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Arthroscopic Lateral Ankle Ligament Reconstruction : A Preliminary Anatomical Study

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Summary:
Anterior Ankle Arthroscopy is a reliable technique for both assessment, dissection and anatomical reconstruction of ATFL and CFL.

Abstract:
INTRODUCTION
Ankle arthroscopy is more and more useful in the treatment of lateral ankle instability for assessment of both intra-articular associated lesions and ligaments. It is a guide for the choice of the technique of lateral collateral ligament repair. Recently some authors described arthroscopic techniques of anterior talofibular ligament (ATFL) repair or ATFL and calcaneofibular ligament (CFL) anatomical reconstructions. The aim of the present cadaveric study was to assess the feasibility of vizualisation, dissection and anatomical reconstruction of the ATFL and CFL with an arthroscopic technique.

MATERIALS & METHODS
ATFL and CFL were vizualised and dissected during a standard 3-portals anterior ankle arthroscopy on fresh frozen cadavers. Fibular, talar and calcaneal footprints of the ATFL and CFL were then identified after section of the ligaments. Three transosseous tunnels were then performed at the center of the footprints (1 on the fibular ATFL footprint, 1 on the talar ATFL footprint and 1 on the calcaneal CFL footprint) to assess the feasibility and accuracy of an anatomical reconstruction. Open dissection was then conducted to identify the anatomical footprints compared to arthroscopic footprints and their respective positions to bony landmarks. Distance from footprint real center to its corresponding tunnel entrance was measured. Length of each tunnel, iatrogeny and duration of the arthroscopic procedures were noted.

RESULTS
14 fresh frozen ankle were included. Footprints were identified arthroscopically in all the cases. Center of the fibular ATFL footprint was 16,1 mm (+/- 3,6mm) from the tip of the fibula, talar footprint was 18,4 mm (+/- 2,8 mm) from apex of the lateral talar process. Center of the fibular CFL footprint was 4,2 mm (+/- 1,7mm) from the tip of the fibula and calcaneal footprint was 18,4 mm (+/- 2,5 mm) from the fibular process of the calcaneus. Fibular tunnel entrance was 2,9 mm (+/- 3 mm) too proximal from the center of the ATFL fibular footprint, talar tunnel entrance was 4,4 mm (+/- 3,2mm) too anterior from the center of the talar footprint and calcaneal tunnel entrance was 3,3 mm (+/- 2,8mm) too anterior from CFL calcaneal footprint. Fibular, talar and calcaneal tunnels were respectively 28,3 mm (+/- 4,4mm), 28,1 mm (+/- 6,3mm) et 34,4 mm (+/- 10,9 mm) long. Duration of the procedure decreased with experience also the positionning of the tunnels quickly improved. No neurologic nor tendinous (fibular tendons) lesions were noticed during the present study.

CONCLUSION
Ankle arthroscopy is a reliable and simple technique for both visualization and dissection of ATFL and CFL with a

short learning curve. The present cadaveric study confirms the feasibility and accuracy of an anatomical reconstruction of both ATFL and CFL with arthroscopic control. Further studies are needed to improve knowledge on indications, surgical steps and clinical results with this all arthroscopic technique.