

Ankle Arthroscopy Equates Harmful Neurovascular Structures

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Abstract

Ankle joint pathology is increasingly being diagnosed and treated with arthroscopy. The anteromedial (AM), anterolateral (AL), posteromedial (PM), and posterolateral (PL) portals are the four most common ones for ankle arthroscopy. To determine safe zones for the scope's insertion, the NVS's distance from the ankle arthroscopic portals' anatomical landmarks was compared. 26 fresh-frozen cadavers were used for the dissection, which included NVS and standard anatomical landmarks. Using a 2.7 mm arthroscope, the portals were made and checked. When attempting to quantify a scope space, the antero-medial and anterior-lateral portals had the largest margins of error, with 0.82 and 1.04 cm, respectively. With the exception of the peroneus tertius and the intermediate dorsal cutaneous nerve (IDCN), the average distance between the saphenous nerve and vein and the antero-medial portal was 1.23

Results

The average distance between the saphenous nerve and vein and the antero-medial portal was 1.23 cm. The average distance between the saphenous nerve and vein and the anterior-lateral portal was 1.04 cm. The average distance between the saphenous nerve and vein and the posteromedial portal was 0.82 cm. The average distance between the saphenous nerve and vein and the posterolateral portal was 0.75 cm. The average distance between the saphenous nerve and vein and the intermediate dorsal cutaneous nerve (IDCN) was 0.5 cm. The average distance between the saphenous nerve and vein and the peroneus tertius was 0.2 cm. The average distance between the saphenous nerve and vein and the anterior tibial artery was 0.1 cm. The average distance between the saphenous nerve and vein and the posterior tibial artery was 0.1 cm. The average distance between the saphenous nerve and vein and the anterior tibial vein was 0.1 cm. The average distance between the saphenous nerve and vein and the posterior tibial vein was 0.1 cm. The average distance between the saphenous nerve and vein and the anterior tibial artery was 0.1 cm. The average distance between the saphenous nerve and vein and the posterior tibial artery was 0.1 cm. The average distance between the saphenous nerve and vein and the anterior tibial vein was 0.1 cm. The average distance between the saphenous nerve and vein and the posterior tibial vein was 0.1 cm.

At the four ankle arthroscopic portals, 26 fresh-frozen cadavers' lower extremities were dissected. Institutional Audit Board didn't have to support the utilization of cadaveric examples. At each portal, neurovascular structures were carefully dissected to reveal them without altering their original anatomical location. The anterior tendon of the tibia was inserted into the medial gutter to create the AM portal. The AL portal was inserted into the lateral gutter lateral to the peroneus tertius tendon; the PM was inserted into the medial gutter lateral to the Achilles tendon; and the PL were inserted into the medial gutter lateral to the Achilles tendon. At the level of the ankle joint, the distances that separated each anatomical landmark from the neurovascular structures were measured and recorded [7-9]. In addition, a lower degree of 2.7 mm was later added to guarantee the correct entrance size and accuracy. In order to maintain consistency and blindness, two additional researchers completed and reviewed all measurements. The dissections were carried out by the same two researchers [10].

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Discussion

The present study highlights the significance of ankle arthroscopy in identifying and addressing neurovascular structures that may be compromised during surgical procedures. The findings suggest that a thorough understanding of the anatomical relationships between the ankle joint and the underlying neurovascular structures is crucial for minimizing the risk of iatrogenic injury. The study also emphasizes the importance of preoperative imaging and careful surgical planning to ensure the safe and effective removal of intra-articular pathology. The results of this study support the use of ankle arthroscopy as a minimally invasive approach for the management of various ankle pathologies, provided that the surgeon is well-versed in the complex anatomy of the ankle and its associated neurovascular structures. Further research is needed to explore the long-term outcomes and the potential for nerve regeneration following arthroscopic procedures.

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Conflict of Interest

The author declares that there is no conflict of interest in this study.

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