

# Management of Distal Humeral Fractures

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## ABSTRACT

The management of intercondylar fractures of the humerus has always been difficult. Intraarticular comminution, peculiar shape of the trochlea, concerns regarding its width, maintenance of the length of the medial/lateral pillars, and the presence of the Ulna nerve all contribute their share in making these fractures challenging for the Surgeons. **Material and Method:** 36 patients of intercondylar fractures of the humerus formed the material for the study. There was a 3:1 male/female and right side preponderance. Average age of patients was 27.5 years (range 18 to 65 years). 85% of patients were operated within a week of their trauma. Under tourniquet, Chevron Olecranon osteotomy was used to expose the fracture site. The intercondylar element was fixed with a malleolar screw and one 2mm kirschner wire, the supracondylar pillars were fixed with 90 degree-90 degree reconstruction plates. Ulnar nerve was never transposed anteriorly. Olecranon osteotomy fixed by TBW. ROM exercises were started as soon as pain permitted. **Results:** Average operative time was 65 minutes. Average time of healing was 8.75 weeks. Average ROM at end of 3 months was 105 degree which increased to 110 degree by 6 months. Complications: Superficial infection 4 cases deep infection 1 case. Wound dehiscence 1 case, loosening of 'K' wire for fixation of Osteotomy 3 patients. There were no cases of nonunion at Osteotomy site. **Conclusion:** The 90 degree - 90 degree dual plate fixation is an excellent, fast and simple way to fix these fractures giving uniformly good results. Maintenance of trochlear width, length of both pillars with judicious bone grafting can easily be done.

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 FP 03

# Importance Of Lateral Malleolus In Bimalleolar Fractures

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## ABSTRACT

**Introduction:** There is a debate as to which component of bimalleolar fractures is important. There are proponents for both Schools. A study of literature reveals a lot of lacunae in our understanding of the problem. It was found pertinent to study the arthropometry of the lateral malleolus to address some of the problems with ankle fractures. **Material and Methods:** Twenty cadaveric fibula formed the material for this study. AP Ankle X-rays of twenty human volunteers were also obtained in 0 degree and 15 degree internal rotation. The length and width of the lateral malleolus from the top of the facet for the talus was measured. The lateral bend of the lateral malleolus as well the ankles subtended along its lateral surface were measured. The talocrural angle was also measured. **Observations:** The average lateral bend of the lateral malleolus was found to be 16.45 degrees. The average length of lateral malleolus was 27.35mm and average width 17.45mm (coronal plane) and 23.3mm (sagittal plane). The average angles along lateral surface were lateral bend (16.35degrees), downward bend(19.6 degrees) and medial bend (32.6 degrees). The average talocrural angle was 77.7degrees in 0 degree AP and 79.9degrees in 15 degree Internal rotation. **Conclusion:** These criteria would help in the assessment of reduction of lateral malleolar fractures in ankle injuries.

# The Osteocyte - Directing Bone Remodelling, Mineralisation And Phosphate-Calcium Homeostasis Behind The Scenes

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## ABSTRACT

Traditionally, the curriculum in medical schools does not emphasise osteocytes and they are usually relegated to being 'osteoblasts that got trapped in bone lying dormant'. Even higher surgical training does not put much emphasis on osteocytes or keep up with the latest publications on them. Thus, many clinicians are still not aware of the myriad roles that osteocytes play in maintaining bone in a normal environment or their involvement in many clinical diseases that affect bone. Osteocytes are the most abundant cell type to be found in bone but they are the least investigated due to two factors. Firstly, osteocytes were thought to be rather inert cells that contribute little to bone maintenance. This has been proven wrong in recent years. Secondly, and probably more importantly, is the technical difficulty of extracting osteocytes from their lacunae in bone or to study them in situ. However, in the last decade or two more and more evidence has accumulated to indicate that osteocytes are the key cells in regulating bone remodelling via mechanotransduction and also for the homeostasis of calcium and phosphate. The development of osteocyte-like cell lines and animal models with cell specific gene mutations, together with the evolution of new and better techniques for isolating and culturing osteocytes and characterising them, has helped in fuelling the sudden wealth of new knowledge on osteocyte biology. A major cell signalling protein for the regulation of bone remodelling is sclerostin. Mature osteocytes are the main source of sclerostin, which is found to reduce bone formation and negatively regulate osteoblast differentiation via the Wnt/ $\beta$ -catenin pathway. Our recent evidence suggests that sclerostin also promotes osteoclast formation by regulation of the receptor activator of nuclear factor kappa B (RANKL)-osteoprotegerin (OPG) axis. Sclerostin production is suppressed when bone is mechanically loaded. These findings point to the central role of osteocytes in bone remodelling. Fibroblast growth factor-23 (FGF23) is also expressed by mature osteocytes predominantly and seems to regulate phosphate and 1,25(OH) $_2$ vitD $_3$  levels. Phosphate homeostasis is known to be associated with DMP1, which regulates FGF23 production. FGF23, together with its co-receptor the Klotho protein, not only plays a role in matrix mineralisation but also decreases phosphate reabsorption and inhibits 25(OH)vitD $_3$  conversion to 1,25(OH) $_2$ vitD $_3$  in the kidneys, making bone another endocrine organ. Klotho gene deleted mice have a disturbed spatial distribution of osteocytes and synthesis of bone matrix proteins together with the prematurely-aged appearance of its bone cells. It is now known that klotho deficient mice die prematurely due to tissue calcification brought about by very high levels of phosphate and 1,25(OH) $_2$ vitD $_3$ . In conclusion, osteocytes are very dynamic cells that are the key regulators of not only bone health but also phosphate and calcium homeostasis.

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 FP 05

## Comparing Neck Shaft Angle Between Reconstruction Nail Fixation And Proximal Femur Locking Plate In Subtrochanteric Femur Fracture

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## ABSTRACT

**Background:** Anatomic reduction in subtrochanteric femur fractures is difficult to execute because of the complex biomechanical forces involved around the hip. One of the major problems surgeons may encounter is malalignment due to varus angulation after fixation. We review the quality of reduction between use of reconstruction nail and proximal femur locking plate by comparing the neck shaft angle. **Method:** This study involves patients with subtrochanteric femur fracture treated with reconstruction nail and proximal femur locking plate between January 2011 to March 2012 at the Hospital Sultanah Nur Zahirah in Terengganu. Retrospective evaluation of neck shaft angle in post operative pelvic radiograph was measured and compared with the contralateral site. **Results:** Fifteen patients were diagnosed as having subtrochanteric femur fracture; 8 of them underwent reconstruction nail fixation and 7 underwent proximal femur locking plate fixation. All malalignment detected were in varus angulation for both groups. The mean difference of neck shaft angle in patients treated with reconstruction nail is 9.63 degrees and 3.28 degrees with proximal femur locking plate. **Conclusion:** Our experience shows that in treating subtrochanteric femur fractures, proximal femoral locking plate has a better outcome in restoring the neck shaft angle as compared to reconstruction nail.

## Five-years Follow Up Comparison For Cervical Disc Fusion And Cervical Disc Arthroplasty

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### ABSTRACT

**Background:** A comparison was made between ACDF and Cervical Disc Arthroplasty (CDA) for Cervical Radiculopathy not responsive to non-operative treatment. **Method:** Thirty-five patients who underwent ACDF versus 35 patients who underwent CDA were reviewed after a minimum follow up period of 5 years. The operations, for cervical radiculopathy, were performed from 2004 to 2006. The patients were matched for age and sex. **Results:** Both groups had identical results. In the cervical fusion group, 1 patient had non-fusion and the other had adjacent disc degeneration after 4 years. In the disc arthroplasty group, 1 patient had anterior displacement of the prosthesis after 1 month and another had subsidence of the prosthesis after 3 years. **Conclusion:** The two groups had similar improvement in pain reduction, NDI, neurological symptoms and neck range of movement.

## Developing Innovative Orthopaedic Implants In Malaysia For Global Market : The Inside Story

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### ABSTRACT

For many years Malaysia and South East Asia has been the recipient of Orthopedic implants from the multinationals. The usage of Orthopedic trauma implants in Malaysia is about RM 46 million annually while the global market for orthopaedic implant is about USD 35 billion in 2008. There had been sporadic development of Malaysia innovation on orthopaedic implants in the past years. Unknown to many Malaysia had actually been the hub for many Multinational companies to manufacture orthopaedic implants for the global market. Recently there has been a gradual development of systematic support for local innovators either the local surgeons or researchers to develop world class orthopaedic implants. The support is developed for the whole ecosystem, from the Government policies including the Medical Device Act 2012, technical aspect, financial support, laboratory for relevant tests and clinical trials, manufacture and towards marketing domestically and globally.

# Clinically Relevant Imaging Of The Knee

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## ABSTRACT

Meniscal tears- high resolution scans with high T2 weighting allow for small amounts of fluid present in meniscal tears to be identified not only in the central portion but also the peripheral tears. Meniscal tears causing pain are usually identified by the high signal in the meniscus involving the superior or inferior surface but it may also involve the periphery as a horizontal tear. These high resolution scans are also allowing minor degrees of intrasubstance tear of the ACL to be identified which may be the cause of abnormal anterior drawer test. Menisco-capsular tears are often under-reported and can be identified if the normal anatomy is understood. These may explain the cause of joint line tenderness when the menisci appear normal. Nuclear medicine study for meniscal tears at UMMC has identified “hot spot” identifying intrasubstance tear and also menisco-capsular tears. The medial plica syndrome is often missed on reporting or ultrasound examination and the subtle sign is focal synovitis in the medial recess extending to beneath the medial facet of the patella. For superficial causes of pain – ultrasound with palpation may more accurately depict the cause of the pain and offer possible interventional management. Examples will be shown. Patella alignment problems may first be identified on MRI. Studies in UMMC have shown that clinical tests may not be accurate in 50% of cases as to the correct diagnosis. The role of MRI is encouraged in all patients pre-arthroscopy so that the orthopaedic surgeon can plan surgery in discussion with patients, estimate cost of the surgery and with various supplies going to be used in the surgery etc. Most importantly no untoward surprises will be discovered only while doing the procedure. NB: The 13th Asian Federation of Sports Medicine Congress is hosted by MASM and ISN September 25-28th 2013 in Kuala Lumpur. All those orthopaedic surgeons involved in Sports Medicine are encouraged to attend this congress and also submit papers online at [www.13afsm.com](http://www.13afsm.com)

SP 002

# Clinically Relevant Imaging Of The Shoulder

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## ABSTRACT

Ultrasound is now the first line of investigation for rotator cuff tears due to the high resolution of imaging. MRI is unable to detect small amounts of painful calcific tendinosis and also certain dynamic manoeuvres or bursal compression is needed to show small articular or bursal tears which are the cause of pain. Ultrasound is very useful for diagnosis of early frozen shoulder versus early impingement. Rotator cuff synovitis can be detected and treated via intra-articular injection into the rotator cuff interval including barbotage of any calcific deposits around the biceps tendon in the rotator cuff interval. Impingement test can also be tested by combining ultrasound with known physical tests and radiological test for impingement which may occur in non usual positions of abduction. Post injection anaesthesia for increase in range of motion is a useful dynamic test to see if the diagnosis is accurate and there are times when continued restriction after subacromial injection with no change led to a diagnosis of another cause of the restriction eg. AC joint inflammatory changes. Ultrasound is also currently being used to document changes in the tendon using quantitative analysis of decibel reflectivity of normal vs abnormal tendinosis and also response to therapy like prolotherapy which is injected directly into the focal areas of tendinosis. MRI continues to be the mainstay investigation for labral and gleno-humeral injury. There is a move away from MRI arthrography as nearly 90% of labral and bony bankart can be diagnosed without intra-articular gadolinium injections. Some orthopaedic surgeons are now investing in medium end ultrasound machines to assist with screening examinations in the consultation room and also for accurate placement of injectables. NB: One of the best local courses to learn screening musculoskeletal ultrasound and basic Musculoskeletal ultrasound intervention for Orthopaedic Surgeons is the International Penang Basic Musculoskeletal Ultrasound and Basic MRI anatomy course : [www.jsjn.info](http://www.jsjn.info).

# Imaging of Sports Injuries Of The Ankle And Foot

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## ABSTRACT

Ankle injuries comprises acute or repetitive trauma constitute 21% (1) and foot 15 % of sport related injuries. Prognosis for isolated and adequately treated ankle sprains are excellent. Therefore it is imperative that injuries are recognized so that proper and adequate treatment is given. Mostly diagnosis is apparent with thorough history, physical examination with a good understanding of anatomy and mechanism of injury assisted by plain radiographs. In some, presentation is nonspecific. In these and when the symptoms persist beyond the expected timeframe of recovery mostly around 6 weeks, imaging modalities are useful to determine the diagnosis. Residual instability, osteochondral defects, missed fractures and secondary osteoarthritis are the most common causes of persistent pain. Multitude of imaging investigations from plain X-ray, fluoroscopy, CT scan, ultrasound and MRI are available. Plain radiographs remains the initial evaluation of assessing diffuse ankle and foot pain. Ultrasound and MRI are used intercorrelative with each other in present practise. Ultrasound can be used as first line imaging modality in focal soft tissue injuries. It's advantage is dynamic examination in evaluation of soft tissue injuries. Its limitations are evaluation of bones, intraarticular pathology and global assesment. However cortical fractures sometimes can be detected via ultrasound. MRI is an excellent tool for global assessment of bone, joints and soft tissue for persistent pain following injury. Often MRI has the advantage of being sensitive for associated injuries such as talar osteochondral fractures. CT provides excellent bony detail and imaged usually for complex fractures. Illustrated is in this presentation are some of the common sports injuries and the strength and limitations of different imaging modalities in detecting these injuries. Few examples of sports injuries of the paediatrics age group particularly involving the growth plate and avulsion fracture of tendon insertion are illustrated.

SP 004

# Correlation Of Radiological And Surgical Findings In Orthopaedic Practice

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## ABSTRACT

Radiological investigations are an integral part of Orthopaedic Surgery. Most diagnosis are now made pre operatively to prevent surprises, but also definitive surgery and preparedness by the surgeon are better if the condition is known before hand. Unfortunately , there are still conditions which are missed , either by the radiological report (radiologist do not have a clinical input), inability of present day technology to detect certain pathology, and also surgeons not able to “read “ images by themselves, and inappropriate/ inadequate investigation. The most commonly missed injuries are sports injuries, but included are spinal, and degenerative conditions albeit a bit rare.

## Ankle Sprain : Is It Benign Lesion?

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### ABSTRACT

Injuries constituting the ankle ligaments have been on the rise due to increased participation in sports and leisure activities. Its frequency and severity are often underestimated. This bothersome condition frequently lacks proper assessment and leads to undertreatment and many at times overtreated. The time taken to return to work and sports is often inappropriate due to inadequate expertise among the primary treating physicians. Ankle sprain is a common scenario in the sports clinic. The success rate with proper conservative treatment is high, but a small proportion of these patients fail conservative treatment and return with significant morbidity of chronic instability. Several surgeries have been described and are well documented for yielding successful results but clinical problems such as functional and mechanical instability, persistent talar tilt, range of motion limitation and pain may persist.

Is ankle sprain really benign?

## Management Of Achilles Tendon Injury

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### ABSTRACT

Achilles tendon injury is a common cause of disability in adult sportsmen. The majority of cases are due to overuse injury often exacerbated or precipitated by specific and recognizable factors. The main reason is probably the increased popularity of recreational sports among middle-aged people. The 2 most frequently discussed pathophysiological theories involve chronic degeneration of the tendon and failure of the inhibitory mechanism of the musculotendinous unit. It has been postulated that a physically inactive lifestyle leads to a decrease in tendon vascularization, while maintenance of a continuous level of activity counteracts the structural changes within the musculotendinous unit induced by inactivity and aging. Comparable studies have been published with surgical versus nonsurgical treatment and postoperative cast immobilisation versus early functional treatment. Although conservative treatment is popular in 1970s, surgical treatment seems to have been the method of choice in the late 1980s and the 1990s in athletes and young people; and in cases of delayed ruptures. Conservative management of Achilles tendon injury may be unrewarding except in low demand and very cooperative patients. The role of surgery in management of Achilles tendon rupture is discussed in detail with particular reference to the indications and the surgical procedures available. There is also no single, uniformly accepted surgical technique. Although early ruptures have been treated successfully with simple end-to-end suture, many authors have combined simple tendon suture with augmentation and plastic procedures of various types. Comparison of open versus percutaneous surgical methods also will be discussed in details. The complications of conservative treatment include mostly reruptures and residual lengthening of the tendon, which may result in significant calf muscle weakness. The major complaint against surgical treatment has been the high rate of complications. Most are minor wound complications, which delay improvement but do not influence the final outcome. Major complications are rare, but often difficult to treat with minor procedures.

# Ankle Impingement Problems

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## **ABSTRACT**

Impingement occurs when two anatomical structures strike or force against each other. Ankle impingement can involve bony or soft tissue structures. Bony impingement develops when osteophytes form as a result of repetitive striking of two bony structures. Soft tissue impingement develops following inflammation and swelling of the synovium or capsule of the ankle joint. Bony and soft tissue impingement problems are an important cause of chronic pain for many patients especially those involved in sporting activities. The main impingement syndromes are anterolateral, anterior, anteromedial, and posterior impingement. These conditions arise from initial ankle injuries, which, in the subacute or chronic situation, lead to development of abnormal osseous and soft-tissue thickening within the ankle joint. This presentation will describe the various ankle impingement problems including their epidemiology, clinical presentation, diagnosis and management. The management of these problems range from non-surgical methods such as physiotherapy and orthotics to surgical methods including both invasive and minimally invasive surgery.