

**ABSTRACTS FROM BOFSS MEETING Oxford – 17-19 November 2005**

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## **SUBTALAR ARTHRODESIS – IS ONE SCREW ADEQUATE?**

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Isolated arthrodesis of the subtalar joint has the advantage that it preserves some motion at the midfoot. In cadaveric studies, movement at the Talonavicular joint is reduced by up to 74% and at the Calcaneocuboid joint by up to 44%. This allows some midfoot flexibility, which would not occur with a triple arthrodesis.

There are several methods of performing a subtalar arthrodesis, broadly divided into extra or intra articular techniques, using structural or cancellous bone graft and a variety of fixation methods.

Earlier studies on primary arthrodesis have shown rate of non union from 0 – 6%. More recently, larger studies have reported higher rates of non union from 14 - 17%.

We present the results of 95 subtalar fusions performed with a standard technique, using one screw from the calcaneum to the talar dome, with 100% follow up.

Between 1993 and 2003 the senior author performed 105 subtalar arthrodeses. We performed a retrospective chart review. All patients with a primary subtalar fusion were included. All cases had been refractory to conservative therapy.

The senior author reviewed all patients until fusion had occurred or a diagnosis of nonunion was established. Fusion was diagnosed when the patient were pain free while fully weight bearing, with a clinically rigid subtalar joint and radiographs showing trabeculae crossing the arthrodesis. A CT scan was performed in all cases where nonunion was suspected, and the patient complained of persistent pain.

A total of ninety five subtalar arthrodeses were performed in ninety two patients. All were reviewed with clinical and radiological examination, until union had occurred or nonunion diagnosed. The average time to union was 5.0 months, range 3 - 12 months. The outcomes, graded using the method of Angus and Cowell, were 21 Fair, 7 Poor and 67 Good results

## ARTHROSCOPIC ARTHRODESIS FOR ANKLE ARTHRITIS AND DEFORMITY CORRECTION

*N Gougoulas, S Parsons*

*Foot and Ankle Service, Royal Cornwall Hospital, Truro, Cornwall*

**Purpose – Methods:** Evaluation of the results of arthroscopic ankle arthrodesis, performed in 49 consecutive patients (52 ankles), with disabling ankle arthritis, between 08/1998 and 12/2004. Thirty ankles had no significant deformity (group A), whereas 22 ankles had a varus or valgus deformity greater than 10° (mean 21.7°, max 45°) (group B). Mean age in groups A and B was 49.7 and 57.5 years respectively (p=0.15). The primary diagnosis in groups A and B was post-traumatic arthritis in 66% and 27% and idiopathic osteoarthritis in 17% and 59%, respectively. Average hospital stay was 3.63 and 3.68 days in groups A and B respectively (p=0.96). Postoperative treatment included ankle immobilization for 3 months. Progressive weight-bearing was initiated at two weeks. Mean follow-up was 14.9 months (range 6-60).

**Results:** No infections or neurovascular problems occurred. Fusion occurred in 29/30 cases in group A at an average time of 11.52±5.2 weeks and in 21/22 patients at 11.67±2.3 weeks in group B (p=0.89). Not planned surgical procedures were required in eight cases (15.4%). Symptomatic arthritis from the adjacent joints developed in three cases during the follow-up period. The arthrodesis position angle measured in the sagittal plane from the lateral post-operative plane film averaged 105°±3° and 103°±6° in groups A and B respectively (p=0.27). The outcome in groups A and B was graded as very good in 73% and 72.7%, fair in 23% and 22.7% and poor in one case in each group, respectively (p=0.26).

**Conclusions:** The arthroscopic technique offers a high fusion rate, decreased time to fusion, short hospital stay and absence of limb-threatening complications. Deformity correction can be attempted with equally good results.

## THE VIABILITY OF DONOR HARVESTING FROM THE ANKLE IN MACI PROCEDURES

*I Winson, P Laing, N Makawana, S Hepple, W Harries*

**Introduction:** Osteochondral lesions of the Talar Dome(OCD) remain a difficult therapeutic problem. One solution has been to consider using autologous chondrocyte implants. Though initial results of this technique are interesting the donor sites have always been in a normal knee. The presence of knee symptoms subsequently in some patients might be regarded as inevitable. This paper reports on the viability of donor material taken from the ankle.

**Materials:** Twenty four patients have been recruited to a pilot study of the viability of obtaining donated chondral material for Matrix Autologous Chondrocyte Implantation. There were 14 men and 10 women. Their mean age was 37.3 years (range 17-63). All were complaining of persistent symptoms of pain and some insecurity following previous conventional surgery for treatment of a symptomatic OCD. All had MRI evidence of ongoing changes in keeping with persistent problems related to an OCD.

**Methods:** All patients had an initial arthroscopy of the affected ankle to reassess the state of the joint surface. Donor articular cartilage was obtained from one of three sites. The anterior part of the joint surface on the talar neck, from the medial articular facet of the talus or rarely from an area of articular cartilage on the edge of the lesion. The mean weight of the donor harvest was 133 micro-grams(range51-450).

**Results:** All donated graft material produced viable implantable graft material between 5 and 7 weeks from harvest. Cell counts ranged from 12.3 million to 20 million with cell viabilities of 98% or above. These figures are directly comparable with the results obtained from the knee despite the original donor weights being less.

**Conclusion:** If this technique is contemplated the use of the affected ankle as a donor site is a viable alternative to the knee.

## A MEDIUM TERM REVIEW OF TOTAL ANKLE REPLACEMENTS WITH A VIEW TO REVIEWING FOLLOW UP PROTOCOLS, REASSESSING THE USEFULNESS OF THE SF12 HEALTH SURVEY QUESTIONNAIRE, AND TO DETERMINE FACTORS THAT MAY INDICATE EARLY FAILURE.

*R Ramiah, S Hepple, I Winson*

**Aim:** A medium term review of total ankle replacements with a view to reviewing follow up protocols, reassessing the usefulness of the SF12 Health Survey questionnaire, and to determine factors that may indicate early failure.

**Method:** Sixty-five ankle replacements in 58 patients with an average age at operation of 65 (44-80) (32 males: 23 females, 3 died) were reviewed after a mean of 41 months (8-97 months). They were assessed via postal questionnaire and a research clinic with regard to their pain, difficulty and SF 12 scores, their outcome perception and range of movement. Additionally, we looked retrospectively at their notes and latest X-rays.

**Results:** Indications for operation were OA (79.5%), RA (18.2%) and psoriatic arthropathy (2.3%). Patients' perceptions of their outcomes were 41(78.8%) good, 5(9.6%) moderate and 6(11.5%) poor. The average "mean pain score" was 3.6 and average "mean difficulty score" was 4.0. There was no significant change between the pre and post-operative mean SF 12 scores. Save for 2 anomalies, poor outcomes and SF12 scores were only seen in post-traumatic OA(100%) and RA patients. Prostheses used were Beuchel-Pappas, OSG and DePuy Mobility. There are no revisions to date. The average range of movement was 26°. X-rays generally showed good prosthesis alignment, minimal insert wear, occasional non-enlarging, small (1-2mm) cysts around the tibial component.

**Conclusions:** The SF 12 scores seem to be unresponsive. The pain and difficulty scores more reflect the patients' perception of outcome. With the low incidence of revision, risk factors for early failure are difficult to establish but patients with radiological cysts, talar collapse or more severe deformities of the foot/ankle might be the ones who need regular review.

## **BUECHEL-PAPPAS ANKLE REPLACEMENTS: FIRST 5 YEARS**

*H Kurup, G Taylor*

*Southampton University Hospital.*

Arthrodesis of the ankle joint gives satisfactory short and medium-term results; however, in the longer term, it frequently leads to sub-talar and mid-tarsal osteoarthritis which is difficult to treat. Use of mobile bearings have significantly improved the results of ankle replacement. This a mid term follow up (1 to 5 years) of Buechel-Pappas ankle replacements performed by the senior author. 34 total ankle replacements performed by one surgeon from October 1999 to May 2004 were reviewed retrospectively. Pre and post operative VAS scores, AOFAS scores were evaluated to find patient satisfaction and outcome. Tourniquet time as recorded in operation notes showed the learning curve for the procedure. Males : Females- 1:1.4. Mean age was 65 years ( range : 33 to 83). Indication for surgery was primary osteoarthritis in 13, post traumatic arthritis in 14 and rheumatoid arthritis in 8. Average VAS score was 8.2 pre operative and improved to 2.0 at follow-up . AOFAS score improved from 39.1 to 72 . Operating time averaged 113 minutes in 1999 and 85 in 2004. Significant complications were medial impingement (8) out of which 3 patients needed further surgery, intra-operative malleolar fractures ( medial 4, lateral 1 and posterior 1, all healed successfully) and injury to cutaneous nerves (4) 3 patients had superficial infection which settled with antibiotics, but there were no cases of deep infection. 58 % were very happy, 32.5 % were happy, 9.5 % were not happy with the result. 2 patients had ankle fusion on the opposite side earlier, both were happier with the replaced side. Ankle replacements appear to offer a good alternative to fusion in selected patients. There is a significant risk of minor complications. Medial impingement may need further debridement at a later stage.

## **CHANGE OF AP TIBIOTALAR ALIGNMENT POST TAR- APPLICATION OF A NEW RADIOLOGICAL MEASURE**

*H Prem, P Wood*

**Purpose:** We evaluated the role of the Distal Tibial Line (DTL by Saltzman et al, 2005) in measuring the preoperative and postoperative position of the talus on 'lateral' radiographs following a Total Ankle Replacement (TAR). Currently there is no validated measure of anteroposterior (AP) alignment of a TAR.

Arthritis in the ankle causes considerable malalignment in the anteroposterior plane. The DTL is not affected by the destruction of the tibiotalar joint and is independent of slight variations in the positioning of the foot and

radiological magnification.

**Method:** DTL divides the talus into two sections and the proportionate length of the posterior segment is presented as a ratio. The size of the posterior segment and ratio decreases with anterior subluxation.

Radiographs of 200 cases of TAR were reviewed. The anterior and posterior outlines of the talus could not be seen in all cases (e.g. preoperative talonavicular fusion). As a result 49 cases of inflammatory arthritis (49 of 119) and 6 of osteoarthritis (6 of 81) could not be assessed.

**Results:** The osteoarthritic ankle (OA) in particular showed a tendency for anterior subluxation. The average ratio in OA cases increased from '34.8' before surgery to '40.4' after surgery, confirming a trend for this subluxation to reduce with a TAR.

There was a lesser tendency for subluxation in the inflammatory group of patients although the body of the talus itself was more deformed. The average preoperative value was '36.1' and the post operative value was '38.9'.

**Conclusion:** We found the Distal Tibial line to be a reproducible parameter for measurement of AP alignment in TAR in the vast majority of OA cases. The change of anteroposterior alignment post surgery appears to be due to the restoration of soft tissue balance.

## **A RANDOMISED DOUBLE BLIND TRIAL TO INVESTIGATE THE EFFICACY OF INTRA-ARTICULAR BUPIVACAINE FOR PAIN RELIEF FOLLOWING ANKLE ARTHROSCOPY**

*S Palmer, R Venn, J Coates, S Umarji, F Middleton*

**Purpose:** The aim was to determine whether intra-articular bupivacaine provides effective analgesia following ankle arthroscopy and whether it reduces the need for supplemental analgesia.

**Methods:** A power calculation revealed that 40 patients were required to provide a 5% significant level using a visual analogue scale. 40 patients were therefore randomised to receiving 20 mls of either bupivacaine or saline (control) after routine anterior ankle arthroscopic surgery. The tourniquet was released 10 minutes later. In recovery, supplementary analgesia of 2 tablets of co-codamol 30/500 orally or 50-100mg tramadol IV was available on request. A 10 day supply of 50mg diclofenac (8 hourly) and co-codamol 30/500 2 tablets (6 hourly) was provided.

A visual analogue scale (VAS) was employed as a direct indicator of pain and indirectly, supplemental analgesic requirement. Measurements were made preoperatively and postoperatively.

Age, weight and tourniquet times were compared with Mann Whitney U test and Chi-square. Pain scores and analgesic requirements were compared using ANOVA at a 5% significance level.

**Results:** Pain scores were lower in the bupivacaine group compared to the control as was the need for supplemental analgesia.

**Significance:** We conclude that postoperative intraarticular bupivacaine provides effective analgesia following ankle arthroscopy.

## **THE EFFECT OF ACHILLES TENDON LENGTHENING ON ANKLE DORSIFLEXION**

*M Costa, K Logan, D Heylings, K Tucker, S Donell*

**Introduction:** Tendon lengthening is an important cause of morbidity after Achilles tendon rupture. However, direct measurement of the tendon length is difficult. Ankle dorsiflexion has therefore been used as a surrogate measure, on the assumption that it is the Achilles tendon that limits this movement. The aim of this investigation was to assess the relationship between Achilles tendon length and ankle dorsiflexion. The primary research question was whether or not the Achilles tendon is the structure that limits ankle dorsiflexion. The secondary purpose was to quantify the relationship between Achilles tendon lengthening and dorsiflexion at the ankle joint.

**Methods:** Five cadaveric specimens were dissected to expose the tendons and capsular tissue of the leg and hindfoot. Fixed bony reference points were used as markers for the measurements. In the first specimen, the Achilles tendon was intact and the other structures that may limit ankle dorsiflexion were sequentially divided. In the other specimens the Achilles tendon was lengthened by 1cm intervals and the effect upon ankle dorsiflexion movement was recorded.

**Results:** Division of the other tendons and the capsular tissue around the ankle joint did not affect the range of ankle dorsiflexion. When the Achilles was divided the foot could be dorsiflexed until the talar neck impinged upon the anterior aspect of the distal tibia. There was a mean increase of 12 degrees of dorsiflexion for each centimetre increase in tendon length.

**Conclusion:** The Achilles tendon is the anatomical structure that limits ankle dorsiflexion, even when the

tendon is lengthened. There was a linear relationship between the length of the Achilles tendon and the range of ankle dorsiflexion in this cadaveric model. Ankle dorsiflexion would appear to be a clinically useful indicator of tendon length.

## **ANKLE ARTHRODESIS IN THE PRESENCE OF LARGE CORONAL PLANE DEFORMITY**

*R Smith, P LR Wood*

*Wrightington Hospital, Wigan*

We aim to assess the outcome of ankle arthrodesis performed for painful osteoarthritis in the presence of a coronal plane deformity of 20 degrees or more. To our knowledge this is the first reported series of such a cohort of patients. We have a consecutive and complete series of 24 patients with 26 ankle arthrodeses which were all performed for painful osteoarthritis in the presence of large coronal plane deformity. These patients have a minimum of twelve months clinical follow up. The results showed a low non union rate of 8% (2 ankles). These have subsequently been re-fused satisfactorily, and were excluded from further analysis. The results of the remaining 24 ankles which united primarily show that they were very pleased with the outcome of their surgery. AOFAS scores were used to measure pain and function both pre operatively and post operatively. These scores showed large improvements for both pain and function, and had a high statistical significance ( $p < 0.0005$ ). All patients improved in their walking distance and many patients reduced their need for walking aids. Stair climbing ability was also improved in some patients. It is recognised that an ankle arthrodesis usually relieves pain but does not result in a normal gait and full function. We feel that the high level of patient satisfaction in this series was due to the combination of deformity correction, restoring a functional foot position, and achieving a painless ankle. Arthroplasty of the ankle is a good procedure for relief of pain and restoration of function. However In the presence of a large coronal plane deformity ankle arthroplasty is known to fare badly with early failure. Therefore for patients with painful osteoarthritis and a coronal plane deformity of 20 degrees or more, we recommend ankle arthrodesis as the procedure of choice.

## **TREATMENT OF IDIOPATHIC CLUBFOOT USING THE PONSETI METHOD.**

*M Changulani, N Garg, A Bass, Nayagam, C Bruce*

**Aim:** To evaluate our initial experience using the Ponseti method for the treatment of clubfoot.

**Materials and Methods:** 85 feet in 56 patients treated at Alder Hey Hospital, Liverpool between Nov 2002 – Dec 2004 were included in the study.

The standard protocol described by Ponseti was used for treatment.

Mean period of follow up was 12 months (6- 30 months).

Evaluation was by the Pirani club foot score.

**Results:** Results were evaluated in terms of the number of casts applied, the need for tenotomy and the recurrence of deformity.

Average number of casts required were 6.

Tenotomy was required in 80% of feet.

At the latest follow up approximately 15% of feet recurred following treatment and were managed surgically. Poor compliance was noted to be the main cause of failure in these patients. We have recently modified our splint and hope this will address some of the reasons for poor compliance. There was also a smaller subgroup of patients (approximately 5%) which failed to respond to the treatment regime and could not be brought to the point where tenotomy would be appropriate.

**Conclusion:** In our hands the ponseti technique has proved to be a very effective treatment method for the management of CTEV but like all treatment methods does have some limitations.



## SHOULD DISEASE MODIFYING ANTIRHEUMATIC DRUGS (DMARDS) BE STOPPED BEFORE SURGERY?

*A Malviya, B Ashton, J Kuiper, N Makwana, P Laing*

**Aim:** Concerns have been expressed that DMARDS may interfere with bone healing. Previous studies give conflicting advice and no consensus exist in current practise especially with the newer DMARDS such as Leflunomide, Etanercept, and Infliximab. The aim of this study was to assess the in-vitro effect of DMARDS and cox-2 inhibitors on Osteoblast activity.

**Method:** Osteoblasts were cultured from femoral heads obtained from five young otherwise healthy patients undergoing total hip replacement. The cells were cultured using techniques that have been previously described. A computer aided design of experiment was used as a model for setting up the experiment on samples obtained from the five patients. Normal therapeutic concentration of the various DMARDS was added alone and in combination to the media. The cell growth was estimated after two weeks using spectrophotometric technique using Roche Cell proliferation Kit. Multiple regression analysis was used to estimate the best predictor of the final result.

**Results:** The most significant factor ( $p < 0.001$ ) in predicting the ultimate response was the patient themselves. Cox-2 inhibitor (Etoricoxib) was found to have the most consistent effect although always in combination with some other drug which varied amongst different patients. Etoricoxib in fact had a stimulatory effect ( $R = 0.219$ ) on the osteoblast growth.

**Conclusion:** Different patients respond differently to the drugs. None of the DMARDS tested inhibit osteoblast proliferation and differentiation in-vitro. If osteoblastic activity is considered to be the primary factor responsible for bone healing, then an inhibition should not result in patients who are on these drugs.

## THE HANDS FREE CRUTCH. MOBILITY AND FUNCTIONAL ASSESSMENT.

*K Mannan, C Belcham, H Beaumont, J Ritchi, D Singh*

**Purpose:** Evaluation of a hands free crutch. This interesting device is intended for patients who have undergone foot and ankle surgery and should be non-weight bearing. It involves a knee tray attached to a vertical beam with a rubber foot. The crutch is strapped to the lower limb and weight is transferred through the proximal tibia.

**Methods:** Five Volunteers were assessed using the crutch, the K9 walker and 2 standard crutches in a simulated environment.

A comparison was made between this device and the K9 walker which has been shown to be a liberating walking aid indoors. Tasks from activities of daily living, productivity and transfers were included. Assessment was undertaken by the Occupational Therapy Team.

The hands free crutch was also compared with non weight bearing using two crutches to gauge performance outdoors. Assessment of ease of use and safety was undertaken by the Physiotherapy Team.

**Results:** Domestic chores including cleaning, cooking and shopping were possible using this device. Sitting activities were noted to be more difficult, because of the necessity to remove the crutch on each occasion.

Although speed was significantly greater ( $p < 0.0001$ .) using two crutches, the hands free crutch permitted safe outdoor mobilisation on even or uneven ground, up and down slopes with a gradient of 1 in 10 and up and down stairs. Good single leg stance stability was predictive of ease of use and safety for the hands free crutch.

**Discussion:** The hands free crutch is suited to motivated and physically able patients. Other lower limb pathology contraindicates the use of this device, but in patients with upper limb pathology it would permit non-weight bearing mobilisation. Good balance is paramount and perhaps a falls risk assessment should be performed prior to use.

## GTN AND ACHILLES TENDINOPATHY - DOES IT WORK AND IF SO, HOW?

*J Calder, T Kane, E Gardner*

*North Hampshire Hospital, Basingstoke, Hampshire and Imperial College, London.*

**Introduction:** A recent clinical study has suggested that topical GTN may improve the outcome of non-insertional Achilles tendinopathy. The mechanism for this improvement is obscure but is thought to be due to

modulation of local nitric oxide (NO) levels. The purpose of this study was to assess the clinical and histological results of topical GTN for non-insertional Achilles tendonitis.

**Methods:** 40 patients with non-insertional Achilles tendonitis underwent standard non-operative therapy. 20 patients also used topical GTN daily. AOFAS, AOS visual analogue scores and SF36 forms were completed pre-treatment and 3 months later.

Patients who failed conservative treatment and underwent surgery had histological examination of achilles tendon and histochemical analysis for isomers of NOS (eNOS and iNOS) as a marker of NO production.

**Results:** There was an overall improvement in symptoms in both groups but no significant difference in the improvement between them - there was no additional benefit in using GTN patches. 4 patients also had to stop using patches within 3 weeks because of headaches.

Histological examination did not show any difference in collagen synthesis or remodelling between the 2 groups and there was no evidence of stimulated wound fibroblasts in the GTN group. There was no difference between the groups in the expression of eNOS or iNOS.

**Conclusion:** This study fails to demonstrate any improvement in symptoms when using GTN patches. There is no histological evidence that GTN promotes degenerate tendon to stimulate wound fibroblasts and increase collagen synthesis and remodelling. GTN patches do not appear to modulate the expression of NOS enzymes in diseased Achilles tendon. The use of GTN patches in the treatment of non-insertional Achilles tendonitis remains questionable and the role of NO as a mediator of inflammatory response remains elusive.

## **VARIATION OF THE DISTAL METATARSAL ARTICULAR ANGLE WITH AXIAL ROTATION OF THE FIRST METATARSAL.**

*N Cullen, A Robinson, N Chayya, J Kes*

**Introduction:** The Distal metatarsal articular angle (DMAA) is a radiographic measure of orientation of the first metatarsal articular surface, it is frequently used in the management of hallux valgus. There is a great deal of conflict regarding accuracy, reproducibility and validity of the DMAA within the literature. This study aims to test the validity of the measurement of the DMAA from standard radiographs, to explore the trigonometric relationship of first metatarsal rotation and the DMAA and to assess inter-observer reliability.

**Materials/Methods:** 34 separate dry cadaveric first metatarsal bones were mounted onto a customized light-box/protractor allowing controlled incremental changes in rotation and inclination. A series of 39 digital photographs were taken of each metatarsal in 5 degree increments of rotation between 30 degrees supination and 30 degrees pronation and 10, 20 and 30 degrees of inclination. Three reviewers performed blinded DMAA measurements from each image; the data was collated for statistical analysis.

**Results:** The data was analysed using a mixed effects linear model comparing the DMAA with rotation of the first metatarsal. A strong statistically significant trend of increasing score with increasing pronation is observed, the relationship of which is approximately linear. There is a strong effect of inclination, but the strength of this varies with rotation this is amplified at higher inclinations. Inter-observer error was noted in line with other studies, the linear relationship is maintained.

**Discussion:** This study has shown that the distal metatarsal articular angle varies significantly, in an almost linear pattern, with axial rotation of the first metatarsal. Inclination of the first metatarsal is also shown to affect the magnitude of the angle.

This study does not refute the distal metatarsal articular angle as an entity, but does confirm the inaccuracy of extrapolating the DMAA from plain AP radiographs.

## **AN ANATOMICAL STUDY OF BLOOD SUPPLY TO FIRST METATARSAL HEAD IN RELATION TO CHEVRON OSTEOATOMY**

*J J G Malal, J Shaw-Dunn, C S Kumar*

*University of Glasgow & Glasgow Royal Infirmary*

**Aim:** Chevron osteotomy is a commonly performed procedure for the treatment of hallux valgus and results in AVN of the first metatarsal head in up to 20% of cases. This study aims to map out the arrangement of vascular supply to the first metatarsal head and its relationship to the limbs of the chevron cuts.

**Methods:** 10 cadaveric lower limbs were injected with an Indian ink - latex mixture and the feet dissected to

evaluate the blood supply to the first metatarsal. The dissection was carried out by tracing the branches of dorsalis pedis and posterior tibial vessels. A distal chevron osteotomy through the neck of the metatarsal was mapped and the relationship of the limbs of the osteotomy to the blood vessels was recorded.

**Results:** The first metatarsal head was found to be supplied by branches from the first dorsal metatarsal, first plantar metatarsal and medial plantar arteries of which the first one was the dominant vessel in 8 of the specimens studied. All the vessels formed a plexus at the plantar – lateral aspect of the metatarsal neck, just proximal to the capsular attachment with varying number of branches from the plexus then entering the metatarsal head. The plantar limb of the proposed chevron cuts exited through this plexus of vessels in all specimens. Contrary to the widely held view, only minor vascular branches could be found entering the dorsal aspect of the neck.

**Conclusion:** The identification of the plantar – lateral corner of the metatarsal neck as the major site of vascular ingress into the first metatarsal head suggests that constructing the chevron osteotomy with a long and thick plantar arm exiting well proximal to the capsular attachment may decrease the incidence of AVN.

## **THE 10 YEAR FOLLOW UP OF THE 'OXFORD PROCEEDURE' FOR LESSER TOE DEFORMITIES**

*S Gwilym, P Loxdale, G Lavis, R Sharp, P Cooke*

**Introduction:** Lesser toe deformities which require surgery are often treated using a technique of interphalangeal joint fusion. This procedure is an effective way of reducing the deformity and pain associated with lesser toe deformity but necessitates internal fixation until fusion is achieved. The Kirschner wire used to provide peri-operative stability is undesirable for a number of reasons, most importantly, the risk of interosseous infection and the lack of patient satisfaction due to the need for a second procedure for the wires removal. The 'Oxford' procedure was developed by the senior author (PHC) both in an attempt to remove the need for Kirschner wire fixation and to maintain some mobility at the interphalangeal joint.

**Patients and methods:** Between January and October 1994, 14 patients underwent 'Oxford' procedures on isolated lesser toe deformities. Their mean age was 59 at the time of surgery (range 26 – 79, 3 male and 11 female). Each patient was reviewed in November 1995 and an assessment was made of their post-operative pain levels, function, footwear, cosmetic appearance, time to return to work and any complications they had experienced. In March 2005 (ie: at least 10 years post-op) an attempt was made to review these patients and make assessments of their pain in the operated toe, any subsequent surgery in that, or other toes, and the stability of the toe. In addition, an assessment was made of the patients view of the cosmetic outcome and their satisfaction levels. 12 patients were successfully contacted and reviewed.

**Results:** All 12 patients were satisfied with their long term results in terms of pain relief and cosmesis.

**Conclusion:** The 'Oxford' procedure for lesser toe deformities has good long term clinical results and avoids k-wire fixation.

## **THE PROXIMAL PHALANGEAL DORSOMEDIAL CLOSING-WEDGE OSTEOTOMY AND CHEILECTOMY FOR THE TREATMENT OF HALLUX RIGIDUS, SHORT-TERM RESULTS**

*A Shah, L Murray, M Siddique*

*Freeman Hospital, Newcastle upon Tyne, UK*

**Purpose:** The purpose of this study was to assess the subjective, clinical and radiological improvement in patients with moderate to severe hallux rigidus undergoing Proximal Phalangeal Dorsomedial Closing-wedge Osteotomy with Cheilectomy.

**Methods:** Between March 2003 and November 2004, 17 patients (18 feet) underwent Proximal Phalangeal Dorsomedial Closing-wedge Osteotomy with Cheilectomy, 14 were available for clinical follow-up; pre and post-operative X-rays were available for all of them.

The Clinical assessment was based on modified American Orthopaedic Foot and Ankle Society's hallux-metatarsophalangeal scale. The subjective assessment was done by a questionnaire and radiological assessment was done by using digital radiographs.

**Results:** Out of the 18 feet we studied, 1 was of Grade 1, 9 of Grade 2 and 8 of Grade 3. 12 out of 14 patients (85%) were satisfied with the outcome after an average follow-up period of 14 months. There was an increase

in the Mean mAOFAS score of 49.6 ( from a mean score of 26.2 to 75.8); the improvement in pain score was 27.4. With a mean osteotomy thickness of 1.78 mm , the proximal phalangeal length was decreased by a mean of 3.7mm. The medialization achieved in the men M1-P1 angle was 6.8 degrees. There was a highly significant gain of 25 degrees in Mean Dorsiflexion which cannot be explained by a mean increase of only 0.9 mm in the lateral dorsal joint space attributable to cheilectomy.

**Conclusion:** Dorsomedial Proximal Phalangeal Closing-wedge Osteotomy combined with Cheilectomy gives good subjective and clinical results regarding satisfaction , pain relief and gain in dorsiflexion; at least in the short-term. This gain in movement might be explainable by an improved EHL lever-arm resulting from dorsomedial nature of the phalangeal osteotomy.

## **‘WHEN IS A GANGLION NOT A GANGLION?’ – A CLINICAL AND HISTOLOGICAL COORRELATION OF 101 SURGICALLY TREATED FOOT LUMPS IN NORTH GLASGOW**

*D MacDonald, G Holt, K Vass, A Marsh, S Kumar*

*Glasgow Royal Infirmary and Western Infirmary, North Glasgow Hospitals, NHS Trust.*

Lumps of the foot present relatively infrequently to the orthopaedic service. There have been very few published studies looking at presenting characteristics or the differential diagnosis of such lesions. We report our experience of foot lumps treated surgically looking at the patient demographics, presenting characteristics, diagnoses encountered and the diagnostic accuracy of the surgeon. All patients who underwent excision or biopsy of a foot lump over a period of 4 years were studied; 101 patients were identified. Average age was 47.3 years (range 14-79); there was a significant female preponderance with 73 females and 28 males ( $p < 0.0001$ ). Pain was the single most common presenting complaint followed by footwear problems. Only three patients attended because of cosmetic reasons and neurological symptoms were very rare with only one patient complaining of paraesthesia. Certain lesions were more commonly encountered in specific zones of the foot. 32 different histological types were identified, ganglion cysts were the most commonly encountered lesions and there was only one malignant lesion encountered in this study. Only 58 out of the 101 lumps were correctly diagnosed prior to surgery.

We have shown that there are a wide variety of potential diagnoses, which have to be considered when examining a patient with a foot lump. There is a low diagnostic accuracy for foot lumps and therefore surgical excision and histological diagnosis should be sought if there is any uncertainty.

## **MORTON'S NEUROMA SIZE AND THE EFFECT OF CORTICOSTEROID ON PAIN**

*S Lines, I Winson, M Bradley*

Morton`s syndrome is an entrapment of a digital nerve between the metatarsal heads in the foot causing pain between the metatarsal heads. 41 subjects with signs and symptoms of Morton`s syndrome were prospectively examined with an ultrasound scan and the size of the bifurcation of the interdigital nerve was recorded if it was visible. Each subject completed a Visual Analogue Scale and short form McGill Pain Questionnaire before an injection of local anaesthetic and corticosteroid was administered. The subjects were reviewed after 6 weeks and the pain scores repeated.

26 subjects had positive ultrasounds with a mean width of 5.1 mm, range 2.7-9.8 mm and 15 subjects had negative ultrasounds. Differences in mean ranks of VAS scores between the two groups were borderline statistically significant for scores before injection ( $p = 0.064$ ). Difference in mean rank of VAS score was significant after injection ( $p = 0.013$ ).

Differences in mean ranks of MPQ scores were borderline statistically significant for changes in scores ( $p = 0.062$ ). Difference in mean rank of MPQ score was significant after injection ( $p = 0.007$ ). None of the correlations between nerve width and any of VAS or MPQ outcome measures were statistically significant.

This study demonstrates that the larger the neuroma on the ultrasound, the more painful it is for the patient. This study suggests that patients who have a small or absent neuroma demonstrated on the ultrasound scan are more likely to have their pain reduced to an acceptable level with an injection of local anaesthetic and corticosteroid than those patients with a large neuroma. Ultrasound examination is a useful tool in the management of patients with Morton`s syndrome.

## **STAINSBY PROCEDURE FOR CLAW TOES-TEN YEAR EXPERIENCE**

*S Godey, R Tandon, O Thomas*

Claw toes are treated by a variety of soft tissue and bony procedures based on the severity of the deformity. We evaluated the results of Stainsby procedure for claw toes. This is a retrospective analysis of the results of Stainsby procedure for claw toes of the foot done by a single surgeon over a 10 year period. All patients who had claw toes, secondary to Rheumatoid and Non rheumatoid causes and treated by this procedure were included in the study. All the patients operated between Jan 1995 - Dec 2004 and who had minimum follow-up of 6 months after surgery were included in the study. Follow up evaluation was by clinical examination, review of case notes and telephone conversation.

42 patients underwent this procedure of which 38 were available for evaluation. Average follow-up was 43.5 months (6-110 months). 26 rheumatoid and 21 non-rheumatoid feet were evaluated based on the AOFAS score. The mean AOFAS score was 76.5. The scores for the Rheumatoid and Non-Rheumatoid groups were 81.5 and 72.6 respectively. 81% were satisfied with the result of the operation and 83% would recommend this surgery for friends and relatives. Six patients had superficial infection, 2 had broken k-wires, 2 had DVT, and 2 had recurrence of deformity.

We conclude that Stainsby procedure for claw toes is a procedure which has good results in the long term and can be taken up as a procedure of choice for severe claw toes.

## **GAIT ABNORMALITIES FOLLOWING ACHILLES TENDON RUPTURE**

*M Costa, D Kay, S Donell, F Robinson*

One of the factors that influence the outcome after Achilles tendon rupture is gait abnormality. We prospectively assessed 14 patients with Achilles tendon rupture and 15 normal control subjects using an in-shoe plantar pressure measurement system. There was a significant reduction in peak mean forefoot pressure in the early period of rehabilitation ( $p < 0.001$ ). There was a concomitant rise in heel pressure on the injured side ( $p = 0.05$ ). However, there was no difference in cadence, as determined by the duration of the terminal stance and pre-swing phases as a proportion of the total stance component of the gait cycle. The forefoot pressure deficit in the Achilles tendon rupture group was smaller when assessed six months after the injury but was still significant ( $p = 0.029$ ). Pedobarographic assessment of patients after Achilles tendon rupture confirms that there are marked abnormalities within the gait cycle. Rehabilitation programmes which address these abnormalities may improve outcome.

## **FASTER REHABILITATION FOR ACHILLES TENDON RUPTURES**

*M Costa, F Robinson, S Donell, L Shepstone, R Chester*

We performed two independent randomised controlled trials to assess the potential benefits of immediate weight-bearing mobilisation for Achilles tendon ruptures. The first trial on surgically treated patients provides strong evidence of improved functional outcome for patients mobilised fully weight-bearing after operative repair of their Achilles tendon rupture. The two cases of re-rupture in the treatment group suggest that careful patient selection may be required as patients need to follow a structured rehabilitation regime.

The second trial performed upon non-operatively treated patients provides only weak evidence of a functional benefit from immediate weight-bearing mobilisation. However, the practical advantages of immediate weight-bearing did not predispose the patients to a higher complication rate. In particular there was no evidence of tendon lengthening or a higher re-rupture rate. We would therefore advocate the use of immediate weight-bearing mobilisation for the rehabilitation of all patients with rupture of the Achilles tendon.

## **PROSPECTIVE STUDY TO MEASURE RADIATION EXPOSURE TO THE SURGEON DURING FOOT AND ANKLE SURGERY**

*P Singh, N Perera*

*Orthopaedic Department, Wexham Park Hospital*

**Background:** There is increased concern regarding radiation exposure to surgeons using fluoroscopic guidance throughout various procedures. However, relatively little information exists on the level of radiation exposure to

the foot and ankle surgeon during fluoroscopically assisted foot and ankle surgery.

**Methods:** We are conducting an ongoing prospective study to measure radiation exposure to the hands of a single orthopaedic foot and ankle surgeon (RD). Over a 12-month period, thermoluminescent dosimeter rings are worn on the little finger of each hand of the operating surgeon. The rings are changed at six week intervals. Measurement of the overall radiation exposure is being recorded over this time period.

**Results:** This is an ongoing prospective study started in December 2004. We are measuring: total number foot and ankle cases using fluoroscopy, the total screening time for foot and ankle procedures, the mean screening time per procedure and the total radiation exposure to the thermoluminescent dosimetry rings.

**Conclusion:** Preliminary results show that radiation exposure is well below the current annual dose limit. In our study, radiation exposure during orthopaedic foot and ankle procedures is expected to comply with current recommendations of the European Committee on Radiation Protection and is well below dose limits set by the International Commission on Radiological Protection.

## DRIVER RESPONSE TIME AFTER FOREFOOT SURGERY

*G Holt, M Kay, R McGrory, S Kumar*

**Introduction:** Patients undergoing surgery to the foot frequently ask when it is safe to return to driving. The ability to drive is important both in social and economical terms. There is currently little data in the literature relevant to foot surgery. We are conducting a prospective cohort control study to assess the effect of forefoot surgery on break-response time. **Methods-** Individuals attending for first MTP joint arthroplasty and SCARF/Chevron osteotomies for hallux valgus are recruited. A driving simulator was constructed consisting of a steering wheel, foot pedals, an LCD display, a CPU and a control unit. The patient follows an image on the LCD screen using the steering wheel. The examiner then randomly initiates the machine and a stop sign is displayed. The patient would then release the accelerator pedal and depress the brake. The CPU calculates the "response-time", the "break-time" and total breaking time. In addition the "stick test" and "stand test" were performed as further measures of lower limb function. Each individual was assessed pre-operatively and at 2 and 6 weeks post-operatively. Both drivers and non-drivers are included and a control population of age and gender matched individuals was included for comparison. Results - 25 individuals are currently enrolled as study cases, 12 of which have 2 week follow-up and 3 have completed the study. Control data is being collected.

**Conclusion:** Early results indicate that break response time is increased at 2 weeks post-operatively, however this returns to pre-operative levels by 6 weeks. (204ms vs 256ms vs 206ms) These early results may be validated when all individuals have completed the study. Further study of the period 2-6 weeks after surgery will now be subject to study to assess the optimum time to return to driving.

## COMPARISON OF THE BIOMECHANICAL PROPERTIES OF MINI COMPRESSION SCREWS

*C Nguyen, D Singh, M Harrison, G Blunn, I Dudkiewicz*

**Introduction:** Many mini compression screws are now available for fixation in procedures such as metatarsal osteotomies or arthrodeses of the foot.

The aim of the current study is to compare the compression forces achieved by mini compression screws on cortical and cancellous bone models.

**Material and Methods:** The screws that were tested are listed in the table below. The compression forces were tested by inserting a pressure load measurement cell between longitudinally-split sheep tibia as a cortical bone model and longitudinally split retrieved femoral heads as a cancellous bone model.

**Results:** The Headed AO 3.5 mm cortical screw gave the best compression force and the Bold was the weakest, both in cortical and cancellous bone. The relative compression forces of the other tested screws were different between cortical and cancellous bone. Compression with the headless screws was lost as soon as the screw penetrated through the cortex in the cortical bone model.

**Table 1**

Screw / Bone type	Cortical	Cancellous
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	Average	S.D.	Average	S.D.
AO 3.5mm cortical	261.4	2.6	173.5	2.8
AO 4.0 mm cancellous	211.3	2	128.6	3.5
AO 2.7mm cortical	175.3	4.2	143	1.2
Omnitech 3.0mm	146.8	4.8	77.6	1.6
Omnitech 2.3mm	136.3	2.8	71.5	1.2
Vis Antares	132.5	6.3	76.4	2.4
Bold	97.8	3	84.2	1.9
Barouk	58.9	1.9	69	1.4

**Conclusions:** The indications for using headless self-tapping screws should be reserved for fixation of cancellous bone or of metatarsal or Akin osteotomies where compression is not required for union. When compression is important, such as in MPJ, tarso-metatarsal or talo-navicular arthrodeses, Headed AO 3.5 mm or 2.7 mm cortical or 4 mm cancellous screws, which give better compression, should be used.

## INTEGRATION OF PODIATRIC SURGERY WITHIN AN ORTHOPAEDIC DEPARTMENT: AN AUDIT OF PATIENT SATISFACTION

*B Yates, D Williamson*

*Great Western Hospital, Swindon*

**Purpose:** An audit was undertaken to evaluate the patients' experience of foot surgery at the great Western Hospital in 2004 following the appointment of a podiatric surgeon to the orthopaedic department.

**Method:** The first 100 patients that were operated on by the podiatric surgeon (Group 1) were matched by OPCS code to a randomly selected patient cohort that had been operated on by orthopaedic surgeons (Group 2). All patients were at a minimum of 6 months post-surgery (range 6-10 months Gp. 1, 11-20 months Gp. 2). The audit department sent out an anonymous questionnaire relating to the patients' experience both before and after their surgery as well as current levels of satisfaction with the outcome of their surgery.

**Results:** The response rate was 64% in Gp.1 and 68% in Gp.2.

The patients' overall satisfaction with the result of their foot surgery was determined using a Likert scale and the results can be seen in Table 1.

**Table 1: Overall satisfaction with the result of foot surgery**

Level of Satisfaction	Orthopaedic (Gp.2)	Podiatric (Gp.1)
Good/Excellent (80-100%)	43.4%	63.7%
Moderate (51-79%)	17%	23.6%
Poor (0-50%)	39.6%	12.7%

Patients in the podiatric surgical group were significantly more satisfied with the result of their foot surgery than those in the orthopaedic group ( $p < 0.008$ ; Mann Whitney U test).

Similar statistically significant differences were also seen between the two groups relating to patient satisfaction with their pre and post-operative consultations and information concerning their proposed surgery and its outcome.

**Conclusion:** The results of this audit suggest that the satisfaction of patients following foot surgery can rise significantly following the appointment of a podiatric surgeon to a general hospital orthopaedic department.

## SURGERY FOR CHRONIC ACHILLES TENDINOPATHY IN SEDENTARY PATIENTS

*N Maffulli, V Testa, G Capasso, F Oliva, A Sullo*

**Objective:** To report the outcome of surgery for chronic recalcitrant Achilles tendinopathy in sedentary and athletic subjects.

**Design:** Case control study

**Participants:** We matched each of the 61 non-athletic patients with a diagnosis of tendinopathy of the Achilles tendon with an athletic patient with tendinopathy of the main body of the Achilles tendon of the same sex who was within two years of age at the time of operation. A match according was possible for 56 patients (23 males and 33 females). 48 sedentary subjects and 45 athletic subjects agreed to participate.

**Main Outcome Measure:** Outcome of surgery, return to sport, complication rate.

**Results:** Non-athletic patients were shorter and heavier than athletic patients. They had greater BMI, calf circumference, side-to-side calf circumference differences, and subcutaneous body fat than athletic patients. Of the 48 sedentary patients, only 25 reported an excellent or good result. Of these, three had undergone a further exploration of the Achilles tendon. The remaining patients could not return to their normal levels of activity. In all of them, pain significantly interfered with daily activities.

**Conclusions:** Non-athletic subjects experience more prolonged recovery, more complications, and a greater risk of further surgery than athletic subjects with recalcitrant Achilles tendinopathy. Key words: Achilles tendinopathy, surgery.

## **Poster/ MANAGEMENT OF FRACTURES OF THE BASE OF THE FIFTH METATARSAL DISTAL TO THE TUBEROSITY**

*W S Khan, M. Aggarwal, C Warren Smith*

Proximal fifth metatarsal fractures distal to the tuberosity, also known as Jones' fractures, are troublesome fractures to manage with a high incidence of delayed union and nonunion.

We conducted a retrospective study of 32 patients with fractures of the fifth metatarsal distal to the tuberosity over a three year period. The aim was to assess healing with non-weight bearing and variations of weight bearing mobilization including minimal, partial and full weight bearing. This is one of the largest reported series of such fractures. These fractures were classified as acute fractures (14 fractures), fractures with features of delayed union (15 fractures) and fractures with features of nonunion (three fractures) at presentation according to the radiological classification used by Torg in 1984. These patients were treated in a plaster cast and mobilised either non-weight bearing or with variations of weight bearing. These patients were followed up for a mean of 16 months.

Our findings correspond with those observed by Torg and we describe a correlation between the radiological appearance of the fracture at presentation and the clinical course. Prevailing guidelines for the management of these fractures are ambiguous. A standardized classification is important because there is great variability in the types of fractures and appropriate treatment. It is important that radiological features are correlated with clinical features and appropriate treatment instituted. The treatment of choice for acute fractures is immobilization of the limb in a below-knee non-weight bearing plaster for 6 to 8 weeks. Fractures with delayed union may eventually heal if treated non-operatively, although this may take up to 20 weeks. An active athlete will benefit from early surgery. Fractures with symptomatic nonunion require surgery.

## **Poster/ DO WE NEED THE CT-SCAN IN MANAGING FRACTURES OF THE CALCANEUM ?**

*V Kumar, R Bhattacharyam F Attar, A Hameed, I McMurty*  
*The James Cook University Hospital, Middlesbrough*

CT- scan as an management tool is being used extensively in managing calcaneal fractures. We set out to see if a CT-scan makes any difference to the management plan as obtained by looking at the plain radiograph. We also looked at the correlation with the actual management.

**Methodology:** This was a retrospective study involving 24 patients with fracture of the calcaneum. These patients had both a plain radiograph and a CT- scan to help decide on management. The actual management that each of these patients had was documented. Three consultants who were blinded to the actual management and names of the subjects were independently asked to grade the radiographs, as operative or non-operative. They were then similarly, asked to decide on operation or no-operation based on blinded CT- scans. The data obtained from the three observers were compared to the actual management and were subjected to statistical analysis.

**Results:** As the data was categorical and matched, the McNemars test was used to test the association between the management plan obtained from the radiographs and the management plan obtained from the CT scans, for each consultant. They were also compared with the actual management. The statistical analysis showed that there was no statistically significant association between the management decision obtained from the radiographs and the CT scan, for all three observers. Radiograph and CT scan based management decisions also did not correlate with the actual management.

**Conclusion:** The CT scan should only be done when a definite decision is made to operate on a patient, based on plain radiographs. Calcaneal fractures which are decided not to operate, based on X rays, should not have a



CT scan as a routine as it provides no valuable additional information.

## Poster/ COMPARISON OF FOOT PRESSURES OF NORMAL SUBJECTS VERSUS METATARSALGIA USING THE FSCAN PEDOBAROGRAPH

*V Kumar, F Attar, M Maru, A, Adedapo*  
*The James Cook University Hospital*

**Aim:** Our aim was to measure plantar foot pressures in normal individuals and to compare them with variations in patients with metatarsalgia.

**Methodology:** We measured the plantar foot pressures in different parts of the foot in normal subjects of various ages and then compared this with foot pressures of patients with metatarsalgia. For measurement and statistical analysis, the plantar contact of the foot was divided into six anatomical divisions. The foot pressures were measured under the hallux, head of first metatarsal, over heads of second, third and fourth metatarsals, the fifth metatarsal, midfoot and hindfoot. This was measured using the FSCAN insole pedobarograph system (Tekscan, Inc, Boston, MA).

The foot pressures were measured in Kilopascals(Kpa). Independent T-tests was used to compare mean pressure distributions in the six anatomical divisions. We found the mean pressures through the 5<sup>th</sup> metatarsal head – 217(t=-2.32,p<0.05) and midfoot 94(t=-3.17, p<0.05), were significantly higher when compared to pressures in normal subjects ( table 1).

Table 1: Comparison of mean pressures ( Kpa)

Anatomical part	Mean pressures (Normal)	Mean pressures (Metatarsalgia)
Hallux	15947	19000
1 <sup>st</sup> Metatarsal	18973	23600
2,3,4 Metatarsal	22363	28057
5 <sup>th</sup> Metatarsal	13687	21786
Midsole	42.83	94.71
Hindfoot	19130	24343

**Conclusion:** We have demonstrated increased pressures transmitted through the outer aspect of the sole of the foot, in patients suffering from metatarsalgia. This can be used further to plan any foot- orthosis or surgery to distribute pressures more evenly across the sole of the foot.

## Poster/ THE USE OF MEMORY® STAPLES IN FOOT AND ANKLE SURGERY

*J J G Malal, C S Kumar*  
*Glasgow Royal Infirmary, Scotland*

Shape memory phenomenon whereby the metal changes its characteristics depending on the ambient temperature it is exposed to is well described in the metallurgical literature. In cold conditions (0-5° C) the alloy becomes plastically deformable and its shape can be changed at will, but would rapidly regain its original shape and strength at higher temperatures. This study assesses the effectiveness of shape memory staples as a method of internal fixation in foot and ankle surgery.

All patients who underwent foot and ankle surgery in which Memory® staples were used for fixation were included in the study. The patients were evaluated with regard to period of immobilisation in cast, period of restricted weight bearing and time to radiological joint fusion or union of osteotomy.

Memory® staples had been used in a total of 40 procedures; 13 procedures (6 MTPJ fusions, 7 Akin osteotomies) were done in the forefoot while the rest were carried out in the mid or hind foot. Bone grafting was used only in one hind foot arthrodesis. A strong arthrodesis or union was achieved in all the patients. The average time to fusion was 7.2 weeks (range 6-12) with an average period of immobilisation of 4.3 weeks (range 0-12). The average time to full weight bearing was 5.2 weeks (range 0-6). Breakage of the staple was noticed in one patient but the joint went on to unite satisfactorily. Staple back out or displacement was not

noticed in any of the cases.

The early experience with the use Memory® staples in foot and ankle surgery is encouraging; we did not encounter any technical problems and there is a suggestion that these implants may reduce the time to fusion/healing thereby reducing the recovery time following foot and ankle surgery.

## **Poster/ STAINSBY PROCEDURE FOR CLAW TOES-TEN YEAR EXPERIENCE**

*S Godey, R Tandon, O Thomas*

*New Cross Hospital, Wolverhampton*

Claw toes are treated by a variety of soft tissue and bony procedures based on the severity of the deformity. We evaluated the results of Stainsby procedure for claw toes. This is a retrospective analysis of the results of Stainsby procedure for claw toes of the foot done by a single surgeon over a 10 year period. All patients who had claw toes secondary to Rheumatoid and Non rheumatoid causes and treated by this procedure were included in the study. All the patients operated between Jan 1995 -Dec 2004 and who had minimum follow-up of 6 months after surgery were included in the study. Follow up evaluation was by clinical examination, review of case notes and telephone conversation.

42 patients underwent this procedure of which 38 were available for evaluation. Average follow-up was 43.5 months (6-110 months). 26 rheumatoid and 21 non-rheumatoid feet were evaluated based on the AOFAS score. The mean AOFAS score was 76.5. The scores for the Rheumatoid and Non-Rheumatoid groups were 81.5 and 72.6 respectively. 81% were satisfied with the result of the operation and 83% would recommend this surgery for friends and relatives. Six patients had superficial infection, 2 had broken k-wires, 2 had DVT, and 2 had recurrence of deformity.

We conclude that Stainsby procedure for claw toes is a procedure which has good results in the long term and can be taken up as a procedure of choice for severe claw toes.

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*S Godey, R Tandon, O Thomas*

*New Cross Hospital, Wolverhampton*

Morton's Metatarsalgia is a painful condition and can often be debilitating. The value of surgical excision has been doubted due to low success rate of surgical intervention.

**Objective:** The purpose of this study is to examine the variation in the management steps of Morton's Metatarsalgia.

**Methods:** Several Surgeons from different European countries answered a questionnaire in regard to their routine management of a typical Morton's Neuroma patient.

**Results:** 25 surgeons (100%) stated they would routinely elicit intermetatarsal tenderness in comparison to 14 (56%) and 10 (40%) surgeons who would routinely elicit intermetatarsal tenderness and Mulder's click respectively. The majority of them (84%) will routinely request plain foot radiograph, while 7 surgeons (28%) use ultrasound routinely. Conservative management is initiated by 16 surgeons (64%). Local injection was first line of treatment among 13 surgeons (56%). Surgical treatment is favoured by 10 surgeons (40%), while only one surgeon (4%) would use ultrasound guided injection routinely. The popular surgical approach is dorsal incision (75%). If surgical option was chosen then neurectomy is attempted by 17 (68%) surgeons.

**Conclusion:** Considerable variation exists among continental surgeons in their initial management of a typical Morton's Neuroma patient. This is probably due to lack of understanding of the true aetiology of the Morton's "Neuroma".

## **Poster/ SMOKING SUCKS! HIDDEN EFFECTS OF SMOKING IN FOOT & ANKLE SURGERY – AN AWARENESS SURVEY OF THE MEMBERS OF BRITISH FOOT AND ANKLE SOCIETY.**

**Introduction:** Every ten seconds, somewhere in the world, someone dies of tobacco-related causes. The adverse effects of smoking on the cardiovascular, respiratory, and immune systems have been well documented. Results of foot surgery are also gravely affected by cigarette smoking, with poorer clinical outcomes, lower rates of osteotomy union, bony fusion and higher rates of postoperative infection. However, data on surgeon's awareness and their practices to overcome the adverse effects of smoking in elective foot surgery is limited.

**Aim:** The purpose of this study was to report the results of a survey of experienced foot and ankle surgeons regarding their awareness about detrimental effects of smoking and the measures they take in their practice to prevent them.

**Methods:** A survey of members of British Foot and Ankle Society was done to document surgeon's awareness and attitudes towards detrimental effects of smoking in patients undergoing elective foot surgery and the measures they take to prevent these problems. Survey was returned by 104 of the 225 surgeons (47%).

**Results:** One hundred and two (99%) of the surgeons were aware of the damaging effects of smoking in foot and ankle surgery. Eightynine (84%) of these recorded the smoking habits of their patients in their dictated notes. However, only 9% respondent admitted recording the smoking habits of their patients in consent form and warn them about forthcoming risk of complications at the time of consenting. Only twentyfour (23%) had varying protocol's to prevent smoking related operative complications.

**Conclusions:** Most of the surgeons appreciate the harmful effects of smoking. However they are unaware of the extent to which it causes problems. Majority of the members would like the society to propose a unified policy or evidence based guidelines to deal with smoking related problems in foot surgery.

#### **Poster/ SYNDYSMOTIC SCREW REMOVAL IN WEBER 'C' ANKLE FRACTURES**

*S Hakkalamani, K Meda, V Prasanna, J Stamer*

**Objective:** To assess functional outcome and complications in patients with Weber C fracture following syndysmotic screw removed.

**Patients & Methods:** Forty three consecutive patients with closed Weber C type ankle fractures between 2002-20003 were studied. The syndysmotic screw was removed at 6-12 weeks time post operatively. Post-operative complications and functional outcome were studied.

**Results:** Following removal of the syndysmotic screw 6 patients had superficial wound infection, 4 patients had pain due to instability, one patient had DVT and one patient had broken screw. The functional outcome using ankle scores compared to the other studies in the literature did not show any significant difference.

**Conclusion:** Syndysmotic screw removal has significant morbidity. Guidelines with randomised control studies are recommended.

#### **Poster/ FREE GRACILIS TENDON GRAFT IN NEGLECTED TEARS OF THE ACHILLES TENDON**

*N Maffulli, W Leadbetter*

**Introduction:** Neglected Achilles tendon ruptures are a management challenge. Several surgical techniques have been described. A two centre, two surgeon, two year longitudinal study was undertaken to report the results of reconstruction of neglected Achilles tendon rupture using a free autologous gracilis tendon graft

**Methods:** Fourteen patients underwent surgery for a neglected rupture of the Achilles tendon occurring between 65 days and nine months before the operation. All were prospectively followed up for two years.

**Results:** No patients experienced any problems in the wound used to harvest the tendon of gracilis. Four patients were managed conservatively following a superficial infection of the achilles tendon surgical wound. No patients developed a deep vein thrombosis or sustained a re-rupture. All patients were able to walk on tiptoes, and no patient used a heel raise or walked with a visible limp. The maximum calf circumference

remained significantly decreased in the operated leg at latest follow up. The operated limb was significantly less strong than the non-operated one.

**Conclusions:** The management of neglected subcutaneous tears of the Achilles tendon by free gracilis tendon grafting is safe but technically demanding. It affords good recovery, even in patients with a neglected rupture of nine months' duration. These patients should be warned that they are at risk of post-operative complications, and that their ankle plantar flexion strength can remain reduced.

## **Poster/ CONSERVATIVE, OPEN OR PERCUTANEOUS REPAIR FOR ACUTE RUPTURE OF THE ACHILLES TENDON**

*B Sarai, A Ebinesan, G Walley, D Miller, D McBride, N Maffulli*

**Introduction:** We reviewed the complications and recovery of patients treated for Achilles tendon rupture by percutaneous repair, open repair, and non-operative management in a tertiary referral centre between 2001 and 2003.

**Materials and Methods:** We identified patients who underwent Achilles tendon rupture repair by percutaneous or open methods from the logbooks of Consultants and the operating theatre register. We used plaster room records were also used to identify patients who received non-operative treatment. We collated demographic and management details, and compared them with published rates relating to average age range, demographic, and management details.

**Results:** In the 20 patients who underwent open repair, one (4.8%) patient sustained a re-rupture, four (19%) sustained minor complications, and one (4.8%) had a major complication. In the 31 patients who underwent percutaneous repair, one (3.2%) patient sustained a major complication, six (19.4%) patients experienced minor wound complications, and there were no re-ruptures. In the 12 patients who underwent conservative management, re-ruptures occurred in one patient (8.3%), minor complications occurred in five patients (41.7%), and there were no major complications. The median recovery time in the open, percutaneous and conservative groups was 25 weeks, 26 weeks and 18.5 weeks respectively.

**Discussion and Conclusion:** In our setting, percutaneous repair is the most successful management method, with no re-ruptures and very few complications. Although conservative management produced the highest rate of complications, each patient will have different needs due to their age, occupation or level of sporting activity. Ultimately, the decision of the management regime used probably lies with the patient.

## **Poster/ MEDIAL IMPINGEMENT AFTER ANKLE REPLACEMENT**

*H Kurup, G Taylor*

*Southampton University Hospital*

Ankle replacements appear to offer a good alternative to fusion in most arthritic conditions. Use of mobile bearings have significantly improved results of ankle replacement. These have a significant minor complication rate including nerve injury, fractures. One of the significant complications noted in our series was medial impingement. 34 Buechel-Pappas total ankle replacements performed by the senior author from October 1999 to May 2004 were reviewed retrospectively. Mean follow up of 2.8 years .8 patients reported medial impingement symptoms at follow up. 3 patients underwent repeat surgery for this problem. One patient underwent arthroscopic debridement of scar tissue and impinging bone by another surgeon which gave good symptomatic relief. Two other patients had tibialis posterior tendonitis and underwent surgical decompression of the tendon. Both were found to be having degenerative tendons with partial tears. We discuss the findings, literature review and other complications of ankle replacements as well. Whether medial impingement is due to implant design or inherent pathology of ankle has to be studied further. Other implant designs like Agility may treat arthritis in medial and lateral gutters but can still cause soft tissue impingement. Whether these are due to implant design, residual arthritis in medial recess or soft tissue pathology is uncertain. This may be caused by the cylindrical shape of talar component ( the physiologic talus has a cone shape with smaller radius on medial side). This has not been proven yet, but has been addressed in newer designs like Salto and Hintegra prostheses.

## Poster/ THE USE OF DYNAMIC ULTRASOUND IN THE MANAGEMENT OF ACHILLES TENDON RUPTURE

*R Kotnis, S David, S Ostlere, K Willet*

**Hypothesis:** If the lower re-rupture in operative treated patients was an effect of tendon-end apposition, then patients in whom that could be demonstrated in equinus by ultrasound could be equally well treated non-operatively without the attendant surgical risk.

**Method:** All patients undergoing ultrasound for a suspected Achilles tendon repair between January 2000 - 2005 were included. Patients with a residual gap, 5mm or more in equinus; were treated by surgical repair. Those with a gap of less than 5mm were treated non-operatively. We excluded patients with no rupture, partial rupture and musculo-tendinous junction (MTJ) tears. We recorded the following: clinical findings, ultrasound measurements of tendon gap in neutral and equinus, distance of rupture from distal insertion, the treatment and complications. All patients were followed up to a minimum of 6 months.

**Results:** 156 patients were treated for a clinical Achilles tendon rupture during the study period. We excluded 5 patients with no rupture, 15 with a MTJ tear, 7 with a muscle tear and 4 patients did not follow the protocol. 125 patients comprising 88 males and 37 females were entered into the study. 67 patients were treated operatively (37 open, 30 percutaneous) and 58 non-operatively. There was no significant difference between the 2 groups with respect to age, sex and injury mechanism. There were 2 re-ruptures in the non-operative group and 1 with surgery. The operative group had 2 patients with superficial wound infection and 2 with temporary dorsal foot numbness. One patient in the non-operative group had a DVT. There was no significant difference for any of the complications between the two groups.

**Conclusions:** It may be possible to reduce the risk of re-rupture and surgery using dynamic ultrasound to determine which treatment the patient receives.

## Poster/ BILATERAL HALLUX VALGUS SURGERY AS A DAYCASE. A STEP TOO FAR?

*A Crombie, C Kumar*

**Background:** Since 2003 we have offered correction of bilateral hallux valgus to suitable patients as a daycase but there is nothing in the literature to support this as safe practice. Two published series support unilateral hallux valgus surgery as a daycase. We prospectively evaluated 30 bilateral daycase patients assessing complications and overall satisfaction rating.

**Methods:** The study group comprised 15 bilateral Scarf osteotomies, 9 bilateral Chevron osteotomies, 4 unilateral Scarf plus unilateral Chevron osteotomies, 1 bilateral 1st MTP joint fusion and 1 bilateral Lapidus procedure. All surgery was performed as a daycase under GA and ankle block. All patients were evaluated clinically and radiologically pre & post-operatively and had AOFAS scores measured. 21 patients were telephoned on the 3rd post-operative day to document their pain scores (0-10) and all patients responded to a patient satisfaction questionnaire at their discharge around 4.5 months.

**Results:** 18 of the 21 patients interviewed on day 3 had mild pain (0-4) as their maximum pain score. 3 reported problems (2 of pain and 1 of poor mobility). There was one unilateral superficial wound infection which required oral antibiotics. No other patients required to call or attend their GP nor attend A&E. The mean overall patient satisfaction rating (0-10) was 8.8 (median 9). If having similar repeat surgery 4 of the 30 patients (13%) would prefer an overnight stay. The reasons given by these 4 patients were: pain (1), poor mobility (1), a desire to be looked after by the nursing staff (2).

**Conclusions:** Bilateral hallux valgus surgery can be performed safely as a daycase and with acceptable levels of patient satisfaction. It does not appear to result in an increased complication rate. To our knowledge this has not been previously documented in the literature.

## Poster/ ADOLESCENT PERONEAL SPASTIC FLATFOOT IN THE ABSENCE OF AN IDENTIFIABLE CAUSE

*J Ritchie, D Singh*

**Introduction:** Adolescent peroneal spastic flatfoot (PSF) is often regarded as synonymous with tarsal coalition. Inflammatory arthropathies, infections and tumours may, however, all present in this way, and in a few patients with PSF no definitive pathology may be identified.

We aim of to evaluate the causes of adolescent PSF and to develop an an algorithm for its investigation and the management of those patients in whom no underlying pathology is identified.

**Methods:** All adolescent patients presenting to the senior author with PSF over a two year period were evaluated first for tarsal coalition by means of clinical examination, plain x-rays and CT scanning. If this proved inconclusive an MRI scan was performed and bloods sent for inflammatory and infective markers. If these too identified no treatable cause the patients were treated with a manipulation under anaesthetic, injection of steroid and local anaesthetic into the subtalar joint and immobilization in a below knee cast for 4 weeks. They then received physiotherapy and a talar neutral orthosis. Follow-up was at 4 weeks post-injection and continued until symptoms resolved.

**Results:** Five patients were found to have PSF with no identifiable cause. All were male, aged 12-17 at presentation. Four completed the treatment. Mean final follow-up was at 10 months post-procedure. All patients reported relief of pain following the procedure and returned to normal activity. At final follow-up, three were still participating in regular sport. One patient suffered a recurrence of his pain.

**Conclusion:** Adolescent peroneal spastic flatfoot is often, but not always due to tarsal coalition.

If this and other treatable causes have been excluded, treatment with the regime described may give good symptomatic relief in the short to medium term.

## **Poster/ STABLE ANKLE FRACTURES: HOW MUCH FOLLOW UP IS NEEDED**

*D Osarumwense, D Jena, A Feldman*

**Background:** Ankle fractures in adults are an increasing part of the workload of orthopaedic surgeons today. Stable ankle fractures are usually managed conservatively and followed up in the fracture clinic to identify any later displacement which may lead to the need for surgical treatment. the guidelines for follow up varies from place to place with equally varying outcomes. the aim of this study was to look at the pattern and outcome of follow up of these fractures and also the influence, if any, of serial radiological imaging during this period.

**Methods:** We retrospectively reviewed the follow up of patients who were referred to the clinic as stable ankle fractures and who were treated conservatively following their first clinic attendance. the period covered was April 2002 to march 2003 and we also assessed the documentation of medial side tenderness from the casenotes.

**Results:** 66 patients were identified consisting of 44 Weber A, 20 Weber B and 2 Weber C fractures with an average follow up of 10weeks. 82% of cases had documented medial side tenderness. None of the Weber A fractures displaced, irrespective of weight bearing instructions and medial side tenderness. Only 2(10%) of the Weber B and 1 (50%) of the Weber C fractures required surgical intervention due to displacement detected after clinic review at week one.

**Conclusion:** Weber A fractures are inherently stable injuries, do not displace over time and hence do not require further clinic attendances and xrays after the first consultation. Beyond the first week, regular clinic reviews and serial xrays are not necessary in the treatment of Weber B ankle fractures. The presence of medial side tenderness was a poor indicator for joint instability in this series. with proper protocols in place, these can lead to a significant decrease in the workload of orthopaedics surgeons.

## **Poster/ TIBIO-TALO-CALCANEAL ARTHODESIS BY INTRAMEDULLARY NAIL - RELATION OF NAIL TO MORPHOLOGY**

*A Young*

Thirty patients underwent tibio-talo-calcaneal fusion using an interlocking arthrodesis intramedullary nail device with locking screws. Although the nail is described as being stiffer in flexion, rotation and cantilever bending it was noted that the placement of the locking screw holes were not sufficiently in-tune with the variations found in nature. The placement of the holes and locking screws with relation to the heights of the talus and calcaneum were measured on post operative xrays and conclusions drawn from the variations found. It was felt that the intramedullary nail is a good device when used for tibio-talo-calcaneal fusion but that the design could be improved in order to improve patient outcome.

## **Poster/ FIRST METATARSOPHALANGEAL JOINT FUSION FOR HALLUX RIGIDUS, RELATIONSHIP OF FUNCTIONAL OUTCOME AND FOOT PRESSURE STUDY**

*G Shah, R Dega*

Arthrodesis of 1st MTP joint is a reliable procedure for hallux rigidus. We have studied the effects of first MTP joint arthrodesis on activities of daily living and leisure activities

**Methods:** We retrospectively evaluated 103 1st MTP fusion, done by a single orthopaedic surgeon with special interest in foot surgery over seven years period. All patients underwent two cross screw fixation for primary operation. Same operative technique was used in all patients.

We evaluated pre op scoring for pain, walking distance, walking up hill – stairs, foot wear, return to leisure activity and work, chronicity of symptoms, associated symptoms, radiological appearance pre op, post op and at radiological fusion and complication rate.

All patients were followed up.

The patients were contacted with questionnaire to evaluate the function after the fusion.

The patients were asked whether they would participate in the foot pressure study; which was done with the help of podiatrist at same trust.

We have tried to correlate the functional outcome and its relation to foot pressure.

**Results:** Fusion was achieved in all patients. ( three after revision). Pain scores evaluated using the visual analogue scale, indicated effective pain relief. High levels of return to functions were noted. The pressure (under 1<sup>st</sup> or 2<sup>nd</sup> Metatarsal heads or laterally) study has revealed a pattern of changes with various symptoms.

**Conclusion:** Arthrodesis of first MTP joint, using two cross screws, is a successful surgical technique for Hallux rigidus and also allows high level of function in daily activities of living and leisure activities.

## **Poster/ OSTEIOD OSTEOMA: BONE GRAFT TECHNIQUE FOR EXCISION OF LESION**

*D Osarumwense, T Millar, Y Feldman*

The recognition, investigation and management of osteoid osteoma has been well documented. Treatment can either be medical or surgical, studies have shown both options to have almost equal long term outcomes. However only surgical treatment involving complete excision of the lesion allows for confirmatory tissue diagnosis of osteoid osteoma especially important in cases where symptoms and signs are atypical. Several methods of surgical treatment with varying degrees of success have been described in literature. Here we describe a surgical technique for the treatment of osteoid osteoma which enables removal of the lesion in a precise manner using a precision bone graft trephine with minimal excision of bone. This technique will be very useful in the excision of lesions in areas in which excessive excision of bone can lead to an unstable bony structure which can predispose to fracture. To our knowledge this surgical technique in the management of osteoid osteoma has not been described in the literature.

## **Poster/ MANN-THOMPSON PROCEDURE FOR RHEUMATOID FOREFOOT DISEASE – MEDIUM TERM RESULTS**

*R Dalal, E Mulgrew, K Lammin*  
*Stockport NHS Foundation Trust*

We present our results with a modified Mann-Thompson procedure in 47 patients (86 feet). Minimum follow up was 24 months.

All patients had moderate to advanced forefoot deformities.

**Methods:**

M:F=12:35

43/47 bilateral

Simultaneous procedures in bilateral cases.

Popliteal block analgesia used routinely.

**Technique:**

Medial incision centered on MTP1 joint. Minimal bony and soft tissue resection. Fixation carried out with staples(78 feet),K-wires(8 feet)

Transverse incision centered on the lesser MTP joints made. Combination of soft tissue release, lesser MT head resection in cascade fashion from dorsal distal to proximal plantar performed. Lesser toe deformities treated by a combination of closed osteoclasis, soft tissue release and bony resection. Transarticular K-wire fixation then performed for all lesser toes.

Bulky postop dressing and post op shoes used.

Immediate FWB permitted.

Transarticular K-wires removed at 4/52.

**Results:**

AOFAS Forefoot Scores assessed at preop,6/12,12/12,and24/12.

Subjective patient assessment of procedure requested.

Average AOFAS scores improved from 37to72(67 – 84)

40 patients extremely pleased with the results. 5 patients pleased with reservations and 2 patients disappointed with the outcome.

**Complications:**

3 superficial wound infections

2 metal work related problems

2 early loss of lesser toe correction

3 late deformities of lesser metatarsals requiring surgery

**Conclusion:**

This procedure offers excellent, reproducible biomechanical correction with high rates of patient satisfaction.

## **Poster/ BASAL DOME OSTEOTOMY FOR HALLUX VALGUS-LONG TERM RESULTS.**

*R Dalal, E Mulgrew, L Checkley*

*Stockport NHS Foundation Trust*

We present our results in 89 consecutive patients (138 feet), minimum FU of 24/12.

**Methods:** Typical indications were IM angles >13 degrees, incongruent MTP1 joints.

Contraindications included abnormal DMMA, significant 1<sup>st</sup> MTP arthritis, hypermobility of 1<sup>st</sup> MTC joint, revision surgery.

All patients underwent a 3-in-1 procedure with soft tissue release in 1<sup>st</sup> webspace, medial bunionectomy with capsulorrhaphy and basal crescentic osteotomy.

A 25 mm blade on oscillating driver was used. Fixation was staples(70%),screws(20%),K- wires(10%).

Post op, PWB, progressing to FWB at 3/52.

AOFAS forefoot scores at pre-op, 6/12, 12/12 and 24/12.

Weight bearing radiographs obtained at pre-op, 3/12, 12/12.

**Results:** M:F=19:70

Age 31-79 ( Mean 64)

89 patients, 138 feet

AOFAS scores improved from average 42/100 preop to 76/100 at 6/12.

Radiographic correction excellent in78% of patients.

74 % of patients extremely satisfied,15 %satisfied,11 %unsatisfied with outcome.

**Complications:** Nonunion=2

Infection=2 superficial,1 deep

Recurrence of deformity at 6/12 = 2

12/12 = 2

Transfer metatarsalgia M2 due to overriding of distal M1=3

**Conclusions:** Basal Dome Osteotomy with soft tissue correction is powerful and reproducible for the correction of moderate and severe Hallux Valgus. There is an initial learning curve. Much less soft tissue dissection required compared to the SCARF procedure. Results are very satisfactory.



## **Poster/ SUBTALAR JOINT STIFFNESS FOLLOWING ANKLE FRACTURES – RESULTS OF A PILOT STUDY**

*R Dalal, E Mulgrew, G Devarajan*  
*Stockport NHS Foundation Trust*

Subtalar joint stiffness is an under recognized complication of ankle fractures. We set out to objectively measure its prevalence and impact on Activities of Daily Living (ADL).

### **Method:**

60 ankle fractures included in study. All patients had contralateral normal ankle.

M:F=21:39

Average age: 36 (19 – 84)

Weber: A B C

21 27 12

27 patients underwent ORIF (12C + 15B)

39 patients had plaster casts for between 2 and 6 weeks. ( 27B + 12C )

Postop regimes included early mobilization and POP application (AO recommendation)

Weber A(21) treated symptomatically.

Examinations for study at 3/12 and 6/12 post injury.

Subtalar and ankle movements were assessed by the same examiner (as per Hoppenfeld)

Subjective questions about subtalar stiffness and their impact on ADL were asked.

**Results:** At 3/12, 56 patients (17A + 27B + 12C) had subjective and clinical impairment of subtalar movement.

32 patients (2A + 20B + 10C) had moderate to severe impairment (>30%)

At 6/12, 42 patients (9A + 23B + 10C) had subjective symptoms and clinical impairment of subtalar function.

Of these, 26 (0A + 18B + 8C) had >30% impairment vs. controls.

### **Conclusions:**

Symptomatic subtalar joint stiffness with limitation of ADL is a significant sequel of ankle fractures and results in long term morbidity. This has implications in assessing functional outcome of these common injuries.

## **Poster/ THE EFFECT OF A PRIMARY CARE MUSCULOSKELETAL SERVICE ON FOOT AND ANKLE CARE**

*P Watmough, N Roberts, R Freeman, J Lishman, J Barrie*

Primary care trusts (PCTs) are encouraged to create musculoskeletal services to improve access and reduce pressure on orthopaedic clinics. Previous reports have suggested problems can arise.

A PCT with a population of 100,000 launched a musculoskeletal service in July 2004. The foot and ankle component was in partnership with the local secondary care foot team. Treatment and referral guidelines were agreed. The PCT staff reviewed GP referrals to orthopaedic clinics. They could forward letters to the acute trust orthopaedic department or initially treat the patients in primary care.

We audited referrals from October-December 2004, allowing 3 months to establish the service and 6 months follow-up.

617 orthopaedic referrals were received, including 123 (19.9%) adult foot and ankle problems. 82 patients were treated initially in primary care: 54 by the podiatrist, 20 by the physiotherapist and 8 by the specialist GP. Commonest problems were metatarsalgia (12), hallux valgus (10), Achilles tendonopathy (9), plantar heel pain (9), generalised foot pain (8) and arthritis (6). The commonest intervention was attendance at a physiotherapy programme (26) followed by advice (22), usually about footwear, insoles (14) and injections (8). Ten patients were referred to secondary care after initial treatment in the community, all in accordance with guidelines; four were listed for surgery. Four patients failed to attend and information was missing on six.

31 referrals were sent directly to secondary care, 29 of which were according to guidelines. 9 were offered surgery, 9 had other specialist care, 6 required services which could not be accessed directly by the PCT team and 3 failed to attend.

Primary and secondary care can work together successfully to deliver services for patients with foot and ankle problems, though waiting time remains a challenge

