

Detecting Traumatic Ankle Arthrotomies: CT Scan vs. Saline Load Test

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INTRODUCTION:

Periarticular wounds present a common diagnostic dilemma for emergency providers and orthopaedic surgeons, as traumatic arthrotomies (TA) necessitate different management from superficial soft tissue wounds. Historically, traumatic arthrotomies have been diagnosed with the saline load test. Computed tomography (CT) scan has been studied as an alternative to the saline load test in diagnosing traumatic arthrotomies in several joints, but not specifically the ankle. Our study aimed to compare the ability of a CT scan to identify a traumatic ankle arthrotomy versus the traditional saline load test. We hypothesized that there would be no significant difference between a CT scan and saline load testing in diagnosing traumatic ankle arthrotomies in a cadaveric model.

METHODS:

This cadaveric study utilized ten thawed fresh-frozen cadaveric ankles. A baseline CT scan was performed to ensure no intra-articular air existed before simulated traumatic arthrotomy. After the baseline CT, a 1 cm traumatic arthrotomy was created in the anterolateral arthroscopy portal site. The ankles then underwent a post-arthrotomy CT scan to evaluate for the presence of intra-articular air. After the CT scan, a saline load test was performed using the anteromedial portal site.

RESULTS:

Following arthrotomy, intra-articular air was visualized in seven of ten cadavers in the post-arthrotomy CT scan. All the ankles had fluid extravasation during saline load testing with less than 10 mL of saline. The sensitivity of the saline load test for traumatic arthrotomy was 100% versus 70% for the CT scan.

DISCUSSION AND CONCLUSION:

The saline load test is more sensitive in diagnosing traumatic ankle arthrotomies than a CT scan and should remain the standard diagnostic tool in evaluating periarticular ankle wounds suspicious for TA.