Is the Dresden technique a mechanical design of choice suitable for the repair of middle third Achilles tendon ruptures? A biomechanical study

De la Fuente, C., Carreño-Zillmann, G., Marambio, H., & Henriquez, H. (2016). Is the Dresden technique a mechanical design of choice suitable for the repair of middle third Achilles tendon ruptures? A biomechanical study. Revista Española de Cirugía Ortopédica y Traumatología (English Edition), 60(5), 279-285. <10.1016/j.recot.2016.06.004> Accessed 23 Dec 2020.

Abstract

Objective: To compare the mechanical failure of the Dresden technique for Achilles tendon repair with the double modified Kessler technique controlled repair technique. The maximum resistance of the two repair techniques are also compared. Material and methods: A total of 30 Achilles tendon ruptures in bovine specimens were repaired with an Ethibond® suture to 4.5 cm from the calcaneal insertion. Each rupture was randomly distributed into one of two surgical groups. After repair, each specimen was subjected to a maximum traction test. The mechanical failure (tendon, suture, or knot) rates (proportions) were compared using the exact Fisher test ($\alpha = .05$), and the maximum resistances using the Student t test ($\alpha = .05$). Results: There was a difference in the proportions of mechanical failures, with the most frequent being a tendon tear in the Dresden technique, and a rupture of the suture in the Kessler technique. Discussion: The repair using the Dresden technique performed in the open mode, compared to the Kessler technique, has a more suitable mechanical design for the repair of middle third Achilles tendon ruptures on developing a higher tensile resistance in 58.7%. However, its most common mechanical failure was a tendon tear, which due to inappropriate loads could lead to lengthening of the Achilles tendon..

Keywords

Achilles tendon tear, Dresden, Mechanical design.