

ABSTRACTS FROM BOFSS MEETING Sheffield – 16/17 November 2000

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THE 2 YEAR RESULTS OF AN OBLIQUE DISTAL METATARSAL OSTEOTOMY USING A COMPRESSION SCREW IN HALLUX VALGUS

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Aim To describe an oblique distal metatarsal osteotomy held with a compression screw and to review the results in the first 100 patients at two years.

Method.Ten of the original 100 patients were lost to follow-up but 40 had bilateral operations, giving 130 feet to review. A clinical and radiological review was conducted at two years.

Results. Patient satisfaction with the operation was 88%. There were five re-operations, one each for non-union and deep infection and three for loss of the corrected position. There were no cases of avascular necrosis. Metatarsalgia was present in 59 feet preoperatively and had resolved in 33 at review. 65 feet

(52%) recovered full function within eight weeks and 113 feet (87%) by 16 weeks. The average hallux valgus angle was reduced from 37.5° to 25.8° and the inter-metatarsal angle from 13.5° to 8.6°.

Conclusion. The results of this variation on a distal metatarsal osteotomy are similar to those reported in the literature; an 81 % excellent or good result with a patient satisfaction rate of 88%. The advantages of screw fixation include; compression at the osteotomy site, avoiding shortening of the metatarsal, avoiding the need for plaster support post-operatively and so allowing early mobilization of the MTP joint. The disadvantages include rotation of the head about the screw and the occasional need for removal of the screw once union has occurred.

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OPTIMISATION OF THE SCARF OSTEOTOMY USING FINITE ELEMENT ANALYSIS

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Currently, the Scarf osteotomy has a number of variables and the aim of this study is to optimise the procedure using Finite Element Analysis (FEA). FEA is a numerical technique that is able to predict stresses on orthopaedic structures.

A Scarf osteotomy was carried out on a cadaveric foot. It was CT scanned at 1mm sections. The outer and inner profiles of the first metatarsal were imported into the FEA software MARC (MSC, USA). This model examines the stresses in the cut bones and the screws for different levels of resection and the effect of using 3mm screws and 2mm k-wires.

The results show that stresses in the bone, where the cut is in the middle of the bone, are not high enough to cause fracture. Increasing the resection level, thereby reducing the thickness of the lateral surface of the bone, causes increases in stress which could result in fracture of the bone. There is no significant difference in stresses in the bone between 3mm screws and 2mm k-wires. The stresses in both the pins and screws for all resection levels are not high enough to cause fracture of the pins. The pin closest to the sesamoid takes a higher level of load.

The study shows the importance of the resection level of the osteotomy. A reduction in the lateral face causes the stresses in the bone to increase. It also shows that the use of 2mm or 3mm pins/screws has little effect on the stresses in the bones.

LONG-TERM RESULTS FOLLOWING KELLER'S ARTHROPLASTY

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Introduction. The operation of Keller's arthroplasty for hallux valgus associated with arthritis appears to have fallen from favour. It is pertinent therefore to review the long-term results in patients treated by one consultant orthopaedic surgeon using a standardised technique.

Method. We were able to locate 30 patients (47 feet). Four were male and 26 female, and the age at surgery was 20 - 74 years (mean 65). Follow-up was from seven to 22 years (mean 13). All patients were recalled for clinical evaluation, recording history of symptoms in the feet, need for further surgery, and presence of deformity. Clinical rating on the American Orthopaedic Foot and Ankle Society score for the hallux was determined. Pedobarographs (Musgrave) were recorded and radiographs taken of symptomatic feet.

Results. 27 patients (43 feet) were either very satisfied or satisfied with the outcome of surgery. The mean AOFAS score was 80 (range 49 - 100). Three patients (four feet) were dissatisfied because of floppy toe, or elevated toe with metatarsalgia. Pedobarograph and radiographic findings will be presented.

Conclusions. We found Keller's arthroplasty to be a reliable procedure in the management of hallux valgus associated with arthritis. Satisfactory results in the long term were obtained in 90% of patients. We believe attention to detail in the performance of the procedure to be important.

Acknowledgement. We would like to acknowledge that patients studied in this review were treated under the care of Mr GD Stainsby.

SECOND TOE AMPUTATION AS A PRIMARY PROCEDURE FOR ASYMPTOMATIC HALLUX VALGUS WITH OVERRIDING OR SEVERE HAMMER SECOND TOE

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We assessed the results of second toe amputation retrospectively from January 1990 to December 1999 in terms of patient satisfaction in the "over-70" age group with with over-riding second or severe hammertoe. We also assessed a second group who had this procedure as a salvage procedure for failed hammertoe surgery. 25 patients returned to the outpatient clinic and were assessed using the Maryland Foot Score Profile, (a subjective assessment of pain, function, cosmesis and motion). 20 (80%) patients had an excellent result (score: 90-100); five (20%) patients had good result (score: 75-89). In the older age group (70 and above) corrective surgery is more frequently associated with anaesthetic and surgical complications due to associated co-morbidities. Although not an uncommon procedure it has not been studied and we were unable to find any literature on the subject.

Second toe amputation is valuable and psychologically atraumatic as a primary procedure in the "70 plus" age group for asymptomatic hallux valgus with severe second toe deformity and as a salvage procedure for failed hammertoe surgery. Benefits include its simplicity and ease of application to the day case setting. It is associated with reduced operative risk and recovery time and good patient satisfaction.

LONG TERM RETROSPECTIVE ANALYSIS OF THE FIRST METATARSO. PHALANGEAL JOINT ARTHRODESIS.

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A retrospective analysis of arthrodesis of the first metatarso-phalangeal joint was done to assess procedure's long term results in 32 patients with 42 operated feet. The mean follow up period was 77 months (range Four to 104 months). The evaluation included personal interview, physical examination and post-operative X-rays. The implants used in 30 feet were two crossed screws. The patients were asked about their activities, pain scores, satisfaction with appearance and function and willingness to have the procedure performed again. 40 feet had clinically stable and painless joint. Radiologically , 34 feet (27 feet with two crossed screws) had fused bone to bone. Complications of superficial infection, non-union, metatarsalgia, painful callosities and clawing of the great toe were noted in a few patients. Overall, hallux valgus angle was reduced from mean of 27.2° to 19.6° and inter-metatarsal angle from a mean of 10.8° to 9.2°. The authors believe that arthrodesis of the first metatarso-phalangeal with two crossed screws is an effective , simple and reliable procedure to provide a painless , stable joint with good overall function.

1/3 TUBULAR PLATING AS A METHOD OF FIRST METATARSOPHALANGEAL JOINT FUSION

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A retrospective analysis was carried out on the results of first metatarso-phalangeal joint fusion in 14 consecutive patients (15 feet) using a 1/3 tubular plate. There were 12 females and two males with a mean age of 59.6 years and mean follow-up of 3.5 years. There was a fusion rate of 100% and only one minor complication of a superficial wound infection which settled with oral antibiotics. Three plates (20%) were removed due to pain with complete resolution of symptoms and no effect on the fusion postoperatively. There was a statistically significant drop in pain scores from preoperatively to follow-up. This technique provides excellent objective and subjective results in fusion of the first metatarso-phalangeal joint.

CHEILECTOMY OR SILASTIC JOINT REPLACEMENT FOR HALLUX RIGIDUS? The DGH Perspective

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Several operations have been advocated in the surgical treatment of Hallux Rigidus. The aim of our ongoing study was to compare the outcome of cheilectomy with Silastic joint replacement), which are the two procedures most often undertaken for this condition at our Hospital. We retrospectively followed up 16 cases of Silastic Joint replacement (mean duration of follow up of eight years) and seven cases of cheilectomy (mean follow up of two years). We excluded those that had Silastic joint replacement for Hallux Valgus or Rheumatoid arthritis

Our initial results show the two groups to have a mean age of 54 and 58 respectively and to be matched for sex ratio. Surgery in almost all cases led to a marked reduction in the preoperative pain level.

Complications of Silastic joint replacement that we observed included shortening of the toe, transfer metatarsalgia and a stress fracture of the second metatarsal. There were no deep infections of the prosthesis. Follow up X-rays in all cases showed bony erosion, sclerosis and cyst formation but no cases of prosthetic fracture. Cheilectomy is associated with better dorsiflexion and fewer postoperative complications but one patient was very dissatisfied with the result of surgery.

OUTCOME MEASURES IN ANKLE ARTHRITIS; Whose Outcome Are We Measuring?

Objective. It is increasingly recognised that methods are required to accurately elicit the patient's perception of the outcome of orthopaedic surgery. Patient-based outcome scores currently used to assess ankle arthritis are poorly validated. Sampling of items included in these questionnaires is based purely on judgements made by clinicians. The aim of this study was to investigate the impact of ankle arthritis on patients' quality of life with subsequent evaluation of content validity in current patient-based outcome measures.

Method. Qualitative methods were employed to investigate the impact of ankle joint arthritis as viewed by patients and expert clinicians. 39 patients with isolated ankle arthritis and six health professionals across a variety of specialities, participated in focus group interviews. A questionnaire survey was then administered to a wider population of ankle OA patients (n=113) to substantiate the qualitative data collected and to determine the relative importance attributed to various aspects of quality of life.

Results. The generated data demonstrated the effects of ankle arthritis on patients' quality of life with great importance attributed to the wider psycho-social influences imposed by this condition. The focus group

participants reviewed existing patient-based outcome instruments [Kitaoka et al, (1994) and Domsic et al, (1998)] and it was agreed by patients and clinicians that their content failed to represent many issues pertinent to the assessment of this condition.

Conclusion. The need for a validated patient-based instrument to assess the impact of ankle arthritis and measure the effect of orthopaedic management is irrefutable. The construction of such an instrument must include measures of outcome which are meaningful to the patient. This study provides a rich data set demonstrating the important issues of ankle arthritis as perceived by the patient and thus supplies the matrix of quality of life variables to be considered when assessing outcome.

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THE COUNTERSUNK “DISHED” WASHER IN ARTHROSCOPIC ANKLE FUSION: A New Device.

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Arthroscopic ankle fusion is being performed in preference to open fusion with increasing frequency. Methods of fixation vary, A common and effective method of compressive fixation is the use of 2 parallel AO cannulated screws passed from the proximal and medial tibia into the talus, To gain sufficient compression without head on the screw cutting through the thin cortex, it is usually necessary to use a washer. The standard AO washer allows an angle of insertion of only about 15° either side of a perpendicular to the cortex, or only 75° to the cortical surface. If the screw is inserted at a greater angle, the washer does not lie flat against the surface, but one edge protrudes away from the surface and tends to irritate the medial tibial skin.

The author has worked with the AO engineers to develop a washer, which allows a standard AO cannulated screw to be inserted at an angle of 90 to 20deg to the cortical surface, with almost no protrusion of the screw head or washer above the critical surface. This is achieved by designing a dished washer to accept the head of the screw, and countersinking this dished portion into the cortical surface.

Successful results are presented in two patients are on whom prototypes of this device have been used.

As the device can be produced in either stainless steel or titanium it may also be used to reduce the prominence of proximal tibial locking bolts in tibial nailing of fractures.

This device can be commissioned at present for £30-40 each. The author wishes to ascertain the level of interest in this, as economies of larger scale production should reduce the cost.

(The author derives no personal financial benefit from the sale of this device.)

INFECTION AND CHARNLEY COMPRESSION CLAMPS USED IN OPEN AND ARTHROSCOPIC ANKLE ARTHRODESIS.

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Three years ago we presented a cohort of 25 consecutive patients after ankle arthrodesis, 13 had open operation, 12 arthroscopically. Fixation was by Charnley compression clamps plus transfixation screws. There were similar results for each method, but 12% had infection around the Charnley compression pins.

A further 16 patients have been studied prospectively, where Charnley pins and clamps were not used. Fixation was by compression screws and plaster.

Method A total of 20 patients had open fusion, and 21 had arthroscopic fusion. They were reviewed at a minimum of eight months postoperatively (eight to 36 months)

Results There was no significant difference between open and arthroscopic methods in fusion rates (70% open, 80% arthroscopic), pain relief (good or excellent in 66% both groups), or hind foot score of American Foot and Ankle Society (65 for open, 68 for arthroscopic). In the first 25 patients with Charnley clamps, deep pin tract infection in three required curettage, and one went on to infected non-union. In the last 16 patients, in whom Charnley pins and clamps were not used, none developed any infection.

Conclusions Arthroscopic arthrodesis gave similar rates of success to open arthrodesis. Two Charnley compression clamps and pins were associated with significant infections. These are not used by us now.

ANKLE ARTHRODESIS AND HIND AND MID FOOT ARTHRITIS: INEVITABLE ASSOCIATES?

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Hind and mid foot arthritis is often noted in patients who have previously had an ankle arthrodesis, and it has been suggested that this arthritis may be precipitated or exacerbated by the ankle fusion.

We investigated the existence of hind and mid foot arthritis in 33 patients prior to having an ankle arthrodesis, to assess the incidence and severity of arthritis independent of their ankle fusion.

The latest pre-operative radiographs of the ankle, hind and mid foot were analysed, and the presence and severity of arthritic changes in these joints recorded using the grading of Kellgren and Lawrence (nought to four). Scores for each joint were then summed to give a total score (max 16).

Of the 33 patients only one had no evidence of pre-existent hind or mid foot arthritis. The mean score was 7 out of 16. 24% had a score of less than five out of 16, but 18% had a score of greater than 10 out of 16. The posterior facet of the sub-talar joint was the most commonly affected, followed by the talonavicular joint.

Significant arthritis of the hind and mid foot is frequently seen prior to ankle arthrodesis, and may be severe. One should be cautious about making fusion of the ankle the scape-goat for any hind or mid foot arthritis subsequently noted in such patients.

PEDOBAROGRAPHIC EFFECTS FOLLOWING ANKLE ARTHROPLASTY AND ARTHRODESIS

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Introduction The aim of the study was to evaluate the post-operative pedobarographic effects of ankle arthroplasty and arthrodesis.

Methods Eight consecutive patients following ankle replacement and seven consecutive patients following ankle arthrodesis were reviewed. Patients were assessed pre and post-operatively using clinical scores. Range of movement following arthroplasty was assessed radiographically. All patients underwent pedobarographic evaluation postoperatively. As well as foot pressures, load/time and pressure/time graphs were obtained allowing assessment of the phases of the gait cycle. The area under the graphs was also assessed.

Results One patient in the arthrodesis group developed a non-union. All other patients revealed a statistically significant improvement in pre-operative scores. The mean range of ankle movement following ankle arthroplasty was 17.5°. There were no abnormally high foot pressures in either group. Similarly there were no significant differences between feet in either group when assessing phases of the gait cycle and areas under the graphs.

Discussion The failure to demonstrate any significant differences in either group may reflect the small numbers studied. Alternatively the forefoot and midfoot may compensate for reduced or absent ankle movement. The preserved ankle movement seen after arthroplasty in our study did not convey any specific pedobarographic advantage compared to arthrodesis.

ARTHRODESIS FOR FAILED ANKLE ARTHROPLASTY: A TECHNIQUE USING THE FIBULA AS AN AUTOGENOUS BONE GRAFT.

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Total ankle arthroplasty was developed as a result of encouraging results, of total hip and knee arthroplasty. But the early reports suggest that they are not as successful. Failed total ankle arthroplasty is a difficult problem and recommended treatment options include revision total ankle arthroplasty, soft tissue reconstruction arthrodesis and below-knee amputation, Review of these methods suggests that component removal and arthrodesis is the most reliable

Ankle arthrodesis performed as a primary procedure is technically demanding;. It becomes more challenging when undertaken secondary to component failure This is because of problems such as severe bone loss, disturbed soft tissue envelope and malalignment

We describe a technique using two cross cannulated screws and morsellised fibular. autogenous graft. The distal fibula is divided at a point 8-10 cm from the distal end , detached of all its soft tissue and then morsellised. using a, hone mill to fragment size of 35 cam. This avoids the morbidity associated with harvesting iliac. crest-graft and using external fixators (compression device).

We have used this technique in 4 patients. A11 have been followed up for at least a year. At the latest follow up all the ankles show solid clinical and radiological union

TIBIAL AND TALAR TRABECULAR LINES IN THE ASSESSMENT OF ANKLE ALIGNMENT

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Introduction The determination of talar alignment in patients with ankle destruction due to rheumatoid or previous arthrodesis can be difficult when planning surgery. We found the orientation of the vertical trabecular lines on antero-posterior (AP) radiographs a useful aid.

Methods Trabecular orientation within the talus and distal tibia was measured using an electronic goniometer (Rx Laboratories) in standard AP ankle radiographs from 25 patients who had attended the Accident and Emergency Department after an ankle injury and who did not have a fracture or subluxation of the ankle. Radiographs of 12 cadaver ankles were taken in AP, and in 15° and 30° of both internal and external rotation and the trabecular orientation similarly measured. Three independent clinicians assessed

the radiographs on two separate occasions.

Results In the normal group, the mean trabecular angle was 0.46° valgus, (95 percentile: 4° varus to 5° valgus). In the cadaver group of AP radiographs the mean trabecular angle was 1.6° valgus (95 percentile: 4° varus to 10° valgus). Positioning cadaver ankles in internal or external rotation had little effect on the mean trabecular angle, but intra- and inter-observer variation increased.

Conclusion Normal ankles consistently have a tibio-talar trabecular angle of between 5° varus and 5° valgus on good AP radiographs. These lines can be used to determine the varus/valgus orientation of the talus within the ankle joint, which may be useful when the joint surface has been destroyed by disease or removed at surgery.

ALTERNATIVE COMBINED SURGICAL APPROACH FOR SINGLE STAGE SURGICAL RELEASE OF TALIPES EQUINO VARUS

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In our unit from 1991 until 1996 the surgical approach used in the management of talipes equino-varus involved two procedures, employing a postero-medial incision and a postero-lateral oblique incision. Since 1997 the approach has changed to a one-stage procedure employing a plantar medial incision and an Eastwood-Atkins postero-lateral incision adapted from adult practice.

This approach has been used in 36 feet in 25 children, with wound healing established in all cases. There have been no wound breakdowns, no skin bridge necrosis and no wound infections.

We feel this approach offers the following advantages: It allows complete one-stage sub-talar release, protects the peroneii and sural nerve, allows improved access to the lateral side of the calcaneum, the plantar structures and posterior part of the sub-talar joint. There is good access to the posterior compartment and the Tendo Achilles, lesser wound tether and no loss of access

We would therefore recommend that the above approach be considered as an alternative in the surgical management of talipes equino-varus.

AN ABNORMAL JOINT BETWEEN MEDIAL MALLEOLUS AND NAVICULAR

A Source of Late onset Pain in Treated Clubfeet

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Ten abnormal joints between the medial malleolus and the tarsal navicular were found in six patients with treated idiopathic clubfoot. Four cases were bilateral and two cases unilateral.

Seven feet had significant reduction or obliteration of the normal angle between the neck and body of the talus and the navicular was subluxed medially. Four of the feet showed dorsal subluxation of the navicular as well. Five abnormal joints were degenerate. Interestingly the other tarsal joints did not show degenerative changes. MRI scans performed in five joints confirmed the pseudo-articulation. Five of the feet were symptomatic with ongoing pain at the site of the abnormal joint; four of which were degenerate. Duration of the pain was between 24 and 60 months (mean 36 months). They obtained complete although temporary relief of pain following a local steroid injection into the abnormal joint. Excision of the abnormal joint in two patients improved their pain to a satisfactory level.

TREATMENT OF RESISTANT & NEGLECTED CLUBFEET BY CONTROLLED, DIFFERENTIAL, FRACTIONAL DISTRACTION

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Treatment of resistant & neglected clubfeet has engendered much controversy as the patho-anatomy becomes complex & true cause of disability can be difficult to ascertain. Different soft tissue & bony procedures have been described and most of the procedures do not give consistently good results in the above group of patients.

Between 1992-1997 we studied 83 clubfeet in 67 patients. Only those patients with idiopathic clubfeet who presented late (> 1 yr. old at presentation), who did not respond to corrective stretching manipulation or standard soft tissue release or those patients in whom the deformity recurred after satisfactory initial correction were included in the study. There were 40 boys & 27 girls. Age range was from 18 months to 22 years with the mean age at operation being seven years & two months.

Basic principle of the treatment method used was controlled, differential, fractional distraction using a modified Ilizarov ring fixator. After fixator application, controlled, differential distraction was started which was continued till the deformity correction was achieved & this was followed by a static phase of equal duration in which fixator was left in-situ so as to allow the stretched soft tissues to mature.

Feet were classified preoperatively & prospectively on the Basis of Functional Clubfoot scoring system & we observed 36% good to excellent, 44% fair & 20% poor results. The rate of relapse at four year stage was 18.5%. Complication seen were due to pin track infection, clawing of toes, persistent foot pain & relapse.

This semi invasive procedure of controlled, differential, distraction appears to be a reasonably safe & effective method for the management of cases of clubfeet who are resistant to standard methods of treatment and also those patients who present late with secondary changes.

TALO-CALCANEAL RELATIONSHIP IN CLUBFOOT

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We undertook this study to determine the scope and limitations of talo-calcaneal angles as indices of correction of clubfoot. Talo-calcaneal angles were measured on antero-posterior, stress dorsiflexion and plantarflexion lateral radiographs of 75 normal feet and 145 clubfeet. The talus and calcaneum from 15 normal foetal limbs were dissected without disturbing the subtalar capsule. Antero-posterior and lateral radiographs of these specimens were also obtained. The long axes of the ossific nuclei and cartilaginous anlagen of the bones were marked and the talo-calcaneal angles were measured. Using logistic regression analysis a mathematical model was made to predict the probability of correction of clubfeet based on the talo-calcaneal relationships. The talo-calcaneal angles were lower in clubfeet than in normal feet, but there was considerable overlap in the ranges of normal and clubfeet for all the angles measured. The lateral talo-calcaneal angles in normal feet were higher in dorsiflexion than in plantarflexion while the converse was true in clubfeet. The talo-calcaneal angles measured from the axes of the ossific nuclei of the foetal specimens were -10° higher than those measured from the axes of the cartilaginous anlagen. A lateral talo-calcaneal angle difference of 20° suggests that there is a 93% probability that the hindfoot deformity of clubfoot has been adequately corrected. We conclude that a talo-calcaneal angle of 30° or a talo-calcaneal index of 40° does not ensure correction of clubfoot. An improvement in the talo-calcaneal angles and restoration of the normal talo-calcaneal relationship in dorsiflexion and plantarflexion suggest that the deformity of the hindfoot is corrected. In order to assess adequacy of correction of hindfoot deformity we suggest that, in addition to comparing the pre-operative and post-operative talo-calcaneal angles, the lateral

talo-calcaneal angle difference also be used as an index of correction.

LATERAL SYNOVIAL IMPINGEMENT IN THE ANKLE: A New Physical Test

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Introduction: Ankle inversion injuries are very common¹ and are treated functionally with RICE, bracing and physiotherapy². Gerber³ reported that up to 40% of patients remain symptomatic despite treatment at six months following their injury. Synovial impingement which was first recognised by Wolin⁴ is a common cause of chronic ankle pain after ankle inversion injury. A number of studies have reported a good outcome from arthroscopy and debridement of the soft tissue impingement lesion^{5,6}. Soft tissue impingement is difficult to diagnose clinically because the symptoms and physical signs described to date are often diffuse and non specific⁷.

Objective: To describe a new physical sign to help identify lateral synovial impingement in the ankle.

Design: The study was in two parts, the first was a cadaveric study to demonstrate the anatomic basis for the test and the second part was the collection of prospective clinical data on 73 patients who underwent ankle arthroscopy. The presence or absence of the impingement sign before ankle arthroscopy was noted as well as the arthroscopic findings. All patients were assessed at a minimum of six months after arthroscopy by an independent observer.

Results: The lateral synovial impingement test had a sensitivity of 94.8% and a specificity of 88%.

Conclusion: We believe this ankle impingement test will be of use to general orthopaedic surgeons as well as other practitioners who are confronted by the difficult problem of the patient whose symptoms from a sprained ankle fail to resolve

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THE PERONEUS QUARTUS MUSCLE - INCIDENCE AND CLINICAL SIGNIFICANCE.

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Only a few studies have fully investigated this muscle. A number of case reports exist in the literature that associate the presence of the peroneus quartus with clinically relevant pathology including chronic ankle pain, peroneal tendon subluxation or dislocation, peroneus brevis tears or splits, tendon calcification and painful hypertrophy of the calcaneal retrotrochlear eminence. Our study was set up with the following aims

- (1) To further investigate the prevalence of the peroneus quartus muscle.
- (2) To examine the anatomical variations of the peroneus quartus.
- (3) To study the association between the peroneus quartus and clinically relevant pathology.

The study was divided into 2 main parts.

Part 1 102 cadaver legs were dissected and the presence and anatomical characteristics of the peroneus quartus noted.

Part 2 100 MRI scans were reviewed with the same aim as well as to examine any associated clinically relevant pathology. We found the peroneus quartus to be present in 6-7% of cases with a number of

different origins and insertions, the most common origin being the peroneus brevis muscle and the most common insertion the retrotrochlear eminence of the calcaneum. Associated pathology found included a peroneal tendon split, possible peroneal tendon subluxation or dislocation, a prominent retrotrochlear eminence and ankle pain and weakness with no other demonstrable aetiology.

Our conclusions show that all practising orthopaedic surgeons and radiologists should be aware of the possible presence of the peroneus quartus muscle not only due to its potential association with clinically relevant pathology but also due to its potentially beneficial surgical uses.

THE MODIFIED BLANCHET REPAIR FOR LATERAL ANKLE INSTABILITY

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We have treated 10 patients with chronic ankle instability using a Modified Blanchet repair. This anatomical ligamentoplasty uses a flap from the Inferior Extensor Retinaculum to reinforce the repair of the lateral ligaments. The purpose of this study is to assess the outcome of the procedure using subjective and objective criteria. All 10 patients had functional instability and were assessed with preoperative stress X-rays. Follow up averaged 21 months (range six to 36 months.) A subjective grading scale was used to classify the results, as well as a simple hop test to assess ankle confidence. Postoperative stress radiographs were also taken. There were seven excellent results, two good results, one fair result and no poor results. Overall, nine patients had an excellent or good result. There were no complications. Our results support the findings of Sarangaglia et al in their original paper reporting this technique.

ANKLE INSTABILITY IN PES CAVUS

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Between March 1995 and February 2000, we treated 95 patients with pes cavus. 23 patients (24.2%) complained of ankle instability and eight (8.4%) of only ankle instability. Three others had lateral ankle pain but not instability. Of the 95 patients 57 had hindfoot varus on standing hindfoot alignment radiographs, 21(36.8%) of whom had ankle instability.

Of the 23 study patients five have Charcot-Marie Tooth disease, three have another peripheral neuropathy, one congenital myopathy, one myelomeningocele, eight have no neurological diagnosis and five remain under investigation. Eight patients had structural instability of the ankle on clinical and radiological examination; 15 had functional instability only. Five had significant osteoarthritis of the ankle associated with chronic tilting of the talus.

All patients were offered a physiotherapy programme and appropriate orthotic treatment. Four underwent corrective osteotomies, three corrective hindfoot arthrodeses and one a calcaneal osteotomy plus total ankle replacement. In each case the ankle instability was relieved by the procedure. Three others were offered surgery but refused. The others were relieved of their feelings of instability by conservative treatment.

OPERATIVE VERSUS NON-OPERATIVE MANAGEMENT FOR RUPTURE OF THE ACHILLES TENDON

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Objective To establish the best method for treatment of acute closed rupture of the achilles tendon (AT).

Method A prospective multi-centre randomised controlled trial comparing percutaneous repair versus functional bracing of patients sustaining an acute rupture of AT. The clinical diagnosis of AT rupture was confirmed in all patients with ultrasound. 72 patients were randomised using sealed envelopes, 35 patients (28 male) in the operative group, mean age 43 (range 25 to 60), 37 patients in the non-operative group (29 male), mean age 44 (range 29 to 60). 72% of patients were injured doing sport.

Results In the non-operative group, the median number of weeks from injury to perform a single heel raise was 16 (10 to 32) and to running was 20 weeks (14 to 46). In the operative group a single heel raise was achieved at a median of 17 weeks (six to 22) and to run was 17 weeks (12 to 23). There were four re-ruptures in patients treated non-operatively and one patient with persistent swelling of the AT. There was one re-rupture in the operative group, two stitch abscesses requiring one week of antibiotics for resolution and one stitch was removed under local anaesthetic. There were no injuries to the sural nerve.

Conclusion The use of percutaneous repair resulted in a quicker return to function with a lower re-rupture rate.

OPEN FRACTURES OF THE CALCANEUM

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Methods. Details of patients with open fractures of the calcaneum treated between July 1988 and July 1998 were prospectively collected on our calcaneal fracture data base. Each fracture was investigated with radiographs and a CT scan in coronal and axial planes. The first three fractures were treated by wound debridement without fixation. As experience with internal fixation increased, the subsequent seven fractures were treated by serial debridement of the open wound until the soft tissues had settled to allow open reduction and internal fixation (ORIF). This was carried out via the extended lateral approach to the heel, using a Y plate or an AO calcaneal plate. Open wound closure was achieved by delayed suture or granulation. Patients were followed up using the calcaneal fracture scoring system.

Results. Ten of 393 calcaneal fractures were open (2.5%), all on the medial side of the heel due to penetration by the sustentacular fragment. Three patients had a closed fracture of the contralateral calcaneum. Three patients had other injuries. Nine were male. Mean age was 35.9 years. Seven fractures resulted from a fall, one in a deliberate jump, one from a road accident and one from an explosion. In those fixed, followed to mean 33 months, no extended lateral incision broke down, there were no deep infections, and each open wound healed satisfactorily. One patient had a neuropraxia of the sural nerve which resolved within three months. Calcaneal fracture scores in the fixed group ranged from 44 to 100 with a median of 94. Of those not fixed followed to mean 40 months, one patient had a good result with a score of 83. The other two had poor results with scores of 6 and 65 respectively. One patient in the unfixed group went on to subtalar arthrodesis. The calcaneal fracture scores in the fixed group were significantly higher than in the unfixed group when compared by Mann-Whitney U test ($p < 0.05$).

Discussion. Fractures of the calcaneum become open on the medial side of the heel due to penetration by the severely displaced sustentacular fragment, which has previously not been described. No extended lateral incisions broke down, as the approach is based on the posterior branch of the peroneal artery, independent of the blood supply to the medial side of the heel and medial open wound.

We conclude that open calcaneal fractures may be treated by internal fixation, after debridement of the medial open wound, with satisfactory results.

INTERNAL FIXATION WITH LAG SCREWS FOR DISPLACED TALAR NECK FRACTURES.

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Fractures of the talus are usually due to high energy trauma and the management of these injuries presents the clinician with many problems. Accurate reduction and internal fixation with lag screws has been recommended as the treatment of choice for displaced talar neck fractures but because of the rarity of this injury, there are few outcome studies following this procedure. Previous studies have collected patients over three or four decades who have been treated by various surgical approaches, with fracture fixation usually achieved using Kirschner wires. The aim of this study was to review the results of displaced talar neck fractures treated using internal fixation with lag screws.

A retrospective study was undertaken of all patients admitted to our institution who underwent open reduction and internal fixation of displaced talar neck fractures between 1981 and 1995. 31 patients underwent surgery. One patient had bilateral injuries. One fracture was open. There were twenty eight Hawkins's type II and four Hawkins's type III injuries. There were twenty three males and eight females, ranging in age from 15 to 61 years (mean 31 years). There were four causes of injury: falls (13), motor vehicle accidents (13), horse riding (three) and crush injuries (two). Fourteen patients had multiple injuries with the commonest associated injury being ipsilateral ankle (five patients) and foot (two patients) fractures. The mean follow up time was nine years.

Ten patients underwent surgery within 24 hours of injury. All patients had surgery within ten days. The antero-lateral approach was the commonest approach used as dictated by fracture configuration. Compression screw fixation was used in 29 cases whilst Kirschner wires alone were used in three cases. All patients remained non weight-bearing in a below knee plaster cast for a mean time of 12 weeks. There were no infections following fracture fixation. 22 out of 31 patients (71%) had no complications as a result of their injury or operative intervention. All fractures united. Seven patients (22%) developed avascular necrosis which is the commonest complication. Five of these patients required fusion procedures. Secondary procedures were required in 14 patients: eight for metalwork removal, five fusions and one subtalar osteotomy.

This study has confirmed that open reduction and lag screw fixation of displaced talar neck fractures can give good results. The union rate is excellent with no deep infections and over two thirds of patients had no major complications as a result of their injury or surgery. Avascular necrosis remains the most important complication and occurred in five out of twenty eight (18%) Hawkins's type II and two out of four (50%) Hawkins's type III fractures. The outcome following avascular necrosis was poor with patients often requiring a late fusion.

EVIDENCE-BASED CARE IMPROVES THE TREATMENT OF STABLE ANKLE FRACTURES

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Stable undisplaced ankle fractures can be treated safely by a functional approach, early weightbearing and no radiographic follow-up. This produces improved early results and cost savings. We derived evidence-based care guidelines from the literature and introduced them in our unit, backed up by an audit programme. We audited all adult ankle fractures treated in our unit in the calendar year 1996, prior to the introduction of guidelines. We then repeated the audit for all adult ankle fractures treated between April 1998 and March 1999 (immediately after the guidelines were introduced) and again in the first quarter of

2000.

Results.

Stable fractures/total fractures: in 1996;66 of 171, 1998-9;126 of 257, in 2000;34 of 83
Functional treatment: in 1996;7 of 66(10.6%), 1998-9;30 of 126(23.8%), in 2000;20 of 34(58.8%)
Median weeks in plaster: in 1996 ;6, 1998-9;4, in 2000;0 (p<0.04)
Median weeks nonweightbearing: in 1996; 2, 1998-9;0, in 2000;0 (p<0.03)
Median no of clinic Xrays: : in 1996; 3, 1998-9;1;0 (p<0.04)
Unnecessary Xrays: in 1996;198 (3.0/patient), 1998-9;120 (0.95/patient), in 2000;20 (0.59/patient)
No fractures displaced in brace.

Conclusions.Evidence based improvements in trauma care are possible when supported by explicit guidelines and the completion of the audit cycle.

**TRIPLANAR FRACTURES REQUIRING OPEN REDUCTION AND INTERNAL FIXATION -
PREOPERATIVE PLANNING USING COMPUTED TOMOGRAPHY**

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Aim. To document the extent to which computed tomography is used as a pre-operative tool for fracture fixation planning. To demonstrate the usefulness of computed tomography in preoperative planning for triplanar fractures.

Materials And Method. Questionnaires were sent to 30 Orthopaedic Surgeons involved in the operative management of Triplanar fractures. Subsequently three sets of radiographs were randomly selected and shown to five Orthopaedic Surgeons who were required to mark the respective screw positions. They were then shown the corresponding CT scans and asked to mark the screw positions again.

Results. Only 13 (50%) of the responding surgeons requested CT scans preoperatively. 10 out of the 13 requested CT scans always for all displaced triplanar fractures.

The initial screw positions were altered by the Orthopaedic Surgeons after seeing the corresponding CT scans. This was especially so for the Epiphyseal screws. The surgeons who requested CT scans agreed that fixation was much easier, quicker and the corresponding surgical incision was smaller.

Conclusion. We have found computed tomography to be very useful in preoperative planning for displaced triplanar fractures and are currently under utilised.

ULTRASOUND GUIDED INJECTION FOR MORTON'S NEUROMA;

Technique and Early Results

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The diagnosis of Morton's neuroma has been made more accurate by the use of M.R.I.¹ and ultrasound scanning² and the diagnostic injection of local anaesthetic 'blindly' into the web space in question. Combining a steroid preparation with the local anaesthetic injection has also made the procedure therapeutic and in a number of reports has reduced the overall need for surgery. Blind injection has, however, been associated with complications such as skin discolouration and metatarsal fat pad atrophy. We have recently been performing guided injection of local anaesthetic and steroid around Morton's neuromas confirmed at ultrasound scan. We believe this may increase the efficacy of injection and reduce local complications. In this article we describe the technique for injection and a retrospective review of the first 29 cases treated in this way. In 35% of patients a single injection provided long lasting relief of all or most

symptoms. In another 5% a further injection was required to achieve the same goal. In 50% of patients the benefits only lasted a few hours or weeks but provided useful diagnostic information. The remaining 10% found little or no benefit from the procedure. The last two groups are moving on to further treatment with orthotics or surgery. To date there have been no complications.

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SURGICAL CORRECTION OF SEVERE CLAW TOE DEFORMITY:

A review of the Stainsby procedure.

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In the severely clawed lesser toe the plantar plate of the metatarso-phalangeal joint becomes displaced onto the dorsal aspect of the metatarsal head and causes it to be depressed. The results of a surgical procedure replacing the plantar plate to its correct position are presented.

30 feet in 23 patients have been reviewed. Pre-operatively all patients had metatarsalgia due to severely clawed lesser toes. The average age was 60 years (26 to 84 years) and the average follow-up period was 23 months (six to 62 months). In 18 feet (56 toes) the deformities were due to rheumatoid arthritis. Eight feet (10 toes) had lesser toe deformities secondary to hallux valgus, and in three feet (three toes) there was no obvious cause. One patient had severe clawing of two toes as a result of long standing missed traumatic dislocations of the metatarsophalangeal joints.

There was a significant improvement as regards relief of pain, walking ability, and correction of deformity, and difficulties with footwear were reduced. 86.6% were rated as good or excellent, 6.6% had fair results and in 6.6% the results were poor.

FOREFOOT SURGERY, WHAT IS MISSING?

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The most common area prone to symptoms at the forefoot is the first metatarsophalangeal joint/hallux (hallux valgus, rigidus,...). More than 100 surgical procedures have been practised and described over the last century. Each procedure has its own advantages and disadvantages. However, most procedures, if not all of them, have a common denominator: they tend to only treat immediate symptoms (pain) and ignore the *biomechanical* post-operative changes of the forefoot that invariably affects the posture of the foot and the whole body. It is the aim of this paper, through a series of clinical cases, to highlight the importance of biomechanical evaluation of pre and post operative treatment and the role of orthoses in complementing surgical intervention.

PLANTAR FASCIISTS

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Plantar fasciitis is the most common cause of pain at the weight-bearing surface of the heel, and may coexist with other sources of heel pain. This has led to a confusing array of treatment strategies, including surgery. Plantar fasciitis is a term first used by Wood in 1812. It is subcalcaneal pain. The Causes are quite numerous, these include: microtrauma, microfracture and stress fracture, obesity & overweight, degenerative changes, bursa, secondary nerve involvement, systemic diseases, tarsal tunnel syndrome, calcaneal spur.

It is more common after the age of 40, mainly affecting women: females 3:1, 70% unilateral, and almost 50% have "spurs". Almost 20% of foot pain is due to plantar fasciitis

The diagnosis can be determined easily by history and physical examination. Sonography, two-phase bone scan, X-ray and electrodiagnostic studies, are not essential, whilst technetium bone scan can be considered useful.

Personally, I prefer a conservative therapy, amongst which: rear foot orthosis, ripple sole shoes, analgesic plasters, physiotherapy. if very painful, injections with a local anaesthetic associated to stretching exercise and *radial shock wave therapy* (which we have just started using). I believe that this is an effective therapy, especially for the painful symptoms. It seems to be exploiting the mechanism of the gate control theory.

NERVE ENTRAPMENT OF THE BRANCHES OF THE SUPERFICIAL PERONEAL NERVE

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The superficial peroneal nerve branches in the front of the ankle joint into the lateral and medial branches.

2 cases are reported where the lateral (in one case) and the medial (in one case) were entrapped, causing severe, excruciating pain and difficulty to wear shoes.

The cause of this entrapment is not clear, but most probably related to a tight foot wear causing a repeated minor trauma at the site of the nerves. Injection of local anaesthetic confirmed the diagnosis and steroid injection had temporary relief. Surgical release of these branches of the superficial peroneal nerve is disappointing. Exploration and diathermy of the nerve has given post operatively an excellent result and good patient satisfaction.

POSTER: METALLOSIS IN CERAMIC REPLACEMENT OF FIRST MTP JOINT

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This is a case of a 64 year old gentleman who is a retired technical supervisor for swimming pools, who has history of painful big toe on the left side for four years, due to hallux rigidus. He elected for replacement of M.T.P joint as he was not keen for arthrodesis. This was performed in October 1999 using ceramic prosthesis. Apart from slight inflammation the post operative recovery was uneventful. However, during the first two months he had discomfort, which resolved. On fifth postoperative month he started to experience some discomfort and pain and his condition continued to deteriorate. Radiological examination in the eighth postoperative month showed signs of loosening. In the eleventh postoperative month, the removal of the prosthesis was performed which showed jet back necrotic and shaggy tissue and the prosthesis was found to be very loose.

On histopathology of material, the specimen was composed of fibro-vascular tissue containing many macrophages, which were found to be filled with black granular material, probably carbon. On occasions,

along with fragments of bony material, tiny birefringence fragment of foreign material was seen, probably ceramic debris. These findings were suggestive of chronic inflammation and foreign material.

X ray analysis of the biopsy specimen to try and find out chemical composition of black granular material suspected to be carbon has been sent, reports are awaited.

The patient made a very good recovery after removal of the prosthesis.

POSTER; A REPORT ON THE USE OF DORSAL ANKLE ORTHOSES IN THE MANAGEMENT OF ACHILLES TENDON RUPTURE.

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Conventional treatment after acute rupture of the Achilles tendon treated by surgical repair or non-operatively, involves a period of cast immobilisation of the ankle joint to protect the tendon. A dorsal ankle orthosis [DAO] can be used as an alternative method with less associated complications. The aim of this study was to investigate the effect of a DAO positioned in plantar flexion, and a DAO positioned in the neutral position, on the second peak of the vertical ground reaction force. Four normal subjects mobilised wearing the DAOs in the gait laboratory. The vertical ground reaction force data recorded from force plates.

The dorsal ankle orthosis fixed in a plantar flexed position reduced the walking speed of the subjects. This produced a reduction in the vertical ground reaction forces consistent with walking at slower speeds. By reducing cadence the plantar flexed orthosis reduced the vertical ground reaction forces during the propulsive phase and so protected the Achilles tendon. The orthotic fixed in the neutral position of the ankle reduced the vertical ground reaction force during the propulsive phase of gait and enabled the subjects to walk at their normal cadence. The effects of DAOs are discussed in the rehabilitation of patients following rupture of the Achilles tendon.

POSTER: LOCAL ANAESTHESIA FOR FOOT SURGERY: A SAFE AND HIGHLY ECONOMIC PRACTICE

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This study assesses the acceptability of the Kofoed ankle block (1982) for day case foot surgery in the UK. Although this technique is little known in this country, we have used it routinely since 1990. All blocks were administered by the surgeons.

Fifty patients (age range 19 to 84 years; average 62) were so treated throughout 1999. The operations were: Twenty first metatarsal chevron osteotomies; Four Morton's neuromata excision; Eight lesser metatarsal osteotomy; Four MTPJ arthrodesis; Six lesser toe corrections; Eight other operations. Many were unfit for a day case general anaesthetic (GA).

The dose of local anaesthetic (LA) used was 20ml of 2% lignocaine with adrenaline, given at least 15 minutes before surgery. An ankle tourniquet was used. There were no failures of anaesthesia and no specific complications arose. One patient required admission overnight for social reasons. Only one case of prolonged paraesthesia was reported which lasted one week.

Patients were interviewed by telephone 12 months after surgery. Subjectively 93% of respondents were satisfied with the technique and would be willing to undergo further surgery in this manner, or recommend it to a friend.

We conclude that the Kofoed technique is safe, reproducible and deserves much wider acceptance. Major savings are achieved compared with conventional GA management.

POSTER: SYNOVIAL CELL SARCOMA PRESENTING AS SPASMODIC PERONEAL FLATFOOT

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Ten year old boy with a history of dyspraxia and learning difficulties presented with right foot pain and out-toeing gait. Clinically he had a plano-valgus foot, external tibial torsion and spasmodic peroneals and tibialis anterior. Blood tests were normal and bone scan was cold. X-rays showed no abnormalities. MRI scan showed soft tissue swelling in the sinus tarsi. Biopsy showed no evidence of malignancy. Symptoms recurred and further investigations including CT scan and MRI scan were done 2 years later. Intra-lesional curettage of the calcaneum, bone grafting and Dennyson Fulford procedure was performed. Biopsy showed evidence of monophasic synovial cell sarcoma and patient was appropriately referred to the tumour centre.

POSTER: SAPHO SYNDROME MIMICKING AS MULTIFOCAL SUBACUTE OSTEOMYELITIS (Synovitis Acne Pulstulosis Hyperostosis & Osteitis)

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An eleven year old female was referred with complaint of left ankle pain following an injury. She had been treated by a physiotherapist with insoles prior to this. A further history of a fall drew attention to a swelling of the medial end of the left clavicle and her initial blood tests were normal. Ultrasound scan showed thickening of the medial end of the clavicle. X-ray of her left ankle showed a possible infective lesion in the distal tibial metaphysis. Apart from raised IgM levels and ASO titres, her blood test remained normal. No treatment was instituted. A biopsy of the tibial lesion was nonspecific. No organisms were cultured and AFB were negative. Rheumatological opinion concurred with the diagnosis of SAPHO syndrome and the patient was managed with anti-inflammatories.

SAPHO syndrome, which is discussed in the rheumatological literature, should be considered as a differential diagnosis in these unusual presentations mimicking sub acute infections.

POSTER: AETIOLOGICAL FACTORS IN METATARSALGIA

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We reviewed the structured records of 388 patients (524 feet) complaining of pain in the lesser metatarsus and MTP joint, looking for the presence of various possible aetiological factors. 104 patients had one factor (mostly lesser toe deformities or interdigital neuralgia), 154 patients had two factors, 80 had three factors, 34 had four factors, 14 had five factors and two had six factors. Factors identified were grouped: as follows: Lesser toe deformities 266 patients (380 feet), first ray disorders 137 patients (193 feet) neurological conditions 95 patients (113 feet), biomechanical factors 86 feet in 67 patients, systemic diseases (mostly RA) 106 feet in 66 patients previous forefoot surgery 81 feet in 66 patients, pes cavus 84 feet in 56 patients, MTPJ problems 45 feet in 37 patients, hind foot factors 32 feet in 23 patients, previous trauma (including stress fractures) 15 feet in 13 patients, other factors 56 feet in 44 patients

The commonest non-surgical treatments were metatarsal dome insoles (111 patients),

accommodative shoe-wear (64 patients) and steroid injections (59 patients). The commonest procedures were lesser toe straightening (81 patients), first metatarsal osteotomies (49 patients), rheumatoid forefoot reconstructions (18 patients), first MTPJ fusions (16 patients), interdigital neurectomies (14 patients) and metatarsal shortening osteotomies (12 patients). Metatarsalgia is a symptom, not a diagnosis. Several factors may contribute to the problem and require to be addressed.

POSTER: A NEW METHOD TO ASSESS DORSIFLEXION OF THE ANKLE JOINT;

Yassari sign

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Purpose. To introduce a simple new method of examination to assess dorsiflexion of the ankle joint, particularly useful for unilateral mild to moderate restriction of ankle dorsiflexion.

Methods. A 23 year old lady presented with a history of ankle discomfort provoked by physical activities, preceded by mild ankle injury. Conventional examination was within normal limits. Since tibia is much longer than the foot, it should augment any change in the range of ankle dorsiflexion much better than the foot.

Ankle dorsiflexion is assessed while patient in standing position. Ask the patient to move his knees forward as far as possible while keeping heels on the ground. Notice any restriction in this movement making sure that both heels are on the ground. This movement occurs mainly in knee and ankle joints. Provided that patient's knee range of movement is normal any restriction in the ability to move the knee forward while the heel is on the ground is due to restriction of ankle dorsiflexion

Results. The above patient was treated successfully by physiotherapy to improve dorsiflexion of the left ankle.

Conclusion: Mild to moderate restriction of ankle dorsiflexion may give rise to symptoms during physical activities particularly in a young patient. This method of examination is simple and can be helpful to diagnose a treatable common condition.

POSTER: DIVERSITY IN THE OPERATIVE TREATMENT OF LATERAL TALAR SHIFT, LATERAL MALLEOLUS FRACTURE AND INTACT MEDIAL MALLEOLUS

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Fracture of the ankle is one of the injuries commonly treated by orthopaedic surgeons. Treatment of the associated deltoid ligament injury remains an area of controversy. Lateral malleolus fracture associated with intact medial malleolus and lateral talar shift of >2mm indicates deltoid ligament injury. The purpose of this study is to assess the current diversity in the treatment of such injuries. We reviewed the literature to gather the available evidence.

A questionnaire was designed and sent to consultant orthopaedic surgeons selected randomly from the British medical directory, and British Orthopaedic Association Fellow list. The Weber classification was used in the questionnaire because it is the most commonly used classification in UK. 36 surgeons from 36 different hospitals in UK responded to the questionnaire. We found significant difference among the surgeons with regard to whether the deltoid ligament needs exploration or not. Of the 36 surgeons 7 (20%) never explored the ligament and seven (20%) always explored the ligament in type C fracture. In type B fracture 10 surgeons (28%) never and four surgeons (11%) always explored the ligament. While in type A fracture 21 surgeons (58%) never and 14 surgeons (39%) sometimes explored the ligament. Threshold to

explore the ligament among the surgeons who sometimes explore the ligament also showed significant diversity. Treatment of deltoid ligament injury remains an area of major controversy. We believe that the diversity shown in this study in the treatment of this injury is unacceptable. In Weber type C fracture this study showed 20% of the surgeons never explored the ligament and 20% of the surgeons always explored it. This means that 20% of the surgeons in this study either under or over treated their patients surgically. A randomised prospective clinical trial is required to achieve more rationalized and homogenous treatment approach to such an injury.