



WSO



World Symposium on Orthopaedics 2022

Time: Dec. 09th-11th, 2022

Place: InterContinental Singapore, Singapore

Format: Hybrid

Conference Book



Committee

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Hosting Organization

Life and Medical Sciences Innovation Institute(LMSII)

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Dr. Vincenzo Filardi, University of Messina, Italy

Dr. Konstantinos Sidiropoulos, Papageorgiou General Hospital of Thessaloniki, Greece

Dr. Rajat Emanuel Singh, Northwestern College, USA



Welcome Remark

Dear Friends and Colleagues,

It is our great pleasure to welcome you to World Symposium on Orthopaedics (WSO 2022), which is now being held during Dec 9th-11th, 2022 in InterContinental Singapore, Singapore with hybrid format.

WSO 2022 includes plenary forum, 7 breakout sessions with 30 oral speeches, as well as poster exhibition in the three-day scientific program. The topics will focus on Knee and Ankle, Hip, Spine, Shoulder, Arm and Hand, Skeletal Muscle and Muscle Synergies, Orthopedics Surgery and Trials, etc.

WSO 2022 brings together the best scientists from universities, research institutes and the hospitals worldwide to share exciting results and to build new collaborations. Great ideas and top discoveries from participants will help develop novel aspects of Orthopaedics development.

We hope you can join your peers in a highly interesting and engaging hybrid event with online and offline. Your presence and deliberation will make this congress remarkably successful.

Organizing Committee of WSO 2022



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Posters

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Schedule of WSO 2022

Time: Dec. 9th-11th, 2022

Venue: InterContinental Singapore, Singapore

Day 1, Dec. 9th, 2022 (Friday), Time Zone: GMT+8

Time	Sessions
01:30 PM-03:55 PM	WSO Hybrid Session: Knee and Ankle (Bras Basah I, Level 3)
03:55 PM-05:30 PM	WSO Hybrid Session: Plenary Forum of WSO 2022 (Bras Basah I, Level 3)

Day 2, Dec. 10th, 2022 (Saturday), Time Zone: GMT+8

Time	Sessions
08:00 AM-10:10 AM	WSO Hybrid Session: Hip and Injury (Bras Basah I, Level 3)
05:20 PM-06:40 PM	WSO Online Session: Knee
08:00 PM-08:55 PM	WSO Online Session: Arm and Wrist

Day 3, Dec. 11th, 2022 (Sunday), Time Zone: GMT+8

Time	Sessions
10:25 AM-11:45 AM	WSO Hybrid Session: Skeletal Muscle and Muscle Synergies (Bras Basah I, Level 3)
08:00 PM-11:00 PM	WSO Online Session: Orthopedics Surgery and Trials



Program

Time: Dec. 9th-11th, 2022

Venue: InterContinental Singapore, Singapore

WSO Hybrid Session: Knee and Ankle

Chaired by **Dr. Kees van Egmond**, Isala Zwolle, Netherlands

Time: 01:30 PM-03:55 PM, Dec. 9th, 2022 (Friday), GMT+8; Place: Bras Basah I, Level 3

Time	Presentations and Presenters
01:30 PM-01:35 PM	Chair's Introduction
	Online Speech: Preliminary Experience in Reconstruction of Lateral Malleolus Defect in Adolescents
01:35 PM-02:00 PM	Dr. Wenjun Li , Beijing Jishuitan Hospital, China
	Title: Supra Malleolar Osteotomy of Ankle Arthritis – 10 Year Follow up from a Major Referral Centre in the UK
02:00 PM-02:25 PM	Dr. Seyed Ashgar Ali , University Hospital Birmingham, UK
	Title: Knee Ligaments: Clinical Examination with Lelli Test
02:25 PM-02:50 PM	Dr. Alessandro Lelli , Villa Regina Hospital, Italy
	Title: Prospective Clinical Feasibility Study of A PLLA Scaffold For Primary ACL Reconstruction With 5-year Follow-up
02:50 PM-03:15 PM	Dr. Kees van Egmond , Isala Zwolle, Netherlands
	Title: Erythema Elevatum Diutinum: an Epiphenomenon or a Distinct Entity?
03:15 PM-03:40 PM	Dr. Fakhreddin Sabooniha , Sabzevar University of Medical Sciences, Iran
03:40 PM-03:55 PM	Coffee Break

WSO Hybrid Session: Plenary Forum of WSO 2022

Chaired by **Dr. Birgit Schulz**, Center for Shoulder Surgery Suedwestfalen, Germany

Time: 03:55 PM-05:30 PM, Dec. 9th, 2022 (Friday), GMT+8; Place: Bras Basah I, Level 3

Time	Presentations and Presenters
03:55 PM-04:00 PM	Chair's Introduction
	Title: The Costs of Confronting Osteoporosis: Cost Study of an Australian Fracture
04:00 PM-04:30 PM	Liaison Service
	Dr. Gabor Major , Hunter New England Health Service, Australia
	Online Speech: Influences on the Achievement of Spontaneous Neurological Recovery Following Acute Traumatic Spinal Cord Injuries
04:30 PM-05:00 PM	Prof. W S El Masri , Keele University, UK



05:00 PM-05:30 PM **Title:** Current Concept for Treatment of Recurrent Posttraumatic Shoulder Dislocation
Dr. Birgit Schulz, Center for Shoulder Surgery Suedwestfalen, Germany

WSO Hybrid Session: Hip and Injury

Chaired by **Dr. Haiwen Peng**, Chongqing Daping Hospital affiliated to Army Medical University, China

Time: 08:00 AM-10:10 AM, Dec. 10th, 2022 (Saturday), GMT+8; Place: Bras Basah I, Level 3

Time	Presentations and Presenters
08:00 AM-08:05 AM	Chair's Introduction
08:05 AM-08:30 AM	Title: Associations between Bone Turnover Markers and Outcomes in Hip Fracture Patients with and without Type 2 Diabetes Mellitus Dr. Malith Ramasundara , The Canberra Hospital, Australia Online Speech: Classification Systems Regarding Developmental Hip Dysplasia And Their Suggestive Effect
08:30 AM-08:55 AM	Dr. Haiwen Peng , Chongqing Daping Hospital affiliated to Army Medical University, China Online Speech: Increased Risk of Avascular Necrosis with Open Hip Reduction in Arthrogryposis
08:55 AM-09:20 AM	Dr. Tristen Taylor , Texas Children's Hospital Houston, USA Online Speech: Mid-term and Long-term Results of Restoring Rotation Center in Revision Hip Arthroplasty
09:20 AM-09:45 AM	Dr. Heng Zhang , The First Affiliated Hospital of Bengbu Medical College, China; Jinling Hospital, School of Medicine, Nanjing University, China Title: Clarifying the Structure of Serious Head and Spine Injury in Youth Rugby Union Players
09:45 AM-10:10 AM	Prof. Koh Sasaki , Nagoya University, Japan

WSO Online Session: Knee

Chaired by **Dr. Bernhard Waibl**, Cartilage Care, Switzerland

Time: 05:20 PM-06:40 PM, Dec. 10th, 2022 (Saturday), GMT+8

Time	Presentations and Presenters
05:20 PM-05:25 PM	Chair's Introduction
05:25 PM-05:50 PM	Online Speech: Clinical Application and Study on Comprehensive Solution Strategy of Meniscus Injury Dr. Jia-Kuo Yu , Peking University Third Hospital, China



05:50 PM-06:15 PM **Online Speech: Save the Meniscus - Meniscus Repair Options in Borderline Cases**
Dr. Bernhard Waibl, Cartilage Care, Switzerland

06:15 PM-06:40 PM **Online Speech: Acute Knee Clinic in the West of Scotland**
Dr. Laith Sinan, Queen Elizabeth University Hospital, UK

WSO Online Session: Arm and Wrist

Chaired by Dr. **Vincenzo Filardi**, University of Messina, Italy

Time: 08:00 PM-08:55 PM, Dec. 10th, 2022 (Saturday), GMT+8

Time	Presentations and Presenters
08:00 PM-08:05 PM	Chair's Introduction
08:05 PM-08:30 PM	Online Speech: Comparative FE Analysis in an Implanted Humerus During Elevation of the Arm and External Abduction Dr. Vincenzo Filardi , University of Messina, Italy
08:30 PM-08:55 PM	Online Speech: A Novel Approach to Surgical Treatment of Scapholunate Ligament Disruption Using Temporary 2-Tine Staple Fixation Prof. Angelo Rashard Dacus , University of Virginia, USA

WSO Hybrid Session: Skeletal Muscle and Muscle Synergies

Chaired by Dr. **Rajat Emanuel Singh**, Northwestern College, USA

Time: 10:25 AM-11:45 AM, Dec. 11th, 2022 (Sunday), GMT+8; Place: Bras Basah I, Level 3

Time	Presentations and Presenters
10:25 AM-10:30 AM	Chair's Introduction
10:30 AM-10:55 AM	Online Speech: Musculoskeletal Ultrasound Imaging and Rehabilitation of the Shoulder Dr. Daryl Lawson , Western Michigan University, USA
10:55 AM-11:20 AM	Online Speech: Modification in Modular Control is Dependent on Proficiency Level in Slackliners Dr. Rajat Emanuel Singh , Northwestern College, USA Title: Ultrasonographic Evaluation of Spasticity
11:20 AM-11:45 AM	Dr. Dong Rak Kwon , Department of Rehabilitation Medicine, Catholic University of Daegu School of Medicine, South Korea

WSO Online Session: Orthopedics Surgery and Trials

Chaired by Dr. **Konstantinos Sidiropoulos**, Papageorgiou General Hospital of Thessaloniki, Greece

Time: 08:00 PM-11:00 PM, Dec. 11th, 2022 (Sunday), GMT+8



Time	Presentations and Presenters
08:00 PM-08:05 PM	Chair's Introduction
08:05 PM- 08:30 PM	Online Speech: The Use of Closed Incision Negative Pressure Therapy to Reduce Complications in Surgical Site Complications in Orthopedic Surgery Dr. Ronald P. Silverman , 3M Health Care, USA
08:30 PM-08:55 PM	Online Speech: Long Term Outcome Results after Comparing Arthrodesis to Fusion in Treating Cervical Radiculopathy: 5 Year Results of a Randomized Controlled Trial Dr. Carmen L.A.Vleggeert-Lankamp , Leiden University Medical Center, Leiden, the Netherlands
08:55 PM-09:20 PM	Online Speech: Elastic Intramedullary Nails in Long Bones Fractures Dr. Konstantinos Sidiropoulos , Papageorgiou General Hospital of Thessaloniki, Greece
09:20 PM-09:45 PM	Online Speech: Ensuring Quality and Safety in Pediatric Spinal Deformity Surgery Dr. Harry Shufflebarger , Paley Institute, USA
09:45 PM-10:10 PM	Online Speech: Antitumor Necrosis Factor Alpha and an Epidural Abscess During a Spinal Cord Stimulator Trial: A Case Report Dr. Edward Braun , University of Kansas Medical Center, USA
10:10 PM-10:35 PM	Online Speech: The Duration of Postsurgical Antibiotics for Orthopedic Infections Prof. Ilker Uckay , Balgrist University Hospital, University of Zurich, Switzerland
10:35 PM- 11:00 PM	Online Speech: Decreased Lean Psoas Cross-sectional Area is Associated with Increased One-year All-cause Mortality in Male Elderly Orthopaedic Trauma Patients Dr. Basel Touban , Texas Children's Hospital Houston, USA



WSO Hybrid Session: Knee and Ankle

Chaired by **Dr. Kees van Egmond**, Isala Zwolle, Netherlands

Time: 01:30 PM-03:55 PM, Dec. 9th, 2022 (Friday), GMT+8; **Place:** Bras Basah I, Level 3

Title: Preliminary Experience in Reconstruction of Lateral Malleolus Defect in Adolescent

Wenjun li

Chief Physician, Associate Professor

Department of Hand Surgery, Beijing Jishuitan Hospital

China

Abstract

Background: Defects of the lateral malleolus with distal fibula occur occasionally, mainly because of severe trauma. For kids, these bony defects must be reconstructed to avoid persistent pain and to prevent a progressive deformity induced by growth plate defect and ankle instability. Different methods of repair have been developed, including autologous iliac crest transplantation, and arthrodesis, and residual bone lengthening with external fixation system.

Hypothesis: For lateral malleolus reconstruction, the vascularized fibular head epiphysis transfer for growing lateral malleolus defect and bone graft for no growing potential can be a good option.

Methods: A 12-year-old and 16-year-old boy presented to our hospital after surgery for traumatic tissue defect of the distal right leg by traffic accident. Originally, two patients suffered severe soft tissue loss, with avulsion of the distal right lateral calf, as well as complete loss of the distal 3cm of fibula. For the 12ys patient, the fibular artery perforator flap was done for skin defect in local hospital, and we did skin expansion, 3 weeks later, simultaneous, we did skin expander removal and ipsilateral vascularized fibular head epiphysis transfer using the inferior lateral genicular artery for nutrition vessels for lateral malleolus reconstruction with anterior talofibular ligament and calcaneofibular ligament rebuilding. The bone fixed with screw and miniplate. The inferior tibiofibular joint secured with lag screw. The donor vessels were anastomosed to the recipient (dorsalis pedis artery and dorsal vein). For the 16ys patient, the free Chest umbilical flap was done for skin defect cover and simultaneously, the iliac bone graft was done for malleolus reconstruction. Two patients recovered smoothly.

Results: The patients had a routine postoperative course and was discharged to home in a cast on postoperative day 12. The cast was removed by 6 weeks, and placed in an orthotic brace for weight-bearing protected with crutch. Good graft position was confirmed radiographically and union postoperative 7 months. At the 1.5-year follow-up examination, the patient had an American Orthopaedic Foot and Ankle Society ankle-hindfoot score of 100, without any apparent complications. The epiphysis of fibular head is growing, and bone graft was no absorption.

Summary: For lateral malleolus defect in adolescent, vascularized fibular head epiphysis transfer using inferior lateral genicular artery as nutritional vessel is a good reconstruction method for growing, however for no growing potential patient, the iliac bone graft is an alternative method, too.

Biography

Wen-jun li, male, Beijing jishuitan hospital, Beijing, China.

Chief physician, associate professor of Peking University;

Good at peripheral nerve injury repair (especially for brachial plexus and lumbosacral plexus nerve injury) and the extremity tissue defect reconstruction, wrist and hand arthroscopy, congenital hand deformity treatment, etc.

Standing committee of Microsurgery branch of Chinese medical association;

The Chinese medical association bone science branch of bone microstructure repair committee member.



Title: Supra Malleolar Osteotomy of Ankle Arthritis - 10 Year Follow up from a Major Referral Centre in the UK

Sayed Ashgar Ali MS D Orth, MCh Orth L'pool, FRCS (Tr & Orth) Dr. May Labidi, Dr. D Chakrabarti

University Hospital Birmingham

UK

Abstract

Incidence of Ankle arthritis is about 1 – 2 % of adults worldwide. About 80% are post traumatic and in younger patients. They become symptomatic 12-15yrs earlier than hip/knee arthritis. Hence Joint preserving surgical options important.

Joint-sacrificing procedures have been treatment of choice for severe end-stage ankle OA. However, realignment surgery has role in asymmetric ankle OA. Its primary use still lies within the pediatric population, but it has been successfully used in the adult population and is supported by experimental and clinical data

Realignment surgery could either be of curative value for asymmetric OA or postpone ankle fusion and total ankle replacement in a group of patients who wish to maintain an active lifestyle.

Cadaveric biomechanical studies have shown decrease of the contact surface area of the ankle joint up to 40 % in presence of malalignment. Supra-Malleolar Osteotomy (SMO) aims to achieve correction of deformity in the coronal plane (varus or valgus angle). Recently we started to correct triplane deformity in both sagittal and coronal plane. It is designed to normalise the intra-articular load distribution in the tibiotalar joint to halt the process of destruction.

We share our 10 year experience of SMO from our institute which is a major referral Centre in the UK.

Key Words: Ankle Arthritis, Supra Malleolar Osteotomy, asymmetric ankle OA

Biography

Dr. Sayed Ashgar Ali is a Specialist Orthopaedic Foot & Ankle Consultant Surgeon at the University Hospital Birmingham in the UK. Being a major teaching and referral hospital, it receives tertiary referrals from many hospitals in the region.

Mr. Ali is one of the senior Orthopaedic Consultant in the region and provides highest quality foot & ankle service in his chosen elective sub-speciality. He has broad experience in dealing with almost all foot ankle conditions.

He has developed a keen interest in Supra Malleolar Osteotomy of ankle and ankle replacement surgery and has performed several procedures in the last 10 years. He has given talks in various conferences and centres about Supramalleolar Osteotomies which were well received.

He has trained many trainees in the speciality and is the Clinical and Educational Supervisor to British Orthopaedic Future Leadership Foot & Ankle Fellowship Program, which is a post FRCS Orth/CCT program, ongoing in the Hospital for the last 7 years. He is actively involved in the teaching and training of trainee Surgeons.

He has published articles in International Journals and presented papers at numerous National & International conferences. He has given talks in various international conferences as invited lecturer. He is much interested in research and has made and continue to make active contribution to several projects in the speciality.

Title: Knee Ligaments: Clinical Examination with Lelli Test

Alessandro Lelli

MD

Villa Regina Hospital, Bologna

Italy

Abstract

Physical examination of the knee. A review of the original test description and scientific validity of common orthopedic tests.

The clinical diagnosis of an anterior cruciate ligament (ACL) tear is based on 3 tests: anterior drawer, pivot shift and Lachman.

The latter is the most commonly used test. The "Lelli test" is a new clinical test that was first described by Lelli in 2014.

Objectives: To present the original descriptions of common orthopedic physical examination maneuvers of the knee and then to review the literature to support the scientific validity of these tests.

Physical examination is essential in the diagnosis of any medical problem, including musculoskeletal pathology. Given the large number of patients who consult physicians because of musculoskeletal complaints, it is important that physicians truly understand how to perform the various musculoskeletal tests that are commonly used in clinical practice and that they understand the significance of the test results.

In general, chronic, complete tears were most successfully diagnosed but acute, partial tears were least successfully diagnosed. The Lelli Test is more sensitive to correctly diagnosing both acute and partial tears of the ACL compared with other common manual tests.

The clinical relevance is that some ACL ruptures may be more accurately diagnosed.

- Validity of the lever sign test for the clinical diagnosis of anterior cruciate ligament tears: Assessments in ski resorts.

Bucher C, Lamy D, Debaty G, Pailhé R, Saragaglia D. *Orthop Traumatol Surg Res.* 2022 May; 108(3):103254. doi: 10.1016/j.otsr.2022.103254. Epub 2022 Feb 17. PMID: 35183758

- A modified anterior drawer test for anterior cruciate ligament ruptures.

Zhao GL, Lyu JY, Liu CQ, Wu JG, Xia J, Huang GY. *J Orthop Surg Res.* 2021 Apr 14;16(1):260. doi: 10.1186/s13018-021-02381-x. PMID: 33853620 Free PMC article.

- Critical Analysis of the Lever Test for Diagnosis of Anterior Cruciate Ligament Insufficiency.

Massey PA, Harris JD, Winston LA, Lintner DM, Delgado DA, McCulloch PC. *Arthroscopy.* 2017 Aug; 33(8):1560-1566. doi: 10.1016/j.arthro.2017.03.007. Epub 2017 May 9. PMID: 28499922

- The "Lever Sign": a new clinical test for the diagnosis of anterior cruciate ligament rupture.

Lelli A, Di Turi RP, Spenciner DB, Dòmini M. *Knee Surg Sports Traumatol Arthrosc.* 2016 Sep; 24(9):2794-2797. doi: 10.1007/s00167-014-3490-7. Epub 2014 Dec 25.

Biography

Dr. Alessandro Lelli has been a full professor at Ospedali Privati Riuniti Villa Regina Bologna, Italy, for several years. In September 2015 he has been appointed honorary professor at the University of Shenzhen, China. In January 2013 the "Lelli test" was presented to the 14th EFORT Congress 2013 in Istanbul. For several years he has been the Orthopedic Advisor of the Bologna based professional basketball team Virtus Pallacanestro, Italy. In this years, Dr. Lelli has worked alongside several national and international professional basketball teams, visiting and operating several players.

In this years, he has worked alongside several national professional football teams entered series A and series B championships team.

His case history surgery is about 40.000 knee operations.

Title: Prospective Clinical Feasibility Study of a PLLA Scaffold for Primary ACL Reconstruction with 5-year Follow-up

Kees van Egmond^{1*}, Robert A. Arciero², Pieter Van Dyck³, Robert A. Stanton⁴, Reinoud Brouwer⁵

MD

¹ Nieuwleusen, Overijssel, Isala klinieken Meppel en Zwolle, Netherlands

² Farmington, CT, USA

³ Edegem, Belgium

⁴ Fairfield, CT, USA

⁵ Groningen, Netherlands

Abstract

Graft selection for anterior cruciate ligament (ACL) reconstruction continues to be debated. Autograft outcomes are affected by associated donor-site morbidity, while allografts have higher failure rates and inherently limited quality. To date, a demand remains for a safe, 'off-the-shelf' implant and tissue engineering is one approach that could provide a regenerative solution. Recently, a bioresorbable, acellular, poly (L-lactic acid) (PLLA) scaffold was developed, composed of 3D-braided polymeric microfilaments to guide cellular infiltration and new ligament tissue growth. Therefore, the objective was to assess the safety and feasibility of the PLLA scaffold for primary ACL reconstruction in a prospective, consecutive, clinical study.

Methods

Fifteen patients (ages 18 to 46 years old) with ACL ruptures were implanted with a PLLA scaffold for ACL reconstruction. The primary endpoint for the study was defined as the absence of graft failure or revision ACL surgery at one year. The study was performed in a highly active patient cohort, with 11 of 15 patients reporting a pre-injury Tegner score of 9 out of 10. Secondary endpoints were determined by safety rates per complications, subjective patient-reported outcomes (2000 IKDC scale, KOOS pain, Tegner, and Lysholm scores), clinical function (Lachman test, KT-1000, pivot shift, anterior drawer, and single leg hop test), and imaging measures (radiographic, MRI, and CT). In the case of graft failure, arthroscopic confirmation was performed prior to or on the same day as revision surgery. Biopsies were taken from the intra-articular region during revision surgery and processed for histological and molecular weight analyses.

Results

At the primary endpoint of one year, no infections, allergic reactions, or synovitis was reported indicating the safety of the implant. Patient-reported IKDC scores and additional patient-reported outcome measures showed progressive improvement over baseline values (60.2+/-12.7) at 6 months (82.8+/-14.6) and 12 months (90.1+/-13.5). Physician-reported clinical evaluations of knee function showed little to no laxity or knee instability at one year follow-up. After all patients returned to normal activity at 12 months, four graft ruptures occurred between 1 and 2 years follow-up, with one additional rupture at 3 years(months).

During to 3 years to 5 years, another three graft ruptures occurred. Histological analysis of graft biopsies revealed a fully cellularized scaffold containing a synovial cell layer, neovascularization, and robust extracellular matrix. A mild, chronic inflammatory response, marked by foreign body giant cells, was observed adjacent to remnant PLLA. For the remaining patients, MRI revealed irregular outlines of the ligament and regional hyper-intensity that persisted through 3,4, and 5 years. Although these 7 individuals at 5 years follow-up continued to report normal ACL function, IKDC scores decreased at 2 years (84.40 ±11.9) and plateaued through 5 years (80.8±14.1) follow-up, though neither were statistically significant.

Conclusion

The first-in-man, 5-year follow-up study of a PLLA scaffold for ACL reconstruction demonstrated the feasibility of an acellular, tissue-engineered scaffold. However, tissue regeneration was inconsistent, resulting in clinically unacceptable failure rates in this limited study. Outcomes indicated insufficient load-bearing capacity of new ligament tissue in the



presence of a weakening scaffold, and further innovation is required to optimize scaffold properties to achieve long-term clinical efficacy.

Keywords: *Ligaments, Physical Examination, MRI, Knee, ACL, Sport Specific Injuries, Outcome Studies, Repair / Reconstruction, Tears, Adult*

Summary: Safety and feasibility of a PLLA scaffold for primary ACL reconstruction in a prospective, consecutive, clinical 5 year- follow-up study

Biography

Dr. Kees van Egmond had his basic medical training in the Free University of Amsterdam. From 1995- 2000 he did his specialization for orthopedic surgery in Heerlen, The Netherlands.

Form 2000 until present time he is working In Zwolle, a large teaching hospital in the Netherlands as an orthopedic surgeon/ trauma surgeon.

Beside his involvement in trauma surgery, he specialized in knee pathology, reconstructive as well as sports injuries.

In this field he did several studies in ACL reconstruction.

Since 2018 he is a member of the Scientific Advisory Board of “Biorez” a Bioengineering company from New Haven, Connecticut.

Title: Erythema Elevatum Diutinum: An Epiphenomenon or a Distinct Entity?

Fakhreddin Sabooniha

Adjunct Associate Professor of Cardiovascular Medicine

Sabzevar University of Medical Sciences, Razavi Khorasan Province, Sabzevar

Iran

Abstract

Erythema elevatum diutinum (EED) is a rare leukocytoclastic vasculitis with unknown etiology with a predilection for the skin overlying the extensor surfaces of small joints of the hands and knees and prompt response to sulfone medications [1]. It has various presentations, broad spectrum of underlying conditions and unified pathology. I report the case of a 32 years old otherwise healthy man with an 8 years history of a refractory solitary lesion on his right hand and prompt response to dapsone 100 mg Bid within 2 weeks without any recurrence after 2 years of follow-up. By consideration of its rarity, atypical presentations and multiple associated diseases, the question "whether EED is an epiphenomenon and therefore a final common pathway of various heterogeneous diseases or a distinct entity?" needs to be further investigated.

Keywords: vasculitis, leukocytoclastic, sulfone drugs

References:

[1] John H.Stone, Immune complex –mediated small vessel vasculitis .In: Firestein and Kelley's textbook of Rheumatology, vol 2, 11th Ed, Elsevier, p 1657, (2021).

Biography

I was born in Qazvin. I got married to Dr. Batool Dadkhah, a self-giving Iranian women. We have a beautiful daughter named Rasta.



WSO Hybrid Session: Plenary Forum of WSO 2022

Chaired by **Dr. Birgit Schulz**, Center for Shoulder Surgery Suedwestfalen, Germany

Time: 03:55 PM-05:30 PM, Dec. 9th, 2022 (Friday) GMT+8; **Place:** Bras Basah I, Level 3



Title: The Costs of Confronting Osteoporosis: Cost Study of an Australian Fracture Liaison Service

Dr. Gabor Major

Hunter New England Health Service
Australia

Abstract

Aim – to determine the effect of a Fracture Liaison Service (FLS) on the cost managing patients with osteoporotic fractures

Method – Compare the total cost of management of patients presenting over a 6 month period to a hospital with a FLS to one without a FLS

Cost construction – “bottom up” microcosting approach, include cost of FLS and refracture management

Cohort cost estimated for 1000 patients

Results –Compared to usual care, per 1000 patients the cost of FLS was \$ 617,275 (AUS) less

Conclusion–From the perspective of the Australian Public Health System, investment in FLS is a financially effective way of reducing the cost of osteoporotic fracture management

Biography

I am director of Rheumatology in for Hunter New England Health in NSW Australia

My interests include osteoporosis and fracture prevention.

I was instrumental in the creation of the fracture liaison service at the John Hunter Hospital in 2007, one of the first in Australia, and continue to supervise its operation

Title: Influences on the Achievement of Spontaneous Neurological Recovery Following Acute Traumatic Spinal Cord Injuries

W S El Masri

Hon. Clinical Professor of Spinal Injuries, Keele University

Emeritus Consultant Surgeon in Spinal Injuries, Robert Jones & Agnes Hunt Orthopaedic Hospital - Oswestry

Past President of International Spinal Cord Society (ISCoS)

Trustee of the Institute of Orthopaedic RJA Hospital Oswestry SY10 7AG

Chairman of Trustees of SPIRIT Educational Charity

UK

Abstract

The majority of patients with incomplete traumatic spinal cord injuries undergo significant Spontaneous Neurological Recovery. This is provided no further mechanical and non-mechanical damage is inflicted on the injured cord until Biomechanical Stability is restored and the locomotor as well as the autonomic reflexes have returned.

The prognostic indicators of this recovery with various initial clinical presentations of cord damage has been demonstrated by Frankel et al since 1969 and repeatedly confirmed to this day since. Patients presenting within the first 72 hours of injury with any clinical signs of sensory or sensory-motor sparing are expected to exhibit further motor recovery.

The extent and speed of the spontaneous neurological recovery depends on the function of the spared tract and the extent of the sparing; with some patients exhibiting recovery beyond the initial level of sparing.

There is understandably a significant emphasis on the threats of the Biomechanical Instability of the spinal axis, Canal Encroachment and Cord Compression being potential sources of further neurological damage. What is rarely discussed is that the acutely injured Spinal Cord is also Physiologically Unstable and unable to defend itself from systemic complications such as severe hypoxia, hypotension, hypothermia, generalised sepsis, electrolyte imbalance, all of which can equally cause neurological deterioration, delay or absence of neurological recovery. These complications would not normally damage an intact spinal cord but are potentially detrimental to an injured spinal cord.

The influences of the initial force of the impact that damages the neural tissues, the radiological presentation, the positive and negative influences of the various methods of management of the injured spine and of the patient on the speed and degree of spontaneous neurological recovery will be discussed.

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Biography

Prof. W S El Masri FRCS Ed, FRCP currently Hon. Clinical Professor of Spinal Injuries (SI), Keele University has trained between 1971 & 1983 in the Oxford group of hospitals, Guys & Stoke Mandeville hospitals and the USA. Following 12.5 years of training he obtained the first accreditation in Spinal Injuries and General Surgery in 1982. He was appointed Consultant Surgeon in Spinal Injuries at the Midland Centre for Spinal Injuries in 1983 and personally treated 10,000 patients with TSCI. He published over 145 manuscripts, initiated the Concepts of “Physiological Instability of the Spinal Cord”, “Time related Biomechanical Instability”, “Micro-instability of the injured spine”. And published the largest series of Bladder cancer in SCI patients. WEM is Past-President of the International Spinal Cord Society; Past Chairman British Association of Spinal Cord Injury Specialists WEM has lectured world-wide, won many National and International awards and is founder member and Trustee of a number of charities and.



Title: Current Concept of Treating Recurrent Posttraumatic Shoulder Dislocation

Birgit Schulz

Head of department of Orthopedic Surgery and Traumatology

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Abstract

The shoulder is the most mobile joint of the human body and the one which dislocates most often. To prevent recurrent posttraumatic dislocation it is important to know about the different injury patterns depending on sex and age of the patient and direction of dislocation for first- time- dislocators. Whereas young patients often show labrum lesions after dislocation the older ones more tend to have rotator cuff ruptures or fractures. Both should be treated early. Otherwise recurrent dislocation leads to a high rate of osteoarthritis.

In case of recurrent dislocation (posttraumatic) a differentiated diagnostic preoperative is mandatory. Native X-Ray, MRI and 3D-CT-Scan should show the main problems, especially bony defects on the glenoid or engaging Hill- Sachs- lesions. Bony defects can only be discovered and measured reliable with the (3D) CT- Scan, not exactly with the MRI or arthroscopy. Soft tissue procedures alone for re- dislocators often do not work because of the bony defects, so remodeling of the glenoid shape either open or arthroscopically, maybe together with capsular procedures is necessary, in other cases rotator cuff reconstruction or even shoulder arthroplasty. The exact procedure has to be chosen with the help of the preoperative imaging before starting any surgery. You also have to keep in mind that some (older) procedures can prevent re- dislocation, but by changing the anatomy can also lead to osteoarthritis and for that should not be used today anymore. The presentation shows a practical clinical pathway for decision making and treatment in posttraumatic shoulder dislocation.

Biography

Dr. med. Birgit Ingeborg Ellen Schulz, female, orthopedic surgeon, graduated from the Rheinische Friedrich Wilhelm University in Bonn in 1991. She worked in several hospitals in Bonn, Cologne and Bad Honnef as a resident before becoming an orthopedic surgeon in 1997. For ten years she was a consultant in St. Josef Hospital in Bonn, specialized in arthroscopy and shoulder surgery. Since 2008 she is the head of the Department for Shoulder Surgery and Arthroscopy at Diakonie- Klinikum Bethesda in Freudenberg/Germany, since 2021 of the whole Department for Orthopedic Surgery and Traumatology. Because of the high specialization in shoulder surgery she gained the certificate of excellence of the DVSE (German association for shoulder- and elbow surgery). She has done multiple presentations at meetings and congresses in Germany and had been chair(wo)man at orthopedic meetings, also international. For 21 years up to now she is also working together with surgeons in Viet Nam every year, training them in the field of arthroscopy and shoulder surgery and providing a Fellowship for two young Vietnamese surgeons in Bethesda Hospital in Germany each year.



WSO Hybrid Session: Hip and Injury

Chaired by **Dr. Haiwen Peng**, Chongqing Daping Hospital affiliated to Army Medical University, China

Time: 08:00 AM-10:10 AM, Dec. 10th, 2022 (Saturday), GMT+8; **Place:** Bras Basah I, Level 3

Title: Associations between Bone Turnover Markers and Outcomes in Hip Fracture Patients with and without Type 2 Diabetes Mellitus

A. A. Fisher^{1,3}, M. A. Ramasundara^{1*}, W. Srikusalanukul^{1,2}

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Abstract

Background: Emerging data indicate multidirectional relationships/regulatory network between parameters of bone metabolism and general health. However, until now little is known about the effect of variations in bone turnover markers (BTMs) and osteoporotic fracture outcomes. Only a paucity of studies evaluated this topic and most analyses focused on effects of a single marker (e.g., osteocalcin) on a single outcome.

Aims: To evaluate the relationships between different BTMs and short-term clinical outcomes in hip fracture (HF) patients and compare individuals with and without type 2 diabetes mellitus (T2DM); T2DM has been chosen as a disease with a high risk for fragility fracture (despite normal bone mineral density) and negative effect on outcomes.

Methods: In 600 consecutive HF patients (mean age 82.7 ± 8.7 years, 69.3% female, 19.7% with T2DM), in addition to routine sociodemographic and clinical parameters, three BTMs were evaluated at admission: two bone formation markers - N-terminal propeptide of type 1 procollagen (P1NP) and osteocalcin (OC), and one bone resorption marker - beta C-terminal cross-linked telopeptide of type 1 collagen (β CTX). The measured in-hospital outcomes included postoperative myocardial injury (PMI, evidenced by elevated levels of high sensitivity cardiac troponin I [hs-cTnI]), high inflammatory response (C-reactive protein [CRP] rise), prolonged length of stay (LOS) and mortality. The relationships between BTMs and their ratios (as continuous and categorical variables using previously reported cut-offs) with clinical outcomes were analysed separately in patients with and without T2DM by Pearson correlation coefficient.

Results: In HF patients with T2DM, higher β CTX levels were significantly associated with PMI ($r=0.347$, $p=0.001$), high inflammatory response ($CRP >150\text{mg/L}$, $r=0.235$, $p=0.011$), and hospital mortality ($r=0.258$, $p=0.005$), while higher P1NP correlated with $LOS >10$ days ($p=0.203$, $p=0.028$), and the P1NP/ β CTX ratio correlated inversely with PMI ($r=-0.282$, $p=0.007$). Analyses of BTM as categorical variables revealed that in T2DM patients $OC \leq 8\text{ng/L}$ ($r=-0.214$, $p=0.020$) and P1NP/ β CTX ratio <100 ($r=0.247$, $p=0.018$) correlated with PMI; development of an acute myocardial infarction (AMI: $hs-cTnI >500\text{ng/L}$ and ECG confirmation) was positively associated with OC/β CTX ratio <12 ($r=0.277$, $p=0.007$) and negatively with P1NP/OC ratio <6.5 ($r=-0.289$, $p=0.005$); high levels of bone resorption (β CTX $\geq 0.250\text{mcg/L}$) correlated with $CRP >100\text{mg/L}$ ($r=0.190$, $p<0.040$). In the non-T2DM group, OC concentrations correlated inversely with a high inflammatory response ($CRP >100\text{mg/L}$: $r=-0.112$, $p=0.014$; $CRP >150\text{mg/L}$: $r=-0.112$, $p=0.014$), LOS was associated with P1NP/OC ratio (>10 days: $r=0.192$, $p<0.001$, >20 days: $r=0.226$, $p<0.001$) and inversely with OC/β CTX ratio ($r=-0.151$, $p=0.004$, and $r=-0.150$, $p=0.004$, respectively). High bone resorption (β CTX $\geq 0.250\text{mcg/L}$, $r=0.099$, $p=0.031$) and OC/β CTX ratio <12 correlated with PMI ($r=0.115$, $p=0.029$). Both OC/β CTX ratio <12 ($r=0.142$, $p=0.007$) and P1NP/OC ratio <6.5 ($r=-0.205$, $p<0.001$) correlated with $LOS >10$ days; the P1NP/OC ratio <6.5 correlated also with $CRP >150\text{mg/L}$ ($r=-0.145$, $p=0.006$). In general, poor outcomes were associated with increased bone resorption, lower OC production, disproportionally high bone resorption compared to bone formation (lower P1NP/ β CTX, OC/β CTX ratios) and/or dysregulation in secretion of specific molecules essential for bone formation (low P1NP/OC ratio).

Conclusions: In HF patients, abnormal BTM, especially those reflecting increased bone resorption, correlate with adverse outcomes; the patterns of these relationships in subjects with and without T2DM are different, the causes of which and ability to predict unfavourable outcomes should be further explored.

Keywords: bone turnover markers, β CTX, P1NP, osteocalcin, hip fracture, outcomes

Biography

Dr. Malith Ramasundara is a staff specialist consultant at The Canberra Hospital, Australia. He graduated from the University of New South Wales, Sydney with Bachelor of Medicine, and Bachelor of Surgery (Honours) and holds a fellowship with the Royal Australasian College of Physicians. His research interests include chronic conditions in elderly patients specifically related to bone health.

Title: Classification Systems Regarding Developmental Hip Dysplasia and Their Suggestive Effect

Haiwen Peng

Chongqing Daping Hospital affiliated to Army Medical University
China

Abstract

Background The purpose of this study was to investigate the surgical options between presence and absence of secondary false acetabulum in treatment of Crowe IV DDH with the S-ROM prosthesis. Methods A retrospective review of 32 patients with Crowe Type IV DDH underwent THA (34 hip joints) was performed. 28 hips were divided into no false acetabulum group, while 16 hips into false acetabulum group. Then SSTO procedure application in THA and HSS scores before and after surgery were compared. Results the proportion of SSTO used in the non-secondary false acetabulum group was higher than that in the secondary acetabulum formation group. Group with false acetabulum of 16 hips, 3 hips were used the SSTO, 18.75%; while in the group without false acetabulum, 8 hips of 28 hips were treated with SSTO, accounting for 28.57%. Harris scores showed no significant difference in pain, function or total score between the two groups before and after surgery. Conclusions this study reveals that pseudoacetabulum is an important factor determining SSTO application in total hip Arthroplasty for Crowe IV hips. With combination of these two popular classification systems, it can be more effective and efficient as a guidance for DDH treatment option.

Keywords: pseudoacetabulum; developmental; hip; dysplasia; arthroplasty

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Biography

Haiwen Peng, MD, PhD, major in joint arthroplasty and has over 20 years of experience in the medical field. Dr. Peng has extensive experience in Hip Disorders & Surgical Procedures, especially in both spine and hip involvement such as ankylosing spondylitis. He graduated from Medical College of CPLA.

Title: Increased Risk of Avascular Necrosis with Open Hip Reduction in Arthrogyrosis

Tristen Taylor*, BS; Callie Bridges BS; Basel Touban, MD; Nihar Pathare, BS; Caitlin Perez-Stable, BS; Scott B. Rosenfeld, MD; Jaclyn Hill, MD

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USA

Abstract

Introduction

The most dreaded sequela after open hip reduction is avascular necrosis (AVN) of the femoral head. The literature is relatively abundant describing AVN after open hip reduction in DDH, though limited in describing and comparing rates among other etiologies. We performed a retrospective review to compare the rates of AVN after open hip reduction for various etiologies of non-traumatic hip dislocations.

Methods

322 patients (419 hips) under the age of 18 years who underwent anterior open reduction between January 2010 – July 2022 at a large tertiary pediatric hospital were included. Underlying etiology, degree of hip dislocation (IHDI classification,) rates of concomitant tenotomies and osteotomies, presence of AVN, Kalamchi and Macewen (KM) classification, and rate of secondary surgeries were collected. Categorical variables were compared with the Chi-Square and Fisher's Exact test. Statistical significance was set at P-value of less than .05.

Results

Of the 419 hips that underwent open hip reduction, 25 had evidence of AVN (6%). The number of hips and incidence of AVN for each group was 142 (8%) in developmental dysplasia, 11 (36%) in arthrogyrosis, 241 (7%) in neuromuscular, and 25 (4%) in syndromic hips. The incidence of AVN in arthrogyrosis hips was significantly greater than developmental ($P = .013$, RR 4.7, CI 1.7-11), neuromuscular ($P < 0.001$, RR 9.7, 3.4-24), syndromic ($P = .023$, RR 9.1, 1.52-56.6), and all other hips combined ($P = .003$, RR 6.6, CI 95% 2.5-14). There were no differences in AVN rates or reoperation rates between the other groups. There were no differences in tenotomies or osteotomies between arthrogyrosis and other etiologies. There was no difference in severity of dislocation as classified by IHDI between arthrogyrotic hips and other hips. There was no correlation between AVN and rate of concomitant osteotomy or tendon releases. There were no differences in AVN severity by KM classification between all hips ($P = .18$).

Conclusion

AVN occurs after open reduction of the hip regardless of etiology. Arthrogyrotic hips have the highest rate of AVN despite no differences in severity of dislocation or concomitant bony or soft tissue procedures.

Significance

This is the first study to directly compare outcomes of open reduction surgery among different etiologies of hip dislocation. Incidence of AVN was significantly greater in patients with arthrogyrosis compared to other etiologies of hip dislocation. Greater consideration should be given to techniques to reduce this adverse outcome in this group of patients.

Biography

Tristen Taylor is a Clinical Research Fellow for the Department of Orthopaedics and Scoliosis. After graduating summa cum laude from Texas A&M University with a Bachelors of Science in Biology and completing his 3rd year of medical education at Baylor College of Medicine in Houston, Texas, Tristen sought a fellowship in research to gain academic experience, mentorship, and contribute to the knowledge of treatments and outcomes of rare pediatric musculoskeletal diseases.

Title: Mid-term and Long-term Results of Restoring Rotation Center in Revision Hip Arthroplasty

Heng Zhang^{1,2*}, Jiansheng Zhou¹, Yang Liu¹, Jianzhong Guan¹, Kuanxin Li¹, Qian Zhao¹ and Jianning Zhao²
MD, PhD

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2 Department of Orthopedics, Jinling Hospital, School of Medicine, Nanjing University, Nanjing city, Jiangsu province, China

Abstract

Background: To restore rotation center exactly in revision hip arthroplasty is technically challenging, especially in Paprosky type III. The technical difficulty is attributable to the complicated acetabular bone defect. In this study, we discussed the method of restoring rotation center in revision hip arthroplasty and reported the clinical and radiological outcome of mid-term and long-term follow-up.

Methods: This study retrospectively reviewed 45 patients (48 hips) who underwent revision hip arthroplasty, in which 35 cases (35 hips) were available for complete follow-up data. During the operation, the acetabular bone defect was reconstructed by impaction morselized bone graft, and the hip rotation center was restored by using remnant Harris fossa and acetabular notches as the marks. The clinical outcome was assessed using the Harris hip score. Pelvis plain x-ray was used to assess implant migration, stability of implants, and incorporation of the bone graft to host bone.

Result: The average follow-up duration was 97.60 months (range 72–168 months). The average Harris hip score improved from 29.54 ± 10.87 preoperatively to 83.77 ± 5.78 at the last follow-up. The vertical distance of hip rotation center measured on pelvis x-ray was restored to normal, with the mean distance (15.24 ± 1.31) mm (range 12.4~17.3 mm). The mean loss of vertical distance of hip rotation center was (2.21 ± 0.72) mm (range 1.1 ~ 5.3 mm) at the last follow-up.

Conclusion: Satisfactory clinical and radiological outcome can be obtained through restoring hip rotation center by using remnant Harris fossa and acetabular notches as the anatomical marks in revision hip arthroplasty.

Keywords: *Acetabular defects, Follow-up, Rotation center, Revision hip arthroplasty*

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Biography

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Member of International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine.

Editor of *Journal of EC Orthopaedics*. Reviewer of *Journal of Orthopaedic Surgery* and *Frontiers in Bioscience-Landmark*.

Dr. Heng Zhang specializes in the diagnosis and treatment of joint and sport medicine diseases, and is skilled in precise and mini-invasive replacement of hip and knee joints, arthroscopy. He has been invited to address academic presentations at home and overseas for many times. He has published more than 10 academic papers in SCI and domestic journals as the first author and got four national patents.

Title: Clarifying the Structure of Serious Head and Spine Injury in Youth Rugby Union Players

Koh Sasaki^{1*}, Ichiro Watanabe² and Jun Murakami³

1 Research center of health, physical fitness and sport, Nagoya University, Nagoya, Aichi 4648601, Japan

2 Department of Physical Education, Tokyo City University, Setagaya, Tokyo 158-8557, Japan

3 Faculty of Sports and Health Science, Fukuoka University, Jonan, Fukuoka 8140180, Japan

Abstract

This study aimed to clarify the cause of rugby head and spinal cord injuries through a network centrality analysis of 14-year (2004–2018) longitudinal data in Japan. The study hypothesis is that understanding the causal relationship among the occurrence of serious injuries, the quality of player experience and play situation as a network structure could be possible to obtain practical knowledge on injury prevention. In this study, bipartite graphs are used to make it easier to understand the situation of players and injuries. This would also help to elucidate more characteristic subgroup. A network bipartite graph and subgroup (cluster) analyses were performed to clarify the injured players' experience and the cause of injury. We used the algorithm of R program, IGRAPH, clustering edge betweenness. For subgroup extraction, the modularity Q value was used to determine which step to cut. The Japanese rugby population was 93,873 (2014–2018 average), and 27% were high school students. The data showed that careful attention would be particularly needed for groups of inexperienced Japanese high school players. Our study suggests that we should consider introducing rules that prohibit “head-on collisions” in youth rugby.

Key Words: Rugby injury, longitudinal study, network analysis.

Biography

(Correspondence author)

Koh Sasaki is a Professor Dr. of sport management at Nagoya University, Japan. He was Japan JPN Rugby National team analyst in the past Rugby World Cup. His work focuses on high performance, serious injuries, and social value of sport by network analysis. Recent papers are published in PLoS ONE, International Journal of Performance Analysis in Sport etc.

He loves biking and kingfisher watching.



WSO Online Session: Knee

Chaired by **Dr. Bernhard Waibl**, Cartilage Care, Switzerland

Time: 05:20 PM-06:40 PM, Dec. 10th, 2022 (Saturday), GMT+8

Title: Save the Meniscus - Meniscus Repair Options in Borderline Cases

Bernhard Waibl

MD

Cartilage Care, Private Practice, Schaenzlistrasse 39, 3013 Bern

Switzerland

Abstract

Despite the fact that the disastrous consequences of substantial meniscal resection have been pointed out by countless biomechanical and clinical investigations, partial and subtotal meniscectomy is still one of the most frequently executed procedures in orthopedic surgery today.

This may be due to a lack of familiarity with the different operative techniques for meniscal repair as well as a lack of knowledge about the healing potential of different meniscal tear patterns.

The aim of this speech is to further sensitize the auditorium to a differentiated approach to the treatment of meniscus tears under the light of the current literature and the personal experience of meniscal repair after more than 20 years in orthopedic surgery.

Keywords: meniscus repair, meniscus suture, meniscal root repair, knee osteoarthritis

Biography

Bernhard Waibl was born in Bavaria, Germany, in 1973. He passed Elementary School in Vienna, Austria, High School near Munich, Germany. He graduated from studies of Medicine in 2000 after having studied in Regensburg and Wurzburg, Bavaria, Germany.

In 2003, he obtained the doctoral degree with the thesis: “The operative treatment of skeletal metastases - prognostic factors and durability of the reconstruction techniques” at the Orthopedic University Hospital of Tübingen, Germany.

From 2000 to 2006, he completed his formation in hospitals in Germany and Switzerland and was appointed consultant in orthopedic surgery in 2007.

From 2008 to 2013 he served as senior physician in the Schulthess Clinic Zurich, Switzerland, specializing in reconstructive surgery of the knee joint.

In 2013, he founded the medical practice “Cartilage Care” in Bern, focusing on cartilage, ligament and meniscus reconstruction of the knee joint.

Title: Acute Knee Clinic in the West of Scotland

Laith Sinan*, Saud Alfadhel and Simon Spencer

Queen Elizabeth University Hospital, Glasgow
UK

Abstract

Introduction: Soft tissue knee injuries are a common presentation among the young and adult population, thus, we have performed this audit to investigate the impact of introducing a new acute knee clinic in the West of Scotland with regards to delay in treatment of such injuries and potential clinical outcomes.

Methods: We have collected data from over 100 random patients with anterior cruciate ligament (ACL) injuries pre and post- the introduction of acute knee clinic in the West of Scotland and calculated the median time taken for them to see a knee specialist following their initial injury. The data was collected using a standardised proforma and analysed using Microsoft Excel. All patients included were 18-years-old and above.

Results: The introduction of an acute knee clinic has led to over 65% reduction in waiting time to see a knee specialist following a knee injury. In addition, soft tissue co-injuries such as meniscal tears were more likely to occur in patients who waited longer to be treated and thus the introduction of the knee clinic had also led to a reduction in waiting time for a definitive treatment (i.e. surgery) of patients and subsequent reduction in associated co-injuries.

Conclusion: Acute knee clinics are effective in reducing patient waiting time to be seen by a knee specialist following an ACL tear. This is particularly important as the earlier intervention is more likely to prevent subsequent meniscal and chondral injuries which in turn can provide patients with better clinical outcomes and quality of life.

Keywords: *Acute Knee Clinic, Scotland, Knee Injuries, Waiting time*

Biography

Dr. Laith Sinan graduated from the prestigious University of Glasgow and continued his Orthopaedics surgical training in the United Kingdom. During his time in University, he has worked on multiple research projects including his work on the effectiveness of the acute knee clinic.



WSO Online Session: Arm and Wrist

Chaired by **Dr. Vincenzo Filardi**, University of Messina, Italy

Time: 08:00 PM-08:55 PM, Dec. 10th, 2022 (Saturday), GMT+8

Title: Comparative FE Analysis in an Implanted Humerus during Elevation of the Arm and External Abduction

V. Filardi

PhD

D.A. Research and Internationalization, University of Messina, Via Consolato del mare 41, 98121, Messina
Italy

Abstract

The purpose of this study is to estimate stress distribution occurring in an implanted, with locking plate system, humerus during elevation and external rotation of the arm, compared to a healthy one. Contact forces and moments were estimated using telemeterized shoulder implants.

Two accurate three-dimensional (3D) finite element (FE) models of the natural scapula and humeri were developed, and loaded at different configurations.

Stresses of about 50 MPa were found on the implanted humerus during the elevation phase acting at 30 ° and 80 °, while a peak of 67 MPa was found during the external rotation phase at 20 °. The stress aging on scapula was of about 45 MPa, while the acromion was subjected at about 30 MPa. Stresses aging on ligaments were of about 15 MPa. The external load of 543 N imposed produced maximum values of about 45 MPa for the intact humerus and 113 MPa for the fractured one. These results indicated that the transfer of major muscle and joint reaction take place predominantly through the thick bony ridges, and stresses induced can be dangerous especially for patients with shoulder problems or during the first post-operative weeks after shoulder fractures or joint replacements. Comparison between healthy and fractured humerus showed an optimal stability of the implant, when contact surfaces optimization and screws insertion are correctly performed.

Key Words: Shoulder, Scapula, Finite element modelling, Stress analysis, Coracoacromial ligament; locking plate

Biography

Vincenzo Filardi has her expertise in FE simulations and CAD modeling. He has his PhD in Structural Mechanics in 2001, and many years of experience, and published papers, in orthopedics research. He has carried on many other activities as teaching and he is inventor of two Italian patents. Actually, he is reviewer for several international journals.

Email: vfilardi@unime.it

Title: A Novel Approach to Surgical Treatment of Scapholunate Ligament Disruption Using Temporary 2-Tine Staple Fixation

Angelo Rashard Dacus

Professor

University of Virginia

USA

Biography

Dr. Dacus joined the department of Orthopaedic Surgery at the University of Virginia in August of 2007 after completing a fellowship in hand and upper extremity at the University of California, San Diego. His practice has grown rapidly in his time here and his practice continues to encompass joint replacement in the hand and elbow, upper extremity trauma, sports elbow, as well as micro vascular surgery of the hand and upper extremity. He is currently working on a research project to study the effect of EMG results on treatment plans/outcomes in patients with carpal and cubital tunnel syndrome, as well as demographic assessments of these surgeries. In 2011, he was appointed the Residency Program Director after serving as the Assistant Residency Director from 2009 to 2011. He is also the co-fellowship director for the Hand and Upper Extremity Division. Dr. Dacus has also enjoyed being an Assistant Team Physician for James Madison University Athletics since 2008 and continues in this capacity. In 2019, he was appointed the position of Vice Chair for Diversity, Inclusion and Wellness. Outside of work, he enjoys time with family, travel and sports.



WSO Hybrid Session: Skeletal Muscle and Muscle Synergies

Chaired by **Dr. Rajat Emanuel Singh**, Northwestern College, USA

Time: 10:25 AM-11:45 PM, Dec. 11th, 2022 (Sunday), GMT+8; **Place:** Bras Basah I, Level 3

Title: Modification in Modular Control is Dependent on Proficiency Levels of Slackliners

Rajat Emanuel Singh

Department of Kinesiology, Northwestern College, Orange City, IA.
USA

Abstract

Bernstein suggested that Central Nervous System (CNS) simplifies motor control by reducing the degrees of freedom. This theory is also referred to as modularity in motor control, and it has shown some validity in recent years through the use of certain instrumentation (EMG), experimental (electrical and chemical stimulation of spinal cord), and mathematical models (linear decomposition algorithms). The previous investigation suggested that a movement is formed by the assembly of low dimensional motor modules out of a high dimensional motor solution space that exists in the CNS. These modules encode information regarding synergistic activation of muscles, when they are activated by neural command, they exhibit adaptive or innate motor behavior.

In the past two decades, several researchers have estimated these modules from EMG using linear decomposition algorithms. The goal of decomposition is to capture regularities and irregularities from the EMG in the form of spatial (muscle synergies) and temporal patterns (activation coefficient). These spatial and temporal patterns were examined to understand neuromuscular strategies for different movements and neurological conditions. In addition, they are used as a tool to improve prosthetic devices.

We have also made several contributions in this field over a decade. Our contributions resonate from engineering (upper and lower extremity myoelectric prosthesis using muscle synergy hypothesis) to the physiological aspects of synergies in exercise science and rehabilitation therapy (slacklining, handcycle ergometer).

Our recent work had concluded that during highly challenging balancing tasks (slacklining), muscle synergies structures adapt. This adaptive behavior can be associated with the dynamics of the task and the proficiency level of the slackliner. Furthermore, with increased resistance during cyclic motion, we reported that activation coefficients flexibly recruit similar synergies to preserve innate and adaptive motor patterns. The implications of these results correspond to improving the accuracy of human-robotic control and understanding the neuromuscular mechanism for rehabilitating individuals with postural disorders.

Biography

Dr. Rajat Emanuel Singh is affiliated with Northwestern College, Orange City IA as an Assistant Professor. He has post-doctoral research experience from the Joint Department of Biomedical Engineering at North Carolina State University/University of North Carolina at Chapel Hill, and at the University of Minnesota, Minneapolis. He has also worked as a research intern at Shirley Ryan Ability Lab of Northwestern University in Chicago. His research focus is biomechanical movement—specifically, synergy analysis of movement disorders, with the goal of quantifying muscle coordination strategies when assistive technologies are being used. Dr. Singh completed his undergraduate degree in electronics and communication engineering at Punjab Technical University, India. His master's degree and doctoral work were completed at the University of Arkansas, Little Rock. Dr. Singh's published work has appeared, among other places, in the top international journals.

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Mode of Presentation: Oral/Poster.

Contact number: +1 712-707-7312



Title: Ultrasonographic Evaluation of Spasticity

Dong Rak Kwon

Department of Rehabilitation Medicine
Catholic University of Daegu School of Medicine
South Korea

Abstract

In central nervous system problem such as cerebral palsy, stroke, and spinal cord injury, spasticity can be a very disabling feature: limited locomotor abilities, joint contracture, dependent activities of daily living and gait difficulty. A precise evaluation of spasticity is important to establish the effectiveness of medical and physical therapeutic interventions. Various diagnostic methods are available to investigate specific influences on muscles. The most obvious diagnosis of spasticity is based on clinical assessments of muscle tone by a physician or physiotherapist, such as the Modified Ashworth Scale and the Modified Tardieu Scale. Current clinical assessment methods include the Modified Ashworth Scale (MAS) and the Modified Tardieu Scale (MTS) can result in inconsistencies due to their subjective nature. The spasticity has the neural component that is evoked by a velocity dependent phenomenon and the biomechanical component such as soft-tissue compliance, that is, stiffness, together. Ultrasound is the imaging method of choice for a study of muscle and tendon dysfunction. Conventional Ultrasound provides information about fiber length, pennation angle, and cross sectional area. To increase objectiveness, recently imaging method such as sonoelastography has been developed to evaluate muscle stiffness. This presentation will summarize the body of evidence, describe this recent research, and show several pertinent clinical cases.

Key Words: Spasticity, ultrasound, sonoelastography

Biography

Dr. Dong Rak Kwon received his M.D. and Ph.D. from Pusan National University College of Medicine in rehabilitation medicine. Dr. Kwon currently serves as tenure professor and researcher in the Department of Rehabilitation Medicine, Catholic University of Daegu School of Medicine, Daegu, Korea. Dr. Kwon currently focuses on diagnosis using ultrasound such as cerebral palsy, torticollis, plagiocephaly and regenerative treatment of neuromusculoskeletal disease such as knee osteoarthritis, shoulder rotator cuff disease, degenerative disc disease using platelet rich plasma, microcurrent therapy, and stem cells. He was awarded as best poster and oral presenter over 30 times and five cover papers in famous journal in related fields.



Online Session: WSO Online Session: Orthopedics Surgery and Trials

Chaired by **Dr. Konstantinos Sidiropoulos**, Papageorgiou General Hospital of Thessaloniki, Greece

Time: 08:00 PM-11:00 PM, Dec. 11th, 2022 (Sunday), GMT+8

Title: The Use of Closed Incision Negative Pressure Therapy to Reduce Complications in Surgical Site Complications in Orthopedic Surgery

Ronald P. Silverman

MD, FACS

Associate Professor of Surgery, University of Maryland Medical Center

Adjunct Associate Professor of Plastic and Reconstructive Surgery, Johns Hopkins

SVP and Chief Medical Officer, 3M HealthCare, Baltimore, MD

USA

Abstract

There has been a growing body of evidence in support of the use of negative pressure therapy placed on top of a closed incision at the conclusion of a surgical procedure with the goal of reducing surgical site complications in high-risk patients. A recent prospective multicenter randomized control trial compared the use of closed incision negative pressure therapy (ciNPT) vs standard of care dressings (SOC) in 294 revision total knee arthroplasties in high risk patients. The study demonstrated significantly reduced rates of 90-day surgical site complications (SSC) with ciNPT versus SOC (3.4% versus 14.3%, respectively), significant reduced rate of re-admission (3.4% vs. 10.2%), and significant shorter Length of stay if readmitted (2.2 vs. 8.6). This presentation will summarize the body of evidence, describe this recent multicenter RCT, and show several pertinent clinical cases.

Key Words: Negative Pressure, ciNPT, Prevena, revision knee arthroplasty

Biography

Ronald P. Silverman, MD, FACS is the SVP and Chief Medical Officer of 3M HealthCare as well as an Associate Professor of Surgery at the University of Maryland as well as an Adjunct Associate Professor of Plastic Surgery at Johns Hopkins. Dr. Silverman is the former Chief of Plastic Surgery at the University of Maryland and continues to practice at the University of Maryland Medical Center in plastic and reconstructive surgery with an interest in complex facial reconstruction, wound care, abdominal wall reconstruction, and aesthetic plastic surgery of the face, breast and body.

Title: Long Term Outcome Results after Comparing Arthrodesis to Fusion in Treating Cervical Radiculopathy: 5 Year Results of a Randomized Controlled Trial

Carmen L.A. Vleggeert-Lankamp

Neurosurgeon and Spinal Surgeon
Leiden University Medical Center
The Netherlands

Abstract

Background: Motion preserving anterior cervical disc arthroplasty (ACDA) in patients with cervical radiculopathy was introduced to prevent symptomatic adjacent segment disease as compared to anterior cervical discectomy and fusion (ACDF).

Purpose: To evaluate the long-term outcome in patients with cervical radiculopathy due to a herniated disc undergoing ACDA, ACDF or ACD (no cage, no plate) in terms of clinical outcome measured by the Neck Disability Index (NDI). Likewise, clinically relevant adjacent segment disease is assessed as a long-term result. **Study design:** Double-blinded randomized controlled trial

Patient sample: One hundred-nine patients with one level herniated disc were randomized to one of the following treatments: ACDA, ACDF with intervertebral cage, ACD without cage.

Outcome Measures: Clinical outcome was measured by patients' self-reported NDI, Visual Analogue Scale (VAS) neck pain, VAS arm pain, SF36, EQ-5D, perceived recovery and reoperation rate. Radiological outcome was assessed by radiographic cervical curvature and adjacent segment degeneration (ASD) parameters at baseline and up until five years after surgery.

Results: Clinical outcome parameters were comparable in the ACDA and ACDF group, but significantly worse in the ACD group, though not reaching clinical relevance. Annual reoperation rate was 3.6% in the first two years after surgery, declined to 1.9% in the years thereafter. The number of reoperations for ASD was not lower in the ACDA group, while the number of reoperations at the index level was higher after ACD, when compared to ACDF and ACDA. **Conclusions:** A persisting absence of clinical superiority was demonstrated for the cervical disc prosthesis five years after surgery. Specifically, clinically relevant adjacent level disease was not prevented by implanting a prosthesis. Single level ACD without implanting an intervertebral device provided worse clinical outcome, which was hypothesized to be caused by delayed fusion. This stresses the need for focusing on timely fusion in future research.

Biography

Carmen Vleggeert-Lankamp, MD, MSc, PhD is a Neurosurgeon and Spinal Surgeon in Leiden University Medical Centre, Leiden, the Netherlands. She is the director of the Spine research group and focuses on evaluation of Spine care and on fundamental research in radiculopathy. She is President Elect of the board of CSRS Europe, and of the Netherlands Society for Neurosurgery.

She was born in the Netherlands in 1969. She received her MSc grade in Pharmacy in 1995 and afterwards graduated from medical school at the University of Utrecht in 1998. She did her residency in Neurosurgery at the Leiden University Medical Centre from 1998-2006. In 2006 she obtained her PhD degree on evaluation of peripheral nerve regeneration. In 2006 she started to specialize in spine surgery and changed her research focus to spine. Currently she coordinates a research group with numerous PhD students that work on research themes varying from cervical to lumbar and from degenerative to congenital spine diseases. She is actively involved in research concerning the etiology of sciatica and stenosis. In cooperation with Technical University Delft, Erasmus University and the Computational Neuroscience Outcome Center, Harvard Medical School, Boston, she is integrating machine learning algorithms into spine care. She and her research group received several research awards. She is specialized in spine surgery with special interest for craniocervical deformities and reconstruction, and achondroplasia.

She has a long list of scientific publications and invited guest lectures. She is actively involved in spinal teaching, she is supervising multiple PhD trajectories and is involved in spine training programs of the EANS, CSRS and Eurospine.

She is currently the President of the Netherlands Society for Neurosurgery as well as the secretary and President Elect of the Cervical Spine Research Society Europe.

Title: Elastic Intramedullary Nails in Long Bones Fractures

Konstantinos Sidiropoulos^{1*}, Efratios Athanaselis², Alkis Saridis³

¹ MD, MSc, PhD Candidate, Orthopaedic Surgeon, Attendant of Emergency Department
Papageorgiou General Hospital of Thessaloniki, Greece

² MD, PhD, Orthopaedic Surgeon, Attendant of Orthopaedic Department
University Hospital of Larissa, Greece

³ MD, PhD, Orthopaedic Surgeon, Chief of Orthopaedic Department
General Hospital of Drama, Greece

Abstract

Background: Regarding upper limb fracture, a relative common fracture in adult population (16.2 fractures per 10,000 persons in USA [1]) there are two options conservative or surgical treatment. The best viable option depends on multi factors which could be distinguished in two categories: type of injury and host (patient) special characteristics. In case of complex fractures, damage control orthopaedic or patient with comorbidities elastic intramedullary nails (EIN) titanium or stainless steel could be used.

Objective: Biomechanical principles, surgical technique (with tips and tricks), proper selection of candidates and limitations of this method would be highlighted. The use of EIN regards only upper limb fractures (clavicle, humerus, radius and ulna) where no weight bear applies.

Results: This method with proper surgical technique and respecting indications have encouraging results. Literature is limiting but promising. In some cases, the clinical and functional result is superior to conventional treatment (open reduction and internal fixation) [2,3,4,5,6].

Conclusion: Titanium or stainless-steel EIN could be added into the arsenal of any trauma surgeon treating upper limb fractures in adults. There is no Level 1 evidence from prospective multi-center studies yet, but the application and results of this method seems effective and safe.

Keyword: *elastic intramedullary nails (EIN), adult upper limb fracture, surgical technique and indications*

References

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Biography

He was born in Florina, Greece in 1985. He graduated as a Medical Practitioner from the Aristotelian University of Thessaloniki, Greece in 2010. After serving for 9 months as doctor, started his training in Orthopaedic Surgery in General Hospitals of Northern Greece: Florina, Edessa and finally Papageorgiou General Hospital of Thessaloniki (2nd Orthopaedic Department), where he became a licensed orthopaedic surgeon.

He was attendant of Orthopaedic Department of General Hospital of Serres, Greece, for 3 years (2018-2021) and attendant and head of Orthopaedic Department of Mamatsio General Hospital of Kozani, Greece for 8 months (01/2022-09/2022). Since September 2022 is Attendant in Emergency Department of Papageorgiou General Hospital of Thessaloniki, Greece.

He had participated in Life Support Courses (ALS, BLS, ATLS, DSTC). He translated, edited and adapted to Greek standards “Pocket Guide to Diagnosis and Treatment of Periprosthetic Joint Infection (PJI)” Version 9, October 2019 (pro-implant.org).

His main interest is dealing with a trauma patient and prevention/treatment of bone and joint infection (11 publications).

He is member of European Bone & Joint Infection Society (EBJIS), AO Trauma and World Association against Infection in Orthopaedic and Trauma (WAIOT).

Title: Ensuring Quality and Safety in Pediatric Spinal Deformity Surgery

Harry L Shufflebarger

MD

Paley Orthopedic and Spine Institute, West Palm Beach, Florida

Paley Institute

USA

Abstract

Ensuring quality requires the systematic recurring evaluation of all aspects of patient care by many modalities. Ensuring safety is being free from causing injury or loss. These two parameters are complimentary in patient care. Quality involves getting it right the first time and safety requires team involvement.

Team approach to spinal surgery improves outcomes in pediatric spinal surgery, shown to decrease surgical site infections, surgical time, blood loss, and length of stay. Unplanned changes in surgical plan is also significantly decreased.

Dashboard reports permits surgeons to compare their performances to their peers, and can result in significant improvement of performance. Surgeon performance improvement programs are available at info@ssshsg.org.

Development of a defined and reproducible work flow pattern in spinal surgery results in standardization which contributes to efficiency and safety in spinal surgery. Surgeon skill advancement is supported by consistent operative steps and a constant peri-operative team.

References:

Glottbecker MP, Wang, BA, Waters, PM et al. Quality, safety, and value in pediatric orthopedic surgery. J Pediatr Orthop 2016; 36:549-557.

Biography

Name: Harry L Shufflebarger MD **Affiliation:** Paley Orthopedic and Spine Institute at Saint Mary's Medical Center

Education:

Undergraduate and Medical Education: Emory University; Post-graduate Education: Emory Affiliated Hospitals, Atlanta, Ga

Licensure: Florida

Societies

Scoliosis Research Society

Lifetime Achievement Award 2015

President 2000

Secretary 1994-1998

Pediatric Orthopedic Society of North America

North American Spine Society

American Academy of Orthopedic Surgeons

Multiple others

Textbook Chapters

Approximately 75, all dealing with aspects of spinal deformity and surgery

Scientific Papers Published

Approximately 75, all dealing with aspects of spinal deformity and surgery.

Scientific Papers Published by Abstract

Approximately 275, all dealing with aspects of spinal deformity and surgery.

Visiting Professor: Approximately 125 locations, all over the world.

Educational course (chairman or presenter). Approximately 100, dealing with all aspects of spinal deformity and surgery.

Title: The Duration of Postsurgical Antibiotics for Orthopedic Infections

Ilker Uckay

Prof. Dr. med., Head of Infectiology, Head of Clinical Research in Orthopedic Surgery
Balgrist University Hospital, University of Zurich, Zurich
Switzerland

Abstract

Orthopedic infections are difficult to treat and associated with substantial morbidity and costs. They are expected to rise worldwide due to the increasing number of patients undergoing orthopedic implants and surgeries. The surgical approaches are multiple, but they seem standardized, whereas the concomitant antibiotic therapy consists of six or twelve weeks of targeted antimicrobial administration, of which the initial 2 to 6 weeks intravenously. These concepts, based on expert opinion and experience, and are valid for every substratum of implant-related infections and osteomyelitis. However, there is movement. The last decade yielded many clinical studies, including prospective- randomized trials, with a tendency towards a more conservative surgical approach; combined with a reduction of antibiotic use, reduction of parenteral antibiotic use, and new challenges in terms of academic research and management of these infections, including for antibiotic stewardship. This review summarizes established concepts as well as new trends in the therapy of orthopedic infections and osteomyelitis.

Key Words: orthopedic infections, implant; duration o systemic antibiotics, local antibiotics

Biography

Prof. Dr. med. Ilker Uckay is a medical doctor who graduated from the University of Zurich Faculty of Medicine in 1995. He obtained specialist accreditation (FMH) in internal medicine in 2001. After six years of clinical work in the fields of general surgery and internal medicine, he began his career in infectious diseases at Geneva's University Hospitals in October 2002 and obtained specialist accreditation (FMH) in that field in 2006. Besides consultant duties for infectious diseases in general and infection prevention and control activities (specialization at the Infection Control Programme, Geneva's University Hospitals), In February 2010, he was promoted to Assistant Director of the Infectiology and Orthopaedic Services and worked as a clinician and researcher in both services. He obtained his habilitation degree at Geneva University Hospitals in June 2012, and his Senior Lectureship in 2014. Since July 2018, he is the Head of Clinical Research, and the Head of Infectiology and Hospital Hygiene at Balgrist University Hospital. Since February 2020, he is Titular Professor at the University of Zurich.



Title: Decreased Lean Psoas Cross-sectional Area is Associated with Increased One-year All-cause Mortality in Male Elderly Orthopaedic Trauma Patients

Basel Touban

Orthopaedic Surgeon
Texas Children's Hospital Houston
USA

Abstract

Objectives: To investigate the association between lean psoas Cross-sectional Area (CSA) and one-year all-cause mortality in elderly patients sustaining pelvic and long bone fractures.

Design: Retrospective cohort

Setting: Level one center

Patients: Elderly trauma patients admitted from 2007-2014.

Methods: We reviewed demographic and clinical data, injury mechanism, fracture AO/OTA classification, and mortality. Axial Computed Tomography (CT) images were used to measure lean psoas CSA at the L3-L4 disk space. Cox proportional hazard regression analysis was used to estimate one-year mortality association with psoas CSA in crude and adjusted for age, BMI, ISS, medical comorbidities and discharge destination in total population and stratified by gender.

Main outcome measurement: One-year all-cause mortality defined as death within 12 months from date of hospitalization.

Results: 558 patients (54% female, 46% male) were analyzed. The pelvis was most commonly fractured (37.81%). A statistically significant association was observed between decreased lean psoas CSA and one-year mortality in total population [Hazard Ratio (HR)=0.93 (95% Confidence Interval (CI)= 0.90-0.96), $p<0.0001$] and in males [HR=0.89 (95% CI=0.84-0.96), $p= 0.002$]. However, after adjustment for age the association became statistically non-significant [HR=0.97 (95% CI= 0.93-1.01), $p=0.1057$]. Stratified by gender analysis did not reveal a statistically significant association in female population [HR=0.95 (95% CI= 0.89-1.01), $p= 0.103$].

Conclusions: In this cohort of elderly orthopaedic trauma patients, decreased lean psoas CSA was associated with increased one-year all-cause mortality in total population and males. Further investigation of the association of sarcopenia with mortality in the elderly is warranted.

Level of Evidence: Level III prognostic

Keywords: *Sarcopenia, psoas, core muscle, frailty, trauma, fragility fractures, elderly*

Biography

Dr. Touban is a board certified orthopaedic surgeon with experience in the evaluation and treatment of adult sports and trauma injuries.

Dr. Touban earned his medical degree from The New York Medical College, one of the oldest medical schools in the United States. He then went on to complete residency training at the State University of New York at Buffalo. He served honorably, for four years, in the United States Air Force while earning the Air Force Outstanding Achievement and Commendation Medals. He deployed in support of Operation Inherent Resolve during the height of the COVID-19 Pandemic.

Dr. Touban has special interest in sports and pediatric hip preservation. To that end, in 2022, he began a year-long pediatric fellowship at Texas Children's Hospital in Houston, Texas, the #2 Pediatric Hospital in the US according to the US Health News Survey.

In his free time, Dr. Touban loves traveling, cooking and hiking. He is husband to a successful periodontist and fur parent to a male Shiba Inu named Yuki.



Posters

Title: The Relationship between the Nerve Branch Patterns of Radial Nerve and Supinator Muscle

Je-Hun Lee

Professor

Korean Institute for Applied Anatomy, College of Sports Science, Korea National Sport University, Seoul
Korea

Abstract

Introduction: The aim of this study was to investigate the nerve distribution patterns of posterior interosseous nerve (PIN) including radial nerve and supinator muscle.

Methods: 28 non-embalmed extremities were studied. The relationship between the branch out points to innervate each muscles of posterior compartment of forearm and radial nerve was investigated.

For the measurements of some variables related branch out point from radial nerve, the most prominent point of lateral epicondyle of humerus (LEH) and the most distal point of styloid process of radius (SPR) were identified before dissection. The measurement variables are attachment area of supinator, branch out points from radial nerve.

Results: The attachment points of supinator to the radius was $47.9 \pm 3.6\%$ and to ulna bone was $31.5 \pm 5.2\%$ from the LEH. The 67.9% of all specimens was found that the brachioradialis and extensor carpi radialis longus (ECRL) was innervated from the radial nerve before superficial nerve branching and the extensor carpi radialis brevis (ECRB) was innervated the deep branch of radial nerve. 21.4% of all specimens were found that the nerve branch to innervate ECRB was branched out the same point with superficial branch of radial nerve. 7.1% cases were found that the nerve branch was branched out from the radial nerve. 3.6% cases were found that the deep branch of radial nerve was branched out to innervate ECRL. The PIN was found that one large branch without nerve dividing (10.7%) and the other cases (14.3%) were the deep branch was innervated the extensor digitorum.

Discussion: The anatomical investigation of the PIN in this study will help to identify patients with clinically relevant syndromes.

Keywords: *radial nerve, posterior interosseous nerve, supinator, anatomical study*

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Biography

Jehun lee is a professor majored in clinical anatomy. He mainly conducts research for knowledge required in clinical practice through cadaver dissection. Also, recently, he has studied from the perspective of body imbalance and recovery methods, and is teaching rehabilitation at his university. He is currently majoring in these fields and published several research papers every year. He will continue to study the recovery, performance, and clinical anatomy of athletes in the future.

Title: Zirconia additive manufacturing fabricated by DLP

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Abstract

This study optimized the debinding and sintering process of zirconia through thermal weight analysis, and evaluated the shrinkage rate after final sintering of the zirconia, which was manufactured by Digital Light Processing (DLP) method. This test evaluated the effect of the sintering shrinkage rate due to gravity and the possibility of isotropic shrinkage by changing the axis of the zirconia while sintered at the set preliminary sintering temperature.

A cube (C) of 10x10x10mm which size is similar to molar crown and a rectangular parallelepiped (R) specimen of 10x10x20mm, which size is similar to a 3-unit bridge, were manufactured by a DLP 3D printer (3D Controls, Busan, South Korea) using a 49 vol% zirconia suspension.

Zirconia specimens were sintered under debinding conditions maintained at 230 °C, 380 °C, and 600 °C at a heating rate of 0.5 °C per minute for 1 hour, 2 hours, and 1 hour, respectively, and with firing schedules of preliminary sintering temperatures of 1300 °C and 1400 °C.

The additive manufactured zirconia showed a lower mean value and higher deviation than the subtractive manufactured zirconia which its average shrinkage rate was 26%. The shrinkage rate of the printed zirconia was 19 to 21% on the X and Z axes and 21 to 22% on the Y axes. For all additive manufactured zirconia specimens, the sintering shrinkage rate was not affected by the preliminary sintering temperature and the axial change in the direction of gravity during sintering, and the shrinkage rate in the stacking direction was significantly high.

The above results show that zirconia of the additive manufacturing method has a higher standard deviation in sintering shrinkage rate than that of the milling manufacturing zirconia and it shrinks anisotropically. These features make it more difficult in securing precision in the final sintered zirconia suggesting that many additional studies are needed for clinical application.

Keywords: Zirconia printing, Additive Manufacturing

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Biography

Professor Kwidug Yun defended her PhD in 2010 in the Chonnam National University in Republic of Korea. She then started to work as an assistant professor at Department of Prosthodontics, School of Dentistry in the Chonnam National University. Now she is the professor of Chonnam National University. She studied about the dental materials, titanium implant surface and zirconia printing.

Title: Osteoarthritis-Improving Effects of a Combinational Treatment of Human Umbilical Cord Blood Stem Cells and Cartilage Acellular Matrix in a Rabbit Model of Articular Cruciate Ligament Transection

Chan Ho Noh¹, Sumin Cho¹, Hye-Rim Seong², In-Jeong Kim¹, Ka Young Kim¹, Sangryong Park², Tae Myoung Kim², Ehn-Kyoung Choi², Yun-Bae Kim^{1,2*}

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Abstract

In osteoarthritis (OA), cartilage damage is common. Mesenchymal stem cells (MSCs) can be differentiated into adipocytes, osteocytes, and chondrocytes, so induction of MSCs to chondrocytes may enhance cartilage restoration. Cartilage-derived extracellular matrix (ECM) promotes chondrogenesis of MSCs. Therefore, we assessed the role of specific factors from umbilical cord blood stem cells (UCBSCs) as well as cartilage acellular matrix (CAM), a chondrogenic promotor, in the treatment of OA. CAM-treated MSCs were analyzed using chondrogenic markers (aggrecan, collagen type 2, and SOX9) and, especially, bone morphogenic protein 6 (BMP6) as an early chondrogenesis factor. Treatment with CAM significantly increased the expression of chondrogenic markers and BMP6 in UCBSCs. In addition, recombinant human BMP6 also dramatically increased the levels of chondrogenic markers in UCBSCs. To confirm effectiveness in vivo, UCBSCs and CAM were injected to rabbits underwent articular cruciate ligament transection (ACLT). Application of UCBSCs and CAM not only enhanced the structure and synthesis of proteoglycan and collagen-II, but also exerted anti-inflammatory activities in both joint tissues and synovial fluid. Moreover, the injected UCBMSCs were detected in the rabbit cartilage tissues, and involvement of BMP6 was confirmed. Taken together, the results indicate that OA-therapeutic potential of UCBSCs with CAM is mediated via BMP6.

Keywords: Osteoarthritis, UCBSC, chondrogenesis, BMP6, cartilage regeneration, cartilage acellular matrix

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Title: Cartilage-restoring Effects of a Combinational Therapy of Human Adipose-derived Stem Cells and Thrombospondin 2 in a Rabbit Model of Osteoarthritis

Sumin Cho¹, Chan Ho Noh¹, Hye-Rim Seong², In-Jeong Kim¹, Ka Young Kim¹, Sangryong Park², Tae Myoung Kim², Ehn-Kyoung Choi², Yun-Bae Kim^{1,2}

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Abstract

Osteoarthritis (OA), a chronic age-related disease characterized by the slowly progressive destruction of articular cartilage, is one of the leading causes of disability. In the present study, the anti-osteoarthritis effects of human adipose-derived stem cells (ADSCs) and underlying mechanisms were investigated in a rabbit experimental OA model. Anterior cruciate ligament transection (ACLT) surgery were performed in male New Zealand white rabbits, and 8 weeks later, ADSCs (1.7 x 10⁶ or 1.7 x 10⁷ cells) was injected once into the injured knees alone or in combination with 2-day-interval injection of thrombospondin 2 (TSP2, 100 ng/knee). OA progression was monitored by radiological, gross, and histological examinations. At eight weeks after cell transplantation, rabbits treated with ADSCs or TSP2 alone exhibited lower degree of cartilage degeneration, osteophyte formation, and extracellular matrix loss. Notably, such cartilage damages were alleviated further by a combinational treatment with ADSCs and TSP2. In addition, synovial inflammatory cytokines including interleukin-1 β (IL-1 β), IL-6, IL-8, and tumor-necrosis factor- α (TNF- α) markedly decreased following the treatment with ADSC and/or TSP2. Separately, it was confirmed that the transplanted ADSCs attached on the injured cartilage surfaces after intra-articular injection. TSP2 induced chondrogenic differentiation of ASCs in vitro via Notch3/Jagged1 signaling and potentiated the therapeutic effects of ADSCs in vivo. Taken together, the results indicate that ADSCs improve OA via anti-inflammatory and cartilage-restoring activities, and that TSP2 augments the ADSCs' potential.

Keywords: Osteoarthritis, anterior cruciate ligament transection, human adipose-derived stem cell, thrombospondin 2, Notch signaling, cartilage regeneration

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