



The Journal of Bone & Joint Surgery

Journal Club: 29 September 2011

Organiser: Mr David Russell, StR 4 West of Scotland Rotation
West of Scotland Orthopaedic Journal Club

Plantar fascia-specific stretching exercise improves outcomes in patients with chronic plantar fasciitis. A prospective clinical trial with two-year follow-up.

Digiovanni BF, Nawoczenski DA, Malay DP, Graci PA, Williams TT, Wilding GE, Baumhauer JF.
J Bone Joint Surg [Am] 2006;88(8):1775-81

Reviewer: Mr David Russell, StR 4, West of Scotland Rotation

Aim

Evaluate long-term outcome of plantar fascia stretching protocol in patients with chronic plantar fasciitis.

Study Type

Prospective cohort study

Material and methods

This is a follow-on study from a previous prospective randomised clinical trial in which 82 patients with proximal plantar fasciitis of a duration beyond 10 months were randomised to plantar fascia stretches protocol or achilles tendon stretching protocol. The patients were evaluated at 8 weeks. Following this 8 week period, the achilles heel stretching group were provided with the plantar fascia stretching protocol. At two years, all patients completed a questionnaire consisting of VAS score, foot function index as well as questions on function and satisfaction with treatment. Statistical tests were applied with longitudinal mixed analysis of covariance for each outcome of interest. The effect of weight, BMI, duration of standing during day to day activities was analysed.

Results

At 2 years, 66 patients were available for follow-up (initial follow-up at 8 weeks, 82 patients, initial recruitment 100 patients). 92% (61) of the 66 patients reported total satisfaction or satisfaction with minor reservations. 77% of patients reported no limitation in recreational activities and 94% reported a decrease in pain. The authors highlight similar improvements between the two study groups from the initial 8 week study, however both groups entered the same treatment from weeks 8 to 24.

Conclusion

This study highlights the value of the plantar stretching protocol as a safe effective and inexpensive treatment for chronic proximal plantar fasciitis.

Study Critique

Strengths

- Interesting follow-up from prospective randomised comparison demonstrating significant improvement in patient symptoms and function

!

- Highlights most patients improve within 6 to 8 months of beginning treatment

Weaknesses

- No control group to compare natural history of chronic proximal plantar fasciitis
- Authors admit rate of attrition 20% from 0-8 weeks and a further 20% from 8-24 weeks
- Cannot comment on comparison of two treatment arms from initial 8 week study beyond 8 weeks as both groups entered the same treatment arm (all patients performing plantar fascia stretching)

Clinical Relevance

Provides clinicians with useful information on a simple and inexpensive treatment for a common condition.

Resection arthroplasty with and without capsular interposition for treatment of severe hallux rigidus

Schenk S, Meizer R, Kramer R, Aigner N, Landsiedl F, Steinboeck G.

Int Orthop 2009;33:145-50

Reviewer: Mr David Russell, StR 4, West of Scotland Rotation

Aim

For patients with severe hallux rigidus to compare capsular interposition with traditional Keller arthroplasty.

Study Type

Retrospective comparison with clinical and radiological follow-up.

Materials and Methods

22 patients in the interposition arthroplasty group versus 30 patients in Keller procedure group. Average follow up 15 months. Outcomes: AOFAS score, radiological assessment at follow-up. Patients with Hattrup and Johnston grade 2-3 (moderate to severe) osteoarthritis for the first MTPJ were included in the study. Patients with inflammatory arthrotomy and other systemic diseases were not included. There was significant loss to follow up with both groups. Patient demographics were similar in both groups. Radiological follow up included analysis of joint space, alignment, grading of any osteonecrosis using the Meir and Kenzora score. Quantitative data was assessed statistically using t-test or cross tables corrected for small samples. P-value of 0.05 was taken as significant.

Results

Good to excellent results were seen in 77% of the interpositional group versus 73% of the Keller procedure group (p 0.932). Metatarsal index was similar in both groups. Range of motion improved in both groups with no statistical significance between the two. (IA 19.3 degrees, SD 14.6 degrees, Keller 24 degrees, SD 15.7 degrees, P 0.278). Joint space width post operatively 2.4mm in both groups. The scoring of pain, function and alignment analysed as components and collectively demonstrated no difference. AOFAS hallux metatarso-phalangeal – inter-phalangeal scale: inter-position group 57 points pre operatively, mean increase 32 points post operatively, SD 25.7. Resection arthroplasty group mean pre operative score 50 point average increase 38 point SD 21.6.

Osteonecrosis of first metatarsal head was seen in 9 of the 22 inter-positional arthroplasty patients and 9 of the 30 resection arthroplasty patients. The occurrence of osteonecrosis did not affect functional outcome, nor did severity of osteonecrosis on the Meir and Kinzora grading. Patients exhibiting radiological evidence of osteonecrosis were significantly younger. Normal xray findings mean age 58.9, changes of osteonecrosis mean age 51.4, p=0.013.

!

Conclusion

Interposition arthroplasty did not confer benefit over Keller procedure in terms of clinical or radiological outcome.

Study Critique**Strengths**

- Matched patient groups
- Detailed clinical and radiological follow-up

Weaknesses

- Retrospective: comparison
- Small numbers in study
- Large loss to follow-up
- Wide ranging results and outcomes suggesting the study would benefit from more patients in each treatment

Clinical relevance

As well as demonstrating no difference between the two procedures, the authors point out added capsular stripping and longer surgical time with interposition arthroplasty, however the occurrence of osteonecrosis did not appear to affect outcome.

Comparison of Re-operation Rates Following Ankle Arthrodesis and Total Ankle Arthroplasty

Nelson F. SooHoo, MD; David S Zingmond, MD, PhD; and Clifford Y. Ko, MD, MS, MSHS
J Bone Joint Surg [Am] 2007;89-B:2143-49

Reviewer: Mr Cameron Elias-Jones, StR 4, West of Scotland Rotation

Aim

The aim of this study was to compare the re-operation rates of total ankle replacement (TAR) and ankle fusion (AF), specifically with regards to revision and sub-talar fusion. The study postulated that TAR had a higher revision rate, but AF had the greater incidence of sub-talar fusion

Methods and Materials

The hospital discharges from all patients who underwent TAR or AF in California between 1995 and 2004 were pulled from a central database. The data was coded for key variables - age, race, gender, payment source, zip code (and by extension estimated income), hospital site. Outcomes were separated into short-term: infection, PTE, amputation, major revision; and long term: sub-talar fusion, major revision. Predictors of outcome were separated into the primary predictor: index procedure; and secondary predictors: age, gender, race, insurance/income, co-morbid disease and volume of hospital. The data was analysed using the t test for continuous variables, and the Pearson chi squared test for categorical variables.

Results

The data on 5,185 patients (TAR 480, AF 4,705) was analysed. Analysis demonstrated a statistically significant likelihood to receive a AF in younger patients, African-American or Hispanic patients, patients with a lower income or "safety net" insurance or diabetes mellitus ($p < 0.001$); and in patients with osteonecrosis ($p = 0.01$). Conversely there was an increased incidence of TAR in the rheumatoid and degenerate arthritis patient group ($p < 0.01$). Analysis of outcomes revealed a higher incidence of both short term ($p = 0.01$) and long term ($p < 0.001$) major revision in the TAR group, and a higher incidence of sub-talar fusion ($p = 0.03$) in the AF group.

!

Conclusion

The study confirmed the initial hypothesis, whilst demonstrating complication rates similar to previously published data. The study admits that the indications of TAR and AF are different and as a result patient may be self-selecting in to each group. Also that the data collected was demographical and not functional.

Study Critique**Weaknesses**

- Limited by databases
- No information about operating surgeons
- Does not explain exclusion criteria
- Significant discrepancy in population sizes of TAR and AF
- Ignores own independent variables
- Extrapolates information from data to draw conclusions
- Makes statements about predictors of outcome, with no methods or results

Strengths

- Little evidence in literature on AF vs TAR prior to this paper
- Tries to remove bias found in previous papers
- Multicentred
- Large patient population
- Highlights the need for clinical trials
- Acknowledges own weaknesses

Clinical Relevance

Despite its weaknesses, this study highlighted a deficiency in research at the time regarding TAR and AF, whilst drawing important conclusion about both procedures. It also highlighted the need for further research in the area.

Hallux Rigidus: Grading and long-term results of operative treatment

Coughlin MJ, Shurnas PS

J Bone Joint Surg [Am] 2003;85-A :2072-88

Reviewer : Mr Martin Davison, StR 4, West of Scotland Rotation

Aim

Evaluate long-term results of cheilectomy and arthrodesis for hallux rigidus

Assess a new clinical/radiographic grading system and its predictability for choosing procedure

Study Type

Retrospective, interventional study

Case series

Materials and Methods

All patients treated by senior author (Coughlin)

Cheilectomy or arthrodesis from 1981 to 1999

Exclusions included Gout, RA, SLE, Poliomyelitis and Pyarthrosis

Patients were invited for followup evaluation involving; clinical assessment, xrays, grading and AOFAS Hallux MTP score (pain 40, function 45, alignment 15)

Patients followed up then had a retrospective review of their notes and preoperative parameters

- Scores calculated retrospectively

!

Results

93 cheilectomies (80 patients)

34 arthrodesis (30 patients)

Followed up for a mean of 9.6 years (cheilectomies) and 6.7 years (arthrodesis)

- Significant improvement in dorsiflexion after cheilectomy
- Improved post-operative pain in both groups
- Improved AOFAS scores in both groups
- 97 % 'good or excellent' on self assessment
- 8% of cheilectomies had failed
- No correlation between good outcome/pain/AOFAS and xray appearance at followup
- If <50% MT head cartilage remained
 - Correlation with cheilectomy failure ($p=0.002$)
- If >50% cartilage present
 - Long term AOFAS score of >80
 - Good/excellent result ($p=0.01$)

Conclusion

Clinical/radiological Grading system predicts outcome of cheilectomy

Grade 1-2 good/excellent outcome

Grade 3. Advise direct surgical inspection of articular surface

- >50% remains – cheilectomy
- <50% remains – arthrodesis

Grade 4 Fair/poor outcome of cheilectomy (5/9 subsequent arthrodesis)

Study Critique**Strengths**

- Large numbers
- Single procedure/technique
- Long followup
- Use in clinical practice

Weaknesses

Single surgeon

Retrospective

- Including retrospective grading

Variable followup

- 2.3- 20.3 years. Hallux rigidus is a progressive disease so results would be greatly influenced by the length of followup.