

Scientific Tracks & Sessions | Day 1

December 05, 2022

Orthopedics 2022



3rd International Conference on

ORTHOPEDICS

December 05-06, 2022 | Dubai, UAE

Orthopedics | Osteoarthritis | Osteoporosis | Traumatic Injuries | Orthopedics Implants



Chair

Hans-Joachim Pössel

Mediclinic Al Noor Hospital | UAE

Session Introduction

Title: Nicotinamide riboside chloride (NR), an orally bioavailable nicotinamide adenine dinucleotide (NAD⁺) precursor, significantly inhibits post-traumatic osteoarthritis (OA) development and associated pain in mice

Paulo V G Alabarse | VA San Diego Healthcare System | USA

Title: The relation between gut microbial profile and osteoporosis status in postmenopausal women

Bolaji Lilian Ilesanmi-Oyelere | Massey University | New Zealand

Title: Wrist joint replacement with ceramic implants

Timofey Alexandrov | Novosibirsk Research Institute of Traumatology and Orthopedics | Russia

Title: Masquelet technique current concepts & advances

Srinivas Yeggana | AIMS Hospitals | India

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Nicotinamide riboside chloride (NR), an orally bioavailable nicotinamide adenine dinucleotide (NAD⁺) precursor, significantly inhibits post-traumatic osteoarthritis (OA) development and associated pain in mice

Paulo V G Alabarse and Ru Liu-Bryan

VA San Diego Healthcare System, USA

Purpose: Nicotinamide adenine dinucleotide (NAD⁺) is a key metabolite that serves as a cofactor for numerous enzymes involved in cellular energy metabolism and critically regulates multiple cell-signaling pathways. We previously observed that up regulation of expression of CD38, the main NADase (NAD⁺ consuming enzyme) in mammalian tissues is associated with decline of cellular NAD⁺ levels in advanced human knee OA chondrocytes/cartilage. In addition, CD38 expression is markedly induced by pro-inflammatory cytokine IL-1 β , correlated with reduced ratio of NAD and NADH. Changes in cellular NAD⁺ levels are related to the balance between NAD⁺ biosynthesis and degradation. There is an inhibitor of CD38 activity, apigenin (API), that is believed to achieve increase to NAD⁺ levels. Thus, we carried out *in vivo* studies using a post-traumatic mouse OA model to examine if oral supplementation of NR or API inhibits OA development and associated pain.

Methods: Male C57BL/6 mice at 3-4 months of age were subjected to the destabilization of medial meniscus (DMM) surgery, randomly divided into 3 groups (n=9/group): NR or API treatments by gavage (500mg and 25 μ g/kg/day in water, respectively) and controls. Pain behaviors were evaluated by Von Frey and static weight bearing tests at baseline and every 2 weeks after the surgery. At 10 weeks after the surgery, mice were sacrificed and knee OA pathological changes including cartilage degradation were evaluated using the OARSI score system.

Findings: *In vivo* studies revealed that mice treated with NR or API exhibited significantly reduced cartilage damage after the DMM surgery (Fig 1A). Additionally, they displayed improved pain behaviors (Fig 1B and C). These results suggest NR via oral administration limited post-traumatic OA development and associated pain in mice.

Conclusion: Preventing intracellular NAD⁺ decline and/or restoration of NAD⁺ levels through NR supplementation could be a new approach to suppresses cartilage degradation and OA development.

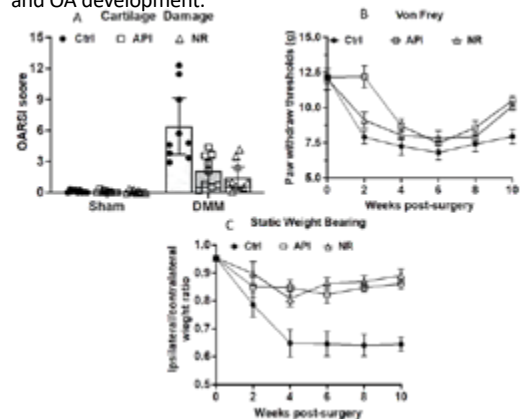


Figure 1: Cartilage damage assessed by OARSI Score (A), pain behavior *in vivo* results from Von Frey (B) and Static Weight Bearing (C) from animals treated with NR or API for ten weeks after DMM.

Recent Publications

- Correa LB, Pádua TA, Alabarse PVG, et al. Protective effect of methyl gallate on murine antigen-induced arthritis by inhibiting inflammatory process and bone erosion. *Inflammopharmacology*. 2022.
- Alabarse PVG, et al. Metabolomic Biomarker Candidates for Skeletal Muscle Loss in the Collagen-Induced Arthritis (CIA) Model. *J Pers Med*. 2021.
- Soares MPR, Silva DP, Uehara IA, et al. The use of apocynin inhibits osteoclastogenesis. *Cell Biol Int*. 2019.

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Biography

Paulo V G Alabarse has expertise in rheumatoid arthritis and related muscle loss, as well as osteoarthritis. His research focuses on searching for novel drugs for the treatment of osteoarthritis and search for a

metabolic biomarker of muscle loss targeting diagnosis, follow-up and treatment response to improve individual disease progress and treatment response.

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The relation between gut microbial profile and osteoporosis status in postmenopausal women

Bolaji Lilian Ilesanmi-Oyelere¹, Elizabeth Rettedal², Jane Coad¹, Roy³ and Kruger¹¹Massey University, New Zealand²AgResearch, New Zealand³Otago University, New Zealand

The gut microbiota has been postulated to affect nutrient absorption, the endocrine and immune systems and bone metabolism. The gut microbiota, otherwise known as the largest gene pool of the human body may play a significant role in bone health. Eighty-six postmenopausal women were recruited from the Manawatu-Whanganui region, for a cross-sectional study and participated in the phase II trial which involved faecal sample collection. The women were classified into two groups of healthy (H) and osteopenic/osteoporotic (OP) based on the WHO classification of their BMD and resultant T-scores. Faecal DNA samples collected from eligible post-menopausal women underwent whole genomic sequencing by Illumina HiSeq® 2500 System. The microbial composition diversity (alpha diversity based on Shannon index) was significantly decreased among the OP group compared to the healthy group when using the hip classification (PShannon = 0.013) as well as femoral neck (PShannon = 0.0003) status but not for the spine (PShannon = 0.40) classification. The composition (beta diversity) did not differ significantly between the groups based on the hip T-score (PANOSIM = 0.373, PADONIS = 0.075, Pbetadisper = 0.066) but was significant based on the femoral neck (PANOSIM = 0.024, PADONIS = 0.703, Pbetadisper = 0.010) and spine (PANOSIM = 0.024, PADONIS = 0.703, Pbetadisper = 0.010) T-score status. The phylum Bacteroidetes were more abundant for the OP group, while Firmicutes were more abundant for the healthy group. At genus level, *Bacteroides*, *Parabacteroides* and *Enterococcus* were identified as possible biomarkers for development of osteoporosis. *Acidimicrobium*, *Aquifex* and *Tetrahymena* had the most influence in the classification based on the hip and *Magnetococcus*, *Akkermansia* and

Moritella had the most influence based on the spine osteoporosis status. The results presented here provide a possible link between certain members of the gut microbiota and bone loss/osteoporosis.

Recent Publications

1. Ilesanmi-Oyelere BL and Kruger Marlina (2022). B-vitamins and homocysteine as determinants of bone health: a literature review of human studies, *Journal of Human Nutrition and Dietetics*, *J Hum Nutr Diet*.doi: 10.1111/jhn.13080.
2. Salavatizadeh M, Soltanieh S, Chegini M, Ilesanmi-Oyelere BL, Kord-Varkaneh H, Hekmatdoost A. (2022) Micronutrient intake and risk of ulcerative colitis: A meta- analysis of observational studies, *Clinical Nutrition ESPEN*, <https://doi.org/10.1016/j.clnesp.2022.07.008>.
3. Abu-Zaid A, Gaman MA, Jamilian P, Ilesanmi-Oyelere BL, Jamilian P, Baradwan S, Bajaman JS, Alras KA, Kutbi E, Al-Ghrai AKM, Sadulah DDS, Albazee E, Alomar O, Al- Badawi IA, Salem H. (2022) The effect of 17 β -estradiol plus norethisterone acetate treatment on the lipid profile in women: a dose-response meta-analysis of randomized controlled trials. *Exp Gerontol*. 2022 May 28;165:111855. doi: 10.1016/j.exger.2022.111855. Epub ahead of print. PMID: 35640782.

Biography

Bolaji Lilian Ilesanmi-Oyelere is a postdoctoral (Nutritional Science) fellow with an expertise in the area of human nutrition, health and aging healthcare. Her research has focussed on nutrition, inflammation, gut microbiome and bone health in postmenopausal women. She is based in the School of Health Sciences, Massey University, Palmerston North, New Zealand.

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Wrist joint replacement with ceramic implants

Timofey Alexandrov

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Arthritis of the wrist joint can cause significant pain and decreased motion. Total wrist arthroplasty can provide pain relief and motion. Ceramic implants can be used in arthroplasty, but their longer-term performance in the wrist remains unknown. The aim of this study is to review outcomes utilizing an all-ceramic bearing total wrist arthroplasty.

Methods: The study was planned as a prospective, non-randomized, non-blinded, single arm study. We reviewed 83 cases who underwent total wrist arthroplasty with all-ceramic bearing endoprostheses during 2010 - 2021. Three patients underwent arthroplasty on both sides

Results:

1. The survival rate of the endoprosthesis of the wrist joint was 86%
2. The baseline DASH score was 63.14 ± 16.57 (15.8 - 86.2) and the MWS was 31.64 ± 18.55 (0 - 80). Pain was scored by visual analogue pain scale (VAS): the average VAS baseline value was 6.66 ± 2.48 (0 - 10).
3. According to the results of a long-term study, stability and positive dynamics are noted,
4. Preservation of the physiological mobility of the bones of the distal series of the wrist contributes to the stabilization of the distal component during long-term study. We evaluated a good result in those cases when there was a positive trend in all three indicators (pain, adaptation and function). A satisfactory result was considered by us in those cases when there is no dynamics in one of the indicators.

Conclusions: Ceramic TWA affords good pain relief and functional improvement and is a good option in the management of wrist arthritis.



Figure 1. Patient M. Diagnosis: Rheumatoid arthritis. Complex contracture of right wrist joint

Recent Publications

1. T. I. Aleksandrov, Prokhorenko V.M., S.I. Chorny T.I., Simonova E.N. Wrist Joint Endoprosthesis (Case study). Spring days of orthopedics. Abstract of International Congress. Novosibirsk Research Institute of Traumatology and Orthopedics n.a. Jacob Civi'jan, 2019, 6-7
2. T. I. Aleksandrov, Simonova E.N., S.I. Chorny T.I., Prokhorenko V.M. Postoperative correction of ulnar deviation. 2019.
3. N.N. Priorov. Early and mid-term results of total joint replacement of carpo-metacarpal joint. Bulletin of Traumatology and Orthopedics. 2020, 19-27

Biography

Timofey Alexandrov has been working in Novosibirsk Research Institute of Traumatology and Orthopedics. He studies the hand problem since 2003. The only surgeon in Russia with a unique fundamental experience in wrist and finger joint replacement using ceramic implants

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Masquelet technique current concepts & advances

Srinivas Yeggana

AIMS Hospitals, India

Background: Open fractures are a difficult entity, often complicated by infection and non-union. Bone loss in such fractures adds to the complexity. Conventional techniques of bone defect management are mainly directed toward fracture union but not against preventing infection or joint stiffness. In this case series, we evaluated Masquelet's technique for the management of open fractures with bone loss.

Materials and Methods: One hundred fifty-six open fractures with bone defects, which presented within 3 days of trauma, were planned for treatment by Masquelet's technique. Follow-up ranged from 12 to 24 months. Results: Average length of bone defect was 3cm. The radiological union was obtained at a mean of 240 days since the first stage of surgery. The time for the union was not related to the size of the defect. Union was faster in the metaphyseal region (225 ± 38 days) as compared to diaphysis (260 ± 58.6 days). No patient had residual infection after stage 1. All the patients were able to mobilize with full weight bearing after radiological union with a satisfactory range of motion of adjacent joints.

Conclusion: This technique can be routinely applied in compound fractures with the bone loss with good results. Chances of infection are reduced using an antibiotic cement spacer as an adjunct to thorough debridement. Induced biomem-

brane revascularizes the graft. The union can be expected in most cases; however, the long time to union is a limitation. The technique is cost-effective and does not require special training or instrumentation. Although it is a two-stage surgery, the requirement of multiple surgeries, as may be needed in conventional methods, is avoided.

Recent Publications

1. Engineering functionally graded tissue engineering scaffolds J Mech Behav Biomed Mater (2008)
2. Endothelial pattern formation in hybrid constructs of additive manufactured porous rigid scaffolds and cell-laden hydrogels for orthopedic applications J Mech Behav Biomed Mater
3. Engineering a vascularized collagen- β -tricalcium phosphate graft using an electrochemical approach Acta Biomaterialia, Volume 11, 2015, pp. 449-458

Biography

Srinivas Yeggana is a well-known senior orthopedic surgeon with extensive experience in the field. He is the first person from South India to be awarded the prestigious British IOA Fellowship in Joint Replacement and Revision Joint Replacement. Computer-aided navigation arthroplasty and arthroscopic surgery in the United Kingdom. He was trained and worked in the best orthopedic hospitals in India and the United Kingdom (UK).

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Scientific Abstracts | Day 2

December 06, 2022

Orthopedics 2022



3rd International Conference on

ORTHOPEDICS

December 05-06, 2022 | Dubai, UAE

Orthopedics Surgery | Orthopedics Trauma | Hip Replacement | Pediatric Orthopedics



Chair

Karim Rezk

Nottingham University hospitals NHS trust | UK

Session Introduction

Title: [Management of relapsed clubfeet by soft tissue distraction using the Ilizarov method](#)

Alham Qureshi | East Lancashire Hospital Trust | UK

Title: [Ortho-SUV in trauma and electives: An initial report of the first ten patients](#)

Karim Rezk | Nottingham University hospitals NHS trust | UK

Title: [Hip replacement for femur neck fracture in the elderly, effects of delayed surgical intervention on morbidity and mortality, a retrospective comparative study](#)

Javeria Saeed | Aga Khan University | Pakistan

Title: [Using patient-specific Beta Tricalcium Phosphate synthetic bone graft in distal radius osteotomy – surgical technique illustrated with a case report](#)

Soha Sajid | Dudley Group of Hospitals, UK

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Management of relapsed clubfeet by soft tissue distraction using the Ilizarov method

Alham Qureshi¹, Elhussein Elgengehy², Mootaz Thakeb² and Qaisar Choudry¹

¹East Lancashire Hospital Trust, UK

²Ain-Shams University, Egypt

Introduction: Conventional surgical methods for management of congenital talipes equinovarus gives satisfactory results, but recurrence requiring further treatment may occur. Gradual soft tissue distraction using the Ilizarov method is an alternative treatment that allows multidirectional correction of all aspects of the deformity without the need for extensive soft tissue derangement, bony resection, or fusion. We present the results of the use of the Ilizarov method for relapsed clubfeet.

Patients and Methods: Patient younger than 8 years with no fixed bony deformities but relapsed clubfeet were treated by soft tissue distraction using the Ilizarov method. The pre-operative deformity was measured using a goniometer and expressed in degrees of equinus, hindfoot varus, forefoot adduction and supination. The amount of residual deformity was expressed as percentage of the initial deformity.

- Excellent = plantigrade foot or one with only trace of residual deformity (<5°).
- Good = foot with correction of more than 75% of the initial deformity.
- Fair = correction between 50% and 75% of the initial deformity.
- Poor = correction less than 50%.

Results: Nineteen feet (9 unilateral, 5 bilateral) with relapsed clubfeet in fourteen patients (10 boys, 4 girls) were studied. The average age at the time of surgery was 5.5 years (range, 3-8 years) with an average of three (range, 2-5) previous surgeries.

The time to achieve correction of the deformity was 4.5 weeks (range, 3-6 weeks). All children then spent additional 6 weeks in the frame. The time taken for correction of the deformity till frame removal was 10.5 weeks (range, 9-12 weeks) and the follow up period was 2.4 years (range, 1-4 years). Twelve feet (63.2%) were graded as excellent, 5 (26.3%) as good, and 2 (10.5%) as fair result.

Conclusion: The Ilizarov method is technically demanding but well tolerated and an effective method of treating relapsed club foot deformity.

Recent Publications

1. Korkmaz A, Ciftedemir M, Ozcan M, Copuroğlu C, Sandoğan K. The analysis of the variables, affecting outcome in surgically treated tibia pilon fractured patients. *Injury* 2013 Oct;44(10):1270–4.
2. Amorosa LF, Brown GD, Greisberg J. A surgical approach to posterior pilon fractures. *J Orthop Trauma* 2010 Mar;24(3):188–93.
3. Conroy J, Agarwal M, Giannoudis PV, Matthews SJ. Early internal fixation and soft tissue cover of severe open tibial pilon fractures. *Int Orthop* 2003;27:343–7.

Biography

Alham Qureshi is a junior doctor working in trauma and orthopaedics in the North West of England. She obtained her medical degree from the University of Glasgow in 2016. She is currently working at Royal Blackburn Hospital. Her interests include trauma, hand surgery, diversity and inclusivity and yoga.

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Ortho-SUV in trauma and electives: An initial report of the first ten patients

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Background: Software-based frames represent a pivotal point in the treatment of various conditions. We report the applications of Ortho-SUV in trauma and elective cases.

Methods: Ten patients (eight males/two females), were operated between June 2019 and February 2020, by a single surgeon. three patients had neglected fractures (distal tibia, shaft tibia and distal femur), three patients had fresh tibial fractures (two proximal and one shaft), two had genu varum, one had equinus ankle and another had docking site angulation after bone transport.

Results: The median age at operation was 36years old (9-57). The median time of correction was 19 days (6-65) and the median number of prescriptions was 2 (1-3). Deformities were: One fixed 30° ankle equinus, one fracture proximal tibia with posteromedial translation, one fracture shaft tibia with 12° procurvatum and lateral translation, one non-united distal tibia with 21° valgus recurvatum, one fracture proximal tibia fracture with 7° valgus recurvatum and lateral translation, one secondary displaced tibial shaft with 6 varus and posteromedial translation, one docking site 14° varus procurvatum, two genu varum with varus procurvatum (24° and 58°) and internal torsion of (5° and 20° respectively) and the last one was distal femoral 25° varus recurvatum and medial translation.

Full correction was achieved in eight, two had minimal residual deformity that didn't affect the outcome. In Seven patients, the use of SUV was planned preoperatively. In three patients, a situation evolved and SUV was used on the applied frame, one patient whom docking site looked malaligned and two patients with shaft tibial fracture.

Conclusion: The flexibility and versatility of SUV struts present this device as a backup plan for in-treatment malalignment. Additionally, it is an easy to use and a powerful tool to correct massive deformities.

Recent Publications

1. Aetiology of long bone chronic osteomyelitis: An analysis of the current situation
2. Improving the Surgical Teaching Opportunities: A QI Project to Deliver a Course at a Local Hospital Level During COVID-19 Pandemic
3. Rapid systematic review of neonatal COVID-19 including a case of presumed vertical transmission

Biography

Karim Rezk, Trauma & Orthopaedic speciality registrar at Nottingham university hospitals NHS trust, MBBCh, MRCS England, Previous core surgical trainee at Yorkshire & Humber deanery, England.

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Hip replacement for femur neck fracture in the elderly, effects of delayed surgical intervention on morbidity and mortality, a retrospective comparative study

Javeria Saeed, Ahmed Abdul Habib, Shah Fahad, Pervaiz Hashmi and Mujahid Jamil Khattak

Aga Khan University, Pakistan

Hip fracture is one of the most common injuries in the elderly population. Delay in operating on patients with hip fractures is associated with greater mortality and morbidity. A retrospective review of medical charts of patients who underwent primary total hip replacement (THR) for the neck of femur fractures at our tertiary care level 1 trauma was carried out. Data were collected from the patient's charts and analyzed for 30-day mortality and morbidity. A total of 96 patients were included in the study. Out of the 36 patients in the delayed THR group, mortality within 30 days was observed in 4 (11.1%) patients while none was noted in the early THR group. The difference was statistically significant with a P-value of 0.008. With regards to post-operative complications, a significantly higher percentage of patients were noted to have developed electrolyte imbalances ($P = 0.003$), postoperative psychosis ($P = 0.02$) and acute kidney injury (AKI) ($P = 0.02$) in the delayed THR group compared to the early THR group. A delay in surgery for the neck of femur fracture is associated with increased 30-day mortality and postoperative complications.

Recent Publications

1. Hashmi SS, Abbas A, Bukhari A, Saeed J, Shafqat A, Siddique

AH, et al. Selective Neck Dissection for Node-Positive Oral Cavity Squamous Cell Carcinoma: A Retrospective Cohort Study. International Archives of Otorhinolaryngology. 2022.

2. Saeed J, Khan MYD, Umer M, Fadoo Z. Primary lymphoma of bone in children-A case series. Journal of Pakistan Orthopaedic Association. 2021;33(04):180-3
3. Durrani MYK, Saeed J, Umer M, Hashmi P. Functional outcomes and complications of total hip arthroplasty with dual mobility cup: an audit. JPMA The Journal of the Pakistan Medical Association. 2021;71(8 (Suppl 5)): S87.

Biography

Javeria Saeed, engaged in clinical research and specifically I have 8 years experience of working on cancer research to fulfill my passion for surgical oncology research and enrich my research writing and analysis skills. Besides being involved in research activities, I had been teaching medical research skills that include different research methodologies and the use of statistical software to medical residents. I have also been providing consultation to the residents of the Dept. of Orthopedics, involved in orthopedic surgery research at Aga Khan University Hospital. Presently I am working as an instructor in research in the department of surgery.

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Using patient-specific Beta Tricalcium Phosphate synthetic bone graft in distal radius osteotomy – surgical technique illustrated with a case report

Soha Sajid

Dudley Group of Hospitals, UK

Aims: Deformity due to malunion of distal radius can result in limited function. Correction of the deformity where there was shortening of the radius from malunion may need a large bone graft. Beta-Tricalcium Phosphate (β -TCP) is a commonly used synthetic bone graft substitute to help bridge the defect. The substitute has osteoconductive and osteoinductive properties, acting as a scaffold for bone regeneration. In the short term the presence of the bone substitute also gives mechanical support for fixation, and can allow earlier return to function. This bone substitute is usually used 'off-the-shelf' and shaped by the surgeon as required. We present a case of a patient specific distal radius osteotomy with a specifically shaped β -TCP bone substitute implant.

Technique: A 69-year-old lady with a left dorsally angulated and shortened distal radius fracture malunion presented with significant reduction in movement and limited function. For correction of the deformity, she had patient specific fixation using KLS Martin Individual Patient Solution software and implants. During the pre-operative planning it was noted that to correct the deformity, a substantial bone defect would occur, and bone graft would be required to bridge the gap. As part of the pre-operative planning the shape and size of the bone graft was deduced. A bespoke β -TCP graft was made for the defect.

Patient specific jigs were made using the software. This jig was applied to the distal radius using wires and the distal holes along with the slotted proximal shaft holes were pre-drilled. The osteotomy was done using a saw. The patient

specific plate as formulated using the pre-operative planning software was fixed distally and then reduced down and fixed onto the shaft with the patient specific β -TCP bone graft in situ. No post-operative immobilization was required.

Post-operative result: The patient made good progress. At 8 weeks post-operative review, the patient had full range of movement and was pain-free. She had grip strength of 22kg on the left non-dominant, operated side versus 26kg on the dominant right side. Radiologically, there were signs of incorporation of the bone graft. No complication has been reported.

Discussion: Our experience of using patient specific β -TCP bone substitute as part of the fixation has been encouraging in the short term and is a technique that we would use again. The bone substitute has given good mechanical support to the fixation and having a bespoke implant of the defect saved time intra-operatively to fashion it to its shape.

Recent Publications

1. Sajid, Soha & Shave, Ruth & Butt, Sohail. (2012). Development of calcific myonecrosis as a late complication of an open fracture. Grand Rounds. 12. 10-13. 10.1102/1470-5206.2012.000

Biography

Soha Sajid currently works at Dudley Group of Hospitals. This work has been done in conjunction with Robert Jones and Agnes Hunt Orthopaedics Hospital in Oswestry. She has published several of research articles in different international journals.

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