

## Technical Note

# Arthroscopic Subtalar Release of Post-traumatic Subtalar Stiffness

Tun Hing Lui, M.B.B.S.(HK), F.R.C.S.(Edin), F.H.K.A.M., F.H.K.C.O.S.

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**Abstract:** We describe an arthroscopic approach of subtalar release for post-traumatic subtalar stiffness that can allow early postoperative vigorous mobilization. The patient is placed in the lateral position. Subtalar arthroscopy is performed via the standard anterolateral portal at the angle of Gissane, the middle portal just distal and anterior to the tip of the lateral malleolus, and the posterolateral portal at the vertical limb of the old surgical scar, just above the posterosuperior tubercle of the calcaneus. Arthroscopic subtalar release is performed in stages. First, the fibrous bands at the sinus tarsi are debrided. The most lateral part of the interosseous talocalcaneal ligament is released. The dense fibrous tissue of the lateral subtalar gutter is then cleared. Most of the time, the subtalar motion gained at this stage is insignificant. At the second stage, the posterior capsule can be released and the fibrous tissue at the posterior corner of the joint can be debrided. Finally, the lateral subtalar capsule and lateral subtalar ligamentous structures are stripped from the lateral calcaneal cortical surface. Stripping should be done beyond the old surgical scar to release the adhesion of the surgical scar to the lateral calcaneal wall. **Key Words:** Subtalar—Stiff—Arthrofibrosis—Calcaneus—Arthroscopy—Fracture.

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**C**alcaneal fracture is a common foot and ankle injury. Open reduction–internal fixation is usually recommended in displaced intra-articular fractures. This is usually approached through an extensile lateral approach. Various degrees of subtalar stiffness frequently result after this injury. In a patient with limited hindfoot inversion/eversion who does not respond to conservative treatment, surgical subtalar release is indicated. Open subtalar release through the

old surgical wound has the advantage of the hardware being removed at the same time. However, because of the extensive surgical wound, immediate vigorous subtalar mobilization is difficult, especially inversion. We describe an arthroscopic approach of extensive subtalar release that allows early postoperative vigorous subtalar mobilization exercise.

## DESCRIPTION OF TECHNIQUE

The patient is placed in the lateral position. Subtalar arthroscopy is performed via the standard anterolateral portal<sup>1</sup> at the angle of Gissane, the middle portal<sup>2</sup> just distal and anterior to the tip of the lateral malleolus, and the posterolateral portal<sup>1</sup> at the vertical limb of the old surgical scar, just above the posterosuperior tubercle of the calcaneus (Fig 1). Arthroscopic subtalar release is performed in stages.

First, the sinus tarsi is visualized through the anterolateral portal. Fibrous bands at the sinus tarsi are debrided by means of an arthroscopic shaver, through

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*From the Department of Orthopaedics and Traumatology, North District Hospital, Hong Kong, China.*

*The author reports no conflict of interest.*

*Address correspondence and reprint requests to Tun Hing Lui, M.B.B.S.(HK), F.R.C.S.(Edin), F.H.K.A.M., F.H.K.C.O.S., Department of Orthopaedics and Traumatology, North District Hospital, 9 Po Kin Rd, Sheung Shui, NT, Hong Kong SAR, China. E-mail: luithderek@yahoo.co.uk*

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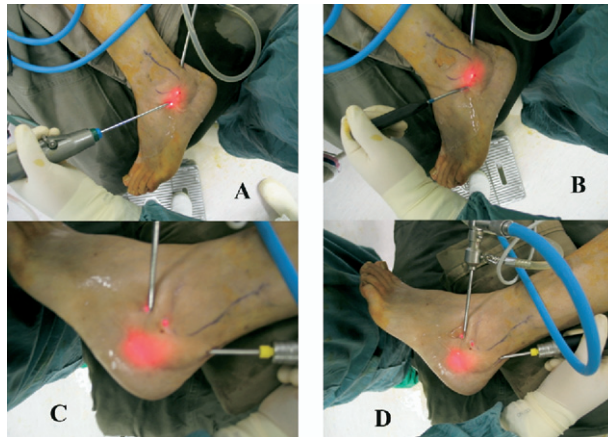


**FIGURE 1.** Anterolateral, middle, and posterolateral portals in patient with extensive surgical scar after calcaneal fracture repair.

the middle portal. The most lateral part of the interosseous talocalcaneal ligament is released, with the deep part of the ligament being left intact. Then, the lateral gutter is visualized through the anterolateral portal. With the middle and posterolateral portals as working portals, the dense fibrous tissue of the lateral subtalar gutter is then cleared. At this moment, the anterior and lateral joint lines of the posterior subtalar facet are identified. The degree of subtalar motion is then examined under arthroscopic visualization. Most of the time, the subtalar motion gained at this stage is insignificant and the articular surface of the subtalar posterior facet still cannot be visualized.

At the second stage, the posterior part of the joint and posterior capsule are visualized through the anterolateral or the middle portal. The posterior capsule can be released, and the fibrous tissue at the posterior corner of the joint can be debrided by use of the posterolateral portal as the working portal. At this moment, the flexor hallucis longus tendon can be seen.

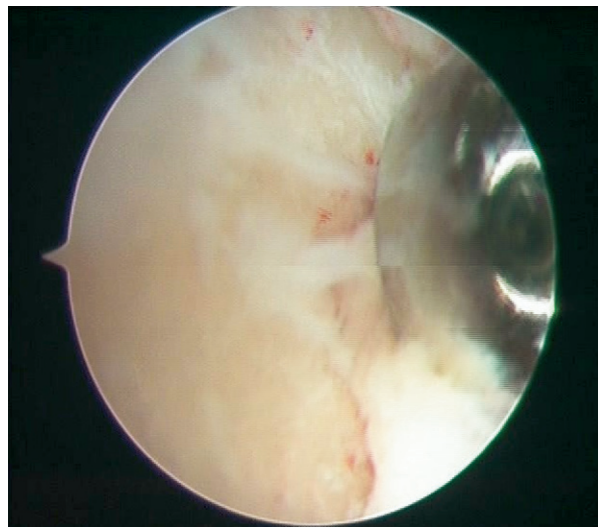
Finally, the lateral subtalar capsule and lateral subtalar ligamentous structures are stripped from the lateral calcaneal cortical surface. Stripping should be done beyond the old surgical scar (Fig 2) to release the adhesion of the surgical scar to the lateral calcaneal wall. The anterolateral portal is used as the visualization portal. The lateral capsule and lateral ligaments are stripped subperiosteally with a shaver and small periosteal elevator through the middle and posterolateral portals (Fig 3). After the release, the subtalar joint can be opened up with an inversion force and the articular cartilage can be examined (Figs 4 and 5).



**FIGURE 2.** A different part of the lateral calcaneal wall can be approached by exchanging the arthroscope and shaver into different portals. Subperiosteal stripping of the lateral subtalar capsule and ligamentous structures from the lateral calcaneal cortex is done with the use of an arthroscopic shaver and small periosteal elevator.

The described sequence of release is just a general guide. The release of ligamentous structures should be adjusted to the direction of motion that needed to be improved, and the tightest structure should be released first.

Occasionally, posterior ankle endoscopy<sup>3</sup> is needed to approach the medial subtalar gutter. The postero-medial portal is established just medial to the Achilles tendon if needed. The flexor hallucis longus tendon is identified and released. The posterior subtalar capsule is identified and released with a banana knife. The medial



**FIGURE 3.** Arthroscopic view of subperiosteal stripping with shaver.

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