

Journal Club: 03 September 2011

Organisers: Dr Cherian VM, Dr Nithyananth M

Q2 Ward, Department of Orthopaedics, Christian Medical College, Vellore, South India.

Two papers were discussed in this journal club by Dr. Krishnamoorthy Vignesh Prasad

### **Review 1**

#### **Operative versus non-operative treatment of acute rupture of tendo Achillis: A PROSPECTIVE RANDOMISED EVALUATION OF FUNCTIONAL OUTCOME**

J. F. Keating, E. M. Will

J Bone Joint Surg [Br] 2011 ;93-B:1071-78.

#### **Introduction**

Rupture of the tendo Achillis most commonly occurs in middle-aged men and is usually sustained during sporting activity. An acute rupture may be treated non-operatively or by surgical repair. Recent reviews have recommended surgery as the treatment of choice, based on evidence of a reduction in the rate of re-rupture associated with surgery compared with non-operative treatment. It is also assumed that surgical repair will result in more rapid rehabilitation, with improved muscle function and earlier return to sports and occupational activity. The aim of this study was to investigate whether surgical treatment conferred any benefits over non-operative management on the functional outcome following an acute rupture of the tendo Achillis.

#### **Patients and methods**

The study is a prospective RCT and has been approved by the local research ethics committee. A total of 80 patients with acute rupture of tendo Achillis were randomly allocated to have operative repair using an open technique (39 patients) or non-operative treatment in a cast (41 patients). They were followed up for one year and the clinical and functional outcomes were evaluated. Data were collected during admission and at 3,4,6 and 12 months after presentation.

#### **Results**

The primary outcome measure was muscle function tested using computer dynamometry/ Ankle ROM tested using a goniometer. The main clinical outcome measures were the rate of re-rupture and pain. There were 2 re-ruptures in the operative group and 4 in the non-operative group. There were 3 infections in operative and none in the non-operative group. There was no difference in the pain score between the two groups from 2 weeks after surgery. There was also no significant difference in ankle ROM at any time point. The difference in peak torque of plantar flexion between the two groups was significant only at 12 weeks, with no significant difference after that. The mean SMFA scores were similar in both groups at 1 year. The time to return to work, to driving and to sports was also similar in both groups.

## Conclusion

The authors were unable to demonstrate any functional benefit associated with operative treatment and hence they do not recommend routine operative management of acute tendo Achillis rupture. The main benefits associated with surgical treatment are a reduction in the duration of cast immobilisation and a lower risk of re-rupture. Non-operative treatment remains a valid alternative to surgery and also avoids the complications of operative treatment.

## Our discussion

The following points were discussed

We would first like to congratulate Keating and Will for their excellent work of doing a prospective RCT in this much debated topic. We discussed this publication in our Journal Club and we found that this study has been very well done with respect to the methodology and the analysis of results. We do agree largely with Mr. Costa's opinions on this publication and also agree that this debate will go on. But we also had a few differences of opinion and other issues which we would like to enlist.

1. We do agree that the patients have had different rehabilitation regimes. But the regimes used here differ only in the period of immobilisation. We should note that re-rupture occurred in two (5.4%) of the operative group and four (10.3%) of the non-operative group and that all the re-ruptures in the non-operative group occurred at around 11-12 weeks, roughly around the time the cast was removed and the patients allowed weight-bearing. Would the re-rupture rate have been higher with just 6 weeks of immobilisation as in the operative group is a question to answer. The shorter period of immobilisation used in the operative group has been shown to be safe by other studies and can be justified. The authors should have probably used the same immobilisation regime in both groups and this could have answered this question.
2. We appreciate the use of computer dynamometry to compare muscle strength as it gives quantitative measurements. But a disease-specific & activity-specific functional outcome measure would make a lot of sense in our population, who do not often indulge in recreational sports and athletics. A 10% difference in plantar flexion torque would not be appreciated by the patient at all.
3. The authors have included patients up to 60 years of age. Though most of the injuries were sustained during sport, some of them have been sustained during dancing and following a fall. We do know that tendon degeneration and tendinitis predispose to tears. They have not mentioned whether patients had pre-existing symptoms suggestive of tendinopathy.
4. We would like to mention that we do not come across a lot of acute traumatic ruptures of the tendo Achillis in our population, though we do see a lot of degenerative tears. Is it just because of the fact that sporting activities are far less common in our population or because degenerative

tendinopathy is more common in our population or is it something to do with the biology and fatigue strength of the tendo Achillis being different in different populations also needs further inquiry.

5. The outcome in the operative group would have been better if percutaneous repair was used because of reduced morbidity. So why was percutaneous repair not used?

6. Why was the accelerated rehabilitation protocol not followed, particularly with many recent studies showing that early weight-bearing and movement is beneficial to tendon healing?

7. There is a possibility of type II error with the small sample size. Some of the differences might have achieved statistical significance with larger patient numbers.

The last 3 issues have been mentioned in the study itself as drawbacks.

## Review 2

### **Total hip replacement and hemiarthroplasty in mobile, independent patients with a displaced intracapsular fracture of the femoral neck: a seven- to ten-year follow-up report of a prospective randomised controlled trial.**

Avery PP, Baker RP, Walton MJ, Rooker JC, Squires B, Gargan MF, Bannister GC.  
J Bone Joint Surg [Br] 2011 ;Aug;93-B:1045-48.

#### **Introduction**

Short-term follow-up from three randomised controlled trials has shown that total hip replacement (THR) is superior to hemiarthroplasty for the treatment of mobile independent patients who suffer a displaced intracapsular fracture of the hip. The authors in their initial report of this prospective RCT reported that THR for displaced intracapsular femoral neck fractures produced better function than hemiarthroplasty after three years with better Oxford hip scores (OHS) and walking distances. They have designed this study to see whether this difference persisted after a mean of nine years follow-up.

#### **Patients and methods**

This study is a prospective randomized controlled trial (RCT). A total of 81 patients living independently, who sustained a non-pathological fracture neck of femur with minimal or no osteoarthritis were prospectively randomized to undergo total hip replacement (40 patients) or hemiarthroplasty (41 patients) through a transgluteal lateral approach. All patients were more than 60 years old and were able to walk a minimum of half-mile prior to injury and had a normal abbreviated Mini-Mental test score. All patients alive were called for an outpatient review. Their current OHS, Short-Form 36 (SF-36) scores and self-reported walking distances were compared. AP and lateral hip x-rays were also reviewed.

## Results

The overall mortality rate after THR was 32.5% and that after hemiarthroplasty was 51.2%. At 100 months post-operatively, a significantly greater proportion of the hemiarthroplasty patients had died (Z-test,  $p = 0.026$ ). There were 3 dislocations in the THR group and none in the hemiarthroplasty group. Patients after THR walked slightly further ( $p = 0.487$ ) and had slightly better physical function ( $p = 0.152$ ) on the SF-36 scores. Walking distance had significantly deteriorated in both groups since last review (THR,  $p < 0.001$ ; hemiarthroplasty,  $p < 0.02$ ; paired *t*-test). After three years, patients with a THR walked more than a mile further than those with a hemiarthroplasty, but the difference had declined to 200 yards after nine years. Eight hemiarthroplasties (20%) were revised or merited revision for pain compared with one THR (2.5%) ( $p = 0.015$ ).

## Conclusion

The seven- to ten-year results of this study indicate longer survival of patients treated by THR. There was also a trend towards better function, less pain and fewer re-operations in this group. However, the statistically significant functional benefit afforded by THR over hemiarthroplasty at three years was no longer present at seven to ten years, but the authors suspect the small numbers of patients involved contributed to this finding. Also, patients with hemiarthroplasties complained of more pain than those with a THR at final follow-up.

## Our discussion

The following points were discussed

We would first like to acknowledge the excellent work done by the authors in this study. We bring out some important critics discussed in our journal club.

1. The outcomes of the study – primary, secondary etc. have not been clearly discussed, even in the initial study.
2. The flow of patients through the trial could have been easily explained with a pictorial depiction.
3. There were no graphs and the paper had only one table.
4. An overall mortality of 42% and migration of surviving patients to far-off places has left only few patients with radiographic follow-up.
5. There are no future directions about how to counter the problem of recruiting the large numbers of patients required in such multi-centre RCTs.