Summary
Osteochondral lesions of the talus are a source of significant pain and disability in patients. Exposure of the talus for grafting can be difficult. These lesions are often accessed through a medial malleolar osteotomy.

The purpose of this study is to examine the amount of surgical exposure obtained, both medially and laterally, when a deltoid release is utilized with a standard anterior arthrotomy and the ankle is plantarflexed and the talus subluxed anteriorly.

Introduction
Talar osteochondral lesions are frequently source of pain and disability in patients. They all virtually can be treated with arthroscopic techniques, but osteochondral autograft or allograft transfer systems utilizing an open approach may be indicated when arthroscopic drilling or microfracture techniques fail.

Talar dome approach can be problematic for these procedures, especially because they all require perpendicular access to the lesion.

Furthermore the talar surface is covered by cartilage over 60% of its surface, thereby limiting access for its vascular supply.

The circulation to the talus has been well-documented and consists of the sinus tarsi artery, peroneal artery, and contribution from the tibial artery through the deltoid ligament. The surgical approaches to the talus must consider the tenuous circulation to prevent iatrogenic avascular necrosis.

Considering this, a medial malleolar osteotomy often is considered necessary to provide greater access to the medial dome of the talus, preserving deltoid legament with its blood supply.

Anyway this procedure has its own morbidity correlated to the fact that the intra-articular portion must be cracked and to the subsequent risk of non union of the osteotomy site.

The senior author has frequently used complete deltoid release safely when performing total ankles in patients with severe varus deformity never reporting a talus avascular necrosis.

This study is founded on this surgical experience with the purpose to examine the amount of surgical exposure obtained, both medially and laterally, when a deltoid release is performed.

Methods
Three surgical approaches were performed on each of the eight cadaveric ankles. The sequence was: (1) Posterior Arthrotomy, (2) Anterior Arthrotomy,
(3) Anterior Arthrotomy with Deltoid Release. Osteochondral cylindrical plugs were harvested from the talus as far anteriorly and posteriorly as possible using an 8-mm harvester taking care to maintain a perpendicular orientation to the articular surface. Both medial and lateral lesions were created. Total talar distance was also measured medially and laterally following the three sequences tested above.

Results
MEDIAL
Average AP exposure and percentage of AP talar dome exposed: (1) Posterior Arthrotomy: 14.25 mm (29.1%), (2) Anterior Arthrotomy: 24.2 mm (53.1%), (3) Anterior Arthrotomy with Deltoid Release: 34.8 mm (75.0%). When comparing anterior arthrotomy alone versus anterior arthrotomy with deltoid release there was an increase in talar dome access of 22.0% (p=.0078). The deltoid release only allowed for an average exposure of 6.0% of the talar dome when accessed through the posterior approach.
LATERAL
Average AP exposure and percentage of AP talar dome exposed: (1) Posterior Arthrotomy: 13.88 mm (33.3%), (2) Anterior Arthrotomy: 23.8 mm (54.4%), (3) Anterior Arthrotomy with Deltoid Release: 33.8 mm (77.8%). When comparing the anterior arthrotomy alone versus anterior arthrotomy with deltoid release there is an increase in talar dome access of 23.1% (p=.0078). The deltoid release allowed for an average exposure of 17.0% of the talar dome accessed through the posterior approach.

Conclusion
Both medially and laterally the anterior arthrotomy with deltoid release provides significantly greater exposure to the talar dome when compared to the conventional isolated anterior arthrotomy.