Achilles Tendon Rupture in Professional Soccer Players

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INTRODUCTION:

Achilles tendon rupture (ATR) occurs most frequently during sports participation, especially in football, tennis, and basketball. Sports that involve frequent acceleration and direction changes with excessive eccentric loads on the Achilles tendon (AT) are considered to have a high risk of ATR.

ATR in professional athletes can be a troublesome event and, in some cases, can be career-ending, forcing them to undergo surgery to restore tendon anatomy, myotendinous junction length, and maximal strength recovery.

The present study aims to evaluate and descriptively report the ATR results from three years postoperatively in professional soccer players. Primary outcomes included the return to play (RTP) and the played minutes per season (MPS) in the three postoperative seasons compared with the three preinjury seasons. Failures and complications were also matters of this study.

METHODS:

In this retrospective study, the authors identified male professional football players who sustained an ATR between 2010 and 2020. All the male professional soccer players were included if they belonged to the first team rosters of professional soccer teams at the time of injury. From the included player, age, BMI, position, injury history, affected side, RTP rate and time, and percentage of played minutes per season (MPS) before and after ATR were retrieved from a publicly available media-based platform. Missing data were searched through other publicly available online sources such as official team websites and press releases.

RTP rate was defined as the percentage of players having played at least one game at a professional level after ATR among all the injured ones. RTP time was assessed as the number of days from an ATR to the first match appearance with the first team, reserve team, youth team, or national team. MPS was defined as the percentage of the played minutes on the total playable minutes during each season.

Data were also evaluated based on players' age (younger than 28 years old, more aged than 28 years old), position (goalkeeper, defender, midfielder, forward), and affected side (dominant or not).

Players who changed to an inferior league or stopped their career for any reason before the end of the second season were recorded. According to the United European Football Association (UEFA) Country Ranking, the downgrade Leagues were defined as being transferred to an inferior competitive level according to the United European Football Association (UEFA) Country Ranking. Complications were defined as reruptures (ipsilateral or contralateral), reoperation, or any adverse event occurring within the rehabilitation period resulting in a delayed or missed RTP.

Players were excluded from the MPS evaluation if they did not play two seasons before or after the injury or if data were not available.

Descriptive data were analyzed for the entire patient cohort. Statistical significance was set at $P<.05$. Descriptive data analyses were conducted depending on the nature of the considered criteria. For quantitative data; this included number of observed values (and missing values, if any), mean, SD, median. Qualitative data included the number of observed and missing values and the number and percentage of patients per class. Comparisons between variables were assessed with Chi-square or the Fisher exact test for categorical variables and the Student test or Wilcoxon test for quantitative variables. The normality of variables was assessed with a Kolmogorov-Smirnov test. The characteristics of the studied population were described according to the group (<28 years old or ≥ 28 years old).

RESULTS:

Seventy-five elite male soccer players sustained an Achilles tendon rupture during the study period and required surgical treatment. Overall, 71 players satisfied the inclusion criteria, while 4 were excluded due to inconsistent follow-up or insufficient available data. Of the players who had adequate follow up after the injury of ≥ 3 years, four players (5.6%) retired after the injury. At the time of injury, the mean age was 28.7 ± 4.1 years (range 19-39). The injury occurred during matches in 70.4% of cases. Midfielders and defenders were more likely to be injured, with both categories each accounting for 36.6% of those injured.

The mean RTP time was 216.16 ± 58.2 days (range 62-992) and only 84.5% of players continued their careers three years after surgery. Six players (8.4%) out of 71 who returned to play sustained ipsilateral Achilles Tendon rerupture at a mean 5.45 ± 2.8 years follow up. Six players (8.4%) out of 71 have not maintained the same sporting level and have subsequently played in lower categories.

No correlation was found between being downgraded and older or younger than 28 years, a median of the study sample ($P=.7$). Age also did not correlate with the risk of rerupture ($P=.2$) but did correlate significantly with retirement from playing professional football (***P*<.001**).

The mean preoperative MPS was 53.6% ± 24% (range, 0.88%-98.3%), 54.4% ± 27.7% (range, 2.6%-99.4%), and 51.2%-25.1% (range, 2.4%-96.4%) respectively 3, 2, and 1 seasons before the injury. The mean MPS significantly decreased to

31.3% ± 23.2% (range, 0.2%-88.5%) in the first season (P=0.02), to 36.6% ± 24.2% (range, 0.1%-84.5%) in the second one (P=0.02) and to 40.5% ± 23.8% (range, 1.2%-82.5%) in the third one (P=0.04).

DISCUSSION AND CONCLUSION:

The main finding of the current study was that 94.4% of professional soccer players return to play after sustaining an ATR with a mean RTP time of 216.16 ± 58.2 days. Another important finding is that performances of the players are significantly lower in the seasons after ATR as compared to the preinjury seasons. Moreover, the age of the players influenced the differences in terms of MPS between the seasons analyzed and correlates significantly with retirement from professional soccer.