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A newsletter by the University Orthopaedics, Hand & Reconstructive Microsurgery Cluster

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New Research by Department of Orthopaedic Surgery Awarded Asia-Pacific Research Prize:

Biological Molecule

May Help Patients with Orthopaedic Implant Infection

*Contributed by Dr Wilson Wang, Head & Senior Consultant
Division of Hip and Knee Surgery*

Orthopaedic implants such as joint replacements are generally very successful, and in most cases have great benefits for patients who need them. However, in a small minority of cases, complications such as implant infections still can occur, especially in patients who have poor immunity due to either illness or old age.

When orthopaedic implants get infected, it is not just the bacteria that cause damage to the body's tissues. Toxins such as lipopolysaccharide (LPS) are produced by bacteria, and these substances can induce immune responses and cell reactions at the bone implant site which can lead to implant failure through deleterious effects on bone-implant stability. In order to seek a solution that can address this problem, a group of researchers from the Department of Orthopaedic Surgery led by Dr Wilson Wang, Head & Senior Consultant, Division of Hip & Knee Surgery, did a scientific study to investigate whether the biological molecule sphingosine-1-phosphate (S1P), which is a known immune modulator, has any beneficial effects in an implant infection situation.

The research team found that S1P was able to reduce the deleterious effects of inflammatory factors that are stimulated by the presence of bacterial infection, enabling osteoblasts (bone cells) to develop tolerance to bacterial toxin effects. Treated osteoblasts were better able to maintain their bone cell characteristics and function in the simulated infection environment, and this may point the way for new forms of treatment in implant infection scenarios.

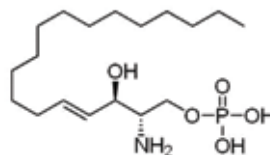


Figure 2:
Chemical structure of sphingosine-1-phosphate



Figure 1: Infected hip implant with bone reaction

This research was presented in November 2010 at the 16th Triennial Congress of the Asia-Pacific Orthopaedic Association (APOA) in Taipei, Taiwan, where it won the APOA-Pfizer 1st Prize for Best Research Paper in Orthopaedic Infection, highlighting the research excellence of our department.

HIGH ANKLE SPRAINS AN OFTEN OVERLOOKED CONDITION

Contributed by Dr Tan Ken Jin, Associate Consultant, Division of Foot and Ankle Surgery

INTRODUCTION

High ankle sprains refer to injuries of the distal tibiofibular syndesmosis. This is a connecting joint between the 2 bones of the leg, located just a few centimeters above the actual ankle joint. Ligamentous injuries to this joint are frequently overlooked because it is much more common to injure the ligaments around the ankle joint. High sprains or syndesmotic injuries are estimated to occur in most ankle injuries. Athletes who play collision sports such as rugby, hockey and soccer are at particular risk. If not treated adequately, long-term consequences such as chronic syndesmotic instability and subsequent arthritis of the ankle can occur. This is because the syndesmosis provides dynamic support to the ankle that is essential for normal performance.

CLINICAL PRESENTATION

Unlike the common ankle injuries that occur with inversion, the mechanism for syndesmotic injuries usually involves eversion of the foot. Patients also complain of pain slightly superior to the ankle joint and over the anterolateral aspect. There are various clinical tests available. One useful and sensitive test is the Frick test that involves passive external rotation of the foot held in a neutral position, against the fixed lower leg. X-rays should be done in a weight-bearing position, and may show diastasis of the syndesmosis in more severe injuries. CT-scans and MRIs have also proven to be useful in detecting subtle injuries.

In clinical practice, the severity of syndesmotic injuries can vary from simple sprains to frank diastasis associated with a bi or trimalleolar ankle fracture. They can also present as a chronic instability associated with a previous 'ankle' injury. For this article, 2 cases which were managed at the Division of Foot and Ankle Surgery, one case of a syndesmotic sprain and another of a more severe syndesmotic injury are illustrated.

SYNDESMOTIC OR HIGH ANKLE SPRAIN

Figure 1 below shows a CT-scan protocol that has been instituted at NUH which is specifically used in evaluating for syndesmosis injuries. The CT section shows a cross-section of both sides at the level of the syndesmosis. This female athlete was playing touch rugby when she twisted her ankle in eversion and heard a 'pop' sound. She subsequently complained of pain over the anterolateral region of her lower leg above the ankle joint proper. An external rotation test was associated with pain over the same area. The CT cross-section showed the syndesmosis on both sides to be equally reduced and she was treated as a sprain of the syndesmotic ligaments with a high ankle brace.

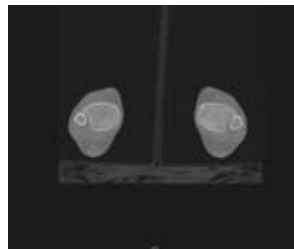


Figure 1. A selected section from a CT-scan using a protocol for evaluating the syndesmosis. The large bone is the distal tibia with a smaller bone, the fibula, sitting posteriorly. The area in between the tibia and fibula represents the syndesmotic area and widening of this area as well as any rotational deformities of the fibula can be appreciated if present.

SYNDESMOTIC INJURY ASSOCIATED WITH ANKLE FRACTURE

Figure 2 shows a syndesmotic protocol CT-scan of a patient who had fallen off an elevated platform of 2 metres and injured his ankle. He had an initial fixation of his ankle done but the post-operative X-rays showed a malreduced talus within the ankle mortise (Figure 3). This CT-scan done subsequently, shows that he had a syndesmotic injury that was not reduced adequately and one can see the fibula located too posteriorly compared to the opposite side. The fixation was revised and the syndesmosis reduced with the aid of intra-operative 3-Dimensional (3D) fluoroscopy.



Figure 2. This is a CT-scan done to evaluate the syndesmosis after the initial fixation. Note the normal side on the left of the section with the fibula (smaller bone) reduced in the syndesmosis (the larger bone is the tibia). On the opposite side, note that the fibula is located too posteriorly and this is associated with a fracture of the posterior part of the tibia.



Figure 3. This is the post-operative X-ray after the initial fixation. The patient has a fibula fracture that can be seen at the superior aspect of the X-ray. Note the tilted talus that was not anatomically reduced.

SUMMARY

With the increasing awareness of syndesmotic injuries, we are improving on our capabilities to diagnose and treat these atypical 'ankle injuries' to optimise results for our patients. In particular, our syndesmotic CT-scans and 3D Fluoroscopy in our operating theatres have advanced our therapy of these injuries.

CLINICAL EXCELLENCE AT YOUR SERVICE

OFFICIAL OPENING OF HAND & RECONSTRUCTIVE MICROSURGERY(HRM) CENTRE

With an ageing population and people becoming more active in sports, more Singaporeans are ending up with hand conditions and injuries sustained from extreme sports activities such as distal radius fractures. On 5 April, the National University Hospital opened a new one-stop Hand & Reconstructive Microsurgery (HRM) Centre. The dedicated HRM Centre will be able to see more patients and to offer them accessible treatment within a shorter period of time.

Staffed by a team of 10 hand specialists, the purpose-built HRM Centre consolidates all hand-related services under one roof to provide treatment for patients with various hand conditions. For greater patient convenience, consultation with the doctors, minor

surgical procedures, hand therapy sessions and fluoroscopic assessment of bone and joints of the hand are all done at the Centre.

The new Centre is expected to serve more than 8,500 patients this year, up from 6,700 in 2010, representing some 20 percent increase in patient volume.

Services at the HRM Centre include:

- Hand, Upper Limb Trauma
- Hand & Upper Limb Numbness and Weakness
- Hand & Wrist Pain
- Hand & Upper Limb Deformity
- Hand Infections
- Benign and Malignant Musculoskeletal Tumours



MAILBAGS: PATIENT COMPLIMENTS

COMPLIMENTS FOR DOCTORS

"I was attended to promptly by Dr Srinivasan Rajappa (Clinical Fellow, UOHC). I have multiple trigger fingers so Dr Peng Yeong Pin (Senior Consultant, UOHC) was consulted on the proposed treatment for my condition. Dr Peng was professional, approachable and empathetic to his patient and colleagues. He struck me as a great mentor... he shared his knowledge and experience on my condition and agreed with the proposed treatment by Dr Rajappa. Dr Dennis Hey (MO, UOHC), assisted by Ms Wang Lee Lee (Asst Nurse, Clinic B), administered the procedure professionally with detailed pre- and post-procedure briefing. I was really impressed by the doctors and nurses at every stage of my treatment. I have to commend all the doctors and the nurse for delivering excellent care. I would recommend NUH to others and choose NUH for my other healthcare needs."
Lim C S

COMPLIMENTS FOR CLINIC

"NUH's Clinic B service time & efficiency really surprise me (in a positive way). Traditionally, it's always been long waits & unfriendly services provided in a hospital."
Ho Fong Kwan (Anne)

"Sharon Au is a very helpful & caring nurse. She helped & enquired about me & assisted with information on how to get medical records for an insurance policy I would like to take up. She has always been very dedicated, caring & warm at every of my consultation visit."
Mdm Karen Chan

"Excellent services that use smses to remind about the appointment. The clinic is very neat and well organised. The clinic staffs are polite and courteous and the doctor is excellent."
Mr Ng Chean Han

"Being a patient, I felt very comfortable with Dr. Wilson Wang (Senior Consultant, UOHC) and Dr. Bernard Lau. They treated me with much warmth and care. With them, as a patient, I felt safe knowing that I am under good hands and they always gave me assurance whenever I was feeling down. They were not only great doctors but could really connect with their patients and give them that sense of security that I believe every patient seek for."
Ms N.Rukumani

CLINICAL EXCELLENCE AT YOUR SERVICE

IMPROVED WORKFLOW FOR PATIENTS UNDERGOING HIP FRACTURE SURGERIES

Previously, the number of hip fracture surgeries performed within 48 hours of admission at NUH was smaller when compared to other hospitals, with the pre-operation average length-of-stay (ALOS) for patients scheduled for surgery comparatively longer at 3.4 days.

In 2010, *Dr Diarmuid Murphy (Associate Consultant, UOHC)* led a team to improve the processes with the aim to increase the number of hip fracture surgeries performed within 48 hours of admission and to reduce the pre-operation ALOS for patients.

The team identified the main issues and reasons to why hip fracture surgeries were not performed 48 hours after admission.

New measures such as streamlining of referrals, refining OT processes, introduction of new workflow, were implemented to tighten the processes.

Between Feb and Jun 2010, the team managed to increase the percentage of hip fracture surgeries performed within 48 hours from 35% to 80%. The pre-op ALOS was also shortened from 3.4 days to 1.9 days.

To sustain the good outcome, all new MOs and Registrars with the department will be inducted using the new workflow. The team also plans to share the good practice with other divisions within UOHC which have pre-op ALOS of more than 48 hours.

The *team* won a merit award at the recent Quest Awards for their good work. Congratulations!



The team behind improved processes at UOHC.

6S at Ward 54 -

CREATING A SAFER ENVIRONMENT AND BETTER WORKFLOW

INTRODUCTION

In 2010, staff from *Ward 54* embarked on their 6S journey to improve the workflow and safety at their workplace. With support from *ADoN Mona Soh, SNM Usha Menon* led a team with representatives from *Wards 41, 44, 54 and 78* to examine how areas like the main and sub nursing stations, clean and dirty utility rooms, equipment room, wheelchair and trolley bays as well as staff rooms could be reorganised to make them more conducive for work.

The team took ergonomics into consideration when deciding the placement of items within the ward. For example, heavier items were relocated to lower shelves for staff safety. The team also reviewed the

steps involved in the preparation of intravenous (IV) procedures and centralised the storage of the supplies for ease of access. As a result, the nurses now spend half the time they used to spend on preparing for the procedures, allowing them to devote more time to patient care.

The post-6S audit score for Ward 54 showed an improvement of about 50% from the previous score of 28%. The staff from *Wards 41, 44 and 78* will also bring the lessons learnt from this exercise back to their wards.

Congratulations, all, on your good results and for winning the Outstanding Award at the recent Quest Awards!

1. Safety



Safety marking on the floor to prevent staff injury. View panel in progress

2. Sort & Scrap



Excessive plastic bags and basins are removed from Dirty Utility Room.

3. Straighten



All intravenous supplies are centralised in 1 location.

4. Shine & Service



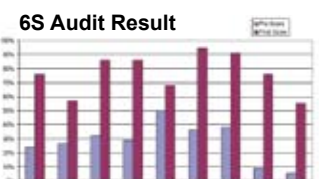
All shelves and equipments are cleaned thoroughly.

5. Standardize



A standard parking bay for ECG machine

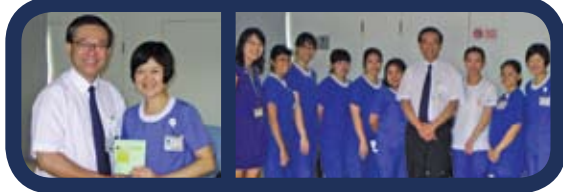
6. Sustain



Team is committed to maintain and further improve the Post 6S result

EVENTS AT UOHC

Nurses Day | 29 July 2010



Cluster Retreat | 16 Oct 2010



Spine Awareness Week | 13 November 2010



During the break, the audience also had the chance to tour the various booths and find out on medical advances in the treatment of spinal disorders. These included surgical treatment as well as neuro-monitoring to enhance the safety level of the spinal surgeries. A concurrent portable heel ultrasound assessment of bone density was also arranged for the participants to test their individual bone mineral density.

The UOHC held its spine awareness public forum on 13th November 2010. The response was overwhelming with all the seats in the auditorium taken up. The forum consisted of not only talks delivered by spine specialists from the University Spine Centre, but also by our allied health professionals such as physiotherapists, occupational therapists, and acupuncturists. There was also a concurrent scoliosis support group meeting chaired by A/Prof Hee Hwan Tak.

We would like to acknowledge all staff of UOHC for their hard work in the successful execution of this public forum.

Dr Hee Hwan Tak, MBBS, FRCS (Ed), FRCS (Glas), FAMS (Orth)
Senior Consultant
Deputy Head, University Spine Centre
Clinical Director, Department of Orthopaedic Surgery
National University Hospital



Staff Appreciation Day | 19 November 2010



Team Building | 20 November 2010

AWARDS AND ACCREDITATIONS

2ND ANNUAL COMBINED GRADUATION CEREMONY 22 February 2011

SN Too Pei Jun (UOHC Top Student in Adult Orthopaedic Nursing Course 2010)

During her graduation, she had thanked the Orthopaedics doctors and nurse managers.

"The doctors had been very supportive of AONC, taking time off their busy schedule to deliver lectures. I would like to thank the nurse manager for introducing this course, sharing of knowledge and taking care of our well being."

The doctors and nurse managers were very helpful and supportive throughout. They patiently explained to us why a certain treatment or test was ordered for a particular condition and how it helped. We had the opportunity to go to the OT to observe the ortho surgeries. It helped us understand the care of our patients better, from pre-op, to intra-op and then post-op.

Thank you also to our Advanced Dip Orthopaedics trained colleagues in the wards for sharing their knowledge and providing opportunities for hands-on practice. And lastly, thank you to my fellow course mates for making this learning process an enjoyable one."



SPARKS Award



Lim Hui Kian
UOHC SOC Clinics
Patient Service Associate



Choo Chiang Bee Janice
UOHC SOC Clinics
Patient Service Associate



Au Sook Kwan
UOHC SOC Clinics
Senior Patient Service Associate



Nur Khadijah Banu
Ward 51
Patient Service Associate



Sharon Isaac A/P Isaac
Santhana Das
Ward 52
Patient Service Associate

GEMS Award



Ho Xin En
Staff Nurse I
Ward 51 Ortho



Lee Hoon Hoon Adeline
Senior Executive
UOHC Ops & Admin

SAFETY AND HEALTH IMPROVEMENT PROGRAMME AWARD



Two teams from the department won a Safety and Health Improvement Programme (SHIP) Silver Award and a Consolation Prize at the NUS Safety and Health Convention

Day on 27 January 2011. The SHIP is aimed at empowering NUS staff with the motivation to bring about improvements in some aspects of their workplace safety and health through innovative projects.

NUS ASPHA Silver Award for 2010/2011

Our department was awarded the NUS ASPHA Silver award for 2010/2011 at the annual NUS Safety & Health Performance Award. The Office of Safety, Health & Environment takes this opportunity to recognize departments that have performed well in the implementation of safety and health at work. This award had been presented to our Head of Department, Prof Wong Hee Kit, at the NUS Excellence Day on 24th February 2011.



| CONTACT US | Orthopaedic Surgery Clinic (Kent Ridge Wing) | Clinic B (Main Building) | HRM Centre (Main Building) | University Spine Centre (Kent Ridge Wing) | Scoliosis Specialist Clinic (Health Promotion Board) |
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| Email | ortho_enquiries@nuhs.edu.sg | | hand_enquiries@nuhs.edu.sg | spine_enquiries@nuhs.edu.sg | |
| Operating Hours | Mondays to Fridays: 8.30am – 5.30pm Saturdays / Sundays / Public Holidays Closed | | | | |