SPONTANEOUS ACHILLES TENDON RUPTURES TREATED WITH A MINI-OPEN TECHNIQUE: CLINICAL AND FUNCTIONAL EVALUATION

De Carli A, Vadalà A, Ciardini R, Ferretti A

Orthopaedic Unit and "Kirk Kilgour" Sports Injury Centre, S. Andrea Hospital, University "La Sapienza" Rome, Italy

Introduction
Spontaneous ruptures of the Achilles tendon are frequent among occasional athletes. Despite the frequency, there is no agreement about the treatment of this pathology.

Methods
Twenty consecutive patients (14 males and 6 females) were surgically treated between 1995 and 2001 with a mini-open technique of suture of the ruptured Achilles tendon modified from Kachiuchi (1). Post-operative long leg cast was applied for a period of three weeks and weight bearing allowed with a brace from fourth to sixth week after surgery.
All these patients were assessed with a new original clinical scoring scale (created in our institution) and a functional jumping test (Ergo-jump Bosco System) at a mean follow-up of 52 months (range 20-95 months). The Ergo-jump Bosco System is a computerized platform connected with an electronic timer. This device allows to evaluate time of flying and the height of one or more consecutive jumps. Patients were assessed using three different tests: squatting jump, counter movement jump and a ten repetition counter movement jump. A paired t-test was used for assessing the significance of the differences. A $P<0.05$ was chosen as significant.

Results
No statistical difference were reported in both clinical and functional results between involved and uninvolved side. The results of our post-operative rating scale were: 13 patients (65%) excellent, 5 good (25%), 1 fair (5%), 1 poor (5%). Post operative complications were: poorly localized ankle pain in two patients (10%), partial loss of plantar flexion in one case (5%), calf hypotrophy in 15 patients (75%) and late skin adhesions in four patients (20%). The jumping capability was tested as follows: squatting jump allowed us to evaluate the explosive strength of the extensor muscles of the inferior limbs: in our group, the test showed a mean deficit of only 4.48 % side to side.
The Counter movement jump evaluated the elasticity of the same muscles: it showed a mean deficit of 6.63 % side to side.
Repetitive jump is an endurance trial for the evaluation of the muscles resistance: it showed a mean deficit of 1.07 % side to side.

Discussion
The best method of treatment of subcutaneous ruptures has long been debated. In 1977 Ma and Griffith (2) proposed a surgical percutaneous repair as a solution to the difficult choice of the higher re-rupture rate associated with non-operative treatment and the higher complication rate associated with open repair.
In our serie a very low rate of minor complications have been reported and most of patients were able to resume their sport activity at the same pre-injury level. No statistically significant differences were observed in jumping capacity between operated limb and contralateral side. The critical evaluation of these results shows that the function of the musculotendineous unit involved in the trauma is almost completely restored when compared to the uninvolved side.

Conclusion
Mini open repair should be considered an excellent method of treatment of this pathology because of the very low rate of complications reported.

References
1. Kakiuchi M. A combined open and percutaneous technique for repair of tendo Achillis. J Bone Joint Surg 77B: 61-64, 1995
2. Ma GWC, Griffith TG: Percutaneous repair of acute closed ruptured Achilles tendon: a new technique. Clin. Orthop. 128: 247-255, 1977.