicking.^[7]



Figure (1): A lateral ankle radiograph demonstrates a large os trigonum.

Posterior ankle impingement syndrome is often accompanied by tenosynovitis or degeneration of the flexor hallucis longus (FHL), especially in ballet dancers.^[8]

Typically, anterior impingement syndrome presents with anterior ankle pain exacerbated by dorsiflexion. Clinical examination may reveal soft tissue swelling over the anterior aspect of the ankle joint with reduced range of dorsiflexion. Movement limitation can sometimes be overcome by excessive ankle pronation, but this additional abnormality in ankle biomechanics may have further consequences. In some instances the anterior bony spurs may be palpable.^[9]

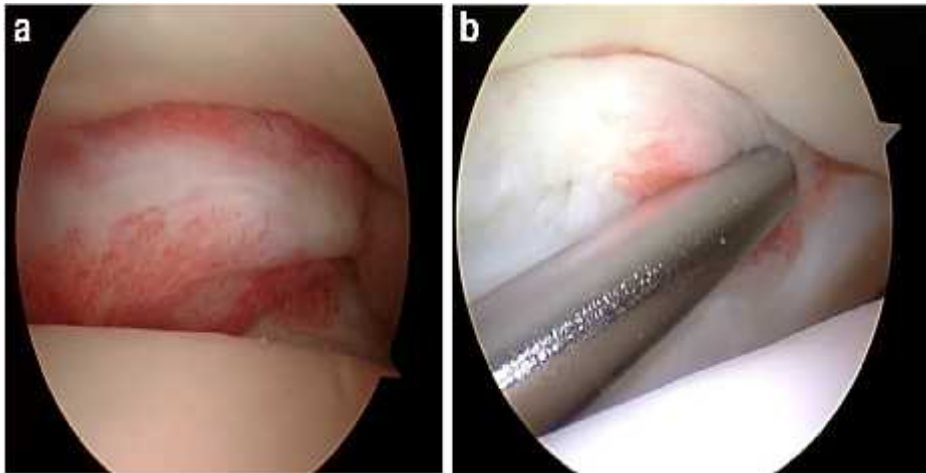


Figure (2): a- An arthroscopic image demonstrates anterolateral scar impingement with associated synovitis. b-An arthroscopic shaver is used to resect the lesion.

Anterior impingement of the ankle most commonly is caused by osteophyte formation at the anterior rim of the tibia and talar neck. Anterior tibiotalar osteophytes are caused by recurrent microtrauma to the joint capsule and anterior chondral margin of the tibiotalar joint, such as from kicking a soccer ball or forcible dorsiflexion.^[6]



Figure (3): lateral ankle radiograph, anterior tibial and talar osteophytes.

Careful analyses of patient history and signs and symptoms at physical examination can suggest a specific diagnosis in most patients. MR imaging and MR arthrography are the most useful imaging methods for detecting the osseous and soft-tissue abnormalities present in these syndromes and for ruling out other potential causes of chronic ankle pain.^[10]

The radiological assessment includes anteromedial oblique and lateral weight bearing skiagram views. MRI scan can precisely locate the osteophytes, delineate synovial hypertrophy and can additionally detect cartilage erosion and osteochondral defects of talus. Despite a lot of advances, diagnostic arthroscopy still remains the gold standard for assessment of the disease.^[11]

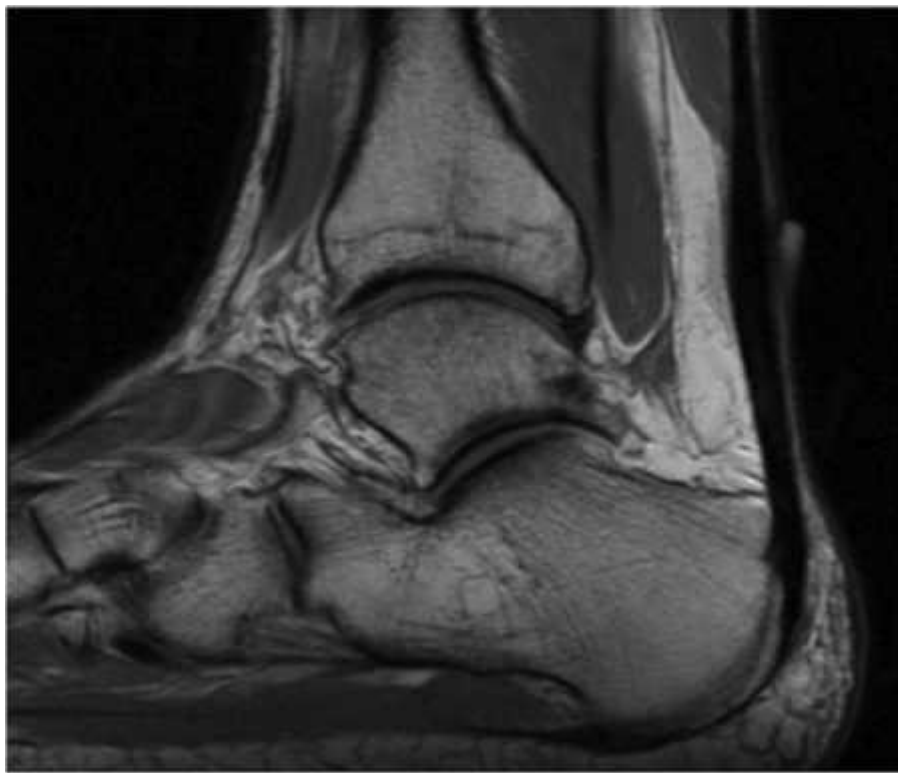


Figure (4): Sagittal T1-weighted magnetic resonance image of the ankle joint. Anterior soft tissue impingement is present as well as synovitis and tibial and talar osteopytes.

Conservative treatment, consisting of rest, physical therapy, ankle bracing, shoe modification, and/or local injection, is recommended as the primary treatment strategy for symptoms of ankle impingement syndrome.^[12]

Arthroscopic debridement has gained popularity and is considered gold standard treatment for virtually all causes of impingement syndrome as it is minimally invasive and associated with low morbidity and faster recovery times.^[13]

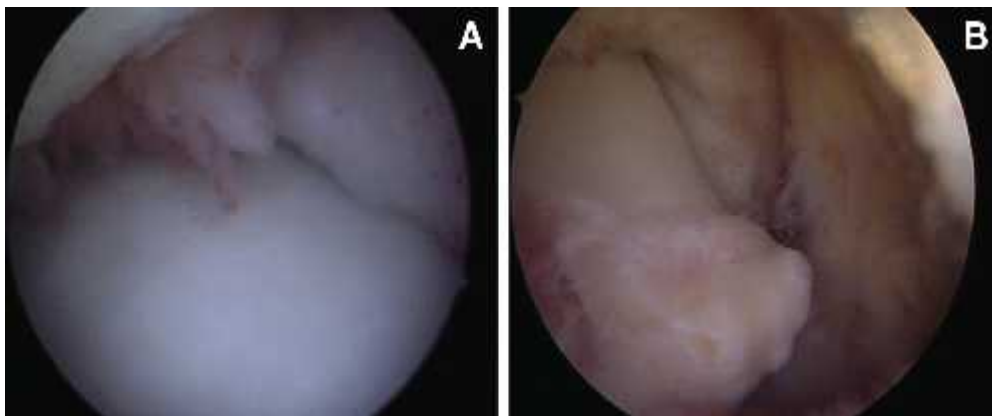


Figure (5): Arthroscopic images of anterior ankle impingement: (A) Soft tissue impingement. (B) Bony impingement.

AIM OF THE WORK

Systematic review of the current literature to assess the outcome of ankle arthroscopy in comparison to conservative modalities in management of ankle impingement syndrome.

MATERIALS AND METHODS

We performed a comprehensive electronic search in PubMed, Embase (classic), and Chochrane library databases, for articles that published between 1990 to December 2015 using the following keywords:

Ankle arthroscopy; Ankle impingement; Bony, Soft tissue impingement; Chronic ankle pain; Sport injury; Os trigonum; Osteophytes; Treatment, Conservative.

We reviewed all titles, abstracts and the full text of articles that were potentially eligible based on abstract review, then studies selected according to the following inclusion and exclusion criteria.

Inclusion criteria:

- Journal articles published in English language.
- In vivo studies.
- Date from 1990 to 2015.
- Clinical trials.
- Studies that reported on at least one of the chosen outcome measures.

Exclusion criteria:

- Case report studies.
- Cadaveric or nonhuman studies.
- Non-English language studies.
- Articles describing other joint impingement diseases rather than the ankle joint.
- Studies with no data on outcome measures.
- Presence of any systemic joint disease.

Data extraction:

The data extracted included the following items:

- Study characteristic; name of the first author, year of publication.
- Participant characteristics; number of patients, mean ages and gender.
- Preoperative diagnosis, detail of intervention.
- Follow up.
- The resulting outcomes of comparison (outcome measures).

Points of comparison (outcome measures):

- Patient satisfaction.
- The mean time to return to full activity after the procedure.