Abstract

Lisfranc injuries account for 0.2% of all fractures, with an annual incidence of 1 in 55,000 persons. The term Lisfranc joint complex is used to refer to tarsometatarsal articulations, and the term Lisfranc joint is used to describe medial articulation between the first and second metatarsals with the medial and middle cuneiforms. An injury to the Lisfranc joint is associated with considerable acute and chronic morbidity. The purpose of this study was to evaluate the change of first metatarsal aperture size with respect to various drill angles and to determine whether the injured surface area of the first metatarsal-medial cuneiform joint increased with an increase in the drill angle. Thirty saw bone model feet were used. They were divided into three groups (5, 15 and 30 degrees) with an N= 10 for each. Specimens were dissected at the first tarsometatarsal joint after the 3.5 mm cortical screw was removed and the aperture and surface area were calculated. There was a significant increase in the aperture as the drill angle increased from 10.03 mm$^2$ to 19.48 mm$^2$ ($p = .0002$). In addition, the mean injury area for the first metatarsal increased significantly as the drill angle increased from 1.25 mm$^2$ up to 1.39 mm$^2$ ($p = .00001$). Therefore, this study demonstrated that there is a significant increase in joint injury with an increase in the drill angle, which correlates with the increase in aperture.

Keywords: Lisfranc, Aperture, fracture

References: