BRITISH ORTHOPAEDIC FOOT SURGERY SOCIETY

ANNUAL INSTRUCTIONAL COURSE AND SCIENTIFIC MEETING

CRAXTON WOOD HOTEL & CONFERENCE CENTRE
PUDDINGTON, WIRRAL

14th & 15th NOVEMBER 2002
CME 11.5 Credits

PROGRAMME

Course Sponsors

BOFSS wishes to express its thanks

Aesculap	Publicity and course administration
Aircast	Wine at Annual Dinner
BUPA Murrayfield Hospital	Champagne at Annual Dinner
DePuy	Audiovisual costs
EBI/Biomet models	Travel/accommodation/ workshop/ Dr Nick Abidi
Stratec	Travel/accommodation/ workshop/ models Dr Christoph Sommer
Stryker/Howmedica	Travel/accommodation/ workshop/ models Mr Roger Atkins & Mr Mark Jackson
Smith & Nephew	Travel/accommodation Prof David Marsh

DePuy	**Sr Jacki Patrick**
Zimmer	Sr Gaynor Williams

Exhibition Stands

Aesculap

Aircast

Athrodax Healthcare International

Atlantech Medical Services

Aventis

Benefoot

Biomet Merck

DuPuy

Intavent Orthofix

Karl Storz Endoscopy Ltd

Linvatec

London Bone Company

Mitek

New Splint PLC

Novel Gmbh

Orthofix Ultrasound Orthosonics Ltd

Ostek

PPM Software

Siemens

Smith & Nephew

St James's Place P/Ship

Stratec

Stryker Howmedica

Tyco

Vertec

Wright Cremascoli Ortho

Zimmer Ltd

THURSDAY 14TH NOVEMBER 2002

CME 6 credits

INSTRUCTIONAL COURSE:- a.m. session

A Symposium on the Current Management of Pilon Fractures

08:30 – 08:50 **Registration & Coffee**

08:50– 09:00 Welcome Nick Geary

Session 1 Chair Steve Parsons

09:00 – 09:30 **Concepts, & Current Problems in Pilon fractures.**
Professor David Marsh, N. Ireland (Sponsored by Smith & Nephew)

09:30 – 10:00 **What Is a Pilon Fracture?**
Mr Mark Jackson, Bristol (Sponsored by Stryker Howmedica)

10:00 – 10:30 **Role of Internal Fixation Including Low Profile Internal Fixation**
Dr Christoph Sommer, Switzerland (Sponsored by Stratec)

10:30 – 11:00 **External Fixation +/- Hybrid Fixation**
Dr Nicholas Abidi, U.S.A. (Sponsored by Biomet/EBI)

11:00 – 11:30 **Coffee and Trade Exhibition**

Session 2 Chair Patrick Laing

11:30 – 12:00 **The Direct Approach: Advantages and Problems**
Mr Roger Atkins, Bristol (Sponsored by Stryker Howmedica)

12.00 – 12:30 **Soft tissue cover around the ankle:-**
What is possible and where not to place your fixator.
Mr Kevin Hancock, Whiston, Merseyside

12:30 – 13:00 Chair Nick Geary
Questions, Discussion, Problem Cases and Résumé

13:00 – 14:30 **Lunch and Trade Exhibition**

THURSDAY 14TH NOVEMBER 2002

INSTRUCTIONAL COURSE:- p.m. session

Practical Hands-on Workshop Sessions: Conference Centre, 1st Floor

There are 3 practical workshops situated as below:-

Kilhey Room	**AO Low profile Pilon plates and distal tibial plates** Battery Operated Power tools provided by Stratec (Christoph Sommer Sponsored by Stratec)
Ansty Room	**EBI Dynafix Hybrid Fixation in Pilon Fractures** Battery Operated Power tools provided by Aesculap (Dr Nick Abidi Sponsored by Biomet/EBI)
Roxburghe Room	**Hofmann II Hybrid Fixation in Pilon Fractures** Battery Operated Power tools provided by Stryker (Roger Atkins Sponsored by Stryker Howmedica

There are 78 places available, divided into 3 groups of 26.
Each delegate does all three workshops.

3 groups

RED
GREEN
BLUE

****

TIME	KILHEY	ANSTY	ROXBURGHE
14:30-15:15	RED	GREEN	BLUE
15:20-16:05	GREEN	BLUE	RED
16:10 – 16:40	**Tea and Trade Exhibition**		
16:45 – 1730	BLUE	RED	GREEN

****

19:30 **Reception & Annual Dinner**
Thornton Hall Hotel, Thornton Hough, Wirral

FRIDAY 15TH NOVEMBER 2002

CME 5.5 credits

ANNUAL SCIENTIFIC MEETING
Morning Programme

Posters will be on display in the Kilhey and Ansty Rooms on the first floor

08:30-10:30 Annual General Meeting
(Quiz to be run during this for non members)

10:30-11:00 Coffee and Trade Exhibition

11:00-12:30 **Session 1 Ligament & tendon injuries**
Chair: Ian Stephen

11:00 **Instability of the tibio-fibular syndesmosis: Have we been pulling in the wrong direction?**
J Candal-Couto, D. Burrow, S. Bromage, P.J. Briggs
Freeman Hospital, Newcastle-upon-Tyne

11.10 **Calcaneo-fibular ligament deficiency in chronic lateral hindfoot instability. A new dynamic ultrasound sign and comparison with cadaveric, clinical and surgical findings.**
C M Blundell, C Bass, T E Schneider
Melbourne Orthopaedic Group and Victoria House Medical Imaging, Melbourne, Australia.

11:20 **The loads in the retrocalcaneal bursa:- a dynamic cadaveric study.**
M. Nyska, A. Nguyen, B. Parks, S. Shabat, M. Myerson
Sapir Medical Center Kfar-Saba, Israel. and Union Memorial Hospital, Baltimore, USA

11:30 **Operative Repair And Early Mobilisation Of Achilles Tendon Rupture**
T. Bishop, S. Molloy, M. Solan. D. Elliott and K. Newman
Ashford and St Peters' NHS Trust

11:40 **Prospective Study Of The Achillon Suture System For Mini-Open Repair of Ruptured Achilles Tendon.**
J. Calder, T. Saxby
Brisbane Foot and Ankle Centre, Australia.

11:50 **Delayed Rupture of the Achilles Tendon : Reconstruction using Sliding Graft Technique.**
I F N Lasrado, M Y Sabouni , S W Parsons
Royal Cornwall Hospital, Truro

12:00 **Vacuum assisted therapy to help assist wound closure in foot and ankle surgery.**
A.D. Mendonca, N.K. Makwana
Wrexham Maelor Hospital, Wrexham

12:10 **Results of 46 isolated Lisfranc injuries and the effect of compensation claims.**
J. Calder, T. Saxby
Brisbane Foot and Ankle Centre, Australia.

12:20 **Charcot neuro-arthropathy in the foot: a 12-year review.**
G. Lomax, K. Eccles, S Clarkson, C McLaughlin, G Jones, J Barrie

12:30- 13:30 Lunch and Trade Exhibition

FRIDAY 15TH NOVEMBER 2002

ANNUAL SCIENTIFIC MEETING
Afternoon Programme

13:30-15:30 **Session 2 Hindfoot**
Chair: Dishan Singh

13:30 **A comparison of outcome scores for the ankle.**
M. Herron, S Kar, D Beard, P Binfield
Warwick District General Hospital

13:40 **Early results of Autologous Chondrocyte Implantation in the Ankle.**
JP Whittaker, N Makwana, Graham Smith, P Laing, Prof Richardson
Wrexham Maelor Hospital and Robert Jones & Agnes Hunt Orthopaedic Hospital, Oswestry

13:50 **The treatment of osteoarthritis of the ankle by intra-articular Sodium Hyaluronate injections.**
M. Nyska, B. Kish, S. Shabat, S. Masarawa, A. Stern
Meir General Hospital, Sapir Medical Center, Kfar Saba, Israel .

14:00 **Arthroscopic Fusion Of The Ankle Using Two Medial AO Screws With Dished Washers.**
Lwin MK, Zubairy A, Geary N.
Wirral Hospitals NHS Trust, Merseyside.

14:10 **Tibio-Talo-Calcaneal (Hindfoot) Arthrodesis By Intramedullary Nailing. Results Of 55 Cases.**
R Hammutt, S Hepple, B Forster, W. Harries, I. Winson.
Avon Orthopaedic Centre, Bristol

14:20 **Open Treatment Of Anterior Ankle Impingement. Minimum Five-Year Follow Up**
R. Coull, T. Raffiq, L.E. James, M.M. Stephens
Cappagh National Orthopaedic Hospital, Dublin, Ireland

14:30 **Patho-anatomy Of The Distal Tibial Pilon Fracture**
Claire Topliss, Mark Jackson, Roger Atkins
University Department of Orthopaedics, Bristol Royal Infirmary.

14:40 **Pre-Operative Assessment Of Distal Tibial Physeal Fractures**
A. P. Molloy , L. Cutler , A. Bass , R. Banerjee , A . Kalyan , V. Dhukurum
Alder Hey Hospital , Liverpool.

14:50 **The Direct Surgical Approach To The Distal Tibial Pilon Fracture**
C. Topliss, M. Jackson, R. Atkins
Bristol Royal Infirmary, Bristol.

15:00 **Percutaneous Removal Of Metalwork Around Ankle: Our experience with first 12 cases.**
M Ramakrishnan, K Subramanian, N P J Geary.
Arrowe Park Hospital, Wirral, Merseyside.

15:10 **Biomechanical Evaluation of Intramedullary Fixation for First Metatarso-phalangeal Joint Fixation**
S. Molloy, B. Burkhart, L. Jasper, M. Solan, S. Belkoff
John Hopkins University, Bayview Medical Center, Baltimore, USA

15:20 **Biomechanical Evaluation of the Interosseous Membrane and the Interosseous Ligament.**
J. Edvinsson, S. Molloy, L. Jasper, S. Belkoff
John Hopkins University, Bayview Medical Center, Baltimore, USA

15:30-16:00 **Tea and Trade Exhibition**

16:00-17:20 **Session 3 Hallux**
Chair: Paul Cooke

16:00 **Hallux Valgus Surgery: What Are the Patients' Expectations?**
C Tai, S Ridgeway, V A Ng, D Singh
Barnet Hospital, United Kingdom

16:10 **Pre-operative Sensory Dysfunction Of The Great Toe In Hallux Valgus**
M. Herron, S. Kar, D Beard, P Binfield
Warwick District General Hospital Lakin Road Warwick and Nuffield Orthopaedic Centre Windmill Road, Oxford

16:20 **Scarf Osteotomy For Correction Of Hallux Valgus: Clinical And Radiological Evaluation**
S. Prasad, T. Lake, H. Hannah, M. Hennessy
Wirral Hospital, Wirral.

16:30 **Scarf Osteotomy For Correction Of Hallux Valgus: Pedobarographic Evaluation**
S. Prasad, T. Lake, H. Hannah, M. Hennessy
Wirral Hospital, Wirral.

16:40 **Silastic metatarso-phalangeal arthroplasty: Very long term results of single-stem implants in degenerative joint disease**
J M Loughead, W J Harrison
Newcastle-upon-Tyne

16:50 **The Screw Fit Ceramic MOJE Toe Joint Replacement. The Initial UK Experience.**
S. Coleridge
Research carried out at Princess Royal Hospital, Haywards Heath, Lewes Rd, West Susse,.

17:00 **Early Results Of Ceramic/Ceramic 1st Metatarso-phalangeal Joint Replacement**
D. Omonbude, A Faraj
Airedale General Hospital, West Yorkshire

17:10 **Distal Phalangectomy For Mallet Toe**
S Raja, J. Barrie , A. Henderson
Blackburn Royal Infirmary, Blackburn.
Royal Bolton Hospital, Bolton.

17:20-17:35 **" The Tourniquet"**
Professor Leslie Klenerman: Invited Speaker

17:35 **Chan Chen Prize for best trainee paper**

Presidential Handover

END OF MEETING

ABSTRACTS
of
Podium Presentations

Instability Of The Tibio-Fibular Syndesmosis: Have We Been Pulling In The Wrong Direction?

J Candal-Couto, D. Burrow, S. Bromage, P.J. Briggs
Department of Orthopaedic Surgery, Freeman Hospital. High Heaton, Newcastle-upon-Tyne. U.K.

Syndesmotic stability in ankle fractures is usually assessed by pulling on the fibula with a bone hook in the coronal plane ("hook test"). Our clinical observations have suggested that instability may be more marked in the sagittal plane.

Our aim was to compare movement at the tibio-fibular syndesmosis in the sagittal and coronal planes after sequential ligament division in a cadaver model.

Seven specimens were used. A blinded subject was asked to perform the hook test both in the sagittal and coronal planes. Movement was assessed by measuring the displacement of parallel k-wires three consecutive times. In all specimens, the anterior tibio-fibular, interosseous and posterior tibio-fibular ligaments were sequentially divided and movement tested. In three specimens the deltoid ligament was then divided and the interosseous membrane in another three.

After division of all three syndesmosis ligaments the mean displacement was 8.8mm (±3.9) in the sagittal plane and 1.5mm (±0.4) in the coronal plane. When the deltoid ligament was then divided, the displacement increased to 11.7mm (±2.4) and 3.2mm (±0.5) respectively. When the interosseous membrane was divided the measurements were 12.7mm (±4) and 3.1mm (±1.5).

We conclude that distal tibio-fibular instability should be assessed in the sagittal plane.

Calcaneofibular Ligament Deficiency In Chronic Lateral Hindfoot Instability. A New Dynamic Ultrasound Sign And Comparison With Cadaveric, Clinical And Surgical Findings.

C M Blundell[1], C Bass[2] and T E Schneider[1]
Melbourne Orthopaedic Group[1] and Victoria House Medical Imaging[2], Melbourne, Australia.

The role of the subtalar joint in patients with chronic hindfoot instability remains controversial We have made an attempt at quantifying subtalar instability clinically and comparing this with findings at dynamic ultrasound. As a result of this study we have been able to demonstrate and test for reliability a new ultrasound sign for calcaneofibular ligament (CFL) deficiency.

A preliminary dissection of 4 cadavers was undertaken to determine the role of the CFL in providing subtalar stability and the effect of sectioning this ligament. 15 patients with symptomatic hindfoot instability were examined by two orthopaedic surgeons and subsequently had dynamic ultrasound examination of their ankle and subtalar joints on both the affected and unaffected sides. 10 control ankles were also examined. It was found that in a subset of these, with positive clinical signs of subtalar instability, the CFL failed to elevate the overlying peroneal tendons and alter their roundness on ultrasound cross section (suggesting that the CFL was deficient) whilst in normal hindfeet and those without a positive clinical test for subtalar instability the tendons were elevated in a reproducible manner. There was perfect correlation with the findings (in terms of the presence or absence of the CFL) at surgery in 5 patients undergoing lateral stabilisation procedures.

We believe this new sign is reliable and demonstrates the integrity of the CFL in patients with chronic hindfoot instability.

The Loads In The Retrocalcaneal Bursa- A Dynamic Cadaveric Study.

**M. Nyska M.D., **Augustine Nguyen B.S., **B. Parks M.Sc. *S. Shabat M.D., **M. Myerson M.D.*

** Department of Orthopaedic Surgery, Sapir Medical Center Kfar-Saba, Israel.*

*** Foot and Ankle Services, Union Memorial Hospital, Baltimore Maryland, USA.*

Insertional Achilles tendonitis is an inflammatory disorder affecting mainly active young patients. The aetiology is multifactorial and include the combination of anatomical and biomechanical characteristics. One fifth of the tendon injuries in athletes are insertional complaints which includes bursitis and insertion tendonitis. The complex of the insertion of the Achilles tendon includes 3 main components of fibrocartilage sesamoid, periosteal and enthesis. A conservative regime is recommended as the first line of treatment. In case of failure a surgical decompression of the posterior margin of the Calcaneus is indicated.

Material and Methods- Nine cadaveric legs were used for the experiment. The leg was mounted on an MTS machine and was axially loaded 360 N. The foot was attached to a plate which enabled dorsi and plantar flexion. The Achilles was sutured twice in an Ethibond using the Krakow technique in order to anchor the tendon to an actuator. A thin pressure sensor plate was inserted into the retrocalcaneal bursa to measure the force, pressure and contact area of the Achilles to the Calcaneus in various conditions of the foot. The conditions included 90 degrees of the foot, 15 and 30 degrees of dorsiflexion while the tension that was applied on the Achilles was 0, 200 N and 300 N. After resection of the posterior surface of the Calcaneus in a 20 degrees of slope.

The mean peak force, pressure and area did not change in Achilles tensioning while the foot was in 90 degrees and were close to zero. In 15 degrees of dorsiflexion there was increase in the mean peak force, pressure and area when the Achilles was tensed to 200 and 300 Newton. Larger increase in these parameters was achieved by further dorsiflexion the foot to 30 degrees.

After resection of the posterior margin of the Calcaneus in an angle of 20 degrees the mean peak force, pressure and area dropped close to zero and remained almost unchanged during the various conditions of the experiment.

Conclusions- Dorsiflexion and tension of the Achilles tendon increases the mean peak force, pressure and area in the Achilles retrocalcaneal bursa.

These data may explain the mechanism for the insertional Achilles tendinosis. Resection of the posterior surface of the Calcaneus in 20 degrees decompress efficiently the retrocalcaneal bursa including various angles of the foot and in various tensions of the Achilles.

Operative Repair And Early Mobilisation Of Achilles Tendon Rupture

T. Bishop, S. Molloy, M. Solan. D. Elliott and K. Newman
Department of Orthopaedic Surgery, Ashford and St Peters' NHS Trust

Traditionally, immobilisation following Achilles rupture has been for 10 to 12 weeks.

We have previously published a series of 71 consecutive repairs with no re-ruptures, using a lateral surgical approach. The latter part of this cohort were immobilised for 6 weeks instead of 12, with early weight bearing. The lack of any re-ruptures encouraged us to pursue the accelerated rehabilitation.

This study documents a further 34 cases followed prospectively for 6-24 months (Mean 16 months). All were repaired with a single Kessler-type suture using loop PDS, through a lateral approach. Patients were partial weight-bearing immediately in an Aircast boot with three cork heel wedges. At two-weekly intervals the wedge was reduced, and the boot abandoned after six weeks.

There have been no re-ruptures, patients return to pre-injury activity levels and are highly satisfied. Costs savings were also made through use of a single removable orthosis rather than sequential casts.

We advocate this regimen of careful operative Achilles tendon repair and accelerated weight bearing rehabilitation with a removable orthosis.

Prospective Study Of The Achillon Suture System For Mini-Open Repair Of Ruptured Achilles Tendon

James Calder MD FRCS(Orth), Terence Saxby FRACS
Brisbane Foot and Ankle Centre, Level 9 Arnold Janssen Centre, Holy Spirit Hospital, 159 Wickham Terrace, Brisbane 4000, Australia.
Email:j.calder@ic.ac.uk

Introduction:

Percutaneous repair of a ruptured Achilles tendon has been shown to reduce wound healing problems but it has a high incidence of injury to the sural nerve. The Achillon Suture System is a new method utilising a small longitudinal incision. It passes a suture through the Achilles tendon leaving the suture purely within the tendon. This aim of this prospective study was to investigate the results of a new mini-open technique utilising a horizontal incision and early active mobilisation.

Methods:

Following ethical committee approval 25 patients underwent repair of their ruptured Achilles tendon using the Achillon System. Patients were followed up at 6 weeks, 3 and 6 months and 1 year post-op using the AOFAS and Leppilahti scoring systems.

Results:

There were no wound complications, re-ruptures or sural nerve injuries. All patients returned to work or their previous daily activities by 6 weeks (mean 22 days) post op. All patients had returned to driving by 6 weeks. One patient had 10° restriction in dorsiflexion at 3 months which prevented her return to running. She was back to running and had a full range of movement at 6 months. All other patients returned to sporting activities at 3 months but jumping sports such as basketball were discouraged until 6 months post-op.

Conclusion:

We suggest that this modification of using a horizontal incision and early mobilisation enhances wound healing and allows early return to normal activities and sports. It is technically simple, utilises a small incision (still enabling visual confirmation that the tendon ends have been approximated) and reduces the risk of sural nerve injury seen in other mini-open or percutaneous techniques.

Delayed Rupture of the Achilles Tendon : Reconstruction using Sliding Graft Technique.

Mr I F N Lasrado FRCS Ed, Mr M Y Sabouni MD, MSc., Mr S W Parsons FRCS, FRCS Ed
Foot and Ankle Service, Royal Cornwall Hospital, Truro, Cornwall. UK

We wish to report a technique for the reconstruction of the late presenting Tendo Achilles rupture.

Methods :

A proximal intra muscular Z lengthening through a separate incision facilitates distal translation of the proximal tendon stump, allowing direct repair distally with minimum tension.
Post operatively, a below knee cast is applied for six weeks, with progressive dorsiflexion at two weekly intervals.
A dorsiflexion restriction splint accompanies early physiotherapy for a further six weeks, with unprotected weight bearing commencing at three months.

Results :

There were eleven patients in the study group with an average follow up of 24 months. All tendons united. There were no re-ruptures. Two distal wound breakdowns occurred and one of these healed by secondary intention.
Good Single Stance power returned in patients with smaller separations but greater calf wasting and weakness was observed in those patients with large separations.

Conclusion :

We conclude that this technique can be employed for the reconstruction of late presenting Achilles tendon ruptures, but great care is required with soft tissue dissection distally.
Consideration could be given to deep flexor transfers in the widely separated case.

Vacuum Assisted Therapy To Help Assist Wound Closure In Foot And Ankle Surgery.

A.D. Mendonca, N.K. Makwana
Wrexham Maelor Hospital, Wrexham.

Aims:

The aims of this study were to 1) determine if vacuum assisted closure (VAC) therapy affords quicker wound closure in diabetic and ischaemic wounds or ulcers than standard treatment, 2) if it helps debride wounds and 3) if it prevents the need for further surgery.

Materials and Methods:

We retrospectively reviewed 12 patients, average aged 52.08 yrs (22-67) at an average of 6.3 months (1-12 months). 7 had diabetes and 3 had chronic osteomyelitis. All wounds or ulcers were surgically debrided prior to application of the VAC therapy. The VAC therapy was applied according to the manufacturers instructions. The main outcome measures were 1) The time to satisfactory healing and 2) the change in the wound surface area.

Results:

Satisfactory healing was achieved in 6 patients (50%), 7 were diabetic and 1 patient had peripheral vascular disease. The time to satisfactory healing was 2.5 months, average (1-6 months). The average size of the wound /ulcer was 7.41 cm^2 prior to treatment and 1.58 cm^2 following treatment by an average 2.5 months in those in whom the wound/ ulcer was still present. VAC therapy helped debride all wounds, which remained sloughy following surgical debridement. In 8 patients the need for further surgery, such as soft tissue flaps or more radical surgery was avoided.

Conclusion:

VAC therapy is a useful adjunct to the standard treatment of chronic wound /ulcers in patients with diabetes or peripheral vascular disease. Its use in foot and ankle surgery leads to a quicker wound closure and in some cases, avoids the need for further surgery. There are significant economic cost savings with its use in foot and ankle surgery.

Results Of 46 Isolated Lisfranc Injuries And The Effect Of Compensation Claims.

James Calder MD FRCS(Orth), Terence Saxby FRACS
Brisbane Foot and Ankle Centre, Level 9 Arnold Janssen Centre, Holy Spirit Hospital, 159 Wickham Terrace, Brisbane 4000, Australia.

Email:j.calder@ic.ac.uk

Aim:
The aim of this study was to investigate the long-term outcome of isolated, displaced Lisfranc injuries requiring operative intervention and identify whether results of treatment are influenced by workers compensation.

Methods:
This retrospective study reviewed all patients who underwent operative intervention for Lisfranc injuries. Patients with concomitant injuries were excluded from further investigation so that the outcome of purely isolated Lisfranc injuries could be assessed. The minimum follow-up was 2 years and the senior author performed all the operations. Patients were contacted and their employment status recorded. Ordinal regression analysis was performed to identify which factors influenced the outcome.

Results:
46 patients were studied and 24 had pursued medico-legal claims. The average Workcover payment was £25,000. 13/46 patients had a poor outcome. 11 of these patients had compensation claims ($p<0.01$) and 11 had greater than a 3 month delay in treatment following diagnosis ($p<0.05$). Although 12/33 men and 1/13 women had a poor outcome this difference was not statistically significant. The need for secondary fusion was not associated with a poor outcome. There was no significant difference between outcome and mechanism of injury or previous occupation. There was no correlation between the outcome and age at the time of injury.

Conclusion:
This series of 46 patients has a long follow-up of a rare injury. We believe that this study has medico-legal implications on reporting prognosis for such injuries and highlights the importance of prompt diagnosis and treatment for such injuries.

Charcot Neuroarthropathy In The Foot: A 12-Year Review

Lomax G, Eccles K, Clarkson S, McLaughlin C, Jones GR, Barrie JL
Diabetic Foot Clinic, Blackburn Royal Infirmary, Bolton Road, Blackburn

Charcot neuroarthropathy is a progressive, destructive process occurring in the presence of neuropathy. We report the outcome of neuropathic foot joints presenting to our clinic over a 12 year period.

Methods:

Cases were identified from the Diabetic Foot Clinic Register, 1989-2001. We studied patient demographics, clinical presentation, distribution, treatment and outcome.

Results:

28 episodes of arthropathy occurred in 23 patients. Age at onset ranged from 40 to 79 years. Presentation was acute in 14 and subacute in the others. Sites affected - 23 mid foot, 4 ankle, 1 MTP. 9 feet were ulcerated at presentation, 8 had a history of ulcer, 9 have no ulcer history. Infection complicated the Charcot process in 15. Mean Hba1c at presentation was 9.3%.

Treatments:

Total contact casting 23, 4 “scotch cast” boots and 1 Aircast walker. Pamidronate was given to 10 patients.

Outcomes:

3 patients died. 2 had below knee amputations. Casts were required for up to 12 months. 3 required orthopaedic foot reconstructions. All ulcers present initially healed.

Conclusion

Charcot arthropathy remains uncommon. In our series treatment was successful in all but 2 patients in terms of preserved limbs, mobility and freedom from ulceration.

A Comparison Of Outcome Scores For The Ankle

M.Herron,Y Lodhi,J McKenna,M Stephens
The Cappagh Orthopaedic Hospital Dublin
and Nuffield Orthopaedic Centre Oxford

There are numerous ankle and hindfoot scores in existence, which have been devised and used to assess surgical interventions. All have in common that there has been little or no work done to demonstrate their validity, reliability or sensitivity to change. Which score one chooses to use for the assessment of outcome will at present depend largely on personal preference.

We have undertaken a study to assess four of the most commonly used scores, those of Mazur (1978), Takakura (1990), AOFAS (1994) and Kofoed (1995) as well as a little used but well designed score, The Foot Function index (1991).

Method:

A cohort of twenty patients who had undergone a unilateral total ankle replacement (STAR) for rheumatoid or osteoarthritis were assessed by a single observer. The time following operation ranged from 6 to 48 months. All completed the above scores as well as a SF36 questionnaire. Using the SF36 as a "Gold standard" the scores were compared, both in terms of their overall results and also more specifically in terms of subsections such as pain and function.

Results:

Our results, though not to be interpreted as validation, do give some rational basis for the choice of score to use in assessing total ankle replacements.

Early results of Autologous Chondrocyte Implantation in the Ankle.

Mr JP Whittaker, Mr N Makwana, Mr Graham Smith, Mr P Laing, Prof Richardson.
The Wrexham Maelor Hospital and Robert Jones & Agnes Hunt Orthopaedic Hospital, Oswestry

We reviewed our results of Ankle ACI in 8 patients with an average age of 45 years (range 37 - 62) performed over two years. The average time to follow up was 8.6 months (range 2 - 26).

The patients were operated upon by three consultant surgeons. The osteochondral lesions were post traumatic in x cases. Six were situated medially, with 2 anterolaterally. The average size of the defects at surgery was 2cm^2 (range 1 -2 cm^2).

The patients were assessed with the Oswestry Ankle Score, Patient satisfaction score and Lysholm knee score, pre- and post-operatively.

Patient satisfaction scores in eight patients were either 'extremely pleased or pleased with the operation'. One patient recorded they were worse than before the operation at 2 months postop.

The mean Oswestry Ankle score improved by 20 points (-1 to 34), at average of 8.6 months (2 – 26). Both patients with over 12 months follow up, had continuing improvement in their ankle scores.
Significant pain was experienced in the knee postop which did not improve with follow up. The Lysholm knee scores on average were 23 points worse at up to 12 months.

Three had repeat arthroscopy at one year postop and were shown to have stable cartilage.

We suggest that the short term results of ankle ACI are good. Although the procedure is associated with donor site morbidity, the majority of patients were satisfied with their operation.

The Treatment Of Osteoarthritis Of The Ankle By Intral-Articular Sodium Hyaluronate Injections.

Nyska M.D., B. Kish M.D., S. Shabat M.D., S. Masarawa M.D., A. Stern M.D.
Department of Orthopedic Surgery "Meir" General Hospital, "Sapir" Medical Center, Kfar-Saba, ISRAEL .

The treatment of OA of the ankle is similar to any other large joint and includes conservative and surgical treatment. The surgical treatment is fusion or replacement but conservative treatment is limited and include mainly ankle supports and physiotherapy. Hyaluronic acid was discovered by Meyer and Palmer in 1934 and recently is widely used in the treatment of knee osteoarthritis.

We evaluated the efficacy of intra-articular preparation containing Sodium Hyaluronate, in the treatment of OA of the ankle.

A group of 16 patients suffering from ankle osteoarthritis were selected for the study. The clinical presentation included at least one or more of the following conditions of the ankle joint: pain in motion or at rest, swelling and tenderness for over than 9 months. The radiographic severity of the ankle osteoarthritis was grade II, III or IV according to Kellgren and Lawrance.

Intra-articular injections of 25 mg Sodium- hyaluronate (Adant) in 5 following weeks were administrated to 16 patients 31-79 years old (average 43 years) suffering from pain in the ankle 9 month to 27 years. 12 patients had ankle fractures and 4 with no trauma history.

Follow-up visits were perfumed 1,2,3,4,7 months post treatment and included clinical evaluation and score scale.

Results:

Global assessment showed in 13 out of 16 patient's improvement in the range of motion by 20%. Significant reduction of the OA symptoms according to the score: 2-3 points improvement on each scale. According to the osteoarthritis ankle score scale: up to 20 points Improvement. 7 months follow-up after the treatment, no decrease in the treatment efficacy has been shown.

Global assessment of 2 patients did not show any significant improvement after the treatment. One patient dropped off the study due to other operation.

Conclusions:

Symptomatic relief of OA of the ankle can be achieved by injection of intra-articular preparation containing Sodium Hyaluronate.

Arthroscopic Fusion Of The Ankle Using Two Medial AO Screws With Dished Washers.

Lwin MK, Zubairy A, Geary N.
Wirral Foot & Ankle Unit, Wirral Hospitals NHS Trust, Merseyside, UK.

Numerous techniques are described for ankle arthrodesis. Arthroscopic procedures with internal fixation have evolved to reduce the morbidity associated with open arthrodesis.

Method:

We describe a new method of arthroscopic ankle arthrodesis. The tibio-talar joint is debrided arthroscopically to subchondral bone, internal fixation is achieved with two medial AO compression screws with specially designed dished washers.

Results:

7 arthrodesis were performed on 6 patients, 1 underwent bilateral arthrodesis. 4 patients were reviewed in clinic 2 failed to attend due to geographic limitations. All patients suffered with severe OA, those reviewed scored their pre-operative pain from 6-10 out of 10 (mean 7.2). Time for fusion ranged from 6 to 18 weeks, 5 fused in 12 weeks. Post operatively the AAFOS ankle hind foot score ranged from 74-89 out of 100 (mean 81.8) and pain scores ranged from 1-3 out of 10. 2 patients required further operations for adjustment and one suffered a stress fracture at the level of the screw.

Conclusion:

Arthroscopic ankle fusion provides an effective alternative to open arthrodesis for severe OA achieving good results.

Tibio-Talo-Calcaneal (Hindfoot) Arthrodesis By Intrameduallary Nailing. Results Of 55 Cases.

R Hammutt, S Hepple, B Forster, WJ Harries, IG Winson.
Avon Orthopaedic Centre, Bristol

Aim:

To report the clinical and radiological results of patients undergoing hindfoot fusion using an intramedullary nail.

Method:

Retrospective review of notes and radiographs of the patients of 2 surgeons who perform combined ankle and subtalar arthrodesis using retrograde intramedullary nailing with an ACE® humeral nail. The procedure is performed mainly for the treatment of combined ankle and subtalar arthritis or complex hindfoot deformities. Outcome was assessed by a combination of notes review, clinical examination and telephone questionnaire.

Results:

Between 1995 and 2001 55 arthrodeses in 51 patients have been performed. The average follow up is 3 years (8m to 73m). Approach to the joints was via a vertical anterolateral incision unless previous surgery dictated otherwise. All cases utilised an ACE® humeral nail which was locked proximally and distally. Most procedures utilised bone graft from the fibula, proximal tibia, iliac crest or allograft femoral head. Mean tourniquet time was 122 min. Intra operative complications included one fractured tibia and one fractured medial malleolus. Post-operative management generally consisted of 3 months plaster immobilisation. Only 3 cases were immobilised significantly longer than this. Post-operative complications included deep infection, amputation, stress fracture, non-union & prominent metalwork. At review 90% of patients were satisfied with the results of surgery and approximately 90% felt the pain level & function of their foot had improved. Average postoperative AOFAS hindfoot score was 66.

Conclusion:

Hindfoot fusion by intramedullary nailing is an effective technique in complex cases of deformity and in many cases is the only alternative to amputation. Patient satisfaction appears to be high but the procedure is demanding and the complication rate can be significant.

Open Treatment Of Anterior Ankle Impingement. Minimum Five-Year Follow Up

R. Coull, T. Raffiq, L.E. James, M.M. Stephens
From the Cappagh National Orthopaedic Hospital, Dublin, Ireland.

We assessed the long term outcome of open debridement for the treatment of anterior impingement in the ankle in 27 patients. Using pre-operative radiographs, patients were grouped according to both the McDermott and the van Dijk scoring systems for anterior impingement. The accuracy of these classifications in predicting outcome was assessed. Clinical outcome was evaluated using the Ogilvie-Harris scoring system, a visual analogue of patient satisfaction, time to return to full activities, and the ability to return to sports at the pre-morbid level. Follow-up radiographs were used to assess the recurrence of osteophytes. The incidence of talar osteochondral lesions at surgery was assessed.

At a mean follow-up of 7.3 years, 23 of 25 (92%) patients without joint space narrowing had a good or excellent result. Improvement in the Oglivie-Harris score was seen in all patients. In athletes, 19 of 24 (79%) were able to return to sports at the pre-morbid level. Two patients with pre-operative joint space narrowing had poor results.

Recurrence of osteophytes was the norm and most patients did not feel their range of dorsiflexion ever returned to normal, but symptomatic relief enabled most patients to return to high level sport. Our results for non-arthritic joints suggest that this is a safe and successful procedure.

Determination Of Subtalar Joint Axis Of Motion Using 3-D MRI Computer Model

VRM Reddy, MS Siddique, D Singh, JC Angel, G Blunn
Freeman Hospital, Newcastle upon Tyne
Royal National Orthopaedic Hospital, Stanmore

Email: laddu@doctors.org.uk

Purpose of the study: To determine the dynamic axis of motion of subtalar joint using three-dimensional MRI computer model.

Materials & Methods:
A dynamic magnetic resonance image scanner was used in three volunteers to assess the subtalar joint motion. Images were obtained in a unilaterally loaded foot through gait cycle, in neutral, and 15° of supination and pronation. Volumetric scan was digitised using computer software. A three-dimensional computer model of foot and ankle was generated in all positions. Calculation of resulting joint deviation from neutral position showed the movement in each plane and an instantaneous axis was drawn at the subtalar joint.

Results:
This updated computer model has made it possible to correctly understand this joint's axis and motion. Subtalar joint axis runs from posterior, inferior and lateral to anterior, superior and medial. This axis varies in position or orientation during range of motion. Joint axis position determined through this computer model clarifies the external force movements at this complex three pairs of facets and the role of ground reaction forces in joint axis movement through a gait cycle. The dynamic motion at subtalar joint is seen in video motion film using digital technology.

Conclusion:
Subtalar joint motion is triplanar and is influenced by various positions of the foot.

Patho-anatomy Of The Distal Tibial Pilon Fracture

Claire Topliss, Mark Jackson, Roger Atkins
University Department of Orthopaedics, Bristol Royal Infirmary.

Tibial Pilon fractures pose a difficult management problem. For logical fracture treatment, precise understanding of the 3-D anatomy is essential.

Methods:

We have studied a consecutive series of 126 pilon fractures. Digitised X-rays and CT scans were analysed using a CAD programme.

Results:

We have defined 6 main fragments, at the articular surface, shown in the table below:

Fragment		% #'s present	Fragment Area	Proportion Of Area (%)
Anterior	**A**	**89**	**458** (170-1269)	**28** (12-75)
Posterior	**P**	**89**	**601** (130-1205)	**40** (8-96)
Medial	**M**	**74**	**466** (81-1135)	**29** (6-76)
Anterolateral	**AL**	**34**	**123** (26-491)	**8** (2-26)
Posterolateral	**PL**	**21**	**149** (42-515)	**9** (2-37)
Die-Punch	**DP**	**43**	**69** (9-210)	**4** (1-12)

The primary fracture line varied in orientation from coronal (93%) to sagittal (7%), in contrast to the classic description.

Observation of the articular fracture patterns revealed 'T', 'V', 'Y' and pure split fractures with respect to the medial fragment. Fractures, which displace into varus, show a "T" configuration, those in valgus a "Y" or "V" configuration, ($p < 0.001$). Fractures with no coronal mal-alignment produce a talo-fibular joint disruption.

These different articular patterns require individual techniques for anatomic reduction and fixation.

Pre-Operative Assessment Of Distal Tibial Physeal Fractures

A. P. Molloy , L. Cutler , A. Bass , R. Banerjee , A . Kalyan , V. Dhukurum
Alder Hey Hospital , Liverpool.

Distal tibial physeal fractures are the commonest cause of growth arrest and deformity secondary to failure to achieve and maintain an accurate reduction . Our study compared assessment of displacement and screw placement using X-Ray alone compared to CT scans .

Method:

62 consecutive fractures over a 4 year period were used . Displacement was measured on 18 Salter Harris III and IV by 7 surgeons separately using X-rays alone . These were compared to measurements from the CT scans . Screw placement was drawn onto outlines of single cuts of CT scans by four surgeons for all 62 fractures using X-Rays alone . This was repeated one week later using the CT scans . Ideal screw placement was considered to perpendicularly bisect the fracture line . Differences between the ideal and observer measurements were analysed using the paired t-test.

Results:

The surgeons were incorrect in determining whether there was more or less than 2mm of displacement in 33.3 – 50% of cases (mean = 38.9%) . There was a statistically significant difference ($p < 0.0001$) in accuracy of screw placement between using X-Rays and CT scans for all surgeons .

Conclusions:

We recommend that CT scans are essential for accurate pre-operative assessment of distal tibial physeal fractures .

The Direct Surgical Approach To The Distal Tibial Pilon Fracture

Claire Topliss, Mark Jackson, Roger Atkins
Bristol Limb Reconstruction Unit, Bristol Royal Infirmary, Bristol.

Optimal treatment of articular fractures is open anatomic reduction and rigid internal fixation. In pilon fractures, this has been associated with unacceptable complication rates.

Anatomical Basis Of Cutaneous Blood Supply:
The cutaneous blood supply of the anterior aspect of the distal tibia arises via short perforating branches from long branches of the anterior tibial artery, which are closely adherent to the periosteum.

We hypothesise that shearing associated with displaced fractures divide these perforating vessels, rendering the skin critically ischaemic. Standard extensile approaches lead to further devitalisation and wound breakdown.
It follows that a direct approach onto the fracture line should do minimal extra damage to the blood supply.

Patients and Methods:
Of 97 pilon fractures, 53 have required an open reduction. Median age 43, 39 male. MOI: fall-41, RTA-10, other-2. 19% open (60% IIIB). Time to surgery 9days.

Operative Technique:
A longitudinal incision with full thickness flaps is based directly over the fracture, not necessarily following inter-nervous planes.

Results:
Anatomic reduction was achieved in all cases. There was only one complication of wound breakdown (2%).

Discussion:
This technique affords a safe and reliable approach to the fractured articular surface. Lack of wound breakdown may rely on the use of fine-wire circular frame external fixators for stabilisation of the proximal fracture. Whether this approach will allow plate fixation, remains to be seen.

Percutaneous Removal Of Metalwork Around Ankle: Our Experience With First 12 Cases.

M Ramakrishnan, K Subramanian, N P J Geary.
Arrowe Park Hospital, Wirral, Merseyside, UK.

Aim:

75% of the patients develop metalwork related problems following ankle fracture fixations and require further open surgical procedures to remove them. This can led to significant morbidity to the patients. In order to minimize the complications associated with open surgical removal of implants, we developed a new technique, by which the metalwork around ankle may be removed percutaneously.

Methods:

We used this technique in 12 patients who had metalwork related problems with malleolar implants especially with the distal fibular plate and the screws. One stab incision could be utilised to remove two screws if placed mid way between the screw heads. The plate was striped from the fibula using an osteotome and extracted through the distal or proximal stab wound. The lag screws were also removed through an anterolateral stab incision. When we were unable to palpate the screw head, we used guide wire to locate the screw head and railroaded a cannulated screwdriver over the wire to lock into the head of the screw .The wounds were closed with Steristrips or with a stitch. All procedures were done as a day case surgery.

Results:

9 patients were fully weight bearing and 3 patients were partially weight before discharge from the hospital. No wound problems noted in any patients. All the patients were discharged from the clinic at 2-week post operatively.

Conclusion:

Percutaneous removal of metal works around ankle joint is a safe and effective technique, which allows the patient to return to their preoperative level of activity quickly.

Biomechanical Evaluation Of Intramedullary Fixation For First Metatarso-phalangeal Joint Fixation

Sean Molloy MSc MRCS, Bradd G Burkhart MD, Louis E Jasper BSME, Matthew C Solan FRCS(Orth), Stephen Belkoff PhD
Department of Orthopaedic Surgery, Johns Hopkins University, Bayview Medical Center, Baltimore, USA

Aim:
To compare the mechanical stability of an intramedullary(IM) screw with two crossed inter-fragmentary compression screws for fixation of the 1st MTPJ.

Methods:
Ten pairs of cadaveric feet. One foot underwent fixation with two crossed 4.0-mm cannulated cancellous screws. The contralateral foot was fixed with an IM 1.6-mm Kirschner wire and an IM 6.5-mm partially threaded cancellous lag screw. A plantar-to-dorsal load was applied to the distal end of the proximal phalanx at a rate of 1 mm/sec. Failure was defined as gross actuator displacement of 5 mm. Stiffness was defined as the slope of the force versus deformation curve between 10 and 60 N. Strength was defined as the load at failure. The differences in stiffness and strength parameters between the two fixation techniques were checked for significance ($P < 0.05$) with a paired t-test.
Results: The intramedullary MTP joint fixation was significantly stiffer(18.7 ± 10.1 N/mm) than control group fixation(10.2 ± 6.1 N/mm). Similarly MTP joint fixation in the IM group was stronger(149.2 ± 88.2 N) than that of the control group(100.2 ± 70.8 N), but this was not significant($P = 0.07$).

Conclusions:
The IM technique resulted in a stronger stiffer fixation when compared with the standard crossed lag screw technique.

Biomechanical Evaluation of the Interosseous Membrane and the Interossoeous Ligament.

Johan Edvinsson, Sean Molloy MSc MRCS, Louis E Jasper BSME, Stephen Belkoff PhD
Department of Orthopaedic Surgery, Johns Hopkins University, Bayview Medical Center, Baltimore, USA

The distal part of the interosseous membrane (IM) may contribute to ankle joint stability and therefore may partly explain reports of no difference in outcome in patients with low Weber C fractures treated with or without a syndesmotic screw. The aim of the current study was to compare the strength of the IM to the interosseous ligament (IL).

Method:
Six paired cadaveric lower extremities were denuded of soft tissue, leaving only the IM and the IL intact. The tibia was rigidly fixed and the fibula was displaced with respect to the tibia along the line of the fibers of the IM and IL. In group one the interosseous ligament was sectioned and the interosseous membrane was mechanically tested until failure. In group two, the interosseous membrane was sectioned and the interosseous ligament was tested.

Results:
Mean (± SD) strength of the interosseous membrane (1040 ± 183 N) was greater, but not significantly so, than for the interosseous ligament
(798 ± 322 N).

Conclusion:
The current biomechanical study found that the IM was 30% stronger than the IL. The interosseous membrane has considerable strength and may play a role in ankle stability.

Hallux Valgus Surgery: What Are The Patients' Expectations?

C C Tai, S Ridgeway, V A Ng, D Singh
Department of Orthopaedic Surgery, Barnet Hospital.

Various clinical outcome studies have consistently reported high dissatisfaction rate (10-33%) among the patients after hallux valgus surgery. We believe that a patient's pre-operative expectations may play a major role in post-operative satisfaction.

Patients & Methods:

Questionnaires were sent to 104 patients anonymously who were given a list of reasons and asked which they hoped to improve by having the surgery. They were also asked to list, in the order of priority, goals that they hoped to achieve from surgery.

Results:

Overall, improvement in the ability to walk was the most important reason. Most patients also wished to reduce pain over bunion and to regain the ability to wear daily shoes. However, the expectations of patients vary significantly according to age. Patients under 40 placed more importance on their ability to wear dress shoes and improvement in functional activities. Patients between the age of 40 and 60 were more interested to improve physical appearance. Pain on other toes, and the abilities to squat and climb stairs are the main concerns for patients above 60. For the male patients, to be able to continue work is the second most important reason after improvement in walking ability. This is in contrast to the female group where the ability to wear shoes of their choice is more important. Occupation did not make any significant difference.

Conclusions:

This study shows that patients have different expectations that can influence the choice of operation. We believe that understanding patients preoperative expectation is crucial in achieving better patient satisfaction, and it should be an important consideration in planning appropriate operation for the patients.

Preoperative Sensory Dysfunction Of The Great Toe In Hallux Valgus

M. Herron, S. Kar, D Beard, P Binfeld
Warwick District General Hospital Lakin Road
Warwick and Nuffeld Orthopaedic Centre
Windmill Road, Oxford

Injury to the dorso-medial cutaneous nerve has been identified as a potentially frequent occurrence after hallux valgus surgery. The existence of pre-operative pressure neuropathy is also described but remains largely unexplored. This study was performed to investigate the incidence of pre-operative sensory deficit in the hallux valgus toe, and to examine to what extent any deficit was related to the degree of. joint angulation.

A cohort of 43 patients (61 hallux toes) presenting for consideration of surgical correction had their sensation tested in pre-designated sensory zones using a 5 filament set of Semmes-Weinstein monofilaments. These -allowed good inter-observer reliability with an ICC (intra-class correlation coefficient) of 0.84 overall.

Whilst sensory symptoms were self reported in only 21% of the feet.. a measurable reduction in sensation by one monofilament grade or more was found in an additional *44% of the* feet. No relationship was found between the degree of sensory loss and degree of angulation.

Patients with symptomatic hallux valgus may have sensory loss of the toe despite not being aware of the deficit. Normal subjective sensation does not reliably predict normal sensory function. Given the potentially high rates of intra-operative nerve damage in hallux surgery we recommend objective sensory testing as part of routine pre-operative assessment.

Scarf Osteotomy For Correction Of Hallux Valgus: Clinical And Radiological Evaluation

Siva Prasad, Tony Lake, Hayley Hannah, Michael Hennessy
Wirral Hospital, Wirral.

e-mail: sivaprasad77@hotmail.com

Scarf osteotomy is a z-osteotomy of 1st metatarsal. This is a technically demanding procedure. This procedure allows early ambulation without cast and early return of function. This study was conducted to evaluate clinical results following this procedure in a district general hospital.

Method:
We prospectively collected the data from 67 feet in 53 consecutive patients followed up for 6 months. 4 patients were lost to the follow up. We collected the AOFAS score preoperatively, 3 and 6 months. Hallux valgus angle, 1-2 intermetatarsal angle and sesamoid subluxation were measured from weight bearing radiographs taken preoperatively, 6 weeks and 6 months.

Results:
Total AOFAS score increased from 43.11 preoperatively to 84.96 at 3 months postoperatively ($p<0.0001$, 95% CI of 44.5 to 35.5). The AOFAS scores at 3 and 6 months also showed significant difference ($p< 0.0001$, 95% CI of 4 to 10). All the components of AOFAS showed similar improvement postoperatively. The hallux valgus angle decreased from 30.1 to 9.92 at 6 weeks post operatively ($p< 0.0001$, 95% CI of 22.21 to 18.27). The 1-2 intermetatarsal angle decreased from 12.59 to 6.4 at 6 weeks post operatively ($p<0.0001$, 95% CI of 5.1 to 7.14). Sesamoid subluxation was reduced in majority of cases. We had 2 fractures of the metatarsal head, 3 wound infections and 6 transient neuropraxia of the cutaneous nerves.

Conclusion:
With Scarf osteotomy, we achieved good correction of the hallux valgus deformity and significant improvement of AOFAS score. It is a versatile and reliable procedure in the management of hallux valgus.

Scarf Osteotomy For Correction Of Hallux Valgus: Pedobarographic Evaluation

Siva Prasad, Tony Lake, Michael Hennessy
Wirral Hospital, Wirral.
e-mail: sivaprasad77@hotmail.com

Hallux Valgus was thought to alter the forefoot function with defunctioning of 1st ray with a resulting overloading of the 2nd ray. Scarf osteotomy is a z-osteotomy of 1st metatarsal and is proposed to correct anatomical and functional deformities of hallux valgus. This study was conducted to evaluate forefoot pressures using Musgrave foot print system following this procedure in a district general hospital.

Method:
We prospectively collected the data from 43 feet in 31 consecutive patients. We evaluated the forefoot function using peak pressure, force time integral and pressure time integral parts of pedobarographs (Musgrave) preoperatively, 3 and 6 months postoperatively.

Results:
The mean peak pressure under the 1st metatarsal head was reduced from 3.09 (95% CI 2.49 –3.70) to 2.25 (95% CI1.80-2.71) at 6 months. The mean peak pressure under the 2nd metatarsal head was reduced from 6.29(95% CI 5.44-7.13) to 5.01 (95% CI 3.98-6.05) at 6 months. Force time integral under the 1st metatarsal head was reduced from 1.34 (95% CI 1.06-1.62) to 0.97 (95% CI 0.74-1.19)) at 6 months. Force time integral under the 2nd metatarsal head also reduced from 2.66(95% CI 2.27-3.06) to 2.41(95% CI 1.98-2.85). Pressure time integrals also showed similar changes.

Conclusion:
Scarf osteotomy produced decrease in the forefoot pressures under the medial part of forefoot. We have not noticed significant alteration of forefoot pressures under the lateral part of forefoot.

Silastic Metatarso-phalangeal Arthroplasty
Very long term results of single-stem implants in degenerative joint disease

J M Loughead, W J Harrison
Newcastle-upon-Tyne

Concern over long term outcomes in patients with silastic metatarso-phalangeal implants prompted an assessment of such patients. We reviewed 21 single-stemmed silastic metatarso-phalangeal arthroplasties in 18 patients with a mean follow-up of 18 years and 9 months. 8 operations were performed for hallux valgus, and 13 for hallux rigidus. Patients were assessed by clinical scoring, patient satisfaction, and radiographic grading. Patients treated for hallux rigidus achieved higher clinical scores than those treated for hallux valgus. This difference was statistically significant. There was no correlation between radiographic appearance and clinical score, patient satisfaction, or time since implantation. Long-term changes to the bone stock did not cause clinical detriment, and in no case was late revision surgery necessary.

There has been widespread concern regarding silicone synovitis associated with early clinical detriment, together with progressive erosive bony changes seen with these implants. In our very long term review outcomes were surprisingly good particularly in the surgical treatment of hallux rigidus in the over fifty age group.

The Screw Fit Ceramic MOJE Toe Joint Replacement. The Initial UK Experience.

Simon Coleridge
Research carried out at Princess Royal Hospital, Haywards Heath, Lewes Rd, West Sussex, RH16 4EX.

This implant seemed to overcome the failings of previous designs. It is a ceramic bearing screwed into a titanium screw, which bonded to bone. The bearing surface was also coated with calcium phosphate to enhance secondary stability.

An initial study examined 40 patients over 3 years. No patients had any loosening, screw breakages, fractures, or local osteoporosis. The patient satisfaction was good with only two dissatisfied. On the basis of this, Orthosonics introduced it to the UK in 1999.

Following problems with the device we conducted a survey with Orthosonics and the MDA.

Results:

In total 160 implants were implanted by 46 surgeons. We received replies from 33 surgeons representing 119 patients. There were 93 implants with a successful outcome but 17 had failed and been revised. The commonest mode of failure was osteolysis secondary to metallic wear debris. Also 6 implants showed radiographic loosening with symptoms, but had not been revised. There were 3 that showed radiographic loosening, but were symptom free.

Conclusions:

A failure rate of 19% at 1 year is unacceptable. We are of the view that products of this type should be introduced in a controlled fashion as part of a prospective trial.

Reference:

Werner D. A Ceramic Prosthesis for Hallux Rigidus. *The Foot 2001;11:24-27.*

Early Results Of Ceramic/Ceramic 1st Metatarsophalangeal Joint Replacement

Omonbude D, Faraj A
Orthopaedic department, Airedale General Hospital, West Yorkshire

Background and Aims:

To evaluate the early outcome of ceramic/ceramic (MOJE) prosthesis in the treatment of painful hallux rigidus.

Materials And Methods:

Between March 2000 and June 2002, 13 patients (14 implants) with painful hallux rigidus were treated with ceramic/ceramic (MOJE) prosthesis. The hallux metatarso-phalangeal/inter-phalangeal scoring scale, by the American Orthopaedic Foot Association, was used to assess these patients, pre-operatively and at follow up.

Results:

The average follow up was for 12 months. At 6 months, 12 patients had no pain post operatively. The average AOFAS score pre-operatively was 43.07, compared to 95.28 post operatively. 10 of the patients subjectively described the out come of the procedure as excellent. Two patients described it as satisfactory. One of the patients who developed osteoarthritis secondary to significant hallux valgus, developed subluxation of the prosthesis at 6 months. At revision, the prosthesis was noted to be loose and a distraction arthrodesis was carried out. Pre-operatively, all patients had a combined dorsiflexion and plantarflexion range of between 30 and 74 degrees. Post operatively this was improved to greater than 75 degrees in 10 patients. 7 out of the 8 female patients were able to wear fashionable foot shoes (High heeled shoes) comfortably. 12 of the patients experienced audible squeaking, which improved after 6 months. One patient developed a superficial infection, which was treated successfully.

Conclusion:

The ceramic/ceramic (MOJE) total arthroplasty gave excellent results in 77% of patients. Patients were happy with the fact that they could continue wearing fashionable shoes. We recommend it as an alternative treatment for patients with hallux rigidus.

Distal Phalangectomy For Mallet Toe

Raja S, Barrie JL, Henderson AA
Blackburn Royal Infirmary, Blackburn.
Royal Bolton Hospital, Bolton.

Mallet toe is a flexion deformity of the distal interphalangeal joint of the lesser toe. It causes pain and callosity in the toe tip and the dorsum of the distal interphalangeal joint. Campbell refers to the "terminal Syme's amputation" for this condition but the results of this have not previously been reported.

Material and Methods:

This is a retrospective review of 17 toes in 9 patients that underwent distal phalangectomy. Seven patients were aged over 70. Patients were interviewed by an independent observer regarding the pain relief, cosmetic acceptability and satisfaction with the procedure and were examined for callosity, stump tenderness, sensitivity and neuroma.

Results:

All patients were satisfied including pain relief and cosmetic acceptability at an average follow up of 4 years. One patient had mild wound infection. One patient had asymptomatic nail growth. No stump tenderness, sensitivity or neuroma was noted.

Discussion and Conclusion:

Coughlin reported a satisfaction rate of 89% and 86% following successful fusion and excision arthroplasty respectively. In this series all patients were satisfied. We feel that distal phalangectomy is an option in a selected group of elderly patients where pain relief and functional outcome is the priority.

ABSTRACTS
of
Poster Presentations

[23]

First Metatarsophalangeal Joint Arthrodesis Using A Vitallium Plate With A Minimum Two Year Follow Up

N Aslam, W J Ribbans
Northampton General Hospital, Department of Orthopaedics

Objectives:

To assess the clinical and radiographical outcome after first metatarsophalangeal joint arthrodesis using a vitallium plate with a minimum follow up of two years.

Methods:

Design: Prospective study and clinical review
Setting : District General Hospital
Patients and Participants : Twenty four patients (33 feet) with an average age of 54 years (range, 31-68) were followed up at an average of 28 months (range, 16-40).
Intervention: First metatarsophalangeal joint fusion using a vitallium plate (Coughlin 1994)
Measurements: American Foot and Ankle Society clinical (Kitaoka 1994)
radiographic guidelines.
Patient satisfaction questionnaire

Results:

Twenty three patients (32 feet) went on to complete fusion of their first metatarso-phalangeal joints. One patient had an infected non-union, his fusion was repeated successfully after one year. One patient required plate removal because of prominence. There was one case of deep infection which went on to a non-union.

Clinical evaluation showed marked improvement in pain and functional scores. Patient satisfaction was high with relief of symptoms and improved appearance of the foot.

Conclusion:

First metatarso-phalangeal joint arthrodesis using a vitallium plate is a successful procedure with a high fusion rate, low complication rate and a high level of patient satisfaction.

[5]

The Position Of The Tourniquet For Forefoot Surgery

N Aslam Et Al
Northampton General Hospital

Our aim was to determine if a tourniquet placed on the ankle has any advantage in forefoot surgery over the position on the mid-calf. We randomised 30 patients who were undergoing forefoot surgery under local anaesthesia into two groups.

One had a tourniquet on the ankle and the other on the mid calf. All calf and ankle tourniquets were inflated to 100 mm Hg above the systolic pressure, just before the surgical procedure.
The blood pressure, pulse and level of pain were recorded at intervals of five minutes during the operation. The surgeons evaluated the quality of the anaesthesia, the bloodless field, and the site of the tourniquet. The patients tolerated the tourniquet on the ankle much more. Both the tourniquet positions gave good operative fields, however the use of the ankle tourniquet was less painful at 5,10,20 and 30 minutes after the operation had started $p<0.0001$.
We conclude that the ankle tourniquet gives a good bloodless field and provides improved pain tolerance for forefoot surgery carried out under local anaesthesia.

[21]

Preliminary Results Of Weil Osteotomy For Intractable Plantar Keratosis

M Anwar, FRCS (Glasg.) S. Kommu, M S Sundar FRCS Ed.

mdanwar22@hotmail.com
smanthravadi@hotmail.com

We present the results of the first two years of experience with the Weil osteotomy at Royal Oldham Hospital and endeavour to define its role in the management of Intractable Plantar Keratosis (IPK) and complication rate.

All patients undergoing Weil osteotomy in 2000 & 2001 were included in this prospective study. A total of consecutive 21 patients, having 61 lesser metatarsal osteotomies were reviewed (95% female). The majority of these patients (66%) had no previous foot surgery. 10 (47%) had simultaneous procedures for the correction of the hallux valgus deformity.

There were no major complications. Superficial wound infections in 4 (19%) patients were treated successfully with antibiotics. No Screws needed to be removed and no non-union / avascular necrosis were seen. Only one patient was left with residual pain and stiffness on ambulation but the rest (95%) were able to walk comfortably in either normal shoe wear or trainers.

We found that the patients consistently reported pain relief although some stiffness of the toes may remain. The majority of patients (95%) were satisfied with the outcome in terms of symptoms and function when evaluated by using American Orthopaedic Foot and Ankle Society scoring system. We conclude that although there is a considerable learning curve that must be overcome the Weil osteotomy can be a reliable procedure that effectively reduce the load under the lesser metatarsal heads.

[17]

Hallux Valgus: Is The Radiographic Assessment Reliable?

A S Aster, M C Forster, R Rajan, K J Patel, R Asirvatham
Lincoln County Hospital, Lincoln, UK

aster_felicia@yahoo.co.uk

The five different methods of measuring hallux valgus (HVA) and intermetatarsal angles (IMA) and the diagnosis of congruency of first MTP joint were studied on 50 pre-operative standing foot radiographs, to test, if these methods were reliable and the results reproducible enough to be used in a treatment algorithm for hallux valgus. ANOVA was used to examine the difference between the five methods and between the five observers. Kappa test was used to measure agreement in diagnosing congruency between two occasions. The mean IMA and HVA varied significantly ($p<0.00001$). The ANOVA model showed that both method and observer variations were significant for IMA and there was no significant difference between measurement methods for HVA. Congruency had good ($k=0.608$) intra-observer and fair ($k=0.261$) inter-observer reliability. A second IMA measurement will lie between 4.2° less and 4.6° more than the first IMA measurement 95% of the time. A second HVA measurement will lie between 6° less and 5.6° more than the first HVA measurement 95% of the time. Overall, there was no advantage to any of the measurement methods, although some observers were better than others. All methods had considerable inter- and intra-observer variability that makes these measurements unreliable.

[14]

Outcome following intra-articular Os Calcis fracture fixation

G E Ayana, D J Martin and J S Moir.
Department of Orthopaedic Surgery, Western Infirmary, Glasgow

Os Calcis fractures are debilitating injuries. There remains much debate regarding appropriate treatment. Fixation has been shown to improve overall outcome. We present the results of the operative fixation of os calcis fractures.

Methods:
24 consecutive primary procedures performed in 21 patients were reviewed (single surgeon). Follow up ranged from 6 to 48 months. All were closed injuries. The majority were as a result of falls from a height. Fractures were graded for severity as per Sanders' classification. Detailed surgical data were obtained from surgical records. In all cases a standard surgical technique was employed using an AO os calcis plate. Wound complication rate was documented and risk factor analysis performed. Functional outcome Kerr scores were assessed through patient contact.

Results:
The overall wound complication rate was 23%. (4% wound necrosis; 7% superficial wound infections; 12% deep wound infections). Signifiacnt risk factors were smoking, unemployment and alcohol/drug use. The mean functional Kerr score following surgery was 52.9/100 (range 10-85)

Conclusions:
Wound complications following fixation of os calcis fractures remain a significant problem. Our figures are comparable to those reported in the literature. Overall functional outcome reflects the severity of this injury. Careful patient selection may improve the results of surgery.

[22]

Percutaneous screw fixation for fractures of the sesamoids

C M Blundell, P Nicholson and M W Blackney
Monash Medical Centre, Melbourne, Australia

Over a period of one year we have treated 9 fractures of sesamoid bones of the hallux. Five of these were in the medial sesamoid. All patients had exercise related pain but only one had a history of trauma. The mean age of the patients was 27 (range 17 to 45), 6 patients were male. Of the nine patients 7 were athletes and 5 were elite class in their sport. The mean duration of symptoms was 9 months (range 1.5 to 48 months). The diagnosis was based on clinical and radiological investigations. We present a new technique of percutaneous screw fixation using a Barouk screw.

All the patients were prospectively assessed using the AOFAS Hallux Score. There was a statistically significant improvement following fixation, with the mean AOFAS score increasing from 46.9 to 80.7 ($p=0.0003$). Symptoms in all 9 patients rapidly resolved. By 3 months all patients had returned to their previous level of activity.

We believe this relatively simple technique is an excellent method of treatment in appropriately selected patients.

[13]

Mechanism, treatment and outcome of open fractures of the Foot

Dharmarajan R, Banerjee S, Abudu S
Selly Oak Hospital, Birmingham, UK

Aim: To evaluate the mechanism, treatment and outcome of open fractures of the foot.

Method:
All patients who had open fractures of the bones of foot over a five-year period were studied retrospectively. Fracture of the foot, for our study, was defined as fractures involving the tarsals and metatarsals. Fractures involving the phalanges, ankle and simple grazes were excluded. The records and radiographs of patients were critically analysed for mechanism of injury, fracture management, deep infection rate, time taken to union and long-term patient related outcome.

Results:
Forty-four patients were studied. Twenty-three patients were excluded. Crush injury (80.9%) was the most common mechanism of injury followed by fall from height. Most fractures (52.3%) were managed by debridement and manipulation/ percutaneous K-wiring. Thirteen patients (61.9%) needed second operation. The average length of stay in the hospital was 22.35 days (range: 3-63 days). The average length of follow up was 12.5 months (range: 2-24 months). The deep infection rate was 0.3% and overall superficial infection including pin track infection was 0.1%. The average time to clinical union of fractures was 3.1 months (range: 1.5-5 months). The average time to radiological union of fractures was 4.0 months (range: 3-6 months). Five patients did not return to their previous work. The time taken to work ranged between 2.5 to seven months.

Conclusion:
There are no previously published results on the overall outcome and deep infection rate following open fractures of the foot. We believe our study is the first to critically evaluate the long-term outcome of patients with open fractures of the foot.

[6]

Peripheral Nerve Blocks In Foot & Ankle Surgery

V Dhukaram, S Kumar
Glasgow Royal Infirmary, Glasgow

E mail: d_vivekanandan@hotmail.com

Thirty patients were evaluated prospectively after peripheral nerve blocks in addition to general or spinal anaesthesia for foot and ankle surgery. Sciatic/ poppliteal nerve blocks was performed in hind foot surgeries with the aid of nerve stimulator, followed by continuous infusion of local anaesthetic via the catheter insitu whereas, static ankle block was done in forefoot surgeries. Pain was assessed with visual analogue scales at fixed time intervals and additional analgesic consumption were also recorded. Ninety seven percent of patients were satisfied with post-operative pain relief and none of them had complications related to nerve blocks or wound healing. The average duration of block lasted for twelve hours after the last injection. We conclude that peripheral nerve blocks are very effective in terms of post-operative pain management and facilitates to perform most of the foot surgeries as a day case procedure.

[15]

A Comparison of Arthroscopic and MRI findings in Osteochondritis Dissecans of the Talus.

N W Emms, S J Scott, HPJ Walsh, B Eyes.
Aintree University Hospital, Lower Lane, Liverpool

wiksy@aol.com

Osteochondritis dissecans (OCD) is a localised disorder of subchondral bone and the overlying articular cartilage. The most commonly used classification systems involve arthroscopy and MRI.

Aim:
To investigate the correlation between arthroscopic and MR findings in patients with OCD of the talus.

Methods:
16 ankles in 14 patients with radiographically proven OCD were reviewed. 9 were male and 5 female. Mean age was 35yrs (range 18-64yrs). The lesions were staged independently using the Guhl[1] arthroscopic and Dipaola[2] MR classification systems.

Results:
Arthroscopically there were eight stable and eight unstable lesions. Of the eight stable lesions, MRI staged five as stable and three as unstable. Of the eight unstable lesions, MRI staged six as unstable and two as stable. This gives a sensitivity of diagnosing unstable lesions as 0.75, with a specificity of 0.63.

Conclusions:
This small study demonstrates that MR scans may have some limitations in classifying OCD lesions of the talus. Possible explanations are discussed. We propose that MRI findings, of OCD of the talus, should not be taken in isolation, but correlated with the patients symptoms and signs to avoid unnecessary arthroscopy.

(1) Guhl JF. Arthroscopic treatment of osteochondritis dissecans. Clin. Orthop.
(167)65-74,1982
(2) DiPaola J, Nelson DW, Colville M. Characterising osteochondral lesions by magnetic resonance imaging. Arthroscopy (7)101-4,1991

[2]

AO Cannulated Blade Plate For Tibiotalocalcaneal Arthrodesis

A. Goel, K.N. Subramanian, M.S. Hennessy
Arrowe Park Hospital, Wirral

Email: agoel33@yahoo.co.uk

To achieve tibiotalocalcaneal arthrodesis, implants described range from external fixator, compression screws and anterior plate and the more recent retrograde calcaneal locked intramedullary nail. Our aim is to assess the outcome of the AO cannulated blade plate for tibiotalocalcaneal arthrodesis.

Patients and methods:
Four tibiotalocalcaneal arthrodesis were performed in three patients. The operative technique involves lateral approach to the distal fibula that was osteotomised and used as bone graft. The articular cartilage of ankle and subtalar joint was removed using an osteotome and congruent surfaces achieved. AO cannulated blade plate was applied on the lateral aspect to achieve compression. The postoperative protocol included a 3 months plaster cast, followed by mobilization out of plaster.

Results and discussion:
At the mean follow up of 10 months (range 5-14) all patients were pain free full weight bearing. The union was achieved at 3 months which was confirmed clinically and radiologically. There was no infection, wound breakdown, or loss of position at the ankle or subtalar joints. Mean AFOAS scoring was 92.

We conclude that the cannulated blade plate is an alternate technique for tibiotalocalcaneal arthrodesis, with no moulding of the implant required to attain satisfactory alignment.

[25]

Titanium hemi-arthroplasty for the hallux metatarso-phalangeal joint

Meda P, Auchinclouss J
Macclesfield General hospital, Macclesfield

The management of hallux metatarso-phalangeal joint arthritis remains a subject of discussion. The aim of the study was to evaluate the clinical outcome of Titanium hemi-arthroplasties.

Between January 1995 and March 2000, 55 arthritic hallux metatarso-phalangeal joints in 46 patients (M:F, 11:35) were treated surgically with Titanium implant. The pathological indication was hallux rigidus in 42 cases , rheumatoid arthritis in 6 cases and degenerative changes associated with hallux valgus in 7 cases. Six cases were done as a revision of silastic to titanium prosthesis due to severe silicone synovitis.

The mean age was 60 (range 43-76) years, and the mean follow up was 56 (range 28-86) months. The mean time taken to get back to normal activities is 36.6 (range 21-90) days. The mean range of movement achieved was 32 (range 20-64) degrees and the relief of pain was excellent or good in 86% of the patients. There were no surgical complications in the form of infection, osteolysis or instability. The synovitis in the revision group has subsided.

The clinical results of Titanium hemi-arthroplasty were good. The advantages of this procedure were preservation of joint movement and good pain relief. Biomechanics of the hallux metatarso-phalangeal joint remained unaffected and problems associated with prosthetic wear or mechanical failure were not encountered.

[7]

Subjective Outcome Analysis On Tendoachilles Injury

K.Rajasekar; A.Faraj; P.Gholve

We analysed the patient's subjective functional outcome following Tendo Achilles injury which was treated either by conservative (42.4%) or surgical method (57.6%).

We established their occupation, leisure activities and level of activity after the injury. To this was added a satisfaction measure.

Thirty-three patients responded to the questionnaire with a mean time of 13 months (range 9 months- 4 years) following treatment. The mean age was 52.7 years (range-33 to 90); 27.3% are involved in office work, 27.3% people doing manual work, 15.2% people doing job which involves standing most of their time (teacher), 27.2% people were leading retired life and remaining were house wives.

There had been no change of occupation after the injury. Subjects presented more than two weeks after the injury had lower levels of satisfaction than who had been treated earlier ($p=0.015$). There was an insufficient sample size to demonstrate a difference between types of intervention. Statistically, no significant difference in the level of satisfaction between operated and conservative group, the level of sports activities undertaken, and age did not have an effect on satisfaction. Occupation has no significance with level of satisfaction. Those who had reduced leisure time activities following injury are less satisfied ($p=0.003$). Among 21 Patients who went back to their leisure activities, 52.4% took less than 6 months. Pain, swelling & stiffness are the causes of reduced level of activity. There was some evidence ($p=0.034$) from a regression analysis that Physiotherapy intervention increased post injury activity.

[1]

Ankle Arthrodesis With Angle Blade Plate

K.N.Subramanian MRCS Ed., A I.Zubairy FRCS (Orth), M.S. Hennessy FRCS
(Orth), N.P.Geary FRCS, M.Lwin MRCS
Wirral Foot & Ankle Service, Arrowe Park Hospital,Wirral

E-mail: jeash@supanet.com

Existence of various techniques of ankle arthrodesis self explains the pros and cons in each method. We describe our experience of ankle arthrodesis using paediatric angle blade plate.

Materials and methods:

10-ankle arthrodesis were performed in 9 patients. All patients were reviewed independently in special clinics. The objective assessment was performed by detailed clinical examination and the subjective assessment was made including overall patient satisfaction. The AAFOS ankle hind foot scoring system was used. The technique of ankle arthrodesis was similar in all patients using anteromedial or anterolateral incision, preparation of articular surface, paediatric angle blade plate fixation with or without bone grafting. Time to union was assessed by clinical and radiological examinations.

Results:

Radiological union was achieved in 9 patients in a mean time of 16 weeks. Fibrous union occurred in one patient. 8 patients were very satisfied with their treatment. The patient with fibrous union had marginal improvement of symptoms with pain score improved from 9 to 7. The mean AAFOS score was 84.

Conclusion:

Ankle arthrodesis with paediatric angle blade plate is a useful method of managing intractable cases of ankle arthritis. The technique is simple and effective with excellent success rate.

[19]

Amputation of the 2nd toe in the presence of hallux valgus

RO Sundaram, HPJ Walsh
University Hospital Aintree, Lower Lane, Liverpool

Email:- rathers74@yahoo.co.uk

Aims:
To show the outcomes of amputation of over-riding 2nd toe caused by gross hallux valgus in the elderly.

Materials and Methods:
8 patients underwent amputation of their overriding 2nd toe. Patients selected had asymptomatic or minimally symptomatic hallux valgus with an overriding 2nd toe and did not want hallux valgus correction surgery. A disease specific questionnaire using a Visual Analogue Scale (VAS) was implemented measuring pain, discomfort, deformity and walking distance. Patients were followed up for a minimum 9 of months.

Results:
8 patients (9 feet) underwent amputation of their 2nd toe, 7 females and 1 male patient. The age range was 63-90 years old, median 83 years. All patients had a painful 2nd toe on wearing footwear. The mean VAS for pain, deformity, discomfort and walking distance before and after surgery are:- [before/after] pain = [7.00/0.94], deformity = [7.44/2.78], discomfort = [7.78/1.22] and walking distance = [6.89/6.44].

Conclusion:
Amputation of the 2nd toe significantly reduces pain, discomfort and the appearance of deformity ($p<0.01$), there was no difference in the patient's walking distance after surgery. We recommend this type of surgery as an alternative to hallux valgus correction surgery in the elderly if the first ray is not causing significant symptoms.

[4]

Best Foot Forward

AP Westbrook, KN Subramanian,J Monk,D Calthorpe
Derbyshire Royal Infirmary,London Road, Derby, DE1 2QY

E mail: jeash@supanet.com

Inclusion of foot dominance in clinical examination of foot disorders is yet not routinely practised. Existence of foot dominance is not reported in Orthopaedic literature. We have evaluated foot dominance in normal population and correlated with hand dominance to highlight its existence and also to bring it into common practice.

Materials and methods:

468 Adult healthy subjects were questioned for hand dominance and then assessed for foot dominance by a blinded method. Those with pre-existing lower limb pathology were excluded from the study. During the questioning all subjects were invited to come and stand in the weighing scale, and the foot that was put forward to stand on weighing scale was noted.

Results:

72% were Right handed, 20% were Left-handed and remaining ambidextrous. Out of Right handed around 65% were right footed, and 23% were left footed and remaining ambidextrous. Out of Left handed around 85% were left footed, 12% were right footed and remaining ambidextrous.

Discussion:

Foot Dominance is recognised entity. Further study needs to be carried out to relate it with foot disorders. Literature search shows the existing correlation with rehabilitation of foot disorders. Questioning of foot dominance should be routinely practised as hand dominance practised for upper limb disorders. This will lighten more information about aetiology, management and rehabilitation of foot disorders.

[16]

Ankle replacement: The Dudley experience

S. Ali, B. A. Kumar
Corbett hospital, Dudley group of hospitals NHS Trust, Stourbridge

E-mail: nash@bkumar15.freeserve.co.uk

Ankle replacement has become a recognised solution for the problem of painful arthritic ankle. However it has not yet been adopted as a modality of treatment of this condition by the general orthopaedic surgeon. We report a series of 15 patients who underwent this procedure at the Corbett hospital in Dudley between February 95 and March 01. One patient died of an unrelated cause and 14 were followed for an average of 4 years. All patients received the New Jersey total ankle replacement performed by one senior consultant orthopaedic surgeon (SA). The patients were invited to attend a special follow up clinic for clinical and radiological review. The Kitioka ankle scoring system was used to assess outcome. The average age was 64 years. There were 8 women and 6 men. The preoperative diagnosis was advanced post-traumatic arthritis in all patients. Two underwent revision of tibial component- one at 3 years post operative for septic loosening, and the other at 2 years post operative for aseptic loosening. One patient required open washout 7 months post operative. The average ankle score in the group was 79. All patients replied in the affirmative when asked if they would undergo the operation again. We feel that in carefully selected patients ankle replacement gives satisfactory outcome and can be safely performed in a district general hospital setting.

[32]

Adult day case Hallux Valgus surgery: a safe and viable option

Mr. Amit Bhargava, Mr. R.K Shrivastava
William Harvey Hospital, Ashford, Kent.

Many orthopaedic surgeons would not prefer to perform bunion surgery in the day care environment.

A patient satisfaction survey was undertaken in 65 cases that had undergone bunion surgery by one surgeon in the day surgery centre of William Harvey hospital. This study was done in patients operated over four years from March 1998 to February 2002. They included 30 patients who had Mann's 3:1 release, 20 had bunionectomy and soft tissue correction and 15 patients had a Keller's procedure. All these patients were sent a patient satisfaction survey after their surgery. Exclusion criteria of the study included - patients unfit for day surgery, those with coexisting rheumatoid arthritis, bilateral operations and those having revision surgery. Satisfaction survey was based on a questionnaire, which included preoperative fitness assessment, admission procedure, nursing care, anaesthetic, surgical, & physiotherapy facilities. Patients opinion regarding postoperative experience in hospital and at home and regarding the day unit help line was also assessed.

Our study shows 92% patient satisfaction when surgery was done at day surgery unit. This is comparable to 93% reported patient satisfaction in knee arthroscopy & carpel tunnel surgery done on the same (day care) basis. 38 out of 41 patients, who replied, said that they were happy to undergo similar surgery again and, they would advocate it to their friends and relatives. Problems encountered were mainly postoperative plaster problems in two, swelling and pain in one case, nausea & vomiting in two cases. Patients who had problems did not find the help line very useful and had to attend to Accident & Emergency for advice.

We strongly advocate the use of this facility in uncomplicated unilateral primary bunion surgery in patients who satisfy the anaesthetic fitness criteria.

[31]

Scarf Osteotomy For Correction Of Hallux Valgus

N Dastgir, A Rauf, J Corrigan
Department of Orthopaedics, Regional Hospital, Waterford, Ireland.

The fact that a multitude of procedures exist for the correction of hallux valgus indicates that there is no ideal operation for this problem. Hallux valgus correction can be significantly improved by scarf first metatarsal osteotomy. The surgical technique is versatile and strong internal fixation allows early functional recovery. The aim of our study is to analyse the clinical, radiological and functional outcome after scarf osteotomy for hallux valgus correction.

Material and methods:
The scarf osteotomy was performed on 65 feet of 48 patients between 1996 and February 2001.The indication was a symptomatic hallux valgus with increased intermetatarsal angle (IMA). The osteotomy was fixed with one/two 2.3 mm screws. Mobilisation was allowed with full weight bearing with forefoot othesis. Fifty-one cases in 39 female patients (12 bilateral feet) were available for follow-up. The mean follow-up was 14 months (range 3-36 months). Patients were interviewed, clinically examined and standing radiographs of operated foot were taken. They were assessed using American Orthopaedic Foot and Ankle Society (AOFAS) Hallux Metatarso-phalangeal Interphalangeal clinical rating system (1) in which 100 point are used to compare preoperative and postoperative pain, function and range of motion, shoe wear comfort and activity level and alignment.

Results:
All osteotomies healed at the time of follow-up. Statistical results for IMA; MPA and other related parameters are shown in table below.

		IMA*	**Pvalue	MPA	P value	DMAA	P value
Pre-operative	Max.	24	<0.001	54	<0.001	24	<0.001
	Min.	10		20		6	
	Ave	18		37.7		13.2	
Post-operative	Max.	18		38		20	
	Min	6		6		4	
	Ave	9		20.8		9	
% Correction	50%			45%		32%	

*IMA (Intermetatarsal angle), MPA (Metatarsophalyngeal angle also called as Hallux angle),
DMAA (Distal metatarsal articular angle.) ** p Value calculated by using paired t test & Rank sum test.

The average value of AOFAS scale was 92 points. Five patients had removal of screws. There were 4 cases of superficial wound infection .All patients have excellent cosmetic and functional results.

In conclusion our study has demonstrated that scarf osteotomy has proven to offer easy postoperative care, and has excellent stable long-term results.

References:

1. Harold B. Kitaoka, Ian J. Alexander et al: Clinical Rating System for the Ankle-Hindfoot, Midfoot, Hallux and Lesser Toes. Foot Ankle International 15:349-353,1994

[27]

Interphalangeal Joint Fusion Of The Great Toe

Mr. V. Dhukaram FRCS, Dr. A. Roche, Mr. H.P.J. Walsh FRCS
Alderhey Childrens hospital & Aintree Hospital, Liverpool

A retrospective analysis was done on 20 cases of interphalangeal joint fusion of the great toe utilizing longitudinal cortical screw fixation. The purpose of this study was to present a series of interphalangeal joint fusion great toe done in both paediatric and adult age group using 3.5mm cortical screws. Most of the patients had interphalangeal joint fusion along with Jones transfer and other associated procedures with a mean follow up period of 19 months. Arthrodesis was successfully achieved in all the patients on an average of 3 months period. A literature review on interphalangeal joint arthrodesis was done and advantages of cortical screw fixation over other techniques has been presented.

[12]

Early Operative Fixation Of Unstable Ankle Fractures

S. Molloy MSc MRCS, Matthew C Solan FRCS(Orth), P. Pietzik MRCS,
I. Qureshi MBBS, R. Sinnerton FRCS (Orth)
St Peter's Hospital, Chertsey, Surrey

Introduction:
The indications for ankle fracture fixation have narrowed and operation is usually reserved for unstable injuries. It has been well documented that unless unstable fractures are fixed early, swelling or blistering may necessitate a delay of up to one week. In practice, it is very rare for an ankle to be too swollen to undertake operative fixation on the day of admission. Furthermore a number of authors have found that delaying the open reduction and internal fixation increases the complication rate. Importantly, inpatient stay has been shown to be significantly longer in those patients who do not get operated on within the first 24 hours.

Methods:
We reviewed the hospital in-patient stay for operative ankle fractures over a twelve-month period and found that 25% of cases were operated after the fifth day of hospitalisation. We subsequently introduced a fast track system for fixation of these fractures and then closed the audit loop.

Results: Early operation for all fractures according to our protocol led to a significant reduction in the mean length of hospital stay, without excess complications. In our institution the number of "bed days" per year saved was 119.

Conclusion:
Unstable ankle fractures should be fixed early.

[26]

Box fusion for hallux rigidus: A Simple and effective technique

Asheem Naraen, K. Kosygan,AA Faraj,
Airedale General Hospital,Skipton Road, Steeton, West Yorkshire

Email: anaraen@aol.com

Arthrodesis of the first Metatarso-phalangeal joint is a well accepted procedure to relieve pain of hallux rigidus. The two bone ends are fused commonly using a screw fixation; passing a screw across perpendicular to the arthrodesis plane is however a daunting technique.

We present a safe and simple method for arthrodesis of the first MTP joint. It consists of using the box wiring technique, with a flexible wire. The biomechanical strength of which has been tested in comparison to the commonly used screw fixation in the Physics laboratory in Bradford University.

The procedure was performed between February 2000 to June 2002 on 14 feet of 12 patients. The arthrodesis was protected in a plaster slipper and allowed to heel-weight bear for six weeks. All patients were followed up for three months and finally assessed with a questionnaire for completion of analysis.

Assessment included pain relief, cosmesis and shoe-wear comfort. Clinically there was pain-free fusion, followed by a normal gait, and radiological signs of fusion. Satisfactory arthrodesis was achieved in all patients.

Two patients had problems relating to prominence of the wire-end pressing against the skin. This settled down in one patient but in the other, the wire was subsequently removed. There was post -operative cellulites in one patient which settled with oral antibiotics.

Overall we found the 0.8 mm gauge flexible wire to have acceptable biomechanical strength and good handling to withhold the dorsal stress forces and suitable to hold the corrected deformities by positioning the drill holes accordingly. This is simple to do and is cost effective.

[24]

Long Term Results Of Silastic Double Stemmed Implant Arthroplasty Of The Hallux

Pankaj Sharma, Samrendu Singh ,Mark Rowntree
Queen Mary's Hospital, Sidcup, Kent

Email: pankaj1sharma@hotmail.com

Thirty two patients (42 feet) who had double stem silicone implant arthroplasty of the first MM (metatarso-phalangeal joint) were reviewed at an average of 8 years (range 4 - 19 years). Surgery was for Hallux rigidus in 25 cases and for Hallux valgus with degenerative osteoarthritis in 17 cases. Patients with rheumatoid arthritis were excluded.

The mean age was 64 years. Twenty-eight of the 32 patients were satisfied with surgery and subjectively achieved excellent or good pain relief. Three of the four patients who were less satisfied had surgery for Hallux Valgus with degenerative osteoarthritis.

Radiographs showed peri-prosthetic sclerosis in all cases and cysts with bony erosions in 17 cases. Initially 12 cases had features suggestive of silicone synovitis but at final follow-up no patients had clinical evidence of silicone synovitis despite radiological findings of new bone formation (57%) and localised osteolysis (40%). Two patients had transfer metatarsalgia with a stress fracture. No patients required revision surgery.

There is a definite role for double stemmed silicone implant arthroplasty in low demand patients. Our long-term study shows that despite poor radiological results, these patients have very good subjective and objective results.

[20]

Extensor Hallucis Longus To Extensor Digitorum Communis Tendon Transfer: A Treatment For Extensor Hallucis Longus Dysfunction

mith, A M FRCS (Ed) Modarai, B MRCS, Davies, M FRCS
Guy's & St Thomas' NHS Trust, London,
Birch, R FRCS, Royal National Orthopaedic Hospital, Stanmore

E-mail: asmithfrcs@aol.com

An inability to extend the hallux following trauma is most often observed after direct laceration to the Extensor Hallucis Longus [EHL]. Primary repair, subsequent splinting and appropriate rehabilitation best deal with this type of injury. Damage to either the EHL muscle belly or the motor nerve to EHL are uncommon causes of the dropped hallux and present difficult reconstructive problems. Damage to the motor nerve branch to EHL in isolation is an uncommon problem and as far as we are aware surgery to address this pathology has not previously been described in the literature. This problem can occur after a penetrating injury, high tibial osteotomy or intramedullary nailing of a fractured tibia. We describe the operative procedure, technique and outcome in two cases of extensor hallucis longus to extensor digitorum communis (EDC) transfer to overcome this problem.

[30]

Distal Wedge Osteotomy Of The First Metatarsal With K-Wire Splintage For Hallux Valgus Deformity.

Srivastava S., Docker C. and El-Fakhri T.
Mid Staffordshire General Hospitals NHS Trust, Staffordshire

E-mail : cdoc999@aol.com

We describe our unit's experience with a distal first metatarsal wedge osteotomy in the treatment of symptomatic hallux valgus. The procedure utilised involves a closing wedge osteotomy with K-wire splinting without the need for any soft tissue correction of the deformity. The technique gives instant correction of the deformity.

26 feet were operated on in 24 patients during the period October 1999 to December 2001. The early results are presented in this retrospective review of our first two years experience of this procedure. Clinical and radiographic outcomes are analysed and presented. The procedure is technically simple to perform.

[18]

Rotational Scarf Osteotomy, An Early Experience

R Vhadra, R Samarji, C Charalambous
Manchester Royal Infirmary

E-mail Ranjan@Vhadra.com

The Scarf osteotomy has proven to be a versatile and powerful procedure to correct various degrees of hallux valgus deformity.
It is a technically demanding procedure that has a large learning curve. However, once mastered, the osteotomy can provide a predictable and satisfactory outcome.

A modification to the scarf osteotomy has been described by Duke (1992). The modification involves a change in the movement of the osseous fragments from lateral transposition to lateral rotation of the metatarsal head fragment around a stationary axis at the metatarsal base. Rotation of the distal fragment in this manner allows greater than 50% transposition and, therefore, higher intermetatarsal angle corrections can be obtained as compared to a transpositional scarf osteotomy. Fixation is also easier than a transpositional scarf osteotomy. This modification provides a useful alternative to closing base wedge osteotomy for the correction of severe hallux valgus deformity.

We describe and present our early results using a rotational scarf osteotomy for severe hallux valgus deformity.

[28]

Wilson's osteotomy 12 yrs on

Lisa Williams, FRCS, Mr K Hariharan, FRCS Orth, MR D N W Lake FRCS
Neath General Hospital

This small study was a pilot for a larger ongoing study to look at the long-term results of Wilson's osteotomy.

8 patients and 13 feet were reviewed at a minimum of 12 years post operatively.
Photographs were obtained of their feet, also pedographs, pre and post op X-rays, clinical assessments were done and the patient outcome was quantified using the American Academy of Foot and Ankle Surgeons scoring system which is well validated and includes a shoe comfort score.

The findings show that in the younger population (less than 40 years old) there were minimal symptoms (pain and stiffness), all showed callosity formation and none had a recurrence. The older group (over 40 at operation) were more symptomatic, all showed callosity formation and there was a recurrence rate of more than 40%.

[11]

Intra–articular Fractures Of The Calcaneus

Should We Be Operating On Them ?

S. Blanckley , C. R. Walker
Royal Liverpool Hospital

Controversy exists regarding the surgical management of intra-articular fractures of the calcaneus. We present outcome data on 37 consecutive patients who underwent open reduction and internal fixation for comminuted intra-articular calcaneal fractures.

Method:
Operations were performed by one surgeon, CRW, following CT assessment of the fracture. All procedures were performed using an extensile lateral approach and early physiotherapy was standard. Case notes were reviewed retrospectively between 3 months and 5 years post-operatively. Patients were also invited to attend a follow-up clinic where outcomes were assessed using the AOFAS Hind Foot Score. Complete data is available for 16 patients, with additional information from other patients.

Results:
These show average AOFAS scores for type II fractures to be 59/100, type III to be 81/100 and 79/100 for type IV fractures. We have shown low rates of complications – 1 infection, 3 patients requiring a change in shoe size and an average return to work of 7 months.

Conclusions:
We have shown good medium-term outcome results for the operative management of displaced intra-articular fractures and to answer our question, we believe we should be operating on them.

[3]

Reconstruction of the anterior iliac crest bone graft donor site using a bridging pre-contoured third tubular plate

Lwin MK, Zubairy A, Geary N, Hennessy MS, Subramanian
Wirral Foot & Ankle Unit, Wirral Hospitals NHS Trust, Merseyside

The anterior iliac crest is commonly used as a donor site for tri-cortical bone grafts in orthopaedic reconstructive foot surgery. Documented morbidity associated with the harvesting procedure includes pain, pelvic instability, nerve injury and herniae. The harvesting of large volumes can leave a significant defect in the donor ilium, which can be palpable and aesthetically undesirable.

We describe a unique method of reconstructing the defect in the anterior iliac crest following harvesting of tri-cortical bone graft. It has been developed to reduce the morbidity and to improve the appearance of the pelvis. A sub-periosteal pre-contoured third tubular AO plate is used to bridge the defect in the iliac crest.

Method:
Eleven patients were assessed retrospectively for pain, functional limitation, aesthetics and complications. The follow up ranged from 1week to 3years 5months.

Results:
All the patients reviewed were satisfied with the contour and cosmesis with no reports of residual pain, tenderness or disability. In four patients there was radiological evidence of bone regeneration. There were two patients who complained of numbness of the lateral aspect of their thigh however this resolved within 3 months.

Conclusion:
We conclude from this initial study that this method of reconstruction effectively improves cosmesis with minimal morbidity and cost.

[9]

Posteromedial Ankle Impingement Caused By An Isolated Ossicle

K. Ramsey & M. Davies
St Thomas' Hospital, London

Ankle impingement occurs as a result of compression of normal or abnormal tissue between two bone surfaces. These syndromes may be as a result of bone, soft tissue or nerve entrapment. Posterior ankle impingement occurs at the anatomical interval between the posterior tibial articular surface and the os calcis. It usually involves the posterior process of the talus which protrudes posterior to the articular surface of the ankle. A number of causes of posterior ankle impingement are described in the literature but very few describe isolated posteromedial impingement. The cases described relate to soft tissue lesions and not to isolated bony lesions.

We present a series of two cases of patients who had specific posteromedial ankle pain which was restricting their daily activity, especially during sport. Conservative management had failed, and at surgery a single bony lesion was found lying posteromedially in the ankle, behind the medial malleolus and indenting the Flexor Hallucis Longus tendon. This was in the absence of other pathology.

The bony lesion was excised and after an uneventful recovery, both of the patients remain symptom free and have resumed full sporting activities.
We believe that this isolated bony lesion as a cause of posteromedial ankle impingement has not previously been described.

[29]

A first web approach for medial exostectomy and soft tissue correction for hallux valgus.

V Vaidyanathan, S Sinha, A C Campbel.

Email Falconexergy@hotmail.com

Material and Methods:

We report a prospective study of 9 patients(10 feet) who underwent a medial exostectomy and soft tissue correction of hallux valgus deformity using a web approach. Seven patients(8 feet) were available for review, with 2 patients having deceased from unrelated causes. All were female patients with an average age of 50 years(range,17-77 years). The average duration of follow up was 20 months(range,6-28 months).

Operative technique:

A zig-zag incision was made in the first web and deepened to expose the adductor hallucis tendon which was then released from its insertion to the base of the proximal phalanx. The dorsolateral capsule was then opened and the hallux dislocated inferomedially allowing removal of any exostosis, but leaving the medial capsule intact(Fig). The intermetatarsal space was then reduced by placing a heavy polydioxanone(PDS) suture at the level of metatarsal heads.

Results:

The metatarso-phalangeal angle was corrected by an average of 9.5 degrees and the intermetatarsal angle by an average of 2 degrees after the procedure. No patient complained of pain or joint stiffness after surgery, and all of them could wear normal footwear. All patients thought cosmesis was good. The overall subjective assessment was excellent in 7 and good in 1 case.

Conclusion:

We recommend first webplasty as a simple and effective procedue in moderate cases of hallux valgus in the absence of a bony abnormality of the MTP joint or a varus deformity of the first metatarsal.

[8]

The Flexor Hallucis Longus Tendon Transfer For The Treatment Of Chronic Tendo-Achilles Ruptures

Mr M. Zenios and Mr RB Dalal
Stepping Hill Hospital, Stockport

Email: m_zenios@ hotmail. com

Although it is generally accepted that surgical treatment is the treatment of choice in chronic TA ruptures, therapeutic options are difficult. Traditional options include grafts (natural, allografts and synthetic grafts) and end to end repair. Natural grafts described include fascia lata and plantaris tendon. Synthetic materials such as Dacron grafts, Marlex mesh and carbon fibres have been used. There are significant complications from graft and end to end repair. These include wound necrosis, delayed union, infection, foreign body reaction and devastating tissue loss. Also functional results are sub-optimal after delayed reconstruction.

Tendon transfer is another method that has been described for the treatment of these injuries. The tendons used were the flexor hallucis longus, flexor digitorum longus and the peronei. The FHL tendon transfer is considered advantageous to other tendon transfers because it is stronger, its axis of force is close to that of the TA and harvesting the tendon is easy and unlikely to cause any complications.

We report excellent results following four operations in three patients treated with flexor hallucis longus tendon transfer for chronic Achilles tendon ruptures. All patients were on long term steroid treatment and an end to end repair would have been associated with a high complication rate.

We believe that FHL transfer to replace the TA is a low morbidity alternative which gives good to excellent results in individuals with low to moderate demand.