Outcomes of Limited Open Achilles Repair Using Modified Ring Forceps
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Introduction/Purpose: Acute Achilles tendon ruptures have a 2.4-4.7% rate of infection and wound healing complications when treated operatively. The incidence doubles in those with risk factors such as diabetes, smoking or steroid use. To diminish complications minimally invasive approaches have received increasing interest. Meta-analyses have demonstrated equivalent rerupture rates, significantly lower risk of superficial infection, and higher patient satisfaction rates with minimally invasive repairs compared with traditional open Achilles repair techniques. We have previously published a novel technique for limited open Achilles repair using modified ring forceps. The objective of the present study is to review the clinical outcomes of this technique, and to analyze functional results using validated outcomes measures.

Methods: Between 2009 and 2016, the clinical records of 29 consecutive patients (average age 45 years [range, 21-76 years], 24 males [83%]) who underwent limited-open repair of an acute Achilles tendon rupture with modified ring forceps were retrospectively reviewed. Through a 2.5-3cm midline incision a pair of ring forceps bent 30 degrees were used to grasp the tendon stumps deep to paratenon. Three #2 non-absorbable sutures were placed in the proximal and distal segments and delivered out of the wound. The tendon ends were reapproximated and the sutures tied down to secure the tendon. At a minimum of 6 months follow-up the 10-cm Visual Analog Scale (VAS), the Foot and Ankle Ability Measure (FAAM), and the Victorian Institute of Sports Assessment – Achilles (VISA-A) were assessed.

Results: At final follow-up (average 43.5 months [range, 5.7-90.1]) 28 of 29 patients reported no pain in their Achilles with an average Achilles VAS of 0.8 out of 100(SD±4.5). The average post-operative VISA-A score was 87.9 out of 100(SD±13.2). The average FAAM Activities of Daily Living and Sports subscales were 96.4%(SD±5.5) and 85.1%(SD±21.3), respectively. Post-operatively patients reported their overall functional level was 94.2% of their pre-injury level when performing ADLs, and 80.1% when participating in sports. Seventeen of 29 patients (58.6%) rated their current functional level as “normal;” nine (31.0%) as “nearly normal;” three (10.3%) as “abnormal;” and none as “severely abnormal.” There was one case of superficial wound infection that resolved with oral antibiotics and local wound care; there were no cases of deep infection, sural neuritis or rerupture.

Conclusion: These results demonstrate that limited-open Achilles repair with modified ring forceps provides an economical repair with excellent pain relief and good functional outcomes at mid-term follow-up. Additionally, this is one of the first studies to report validated Achilles specific outcomes (VISA-A) in the setting of acute repair. The wide age range, and subsequent variability in elective sport involvement, may have differentially lowered the sports-related functional outcomes in this study. The complication rate was extremely low making it an attractive alternative to traditional open techniques. Furthermore, this technique is easy to learn and cost-effective without the requirement of commercially available single-use kits.

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