

■ Technical Art

Simple distraction method for ankle arthroscopy

Ayak bileği artroskopisinde basit distraksiyon yöntemi

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ABSTRACT

Ankle arthroscopy has been a frequently used procedure in settings such as osteochondral lesions of the talus (OLT), anterolateral ankle impingement, arthroscopic-assisted arthrodesis and removal of loose bodies. Tibiotalar joint is a joint too narrow for camera entry or using instruments. Therefore, these procedures, particularly the treatment of the OLT, requires a non-invasive and simple method of distraction more suitable to obtain a clear visualization. In this technical note, we aimed to describe a novel, easy to install and useful non-invasive distraction method designed to meet these requirements in anterior ankle arthroscopy under operating room conditions.

Keywords: ankle; arthroscopy of the ankle; distraction; non-invasive distraction

ÖZ

Ayak bileği artroskopisi Talusun Osteokondral Lezyonu (TOL), anterolateral ayak bileği sıkışması, artroskopik yardımcı artrodez ve serbest cisim çıkarılması gibi durumlarda sıklıkla kullanılagelmiş bir prosedürdür. Tibiotalar eklem genellikle kamera girişi ve enstrümanların çalışması için oldukça dar bir eklemdir. Bu durumdan dolayı; bu işlemler, özellikle TOL'ün tedavisi, net bir görüş sağlamak için daha uygun, non-invaziv ve kolay bir distraksiyon metoduna ihtiyaç duyarlar. Biz de bu teknik notta, anterior ayak bileği artroskopisindeki bu ihtiyacı ameliyathane şartlarında kolaylıkla karşılamak için tasarladığımız yeni, kurulumu kolay ve kullanışlı bir non-invaziv distraksiyon yöntemini tarif etmeyi amaçladık.

Anahtar kelimeler: ayak bileği; ayak bileği artroskopisi; distraksiyon; non-invaziv distraksiyon

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Introduction

The ankle is a special joint due to its unique anatomy. As already discussed, the ankle joint is a rather narrow joint to use camera and instruments. In order to eliminate this problem, invasive and non-invasive distraction methods have been described in the literature. In order to reduce the rate of complication, the approach evolved from invasive methods to continuous soft tissue distraction [1]. In light of this aim; many distraction methods have been described, such as using kyphoplasty balloon [2], using gauze roll [3], using bandage [4], using special tools and traction table [5,6].

Technique

While the patient is lying on supine position, the same side is supported with a sheet or pillow behind the hip to see the ankle on the actual anteroposterior plane and master the anatomical structure. A tourniquet is applied on the proximal thigh. After applying general or regional anesthesia, the patient is prepared for surgery using sterile skin paint and the important structures on the ankle are drawn and marked. First, a 3-meter-long gauze roll is folded in half (Figure 1). Then, a loop is formed by crossing the bandage and the bandage on the upper side is crossed under the other once more to remove it from the loop (Figures 2, 3, 4). Thus, 2 loops are obtained (Figure 5). Once the loops are tightened, one of them is taken from the anterior to the posterior of the foot so the ankle is placed in the mid-foot level immediately distal to the anterior operating area; the other is placed at the achille insertion site at the posterior of calcaneus and the appropriate tension is adjusted (Figures 6, 7, 8). After the surgeon adjusts the distance between the ankle and his own abdomen and eliminates the margins of the bandage, the two remaining ends of the gauze roll are firmly tied behind the primary surgeon (Figure 9). Thus, the surgeon can visualize the ankle, whose arthroscopic view without distraction was as in Figure 10, as in Figure 11 by just using his waist, and obtain a clear image and operating area for himself. As seen in Figure 10 and 11 surgeons may easily perform controlled distraction by simple movement. Local ethics committee approved the study and informed consent was obtained from participant(s)



Figure 1: An approximately 3-meter-long bandage is folded in half



Figure 2: The bandage folded in half is crossed and using the other hand the bandage on the upper side is passed through the loop.



Figure 3: Passing the bandage on the upper side through the loop using the other hand



Figure 4: Passing the bandage through the loop



Figure 5: Two loops formed



Figure 6: Position to slip the 2 loops on the ankle



Figure 7: Lateral visualization of the ankle after slipping the 2 loops on the ankle and ensuring their tightness



Figure 8: Anterior visualization of the ankle after slipping the 2 loops on the ankle and ensuring their tightness



Figure 9: Tying the two free ends of the bandage behind the primary surgeon

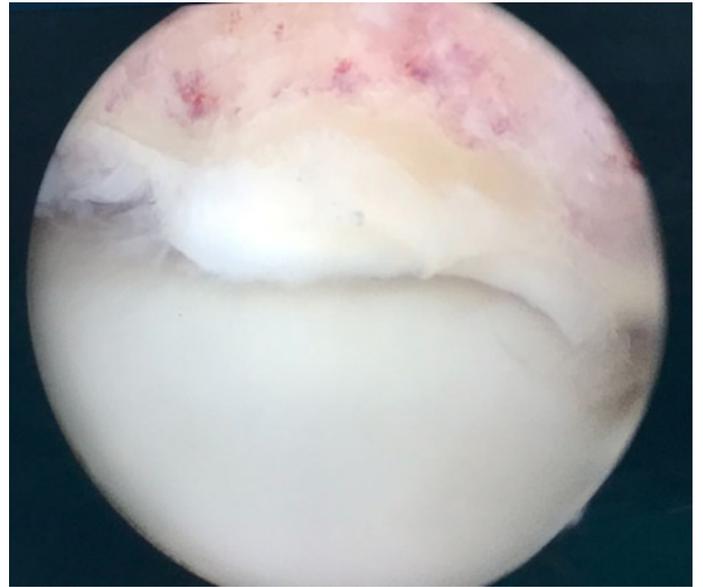


Figure 10: Arthroscopic image of the ankle with no distraction

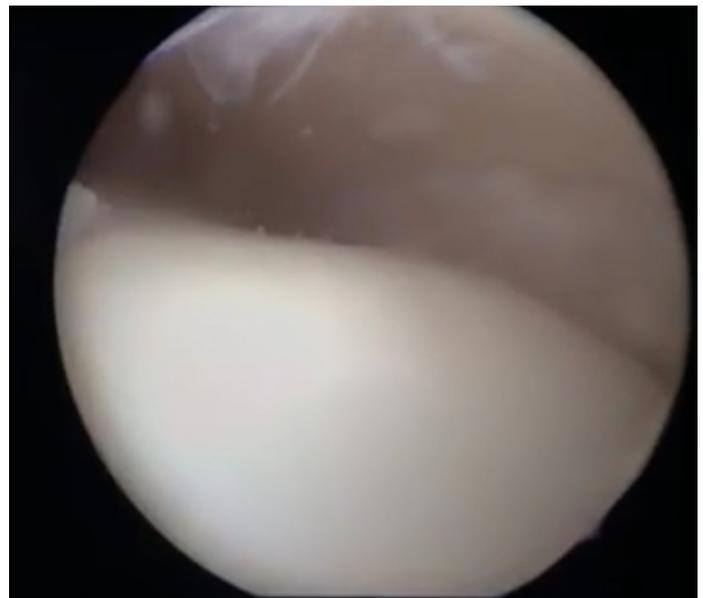


Figure 11: Arthroscopic image of the ankle after distraction

Discussion

Similar distraction methods have been described before. Some require orthopaedic traction tables and special traction materials. Due to problems in sterilization and the time required for their installation, these materials cause problems, such as prolonged preoperative preparation time. Another problem is that every hospital may not have the financial means to purchase these materials [5,7].

Ankle distraction with bandage technique previously described by Yates CK and Grana WA but they applied using a different tying technique from ours [8]. The direction of traction is also different from ours and we can say that the traction direction in our method is the best technical modification. The method we



described is very easy to use, and it is very suitable for traction considering the structure of the ankle. The bandage technique described by Takao et al in 1999 has some disadvantages such as loss of traction force when the bandage is wet [4].

The non-invasive distraction method we described does not require calcaneal or tibial pin for distraction. At the same time, its installation is simple; and it is an easy to obtain and cost-effective method. In our series it was always possible to perform the operation in all cases without the requirement of invasive distraction method.

Conclusion

With this method, the surgeon can easily perform distraction by using only his waist and depending on the procedure and the location of the lesion surgeon can adjust the tightness and degree of the traction. If traction is not required, the surgeon does not need to dismount the traction table or remove the bandage. With this method, the surgeon can stop the distraction simply by relaxing his waist. As can be seen in Figure 11, the operation area is very wide and if needed more working area can be obtained in the talus dom or even on the posterior aspect of the talus.

Declaration of conflict of interest

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