

Title: Safety and Efficacy of Duplex Ultrasound Assisted Transulnar Versus Transradial Arterial Access in Invasive Coronary Procedures – A Randomized Controlled Trial

Category: Interventional Cardiology

Abstract

Background: Several recent studies have shown that the transulnar approach (TUA) to invasive coronary angiography (ICA) is non-inferior to the transradial (TRA) approach in terms of efficacy and safety in the presence of extensive previous operator TUA experience. Without such experience, there is an increase in successful access time and number of punctures to successful access. The aim of the study is to see if duplex ultrasound (DUS) assisted TUA, even without the previous operator TUA experience required, is non-inferior to DUS assisted TRA in terms of time to access and number of punctures, while still maintaining the similar safety and efficacy profile reported by our peers.

Methods: A total of 104 patients were randomized into TUA (n=50) or TRA (n=54) arms. All patients had preprocedural DUS assessment for arterial diameter, peak systolic velocity, the presence of calcification, tortuosity or anatomical abnormalities. Two surface markers per artery, one at the level of the proximal wrist crease and the other 5 cm proximally, were added to delineate the distal surface anatomy of each artery. The patients then had ICA through TRA or TUA. The time to successful puncture, total number of punctures, crossovers, access site complications, total procedure time, fluoroscopy time, volume of contrast, radiation dose and intra- and post-procedural complications were noted for each patient.

Results: The primary endpoints of non-inferiority of TUA to TRA in access time (94.88 ± 80.24 s vs 98.57 ± 112.07 s, $p=0.859$) and number of punctures (2.37 ± 1.61 vs 2.00 ± 1.12 , $p=0.197$) were achieved. Apart from an increase in incidence of access site pain (28% vs 7%, $p=0.006$), there was no statistically significant difference between the two approaches in terms of access site complications, intraprocedural aspects or complications, or post-procedural complications or outcomes.

Conclusion: DUS assisted TUA is non-inferior to DUS assisted TRA in the setting of ICA in terms of time to puncture, number of punctures, safety and efficacy, apart from an increased incidence of access site pain. In the presence of DUS, TUA is a viable alternative to TRA in settings where TRA is not feasible, even in the hands of an operator without extensive previous experience in TUA.