Significant Differences Exist in Patient Demographics of Foot and Ankle Surgeries between High Quality Prospective Studies and National Databases

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Introduction/Purpose: Several high profile studies have compared surgical and non-operative treatments in specific types of major foot and ankle surgeries and serve as management guidelines for many Orthopaedic surgeons. However, the external validity of these studies has not been examined and should be confirmed in order to confidently apply the study conclusions to the national population and modify clinical practice. The purpose of the current study was to compare patient demographic information collected from major high quality, prospective studies in foot and ankle surgeries and from same surgical procedures recorded in a nationwide database of the United States patient population.

Methods: Patient demographic information from surgical procedures for achilles tendon rupture, syndesmotic injury, calcaneal fracture, and lisfranc injury were pulled from American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database between 2005 – 2014 by using CPT codes listed in Table I. The same information was collected from several randomized control or prospective cohort studies identified for each type of procedure (Table I). Patient age and body mass index (BMI) were compared by using two sample T-test, while Fisher’s exact test was used to compare patient sex. Study data on age and BMI that did not provide both mean and standard deviation were not included in analysis.

Results: In the NSQIP database, 1,633 achilles tendon repair and 8,852 syndesmotic injury cases were identified, but few calcaneal fracture surgeries and no lisfranc injury cases were found. For surgical cases with syndesmotic injury repair, age, sex and BMI all differed significantly between NSQIP data and the aggregate values of published studies, with the NSQIP patients being older and have more females and larger BMI (Tables II-IV). By comparing individual study data with NSQIP, 1 of 3 studies showed the same trend in age, 2 of 3 in sex, and 1 of 1 in BMI. For cases with Achille tendon rupture repair, both aggregate and individual comparisons with 2 studies showed statistical difference on age, with NSQIP patients being older (Table II).

Conclusion: Although the results were somewhat mixed, statistical significance did exist in patient demographic characteristics between published clinical data and a national database in the same foot and ankle surgeries. Caution should be warranted when interpreting clinical studies and before generalizing it onto the national population.

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