Technical Note

# Arthroscopic Debridement and Microfracture of Osteochondral Lesion of the Talar Head

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**Abstract:** Osteochondral lesions of the talar head can be classified into 4 types according to their location. A type 1 lesion is located at the anterior part of the talar head. Surgical debridement and microfracture are indicated for symptomatic type 1 lesions if conservative treatment fails to relieve the pain. The purpose of this technical note was to describe the details of arthroscopic debridement and microfracture of the symptomatic type 1 osteochondral lesion of the talar head and the kissing lesion at the navicular bone. The procedure is performed through the standard portals of talonavicular arthroscopy and has the advantages of minimally invasive surgery of better cosmetic results and less surgical trauma.

Osteochondral lesions of the talar head are rare.[1-7] They can be classified into 4 types according to their location.[8] A type 1 lesion is located at the anterior part of the talar head.[2] It can present with anteromedial ankle pain. Clinically, the tender spot is at either the dorsomedial or dorsolateral part of the talonavicular joint depending on the location of the osteochondral lesion. Conservative treatment including arch support may relieve the pain. If the symptoms cannot be controlled with conservative treatment, surgical debridement of the lesion with or without drilling or microfracture of the subchondral bone can be considered. Talonavicular arthroscopy provides minimally invasive access to the type 1 lesion.[9,10] This report describes the technical details of arthroscopic debridement and microfracture of type 1 osteochondral lesions of the talar head. The procedure is indicated for a symptomatic osteochondral lesion of the anterior part of the talar head that is recalcitrant to conservative treatment. It is contraindicated if the osteochondral lesion is not the source of pain, there is generalized degeneration of the talonavicular joint, or the symptomatic osteochondral lesion is located at another part of the talar head (medial, lateral, or plantar) (Table 1).

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## Technique

### Preoperative Planning and Patient Positioning

Preoperative assessment shows pain and tenderness at the talonavicular joint. Radiographs of the foot may or may not show the osteochondral lesion. It is useful to exclude significant degeneration of the talonavicular joint. Preoperative magnetic resonance imaging is useful to confirm the diagnosis of an osteochondral lesion and assess the anatomic details of the lesion.

The patient is in the supine position with the legs spread. A thigh tourniquet is applied to provide a bloodless operative field. A 2.7-mm 30° arthroscope (Henke Sass Wolf, Tuttlingen, Germany) is used for this procedure.

### Portal Placement for Talonavicular Arthroscopy

Talonavicular arthroscopy is performed via the medial, dorsomedial, and dorsolateral midtarsal portals.[9,10] The medial portal is on the medial side of the talonavicular joint, just proximal and dorsal to the navicular insertion of the posterior tibial tendon. The dorsolateral portal is at the junction between

**Table 1.** Indications and Contraindications of Arthroscopic Debridement and Microfracture of Osteochondral Lesion of Talar Head

| |
|---|
| Indications |
| Symptomatic osteochondral lesion of anterior part of talar head that is recalcitrant to conservative treatment |
| Contraindications |
| The osteochondral lesion is not the source of pain. |
| There is generalized degeneration of the talonavicular joint. |
| The symptomatic osteochondral lesion is located at another part of the talar head (medial, lateral, or plantar). |

the talonavicular and calcaneocuboid joints. The dorsomedial portal is at the dorsum of the talonavicular joint, at the midpoint between the medial and dorsolateral portals (Fig 1).

### Arthroscopic Synovectomy

The medial, dorsomedial, and dorsolateral portals are interchangeable as the viewing and working portals for examination and synovectomy of the talonavicular joint. The medial portal is the viewing portal. Synovectomy of the medial half of the talonavicular joint is performed with an arthroscopic shaver (Dyonics; Smith & Nephew, Andover, MA) via the dorsomedial portal. The cartilage of the medial half of the talonavicular joint is examined for any osteochondral lesions (Fig 2). The dorsomedial portal is the viewing portal. Synovectomy of the lateral half of the talonavicular joint is performed with the arthroscopic shaver via the dorsolateral portal (Fig 3).

### Arthroscopic Debridement of Osteochondral Lesion

In the illustrated case, the osteochondral lesions are located at the lateral half of the talar head and navicular bone. The dorsomedial portal is the viewing portal, and the dorsolateral portal is the working portal. The cartilage is probed, and the osteochondral lesions are identified (Fig 4). The cartilage flap is removed with an arthroscopic rongeur (Acufex; Smith & Nephew), and the osteochondral lesions are debrided with an arthroscopic probe (Acufex), arthroscopic curette (Acufex), and arthroscopic shaver.

### Microfracture of Osteochondral Lesion

The dorsomedial portal is the viewing portal. Microfracture of the lateral half of the osteochondral lesion is performed with an arthroscopic awl (Acufex) via the dorsolateral portal (Fig 5). After that, the arthroscope is switched to the dorsolateral portal. Microfracture of the medial half of the osteochondral lesion is performed with the arthroscopic awl via the dorsomedial portal (Fig 6).

### Confirmation of Bleeding From Microfracture Sites

The dorsomedial portal is the viewing portal. The tourniquet is released, and bleeding from the microfracture sites is observed (Fig 7, Table 2, Video 1). After the procedure, the wounds are closed with simple sutures. Postoperatively, the patient is advised to be non–weight bearing for 4 weeks (Fig 8).

## Discussion

The result of debridement and microfracture of an osteochondral lesion of the talar head is not fully known because this is a rare entity. The result is likely better for a small lesion than for a large lesion. However, the upper limit of the size of osteochondral lesion for which debridement and microfracture are indicated is not known. In our opinion, we prefer debridement

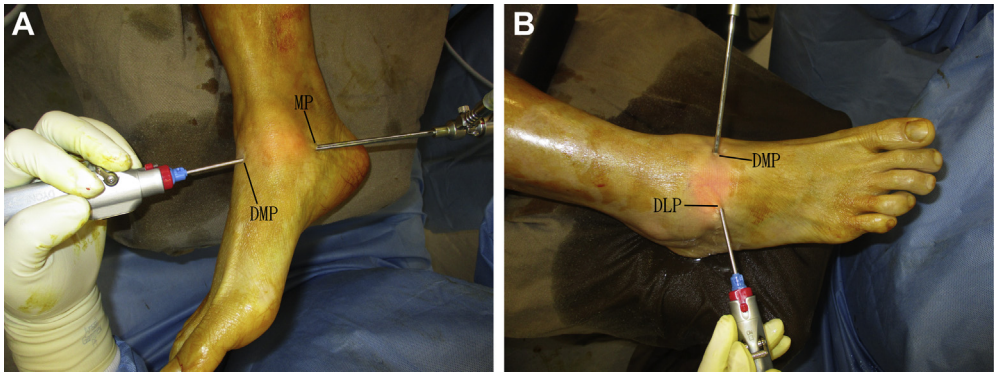


**Fig 1.** Arthroscopic debridement and microfracture of osteochondral lesion of talar head of right foot. The patient is in the supine position with the legs spread. (A) Arthroscopy of the medial half of the talonavicular joint is performed via the medial midtarsal portal (MP) and dorsomedial midtarsal portal (DMP). (B) Arthroscopy of the lateral half of the talonavicular joint is performed via the dorsomedial midtarsal portal (DMP) and dorsolateral midtarsal portal (DLP).

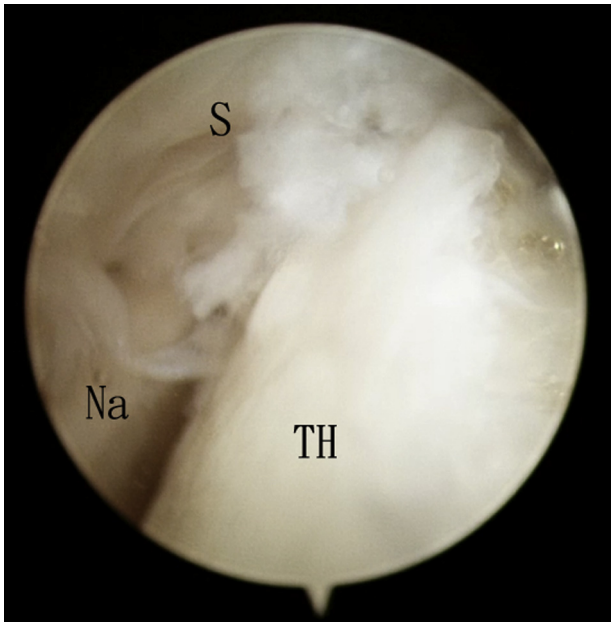


**Fig 2.** Arthroscopic debridement and microfracture of osteochondral lesion of talar head (TH) of right foot. The patient is in the supine position with the legs spread. The medial portal is the viewing portal, and the medial half of the talonavicular joint can be examined. (Na, navicular bone; S, inflamed synovium.)


**Fig 4.** Arthroscopic debridement and microfracture of osteochondral lesion (OCL) of talar head (TH) of right foot. The patient is in the supine position with the legs spread. The dorsomedial portal is the viewing portal, and the dorsolateral portal is the working portal. The OCL at the lateral half of the TH is identified. (Na, navicular bone.)

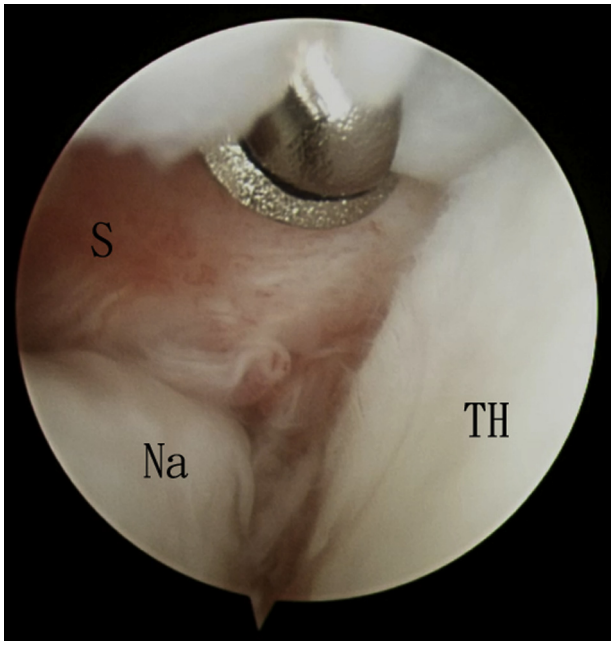


**Fig 3.** Arthroscopic debridement and microfracture of osteochondral lesion of talar head (TH) of right foot. The patient is in the supine position with the legs spread. The dorsomedial portal is the viewing portal, and the dorsolateral portal is the working portal. The lateral half of the talonavicular joint can be examined. (Na, navicular bone; S, inflamed synovium.)


**Fig 5.** Arthroscopic debridement and microfracture of osteochondral lesion of talar head (TH) of right foot. The patient is in the supine position with the legs spread. The dorsomedial portal is the viewing portal. Microfracture of the lateral half of the osteochondral lesion is performed with an arthroscopic awl via the dorsolateral portal. (MF, microfracture sites.)

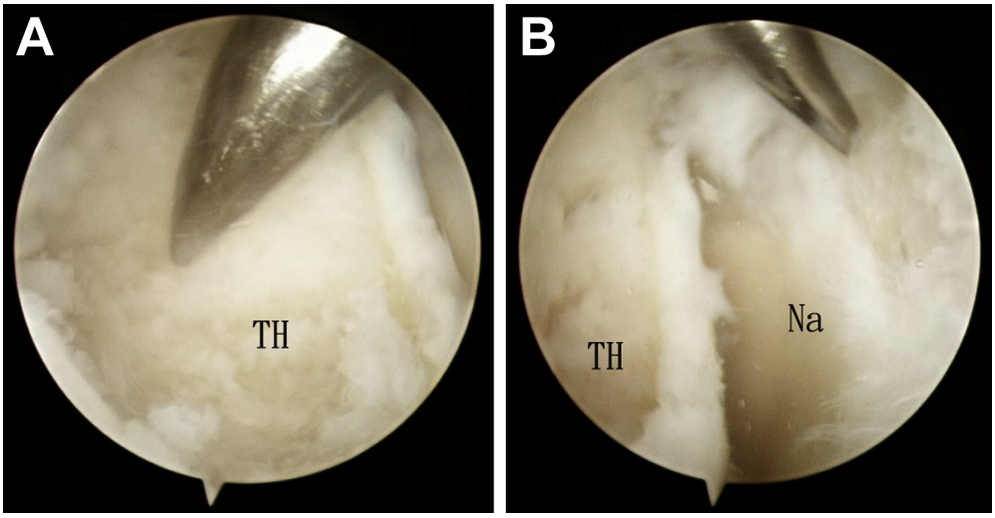


**Fig 6.** Arthroscopic debridement and microfracture of osteochondral lesion of talar head (TH) of right foot. The patient is in the supine position with the legs spread. The dorsolateral portal is the viewing portal, and the dorsomedial portal is the working portal. (A) Microfracture of medial half of osteochondral lesion of TH. (B) Microfracture of medial half of osteochondral lesion of navicular bone (Na).

with microfracture rather than primary talonavicular arthrodesis for large lesions because it does not affect the subsequent treatment choice. Primary talonavicular arthrodesis will only be considered if there is radiologic evidence of talonavicular degeneration and diffuse tenderness of the joint.

Accurate localization of the osteochondral lesion by preoperative imaging is very important for making the proper choice of arthroscopic approach. The reported approach is not workable for a lesion at the medial, lateral, or plantar part of the talar head, which requires medial subtalar arthroscopy, anterior subtalar arthroscopy, or calcaneocuboid arthroscopy.[8,11-18]

Arthroscopic management of osteochondral lesions of the talar head has the advantages of better cosmetic results, less pain, and less surgical trauma. The potential risks of this technique include injury to the cartilage of the talar head or navicular bone or injury to the branches of the deep or superficial peroneal nerve (Table 3). This technique is technically demanding and should be reserved for the experienced foot and ankle arthroscopist.

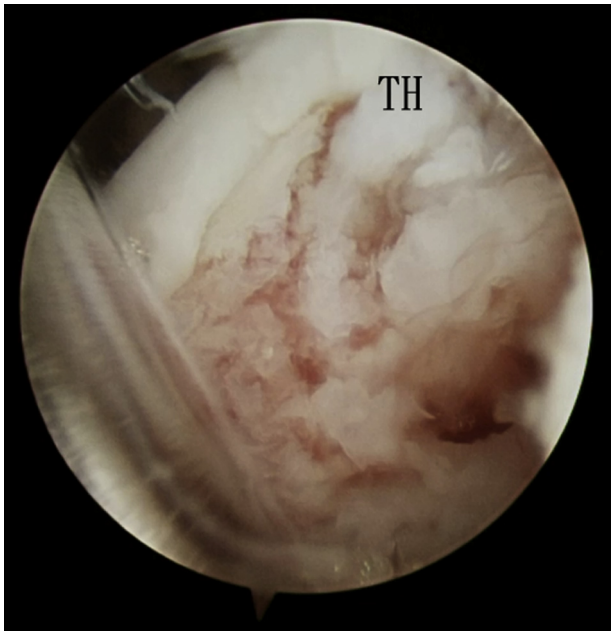


**Fig 7.** Arthroscopic debridement and microfracture of osteochondral lesion of talar head (TH) of right foot. The patient is in the supine position with the legs spread. The dorsomedial portal is the viewing portal. The tourniquet is released, and bleeding from the microfracture sites is observed.

**Table 2.** Pearls and Pitfalls of Arthroscopic Debridement and Microfracture of Osteochondral Lesion of Talar Head

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|---|
| Pearls |
| The arthroscopic probe is a good dissector of an osteochondral lesion of the talar head. |
| The osteochondral lesion should be completely debrided down to healthy bone. |
| Pitfalls |
| The location of the osteochondral lesion should be accurately determined by preoperative imaging to choose the appropriate arthroscopic approach. The reported approach is not workable for a lesion at the medial, lateral, or plantar part of the talar head. |
| Debridement and microfracture of the osteochondral lesion may not relieve the pain if there is generalized cartilage degeneration of the talonavicular joint. |

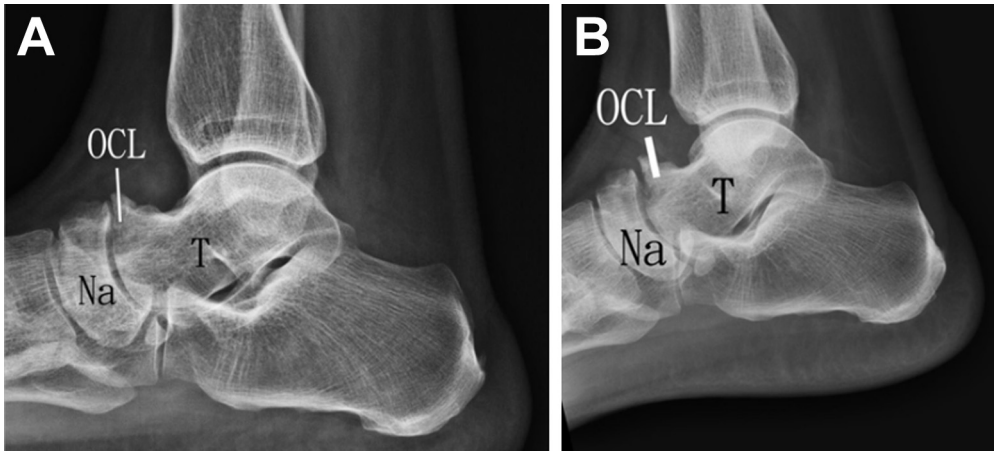


**Fig 8.** Arthroscopic debridement and microfracture of osteochondral lesion (OCL) of talar head of right foot. The patient is in the supine position with the legs spread. (A) Preoperative lateral radiograph of ankle. (B) A postoperative lateral radiograph of the ankle shows debridement of the OCL. (Na, navicular bone; T, talus.)

**Table 3.** Advantages and Risks of Arthroscopic Debridement and Microfracture of Osteochondral Lesion of Talar Head

| |
|---|
| Advantages |
| Better cosmetic result |
| Less pain |
| Less surgical trauma |
| Risks |
| Injury to cartilage of talar head or navicular bone |
| Injury to branches of deep or superficial peroneal nerve |

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