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Use of Cannulated Instruments to Localize the Portals in Anterior Ankle Arthroscopy: A Technique Tip



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ABSTRACT

The use of cannulated instruments under fluoroscopy can improve the localization of the anteromedial and posterolateral portals for use in ankle arthroscopy. This technique is valuable for the less-experienced ankle arthroscopist, in resident education, and for the experienced arthroscopist when surface anatomy palpation and visualization is less than ideal due to soft tissue edema and obesity.

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Ankle arthroscopy allows the physician better access to the ankle joint by way of minimal incisions. The surgery is less painful and frequently requires a shorter recovery owing to the smaller incisions and less tissue trauma than with open surgery. Ankle arthroscopy was first performed with the patient in the supine position. A standard method for the examination of the ankle was first published in 1939 by Takagi (1) and later by Watanabe (2) in 1972. Visualization and surgery were confined to anterior lesions because of the difficulty seeing and accessing posterior pathologic entities. Ankle arthroscopy has evolved to allow for improved visualization and surgical access throughout the ankle. Although the surgical technique has become much more standardized regarding the equipment, positioning, distraction, and portals (3,4), some noteworthy differences exist between the techniques described by Ferkel et al (3) and van Dijk and van Bergen (4). Recently, ankle arthroscopy has been referred to as “anterior ankle arthroscopy” to distinguish it from the development of “posterior ankle arthroscopy,” which is performed with the patient prone (4). The advantage of the latter technique is easier access to the posterior aspect of the ankle joint and adjacent structures, including the os trigonum, flexor hallucis longus tendon, and subtalar joint (5,6).

Routine access to the ankle using anterior ankle arthroscopy is performed through 2 anterior portals, the anteromedial and anterolateral portals. One portal is for visualization, and the other is the working portal for instruments such as shavers and graspers. The need for accessory anterior portals could be indicated (4). A third

portal, the posterolateral portal, has been described by Ferkel et al (3) for use as an inflow portal.

The anterior ankle has a thin layer of overlying soft tissue. The localization of the anterior ankle portals is dependent on the palpation and visualization of the surface anatomy, similar to the arthroscopic technique of the knee, elbow, and wrist. Sometimes, the surface anatomy palpation and visualization will be less than ideal owing to the presence of soft tissue edema or obesity. The technique for establishing the ankle portals has been well described by Ferkel et al (3), van Dijk and van Bergen (4), and others (7) but remains controversial. The posterior ankle has a thicker layer of soft tissue overlying the capsule. Therefore, the posterior bony structures are more difficult to palpate than the anterior bony structures. This might be the reason many arthroscopists have difficulty obtaining the posterolateral portal using the standard technique of palpation and why this technique has reduced interest in published studies. Fluoroscopy has been used to guide posterior portal access for posterior ankle and hindfoot arthroscopy (with the patient prone) (8). Historically, arthroscopists have had difficulty with the hip (a large joint deep to the skin) because of the difficulty palpating the key anatomic landmarks. Partnering both C-arm fluoroscopy with cannulated instruments for proper portal placement has allowed surgeons to successfully perform hip arthroscopy and reduce the risk of complications (9).

We present our adaptation of these techniques for anterior ankle arthroscopy. Access to the ankle is achieved with 3 portals, an anterior portal for visualization and outflow, an anterior working portal, and an inflow portal posteriorly. Cannulated hip arthroscopy instruments have been modified for anterior ankle arthroscopy, including an angiocatheter, a guidewire, and a customized cannulated trocar (Fig. 1), to facilitate the placement of the arthroscope by way of the anteromedial portal and an inflow cannula in the

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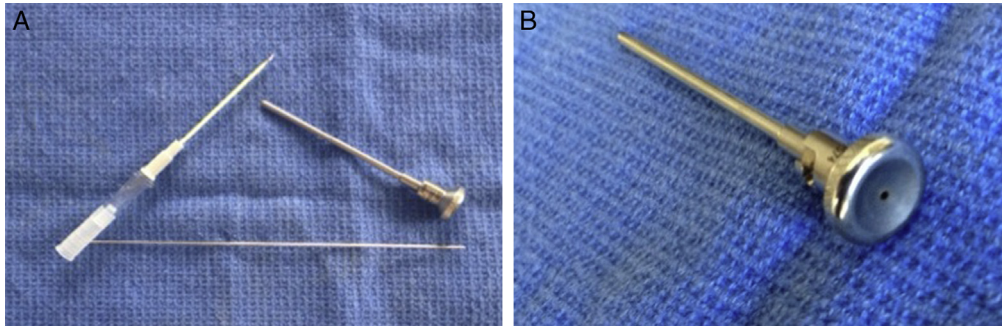


Fig. 1. Ankle access instruments. (A) View of 16-gauge angiocatheter, 1.1-mm guidewire, and blunt 2.7-mm cannulated trocar. (B) Close-up view of cannulated trocar.

posterolateral portal. This results in a clearer arthroscopic image of the ankle joint, a reduction of soft tissue trauma, less articular cartilage scuffing, and a reduced need for the application of a tourniquet.

Operative Technique

The patient is placed on the operating room table in the supine position and prepared for anterior ankle arthroscopy as described by



Fig. 2. Intraoperative fluoroscopic images showing localization of the anteromedial portal. (A) Fluoroscopic setup. (B) Introduction of 16-gauge angiocatheter into the ankle joint through the anteromedial portal. (C) Removal of the stylet, placement of a blunt 1.1-mm guidewire via the angiocatheter into the ankle joint, and removal of the angiocatheter, leaving the guidewire in place. (D) Passage of a blunt cannulated trocar and 2.9-mm arthroscopic cannula over the guidewire into the ankle joint.

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