



BOURNEMOUTH 2022

ANNUAL SCIENTIFIC MEETING

9-11 MARCH 2022

Conference Lecture Notes



British Orthopaedic Foot & Ankle Society

Preface

This guide has been produced on behalf of the BOFAS Education Committee, to accompany what was a fantastic BOFAS Annual Scientific Meeting in Bournemouth. As well as summarising the key points of the main lectures, we have added author key points and opinions, as well as notes on the audience discussions.

You can skip to which ever section you need simply by clicking on the presentation title on the contents page.

We would like to thank all the members of the team that helped to summarise, collate and edit all the content from the meeting.

Organised and Co-ordinated by Krishna Vemulapalli - Education Committee

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Day 1: Instructional Session 1

Title of Talk	Imaging for Hindfoot Union – What’s New? – Dimitri Amiras
Authors Key Points	<ul style="list-style-type: none"> • Hindfoot non-union 8.5% to 48% • Complex interplay of biology/stability/vascularity • CT <ul style="list-style-type: none"> ○ issues – streak artefact – can be reduced ○ can be used to infer biology (trabeculations) • MRI – metal artefact can be reduced with MARS sequences / scanners • Nuclear medicine – SPECT CT– gallium/indium – look for a mismatch
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> • Future <ul style="list-style-type: none"> ○ Colour CT – Energy of photos to create colour images ○ Calcium mapping for calcium density ○ Molecular imaging <ul style="list-style-type: none"> ▪ Spectral CT – bone health measurements / reduced artefact / peri-implant bone detail ○ Regional MDT for selective imaging modalities?

Title of Talk	Beyond Surgery - It’s the Biology! - Richard Keen
Authors Key Points	<p>Conditions can increase non-union, such as male sex, CVS disease, smoking, NSAIDs etc. Vitamin D is essential to bone health. 10-20% of population are deficient, and many are insufficient. 2 peaks of deficiency – late teens/early 20’s, and older age. Important to measure levels preoperatively and aim for >50nmol/litre. Calcium intake – recommended to take 1000mg a day.</p> <p>Drugs for metabolic turnover to aid union</p> <ul style="list-style-type: none"> ▪ Antiresorptives (no difference for union) ▪ Anabolic (teriparatide) – may increase bone and fracture healing, but limited studies ▪ Blockers (Anti Sclerostin Ab) – inhibit osteoclasts – monthly injection – no difference in healing
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> ▪ Ensure adequate dietary intake of calcium and supplement Vit D. ▪ Biochemical markers do not help predict the patients at risk of non-union ▪ Teriparatide for 3-6 months may aid fracture repair. Serum P1NP can be used to monitor biochemical response. ▪ No evidence that anti-sclerostin antibodies (Romosozumab) can improve rate of fracture repair.
Discussion points from the Audience	<ul style="list-style-type: none"> ▪ Always given Vitamin D preop = generally start at least 2 weeks before surgery ▪ Stress fractures in elite athletes – can be due to low vit D. Therefore, treat when they present (before you have checked levels) ▪ Calcium – possible that supplements cause cardiac anomalies. Evidence is disputed. Main aim is to try and improve via dietary means. If you can’t, then it is better to supplement.

Title of Talk	Revision Ankle Fusion – Steve Milner
Authors Key Points	<ul style="list-style-type: none"> • Symptomatic patient and suspicious imaging lead to suspicion of symptomatic non-union • Risk Factors that can be changed <ul style="list-style-type: none"> ○ Stability / Nicotine / Diabetes / Infection / Vit D / NSAIDs • Risk factors that can't be change <ul style="list-style-type: none"> ○ Hindfoot stiffness / Neuropathy / Vascularity / AVN / Non-compliant personality • Risk factors have an additive effect • Treatment options <ul style="list-style-type: none"> ○ Revision ankle arthrodesis vs More immobilisation / LIPUS / Teriparatide / Augment existing fixation / Convert to TAR / Amputation • More immobilisation? <ul style="list-style-type: none"> ○ Some bone healing ○ Intact fixation ○ In presence of neuropathy ○ Modifiable risk factors are present – still smoking • Pre op work up <ul style="list-style-type: none"> ○ Counsel patients about modifiable risk factors ○ 2 week course vitamin D 20,000 units per day ○ Bloods ○ Deep tissue sampling – oxford protocol • Aseptic non-union technique <ul style="list-style-type: none"> ○ Good bony preparation to bleeding surfaces ○ Correct limb alignment ○ Stable / durable fixation with compression ○ DON'T cross the subtalar joint unless absolutely necessary <ul style="list-style-type: none"> ▪ Some shortening is safe than using interpositional graft ○ TTC Nail – When there is insufficient talar bone stock for plating • Infected non-union <ul style="list-style-type: none"> ○ Thorough debridement – involve plastics ○ Bony stability - circular frame or bone transport ○ Void filling – cement block or home-made antibiotic nail ○ Antibiotic delivery – local and /or systemic
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> • Symptomatic non-union is uncommon if primary arthrodesis is done well • Multiple known risk factors for non-union will interact differently in each individual patient • Treatment options depend on the patient, the non-union and the surgeon • Solid fusion occurs in 70-80% after revision arthrodesis but risks and complication are more common, healing times are longer and clinical outcomes are less good than primary arthrodesis

Title of Talk	Revision Triple Fusion - Nick Cullen
Authors Key Points	<p>Literature shows non-union of triple fusion of up to 30%. Important to optimize patients – for example diabetics (defer surgery if necessary to optimize). Address smoking – analogy given of ‘non-union powder’ which can increase non-union rates 4 times. Calcium and Vitamin D supplementation.</p> <p>Fixation – meticulous joint preparation, Charnleys principles of compression and torsional stability. Adequate immobilization.</p> <ul style="list-style-type: none"> ▪ STJ – 3 screws increase union but not enough bone real estate. Divergent 2 screws can work too – torsionally more stable. ▪ TNJ – 3 screws most stable, but again not enough bone usually. Use derotation plate or staple and screw. ▪ Bone graft – 96% union rate with no graft. Use to fill bone voids on case by case basis. ▪ Immobilisation – Stanmore method is 4 weeks NWB, 4 weeks PWB, 4 weeks FWB. Longer if pain in plaster, radiological lucency or neuropathic diabetic. <p>Diagnosing non-union – CT at 3 months. Treat only if symptomatic. In non-union with peri articular sclerosis - poor osteogenic potential. Surgical preoperative plan to resect to bleeding bone. Bone graft – need to fill volume. >50% fill → 81% union (compared to <50% fill → 21% union); DiGiovanni et al. Revision TNJ may need structural graft as thin shell of bone. Sometimes need to extend fusion to cuneiform.</p> <p>Calcaneal fracture options -bone block arthrodesis. Can do plantarising calc osteotomy + insitu fusion + tendoachilles lengthening.</p> <p>Flat feet – avoid insitu arthrodesis. Can be difficult cases.</p> <p>Infected non-union – Image guided biopsy. Involve microbiologist. 2 stage revision. Remove metal and debride. Then plan 2nd stage after 3/12.</p> <p>BMP – beware – risk of HO, neuritis and seroma.</p>
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> ▪ Do not operate until patient is optimized. ▪ Correct deformity ▪ Plan debridement / fixation ▪ Predict bone graft requirement ▪ Fill bone voids >50% ▪ Prolong postoperative immobilization if union not complete.
Discussion points from the Audience	<p>Bone marrow aspirate used to soak graft – injection taken from multiple sites to increase yield.</p> <p>If shorten Medial column after TNJ due to bone loss, you should shorten at CCJ to prevent adduction deformity.</p>

Title of Talk	Revision Midfoot Fusion – Alexej Barg
Authors Key Points	<ul style="list-style-type: none"> • Why has this happened? <ul style="list-style-type: none"> ○ Comorbidities ○ Non-compliance • Don't always blame the patient <ul style="list-style-type: none"> ○ Surgical Technique <ul style="list-style-type: none"> ▪ Cartilage left? Stable fixation? Hardware position? Concomitant problems? ○ Use of orthobiologics
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> • Have a plan A, B, C <ul style="list-style-type: none"> ○ One vs Two stage ○ If infection – always two stage ○ Review surgical approach ○ Osseous defects – autograft, allograft, orthobiologics ○ Fixation – Change type, high stability constructs ○ Think about rehabilitation ○ REALISTIC EXPECTATIONS for you and patient

Title of Talk	Non-union – Do I ever give up? - Cristian Ortiz
Authors Key Points	<p>Masquelet technique –</p> <ul style="list-style-type: none"> ▪ Debride, Remove infection, cement spacer ▪ 2nd stage – remove spacer and bone graft ▪ Can use with ring fixator and bone transport. ▪ Fibula non-union and infection – can do for this. <p>Pilon fractures. Always difficult with non-union or infection. Can sometimes take time for the union to show radiologically. Open fractures with vascular flaps – don't always work. Sometimes need to prepare for fusion or replacement despite union.</p> <p>Headed screws better for poor bone stock – avoid headless screws.</p>
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> ▪ Counsel patients and give them options ▪ Masquelet technique good for infected non-union cases

Day 1: Keynote Lecture 1:

Title of Talk	Phone a Friend - Plastics to the Rescue! - Alex Crick
Authors Key Points	<ul style="list-style-type: none"> ▪ Open fractures – easy to underestimate. Free flaps most useful around the foot and ankle. ▪ Sole of the foot is a unique problem – non load bearing areas (such as arch) – can use skin grafts. ▪ If you don't trust skin – stage the process and wait to see how it plays out. ▪ On occasion – muscle flaps good for volume defects and defects around metalwork. Tuck muscle under the skin at the margins with pants-over-vest suture. ▪ Nerves – respect them – can end up being a pain source. Neglected nerve injury can lead to CRPS. ▪ Achilles – tendon area – ALT flap. Vascularised deep fascia part of the flap. Musculotendinous junction – often migrates proximally – therefore calf wasting remains. ▪ Joints – soft tissue + lengthening – can use circular frame ▪ Bone – exfix + minimal internal fixation allows for primary closure. Keep fine wires of frame outside of skin defect. ▪ Calcaneus – free flap – Skin + gracilis = muscle is great for the dead space ▪ OM of distal tibia – use ALT flap with vastus lateralis – also seals cerament into the bone ▪ Non-union 1st MTPJ – DP artery to the foot. Excise skin and nonunion. Can use medial femoral condyle cortic-periosteal flap. ▪ Hallux amputation – can do free flap to salvage toe length and preserve tripod. ▪ Symes amputation – can have good function as keep heel pad to bone. ▪ Can use lost limb to harvest free flap for use to cover stump ▪ Salvage situation – ALT with gracilis – can be used to fill gaps in muscle and fill deadspace
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> ▪ Plastic surgeon can extend your surgical range ▪ Always useful to get an opinion to plan incisions and soft tissue options.
Discussion points from the Audience	Achilles incision – best to go off midline.

Title of Talk	What's new in navicular fractures? – James Calder
<p>Authors Key Points</p>	<ul style="list-style-type: none"> • 1/3 of all F&A Stress Fractures • Good evidence for initial conservative management in undisplaced + incomplete fractures <ul style="list-style-type: none"> ○ Also consider for complete fractures without sclerosis in non-athletes ○ Treatment protocol pain driven, at least 6 weeks NWB, can increase WB after this if pain free ○ Interval imaging can use CT or MRI, MRI more useful to see if bony oedema settling • Operative treatment for complete fractures/displaced/failed non-operative/athletic population <ul style="list-style-type: none"> ○ Percutaneous screw fixation/ORIF with bone graft ○ May need vascularised pedicle graft from lateral tarsal artery + iliac crest graft (call a friend - Plastic Surgeon) in more complex cases (Fishman, FAI 2012; Nunley at al FAI 2022) ○ Pain relief post-operatively good marker for outcome
<p>Key Learning Points and Take Home Messages</p>	<ul style="list-style-type: none"> • Evidence suggests initial non-operative management is wise <ul style="list-style-type: none"> ○ NWB in boot 6-8 weeks • Consider surgery if displaced/sclerotic/athletes <ul style="list-style-type: none"> ○ Percutaneous screw fixation if undisplaced ○ ORIF with bone graft if chronic/displaced (screw) ○ Vascularised bone pedicle if sclerotic/AVN or failed surgical management

Title of Talk	Minimally Invasive Calcaneal Fracture Fixation – Peter Rosenfeld
<p>Authors Key Points</p>	<ul style="list-style-type: none"> • Primary goal of calcaneal fracture surgery is to prevent pain, deformity and chronic issues e.g degenerative changes • The introduction of minimally invasive calcaneal fracture fixation techniques has led to a reduction in the rate of post-operative wound breakdown (Zeng et al IJS 2018; Seat et al JFAS 2020) • Methods include the sinus tarsi approach (mini-open), as well as percutaneous fixation and transosseous reduction <ul style="list-style-type: none"> ○ Option of arthroscopic assisted transosseous reduction • Reduction is the key to success (under image intensifier) <ul style="list-style-type: none"> ○ Elevation of depressed joint fragment helps correct & reduce heel varus, translation and lateral wall blowout ○ Can use cannulated screwdriver as a joystick when reducing, allowing you to pass a wire through to hold reduction when you are happy ○ Fixation options - can use sinus tarsi plates/calcanail/screws/external fixator ○ Final fixation optimal combination of raft screw to support joint and interfragmentary compression screw

Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> ● MI Calcaneal fracture fixation benefits include <ul style="list-style-type: none"> ○ Much lower complication rates ○ Better outcomes ○ Shorter wait ○ Shorter inpatient stay ○ Easier second surgery
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Title of Talk	Talus Fractures – news, fake news and my views – Mark B Davies
Authors Key Points	<p>Blood supply – poor - intraosseous and extraosseous</p> <p>Prasarn 2010 – FAI</p> <p>12 Cadavers – Complex and rich arterial network that surrounds and perforates the talus</p> <p>Vallier 2003 – JBJS America</p> <p>57 talar body fractures, 23 talar neck fractures</p> <p>Talar neck + open highly likely to lead to advanced posttraumatic OA and osteonecrosis that progresses to collapse</p>
Key Learning Points and Take Home Messages	<p>Outcome is an interplay between</p> <ol style="list-style-type: none"> 1. Vascular 2. Reduction 3. Exposure <p>Neck fractures</p> <p>Tension side lateral</p> <p>Compression side medial</p> <p>Malunion and malreduction commonly in varus position</p>

Title of Talk	The Stable Lisfranc Injury – does it exist? – Daniel Marsland
Authors Key Points	<ul style="list-style-type: none"> ● Missed injuries lead to planovalgus foot – you need to have a suspicion ● Over 50% of subtle injuries may go on to need operations. – they may not be stable and late diastasis is a problem <ul style="list-style-type: none"> ○ Crates et al 2015 – JFAS ○ Chen et al 2020 – FAI ○ Ren et al 2019 – Chinese JT ● Fleck sign does not predict stability ● CT is essential ● Addition of an intraoperative stress test adds evidence

Title of Talk	Restoring Columns in Unstable Chopart Trauma – Chris Blundell
Authors Key Points	<ul style="list-style-type: none"> • Functionally the foot has 2 key columns (Klaue, Swords – Seattle) <ul style="list-style-type: none"> ○ Following trauma, medial + lateral column lengths must be restored to prevent deformity and maintain foot shape • Chopart joints important to the overall function + structure of foot, though easy to miss <ul style="list-style-type: none"> ○ Cuboid central in integrity lateral column - Sheffield Cuboid Classification (BJJ 2016) ○ Navicular fractures pivotal medial column - Sheffield Navicular classification (BJJ 2018) ○ Cuneiform integrity cornerstone of transverse arch of foot • CT important – low threshold in suspected column injuries • Beware soft tissues especially if multiple joints involved <ul style="list-style-type: none"> ○ Reduce dislocations + consider early application of external fixators to allow soft tissue resuscitation • Definitive fixation locking/bridging plates to restore column lengths <ul style="list-style-type: none"> ○ Stabilise surrounding joints, may need to bridge these initially (maintain foot shape) with plate removed at 6 months (to restore function) ○ Consider raft screws in fixation to prevent column collapse • SPAN (anatomically) then SCAN + PLAN • Outcomes <ul style="list-style-type: none"> ○ Generally poor if high energy/crush ○ Anatomic restoration vital ○ Respect for soft tissues reduces likelihood amputation
Key Learning Points and Take Home Messages	<p>Think Columns</p> <ul style="list-style-type: none"> • CT • A la carte approach to each injury • Simple external fixation – low threshold • Locking plates definitively <ul style="list-style-type: none"> ○ Bridging ○ Non-bridging

Title of Talk	It's Not Just CMT! – Rick Brown
Authors Key Points	<ul style="list-style-type: none"> • General principles of decision making: <ul style="list-style-type: none"> ○ Need a precise diagnosis <ul style="list-style-type: none"> ▪ Consider pathologies of whole neural axis ▪ UMN vs LMN, static vs progressive ▪ Early ref to Neuro ○ Define Ortho problem at all levels <ul style="list-style-type: none"> ▪ Assess hips/knees (higher levels) ▪ Gait analysis ○ Set realistic functional goals <ul style="list-style-type: none"> ▪ Aims/Expectations ▪ How to achieve aims - prevent/correct deformity, pain relief, etc ○ Beware other comorbidities ○ Early functional rehab • Specific Conditions: <ul style="list-style-type: none"> ○ Post-stroke <ul style="list-style-type: none"> ▪ Precise Dx – spastic/UMN/static lesion ▪ Define multilevel Ortho problems – concerns over upper limbs and crutches ▪ Set realistic functional goals – to avoid using braces or allow easier bracing ▪ Beware other comorbidities - ?cause of stroke ▪ Early functional rehab – if a severe contracture stops rehab, then complete tenotomy <p>Options in stroke pts:</p> <ul style="list-style-type: none"> ▪ Equinovarus. Achilles, FHL/FDL contractures, TP usually weak. ▪ Consider SPLATT <ul style="list-style-type: none"> ○ Adult CP (pic) ○ Friedrich's ○ Dystonia - avoid surgery, contracture often recurs ○ Spinal cord injury <ul style="list-style-type: none"> ▪ Precise Dx – mixed UMN/LMN signs ▪ Define multilevel Ortho problems – other limb injuries/deformities from polytrauma ▪ Set realistic functional goals – stage of recovery: often younger so wait longer ▪ Beware other comorbidities – Psych Hx, calc fractures ▪ Early functional rehab ○ Spina bifida <ul style="list-style-type: none"> ▪ often latex allergy, try to avoid fusions above insensate foot (risk of ulceration, take home) ▪ equinovarus in spina bifida. SPLATT to act as check rein ▪ Can get calcaneus deformity - unopposed tib ant

	<ul style="list-style-type: none"> ○ Polio ○ Muscular dystrophy - progressive <ul style="list-style-type: none"> • General basic aim is for plantigrade, shoeable, pain free foot • Surgical Principles <ul style="list-style-type: none"> ○ Anaesthetic concerns ○ Systematic decision making (prox to distal) ○ Assess deforming muscles and balance tendon forces ○ Individualised "a la carte surgery" • Concept of FTSI - foot surgeons with specialist interests. Network concept (hub and spoke)
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> ▪ Look for precise Dx, define multilevel problems, set realistic functional goals, beware of other comorbidities, early functional rehab ▪ Surgical Principles: Anaesthetic concerns, systematic decision making, balance the tendons, individualised surgery
Discussion points from the Audience	<ul style="list-style-type: none"> • If getting stress fractures, good sign need to do something • Can split tendons for transfers but will lose some power but can help to balance pull. Of you do split a tendon transfer, you can end up with power only being transferred through the tighter portion of the split tendon, leaving non-tight limb of transfer defunctioned.

Title of Talk	Don't Forget to Balance the Soft Tissues - Cristian Ortiz
Authors Key Points	<p>CMT – progressive. If rigid deformity – need to arthrodesis.</p> <p>Cavus options:</p> <ul style="list-style-type: none"> ▪ Lengthen (plantar fascia / achilles) ▪ Osteotomy ▪ Arthrodesis ▪ Tendon transfer ▪ Combination of above <p>Spectrum of severity. E.g. subtle cavus – enough to do lengthening + tendon transfer.</p> <p>Rigid hindfoot – do dwyer osteotomy (which includes wedge)</p> <p>Assessment – Static or dynamic? Severe or progressive?</p> <p>PL → PB – easier behind fibula. Do side to side tenodesis. Can also do at level of dwyer osteotomy or at PB insertion. Mobilise patient straight away.</p>

	<p>PTT (Tibialis posterior tendon) transfer – 4 incision technique. Open Interosseous membrane by 5cm (2.5x size of tendon). Otherwise its too tight. Go on top of retinaculum (subcut) – more length and better power than going under retinaculum. Typically insert into the lateral cuneiform.</p> <p>Consider achilles lengthening. Are there residual medial soft tissue contractures? Lateral ligament reconstruction?</p> <p>If PTT power <MRC grade 4, then can use FHL or FDL. EDL and Tib Ant rarely strong enough. SPLATT less useful in adults.</p> <p>Do tendon transfer after hindfoot fusion – otherwise lack of balance leads to recurrence. At very least, cut the PTT if you can't transfer it.</p> <p>Can do bridle transfer – if severe peroneal deficit. PL tenodesis to PTT (Acts as checkrein). PTT goes through hole in Tib ant).</p> <p>Claw hallux- Jones is not good for cavus in adults. May be better to transfer FHL to proximal phalanx or do IPJ fusion.</p>
<p>Key Learning Points and Take Home Messages</p>	<ul style="list-style-type: none"> ▪ Tendon Transfers are paramount – remove deforming forces and improve power deficiencies ▪ PL → PB ▪ PT → cuneiform ▪ Bridle, EDL etc.

Title of Talk	Osteotomies in Cavovarus foot deformity - Alexej Barg
Authors Key Points	<p>Author Key Points</p> <ul style="list-style-type: none"> • Pes cavovarus <ul style="list-style-type: none"> ○ Complex deformity ○ Flexible or rigid? ○ OA - yes or no? ○ Stable or unstable? • Imaging <ul style="list-style-type: none"> ○ need WB XRs, alignment views can help ○ WBCT v helpful - standing, high res, low radiation ○ SPECT CT can help with detection of OA • Supramalleolar osteotomies <ul style="list-style-type: none"> ○ Can correct valgus tilt but varus tilt not as correctable ○ For varus OA, medial opening wedge osteotomy with allograft for gap. Can fix with medial locking plate and augment with lateral 1/3 tubular to stabilise apex of osteotomy ○ For varus, may sometimes need double osteotomy - plafond plasty medially for defect in plafond and then supramalleolar osteotomy (medial opening wedge). Works better (double SMOT) • Intra-articular osteotomy <ul style="list-style-type: none"> ○ Get Chondrocyte death and irreversible iatrogenic damage • Complications <ul style="list-style-type: none"> ○ 25% progression of OA – can convert to fusion or replacement if needed • Calc osteotomies <ul style="list-style-type: none"> ○ For inframalleolar deformity ○ Coleman block test relevant for assessment (hindfoot or forefoot driven?) ○ Coleman negative (rigid hindfoot deformity), then lateral slide osteotomy required. ○ Dwyer calcaneal lateral closing wedge osteotomy also has high correction capability in inframalleolar deformity
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> ▪ Origin of deformity is crucial to decide on corrective strategy (supra or infra mall) ▪ Pts will not be completely pain free ▪ Ortiz algorithm, Foot and Ankle Clinics: <ul style="list-style-type: none"> ○ Supramalleolar varus deformity – tibial osteotomy ○ Talus tilted in varus – deltoid release +/- tib post lengthening

	<ul style="list-style-type: none"> ○ Subtalar joint rigid (Coleman block negative) – calcaneal osteotomy or corrective STJ fusion (+/- plantar fascia release) ○ Subtalar joint flexible (Coleman block positive – forefoot driven) – 1st MT dorsiflexion osteotomy (+/- plantar fascia release) ○ Varus tilt tendency/tendency to invert – PL to PB tenodesis +/- lat lig reconstruction ○ Weakness in dorsiflexion – PT to middle cuneiform transfer (+/- achilles lengthening if tight)
Discussion points from the Audience	Ankle goes into varus and rotates so often need supramalleolar osteotomy

Title of Talk	How to do a Triple for Severe Cavovarus - Matt Welck
Authors Key Points	<p>Need to consider:</p> <ul style="list-style-type: none"> ▪ Equinus – flexible or fixed. If fixed, needs lambrinudi. ▪ Instability ▪ Arthritis ▪ Rotation – normally external tibial torsion in neurological feet. <p>Key to plan triple preoperatively</p> <ul style="list-style-type: none"> ▪ What will midfoot and forefoot do when hindfoot corrected - ?adduction ?plantaris/pronation ▪ Tendon balance key ▪ Need to identify these issues preoperatively <p>Recognising plantaris – break in mearys at NC joint. Low calc pitch. Intraoperatively, can restore plantaris. Beware not to overlengthen achilles as this can lead to heel pain.</p> <p>Standard triple:</p> <ul style="list-style-type: none"> ▪ TAL – open, not hoke. Straight incision (not curved – as will gape once hindfoot corrected) ▪ Approach – start lateral. Medial for PTT and TNJ. ▪ Preparation – avoid big wedges. Take more laterally ▪ Reduction – Reduce TNJ first, then build everything else around it. Fix or hold TNJ. Then fix or hold STJ. ▪ Fix tendons last. PTT transfer commonest. <p>Lambrinudi Triple:</p> <ul style="list-style-type: none"> ▪ When talus remains in equinus. ▪ 1st cut – talus cut - perpendicular to the floor. 2nd cut, on calc, parallel to the sole of the foot. 3rd cut – undersurface of navicular so keys into talus. ▪ Fix with screws and staples. <p>Can use 3D modelling and mapping to plan osteotomies.</p>
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> ▪ Plan carefully. ▪ Consider Equinus, Rotation, adductus, plantaris ▪ Balance tendons ▪ Arthrodesis that creates a plantigrade foot is superior to a joint salvage surgery that leaves the patient stiff and under corrected.

Title of Talk	Surgical Decision Making – an ‘a la carte’ approach - Heath Taylor
Authors Key Points	<ul style="list-style-type: none"> • Naughton Dunn - 100 yrs since treatment of paralytic deformities of the foot paper • There is a clear algorithm for flat foot surgery but management of the neurological foot is less straightforward, so is an art and science with variability • Often need bony and soft tissue corrections • Aims of Surgery: <ul style="list-style-type: none"> - Painless - Balanced - Plantigrade - Not infected - Sensate - Shoe-able - Looks like a foot! • Pearls <ul style="list-style-type: none"> ○ do not leave in equinus (thou shalt not commit equinus) ○ Think about foot drop and balance muscles ○ Fuse degenerate/very deformed subtalar joints, osteotomy for less deformed ○ Start proximal, then work distal <ul style="list-style-type: none"> ▪ Hindfoot, mid foot, forefoot ○ Can get severe rotational deformity • Can get good idea from WB XRs and clinical examination <p>Case Examples</p> <ul style="list-style-type: none"> • Case 1 - flat, abducted foot. <ul style="list-style-type: none"> ○ Plan hindfoot, mid foot and forefoot options/corrections ○ Calc osteotomy, mid foot fusion, 1st MTP fusion ○ Better shaped foot, treated OA • Case 2 - Friedrich's ataxia <ul style="list-style-type: none"> ○ Hindfoot, mid foot, forefoot correction • Case 3 - cavovarus foot w/ rotation <ul style="list-style-type: none"> ○ Achilles release + triple, dorsiflexion Lapidus • Case 4 - CMT <ul style="list-style-type: none"> ○ NEED TO ASSESS GAIT ○ Achilles release, split tib post transfer to correct gif stoppage gait

Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> ▪ Careful Hx and examination are essential to determine what troubles the patient ▪ Start proximally, work distally when considering surgical options ▪ Balance soft tissues, regardless of bony surgery ▪ Aim for a plantigrade, sensate, shoeable, balanced, painless foot ▪ Naughton Dunn take home message <ul style="list-style-type: none"> ○ In no other branch of surgery is the patient in a better position to judge the practical success or failure resulting from any operative procedure
Discussion points from the Audience	<p>Discussion re: plantar fascia release</p> <ul style="list-style-type: none"> ○ Argument for: better to overcorrect than under correct and plantar fascia release quite easy to do ○ Argument against: in those who do not release plantar fascia, adequate correction still achievable without sacrificing it.

Day 2: Keynote Lecture 2:

Title of Talk	Supporting Surgeons When it all Goes Wrong - Kevin Turner
Authors Key Points	<p>SAEFAR team</p> <p>What do we know?</p> <ul style="list-style-type: none"> ▪ Burnout/Stress in medics ▪ Medical errors linked to burnout, depression, reduced quality of life ▪ Physicians' feelings of guilt, shame and inadequacy after an error. "Second Victims" – Albert Wu. <p>Current response to medical errors for surgeons is inadequate and under-utilised.</p> <p>Adverse events make us feel awful. Can lead to anxiety, anger/irritability, sleep problems, drinking excessively.</p> <p>No training for how to deal with own emotions after an adverse event. No mechanism to support surgeons. Trust and employer do not support wellbeing of employee. Trusts are good at duty of candour and medicolegal stuff, but not looking after the employee.</p> <p>Preparation is better than cure – resilience can be measured. It is not static. It can be enhanced. RCT for resilience training in surgeons (Acceptance and Commitment Therapy – ACT) – showed improvements.</p> <p>Supporting Surgeons</p> <ul style="list-style-type: none"> ▪ RCS and BU document ▪ Good practice guide (supporting surgeons after adverse event) <p>First Responder Role – default support. Focused on surgeon wellbeing.</p>
Key Learning Points and Take Home Messages	<p>www.surgeonwellbeing.co.uk</p> <p>Next steps:</p> <ul style="list-style-type: none"> ▪ First Responder Role ▪ Resilience training to all?

Discussion points from the Audience

Schwartz Rounds – good for debriefing the wider team
BMA have excellent resources to help after an adverse event
Who will look after the first responders?

Day 2: Instructional Session 4 – Controversies in Forefoot Surgery

Title of Talk	Lesser Toes – Predictably Unpredictable! - James Davis
Authors Key Points	<p>Why are lesser toe outcomes so variable? There are more questions than answers.</p> <p>How do we mitigate unpredictability?</p> <ul style="list-style-type: none"> - Prepare the patient - Prepare yourself and reflect on each case <p>How can we make our surgery less unpredictable?</p> <ul style="list-style-type: none"> - Define anatomy, biomechanics and pathology - Plan your treatment from proximal to distal - Look for other causes (e.g. NMD, DM, Inflammatory) - The secret is the MTPJ
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> - Rays are interdependent so think of the whole foot rather than just the toe (if you shorten one what will that do to the others?) <p>Improve predictability by:</p> <ul style="list-style-type: none"> - Understanding the pathoanatomy - Understand patient factors and surgeon factors - Communicate with the patient

Title of Talk	The 'least worst' procedure for hammer toes – Cristian Ortiz
Authors Key Points	<ul style="list-style-type: none"> • Communication with patient is key here <ul style="list-style-type: none"> ○ Listen to the patient very carefully and ascertain exactly what their main presenting complaint is ○ Manage patient expectations – open and honest communication • Principles apply of proximal to distal correction, think of the foot as a whole • Surgical algorithm <ul style="list-style-type: none"> ○ MTP deformity <ul style="list-style-type: none"> ▪ Flexible – Dorsal release ▪ Rigid – Weil/DMMO/Plantar plate reconstruction/Flexor to extensor tendon transfer ○ PIP deformity <ul style="list-style-type: none"> ▪ Flexible – PIP manual release/FDL Tenotomy/Flexor to extensor tendon transfer ▪ Rigid/dislocated – Res arthroplasty/arthrodesis • Fusion common procedure – goal is straight, well-aligned and painless toe (more important than the fusion of joint itself) <ul style="list-style-type: none"> ○ Patients do not like K wires (pin removal, limits shoe wear, infections etc) • Alternatives to K wire PIPJ fusions are available <ul style="list-style-type: none"> ○ Taping ○ Screws ○ Absorbable pins • Minimally invasive options (e.g MIS phalanx osteotomy) available and popular with patients
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> ▪ Decision making key ▪ Always think about rescue option even when doing primary procedure ▪ Various surgical options available – need open honest communication to manage expectations <ul style="list-style-type: none"> ○ Alternatives to K wires are available - tailor to patient

Title of Talk	Morton's Neuroma – Release or Excise - Nick Savva
Authors Key Points	<p>Literature shows mixed outcome from MN excision – up to 70% post-op patients complain of footwear restriction and up to 40% of poor results (pain, numbness, parasthesia)</p> <p>Predictors of poor outcome: Other pathologies, 2nd webspace, >1 webspace affected, bilateral neuromas.</p> <p>We don't really understand the pathology - ?trauma, ?vascular compromise of nerve, ?nerve squeezed by MT head/bursa/MT mobility.</p> <p>Options for treatment of MNs:</p> <ul style="list-style-type: none"> - Excision - Transposition - Translocation & Suspension - DIMTL
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> - Literature is plagued by papers treating multiple pathologies (?80% of pts with MNs have other pathology) - Results of excision are ok but not as good as we think - Cutting a nerve without formally burying the end makes little sense - Histology suggest cause of symptoms is trauma or perhaps venous congestion - Releasing the nerve does make sense - DIMTL is the culprit - 2 areas for further investigation: <ul style="list-style-type: none"> - Formally bury nerve end (+/- excision of neuroma) - DIMTL ligament release

Title of Talk	Rotation & Hallux Valgus – Does it Matter? – Callum Clark
Authors Key Points	<ul style="list-style-type: none"> • Literature shows significant recurrence rate following hallux valgus correction surgery, particularly in complex cases and if other deformities present e.g. pes planus <ul style="list-style-type: none"> ○ Potentially due to first ray rotation (axial + coronal) ○ Correction of this rotation can potentially reduce the recurrence rate • Simulated weight bearing studies show pronation of 1st MT related to 2nd <ul style="list-style-type: none"> ○ Wide range of normality • By correction pronation while performing Modified Lapidus for HV correction, lower recurrence rates (Conti et al FAI 2022) • Unclear where pronation comes from <ul style="list-style-type: none"> ○ may be from naviculocuneiform joints ○ strong association with hindfoot valgus
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> ▪ Rotation does matter in Hallux Valgus cases though we are not sure yet exactly how much ▪ Need to be pragmatic, ongoing need for studies to guide us further on the exact clinical relevance of this topic in the future

Title of Talk	The "Heart-sink" Bunion - Hiro Tanaka
Authors Key Points	<p>Lots of eating spicy chilli involved in talk as a way of demonstrating the pain of bunion surgery!</p> <p>Took us on a journey of 3 heart-sink patients and how Hiro learnt from them</p> <p>Long-term outcome of bunions is not as good as we would like: 75% recurrence at 14 years, 30% by 10 years and 16% by 6 months (47% if associated severe flat foot deformity)</p> <p>Predictors of challenging bunions include complex pathology and associated mental health</p> <p>Emphasised the importance of examining the midfoot and hindfoot + use CT if needed to exclude other pathology and limit unpredictability</p>
Key Learning Points and Take Home Messages	<ol style="list-style-type: none"> 1. Don't criticize other people's heart sinks 2. Communication is key for managing patient expectations 3. Re-establish trust with patients. If necessary use a combined clinics.

Day 3 : Keynote Lecture 4

Title of Talk	Options in Post-traumatic Ankle OA - Alexej Barg
Authors Key Points	<ul style="list-style-type: none"> • TAR if low patient activity • Consider if the joint space is partially preserved to guide if any native joint salvage procedures are an option <ul style="list-style-type: none"> ○ Then consider if varus or valgus to guide correction • If fibula long - lateral closing wedge with fibula osteotomy • If fibula malunion – lateral opening wedge with fibula osteotomy • If fixed arthritis of the subtalar joint – fusion • Consider heel cord or gastric lengthening if soft tissue equinus • Anterior cheilectomy if osseous equinus followed by ventral closing wedge if tibial flexion deformity • In valgus foot with incompetent deltoid – ankle fusion

Title of Talk	Lesser toes – Get down...stay down! - Karan Malhotra
Authors Key Points	<ul style="list-style-type: none"> • Flexor tenodesis technique <ul style="list-style-type: none"> ○ Divide plantar plate, pull up flexor and deliver into wound ○ Suture through FDL as proximal as possible ○ pass one limb of each suture in tendon either side of proximal phalanx ○ fuse PIPJ ○ tie sutures either side of proximal phalanx together, thus affixing FDL to proximal phalanx, holding it down and preventing it from deviating/extending ○ alternative is without PIPJ fusion, after dividing plantar plate and suturing through FDL, can drill hole in proximal part of proximal phalanx and pass 1 limb of suture through hole, with other to side of proximal phalanx ○ sutures then tied together, affixing FDL to proximal phalanx, holding it down and preventing it from deviating/extending
Key Learning Points and Take Home Messages	<p>Benefit of flexor tenodesis for lesser toe corrections</p> <ul style="list-style-type: none"> ○ FDL pulls the toe down ○ Similar to flexor to extensor transfer but affixes tendon to proximal phalanx ○ Can do in conjunction w/ Weil's osteotomy +/- PIPJ fusion

Title of Talk	MI Takedown of Talocalcaneal Coalition - Ed Gee
Authors Key Points	<p>Case Presentation: 21F presents with medial ankle pain. Ankle sprain age 11. MOXFQ 36. MRI shows medial TC Fibrous coalition synostosis. Challenge to release coalition without sacrificing deltoid. Option to fuse subtalar joint not ideal because patient young.</p> <p>Lateral approach. 3x wires passed across on either side of TC joint and used to open coalition. Arthroscopic burr used to excise coalition whilst preserving rest of joint. Deltoid ligament unaffected.</p> <p>Excellent outcome with rapid active subtalar inversion and stable deltoid/CFL>. MOXFQ 6 post-op.</p>

Title of Talk	Deltoid ligament repair technique - Shakir Haider
Authors Key Points	<ul style="list-style-type: none"> • Deep deltoid tends to avulse from medial malleolus, resulting in increased medial clear space on XRs • Technique <ul style="list-style-type: none"> ○ Curved medial incision ○ To repair deep deltoid, can use 2 suture anchors – place 1 suture ant and 1 suture post in substance of torn deep deltoid ○ Anchor that is attached to the sutures is then inserted into the medial malleolus ○ Leave the medial side now and fix the fracture on the lateral side at this stage ○ Return to medial side after and tie off the deep deltoid repair ○ Repair superficial deltoid over deep with suture technique for robust repair
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> • Deltoid ligament repair can help to achieve congruent reduction of the talus in the ankle mortise • It may reduce the rate of post-op medial ankle pain and instability • Preparing the deep deltoid repair before lateral fixation can allow the procedure to be more precisely done, with final repair and tightening performed after lateral fixation

Title of Talk	How to protect the n/v bundle in TAR - Chris Blundell
Authors Key Points	<p>98% use anterior approach for TAR. 75% used fixed-bearing implant Captive saw guides don't give much feedback and block vision so you can't see where you're cutting. Therefore the tibial nerve is at high risk of injury (up to 20%)</p> <p>Tip for protecting the n/v bundle:</p> <ul style="list-style-type: none"> - Small medial incision and open tibialis posterior tendon sheath - Reflect tibial nerve posteriorly then, keeping the nerve posterior, use the periosteal elevator to clean soft tissue from bone and clear periosteum. - Place a Hohmann retractor into this space backwards (handle in first) with the n/v bundle safe behind.
Key Learning Points and Take Home Messages	- This simple technique not only protects the n/v bundle but also helps the bone block to pop out easily after cutting

Title of Talk	Preparing fusions for fixation with memory staples - Chris Marquis
Authors Key Points	<ul style="list-style-type: none"> • A hintermann distractor is often used for preparing joints for fusion such as the TNJ • The OrthoSolutions guide for the placement of a Hintermann distractor can be set to the same width as a 20mm staple • Technique <ul style="list-style-type: none"> ○ Set the distance on the guide to 22-23mm ○ Use the drill hole for the hintermann distractor ○ Insert the distractor and use it to open the joint space to prepare the joint surfaces

	<ul style="list-style-type: none"> ○ After preparation, the distractor can be removed and the staple inserted, making the flow of the procedure more efficient and minimising multiple drill holes ○ with suture technique for robust repair
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> • OrthoSolutions guide for the Hintermann distractor can double up as a guide for insertion of a memory staple, leading to efficient joint preparation and fusion through the same drilled holes

Title of Talk	TIPTOE - Charline Roslee																				
Authors Key Points	<p>TIPTOE = Theatre Inverse Planner To Optimise Efficiency</p> <p>A simple technique was shown to improve efficiency in theatre. The example of typical delays commonly experienced were given. These can be overcome with the use of a white board chart:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>CASE</th> <th>Send Time</th> <th>AAR</th> <th>KTS</th> <th>OOT</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> <td>Finish Time</td> </tr> </tbody> </table> <p>A discussion with all theatre team members predicts ideal times for each case – Send time, Arrival in Anaesthetic Room (AAR), Knife To Skin (KTS), Out Of Theatre (OOT). The timed events can be varied according to the cases and theatre environment. Once times are written up the theatre staff try to stick to them but Actual times are added through the day. The chart therefore evolves.</p>	CASE	Send Time	AAR	KTS	OOT	1					2					3				Finish Time
CASE	Send Time	AAR	KTS	OOT																	
1																					
2																					
3				Finish Time																	
Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> - Works according to Gamification Theory - Empowers all team members to achieve their best and have ownership of theatre cases - Theatre efficiency is a team sport - There is no punishment for changes which are an expected part of the process. This helps all members to engage 																				

Title of Talk	Intra-operative use of the mini C-arm for calcaneal axial views - Benjamin Lau
Authors Key Points	<ul style="list-style-type: none"> • For some cases, using the big C-arm and Radiographer can be time consuming and cumbersome in a theatre with limited space • Effective use of the mini C-arm can aid surgical efficiency and give the surgeon more control of their intra-operative imaging. • Technique <ul style="list-style-type: none"> ○ Pt in lateral position, mini C-arm at foot of bed along with screen ○ Start with a lateral, then can make C-arm horizontal for calcaneal axial views ○ Can rotate the limb for AP view

Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> • Good lateral and axial calcaneal views can be achieved with this simple and reproducible method, with economy of movement of the mini C-arm • Permits quick adjustments to wire/screw position • Removes reliance on Radiographers • Foot can be held in a stable position so reduction manoeuvres/positions can be maintained
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Title of Talk	My Trick for Knotless Arthroscopic Brostrom Gould - Cristian Ortiz
Authors Key Points	<p>Open lateral ligament complex repair and reinforcement with the inferior extensor retinaculum has been the gold standard procedure. The presented arthroscopic technique using knotless anchors to approximate the ligament to the distal fibula over a larger surface area which creates comparable biomechanical and improved functional results to open procedures. The use of knotless anchors also avoids the need for an accessory portal and limits potential suture knot-related complications.</p> <p>.</p>
Key Learning Points and Take Home Messages	<p>Lateral ligament augmentation using suture tape has significant superiority:</p> <ul style="list-style-type: none"> - Less operative time - No need for cast or brace immediately after surgery which allows for early rehab - Better functional (FAAM) scores at sports activity
Discussion points from the Audience	

Title of Talk	Achieving alignment in combined mid/hindfoot Charcot Reconstruction - Venu Kavarthapu
Authors Key Points	<ul style="list-style-type: none"> • Aim of Charcot Reconstruction <ul style="list-style-type: none"> ○ Stable, plantigrade foot ○ Balanced midfoot and hindfoot ○ Optimal bony opposition • 1/3 pts have combined midfoot and hindfoot deformities in Charcot neuroarthropathy • Technique <ul style="list-style-type: none"> ○ Use hindfoot nail for TCC stabilisation ○ With distal locking screws, insert them into lateral column but leave them deliberately short at this stage ○ Next, prepare CCJ laterally and fix with beam and or plate ○ Next, address medial side with stable fixation ○ Be careful of maintaining joint position throughout to end with balance mid and hindfoot, with stable fixation and bony opposition

Key Learning Points and Take Home Messages	<ul style="list-style-type: none"> • Technique described for achieving alignment and mid/hindfoot balanced reconstruction • Hindfoot nail construct used and lateral column, then medial columns prepared and stabilised • Overall, get stable, plantigrade, balanced foot with good bony opposition
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Title of Talk	Technique for Grafting Cysts around TARs - Tim Clough
Authors Key Points	<p>When you have a large cyst around a stable TAR your options for treatment are: bulk allograft, iliac crest graft (which doesn't produce enough bone graft), injecting Calcium-based cement allograft. This talk recommended the use of Morselized Impacted Fresh Femoral Head Bone Graft (MIFFH). This is prepared using a bone mill.</p> <p>It offers good structural support which is achieved by repeated impacting of the graft as you insert it.</p> <p>This technique can save the TAR which might otherwise have had to be revised to fusion.</p>
Key Learning Points and Take Home Messages	<p>MIFFH has excellent qualities for treating a gyst:</p> <ul style="list-style-type: none"> - Rapid incorporation - Great structural stability