



# SICOT

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**Editorial by Andrew Quaile - SICOT Active Member & Associate Editor of 'International Orthopaedics' Journal**

## **Common mistakes by authors**

In the current academic environment clinicians and especially those undergoing training find that publishing articles in respected journals is increasingly important. It adds to the curriculum vitae leading to more success in job applications and assists career progression in each chosen field. This article hopes to assist the process of writing an article to the standard required for acceptance in International Orthopaedics. The comments in it are also likely to help in submitting an article to many other journals.

### **Language**

The first and perhaps most obvious point is that International Orthopaedics is written in English. English is a language derived from many other languages such as Anglo-Saxon, Old Norse, Norman French and Latin. I make the point that this is English and not American and therefore there are differences of spelling. It is often said that we are separated by a common language! Examples would be the spelling of centre in English as opposed to center. Further examples would be tumour, favour, favourable, travelling, labelling, remodelling, fibres, manoeuvre, centimetre, millimetre, aetiology, oedema, foetal, behaviour etc.. These are very difficult to write in Word as the program tries desperately to correct the spelling into a language other than English!!

English spelling which is becoming Americanised is the use of *ise* instead of *ize* in the same word, Americanized. We prefer the English version.

There are many phrases which are poor English rather than incorrect. We are aiming for articles, which make sense and therefore our preference would be to avoid some of the following:

*This present paper* – should be **this paper** or **our paper** if attempting to differentiate between a number of references. The paper isn't present anymore; it is past!

*As well as* – is used too often when a simple **and** will suffice most of the time.

*Operated on* – should be **operated upon** or indeed **treated** as we are talking about surgery anyway.

*Effectiveness* – **efficacy** is a better word.

*Surgeries* – **operations** or **surgical procedures** is much better English.

*Control* – is often used out of context when it is referring to follow-up.

Negative lists are frequently a problem; we did not find any fruit and vegetables should read, we did not find any fruit **or** vegetables.

*Until now* – change to **date**

*Like* – meaning **such as** can usually become **including**.

*With the use of* – can be **utilising** or more simply **use**.

The use of past tense is often incorrect for example, *previous studies demonstrated* should be **previous studies have demonstrated**.

*With the purpose of providing* should be **to provide**.

These are just some examples and the answer should be to have a native English speaker check the draft before submission, as services such as Google Translate or Word spell checker can be unreliable.

### **Rules of Writing**

There are some rules which most journals will follow and the rules for International Orthopaedics are no different. They include some of the following.

**The title** should be short and snappy to encourage interest. It should have no numbers, these should be written out in letters. There should be no acronyms or abbreviations as these should either be written longhand or not be included at all.

**Numbers** in the text up to and including ten should be written longhand, including writing out numbers in brackets. In other words (ten).

**The text** should be written clearly and fully explain the concept to be presented. It is often better to use simple language than overly complicated terminology. It is important that the same style is followed throughout. It is not unusual to have intraoperative spelt as one word in one sentence and intra-operative with a hyphen in another. Prefixes such as this may or may not be hyphenated but should be consistent throughout a paper. It is more common to use a hyphen with a prefix in English rather than in American English.

**Hyphens** are misunderstood and there is a dreadful tendency to invent new words by linking two individual words together. Hyphens are used to link words and parts of words. They are not as common today as they used to be, but there are three main cases where you should use them according to the Oxford English Dictionary:

In **compound words** hyphens are used to show that the component words have a combined meaning (e.g. *pick-me-up*, *mother-in-law*, *good-hearted*).

Hyphens can be used to join a **prefix** to another word, especially if the prefix ends in a vowel and the other word also begins with one (e.g. *pre-eminent* or *co-own*). This use is less common than it used to be, though, and one-word forms are becoming more usual (e.g. *prearrange* or *cooperate*).

To show **word breaks** hyphens can also be used to divide words that are not usually hyphenated. They show where a word is to be divided at the end of a line of writing. Always try to split the word in a sensible place, so that the first part does not mislead the reader; for example, *hel-met* not *he-lmet*; *dis-abled* not *dise-abled*.

## Keywords

These must be provided and are key for search engines for your paper. There should be four to six of these.

## Units and Quantities

Recognised abbreviations such as ml, %, and so on, are acceptable. When it comes to time there is often lack of consistency. Papers will discuss years, months, weeks, days and then turn to hrs. min. and s. It is better to have them all written out for better understanding.

Your paper when submitted will first be reviewed for its educational content. At this stage it will either be accepted, accepted but for clarification or modification by the author, or rejected. Once accepted there will be a check of the basic language of the paper and a check of whether the guidelines to authors have been followed. The paper will then be sent for a more rigorous check including for the use of English. At that stage more modifications to the paper may be made to bring it to a standard suitable for the journal. It is therefore recommended that your paper is corrected, where necessary by a native English speaker to ensure smooth progress through the acceptance process.

Springer publishes instructions to authors via [www.springer.com/264](http://www.springer.com/264).

I will also be lecturing in Rio de Janeiro on this topic at the SICOT meeting at the 'how to write a paper' symposium.

## SICOT Events

**XXVI SICOT Triennial World Congress combined with the 46th SBOT Annual Meeting  
Rio de Janeiro TWC 2014  
19-22 November 2014 \* Rio de Janeiro, Brazil**



### ◦ **Registration**

Congress registration is open [here](#) for all participants not residing in Brazil. Participants residing in Brazil should register [here](#).

### ◦ **Scientific Programme**

The **Programme at a glance** is available to download [here](#).

SICOT and SBOT are pleased to announce that **Andrew J. Carr**, Nuffield Professor of Orthopaedic Surgery and Head of the Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences at the University of Oxford, and **John P. Dormans**, Chief of Orthopaedic Surgery at the Children's Hospital of Philadelphia (CHOP), will be delivering plenary lectures at the Rio meeting. [Read more...](#)

With the experience of three successful events we are pleased to announce the **4th SICOT Educational Day** in Rio de Janeiro to be held on 19 November 2014. The theme for this year is 'Shoulder & Elbow'. We have invited expert Faculty from over 10 countries to lecture on the course. [Read more...](#)

### ◦ **Social Programme**

Don't miss the Rio Scenarium Night on Friday, 21 November! Tickets are limited, so please book early. Register [here](#).

### ◦ **Accommodation & Tours**

Exclusive hotel and tour offers in Rio de Janeiro can be found [here](#).

### ◦ **Exhibition & Sponsorship**

Don't miss this unique opportunity to promote your products and services to leading international orthopaedic surgeons, traumatologists and specialists in related fields. [Read more...](#)

International Meetings attended by SICOT

- **10th German Congress for Orthopaedics and Trauma Surgery**



Don't miss the 10th German Congress for Orthopaedics and Trauma Surgery (DKOU), one of the largest congresses for Orthopaedics and Trauma worldwide, attracting over 11,000 congress delegates! The Congress will take place on 28-31 October 2014 in Berlin, Germany, and highlights include lectures by Dr Henrique Jones (Portugal) and Prof Francesco Benazzo (Italy). Further information about all sessions in

English can be found [here](#) and any questions you may have will be answered if you email [dkou@intercongress.de](mailto:dkou@intercongress.de). The organising scientific societies welcome you to Berlin in October!





## Assiut Hip Arthroscopy Course: first in the Middle East

**Hatem Said**

*Editorial Secretary - Assiut, Egypt*

The Assiut Arthroscopy Sports Injuries Unit (AASIU) organised in May the first Hip Arthroscopy Course in the region. Until now, hip arthroscopy has not been as popular as shoulder and knee arthroscopy in Egypt and the region. The course was aimed to promote and create more interest in this relatively new field in Egypt.

The Unit is part of the Orthopaedic Department in Assiut University, which is a SICOT Education Centre.

SICOT sponsored the meeting to allow Dr Marc Tey Pons from Spain to visit as an international speaker. The course was strongly supported by Storz, which provided the workshop hip model stations, the hip instrument sets and the Telepacks.



*Models for workshops*



*FAI bone models*

The course was in the form of four live surgeries (for Cam, Pincer, labral repair and arthroscopic ITB release), in addition to a workshop on arthroscopic hip models and FAI bone models. There were also interactive lectures and case discussions.



*Participants practicing in the workshop room*

The FAI bone models were a modification from the idea by Dr Oliver Pena, where cast was used to create the FAI. These were inserted into plastic covers which allowed the arthroscopic triangulation feeling, for burring and labral repair with anchors.



*Knot tying station*

The course ran for two days with 18 participants and 15 observers from all over Egypt, most of whom were advanced knee/shoulder arthroscopists or hip arthroplasty surgeons with an interest in hip arthroscopy. The Faculty members were Drs Marc Tey, Hatem Said, Ahmed Azeem, Mahmoud Abdel Kerim and Hazem Farouk.



*Live surgery*

The participants reiterated the great educational value of the course including live surgery and workshop models.

In 2014, the Unit has run a workshop and hands-on arthroscopy courses on basic and advanced knee, shoulder and hip arthroscopy.

## SICOT News

- **OrthoEvidence - your clinical resource for evidence based orthopaedics**

At OrthoEvidence we take pride in being the global online source for timely, high quality, pre-appraised evidence based orthopaedic summaries. Our database of over 2,400 Advanced Clinical Evidence (ACE) Reports bring you the highest quality research from over 60 top orthopaedic journals. Our ACE Reports are the easiest way to consume research articles, which are designed to be 5 times faster than reading the full text. Our iOS app is coming in 2014 to put our content to the palm of your hand.

Open your OrthoEvidence account and get the best evidence delivered to your inbox – simply go to the [SICOT Members' Area](#) to join via SICOT! We look forward to providing you the best evidence that matters.



# SICOT Global Network for Electronic Learning - SIGNAL

## Article of the Month

August 2014

### **Neglected ununited tibial eminence fractures in the skeletally immature: arthroscopic management**

*Ashraf Abdelkafy & Hatem Galal Said*

**Purpose** The purpose of this study was to prospectively evaluate outcomes of arthroscopic management of neglected ununited tibial eminence fractures in skeletally immature patients.

**Methods** The study was conducted and cases performed by two surgeons from two centres as a prospective case series of 13 patients with neglected ununited tibial eminence fractures: nine were girls and four were boys; ten were right knees and three were left. The average age at surgery was ten [standard deviation (SD) 2.6] years. Average follow-up was 10.8 (SD 6.8) months. Primary outcome measures used for evaluation were the Objective International Knee Documentation Committee Score (IKDC), subjective IKDC and modified Lysholm knee score. Secondary outcome measures were visual analogue scales (VAS) for pain and patient satisfaction.

**Results** Twelve patients had grade A objective IKDC score and one patient had grade B. Average subjective IKDC score was 80.5 (SD 16.7). Average modified Lysholm score was 91.2 (SD 8.9). Average VAS for operation satisfaction was 9.6 (SD 0.5) and for pain was 0.4 (SD 0.5). All patients showed radiological union and anatomical reduction at an average of 12.4 weeks postoperatively. At follow-up, all 13 patients showed complete range of motion (ROM). Eleven patients had negative Lachman, anterior drawer and pivot-shift tests, while two patients had grade 1 positive Lachman and negative anterior drawer and pivot-shift tests. No patient had complained of instability.

**Conclusion** Neglected ununited tibial eminence fractures in skeletally immature patients achieve good functional outcome results when treated with arthroscopic reduction and internal fixation using sutures.

*International Orthopaedics (SICOT)*  
DOI: 10.1007/s00264-014-2462-3

## Case of the Month

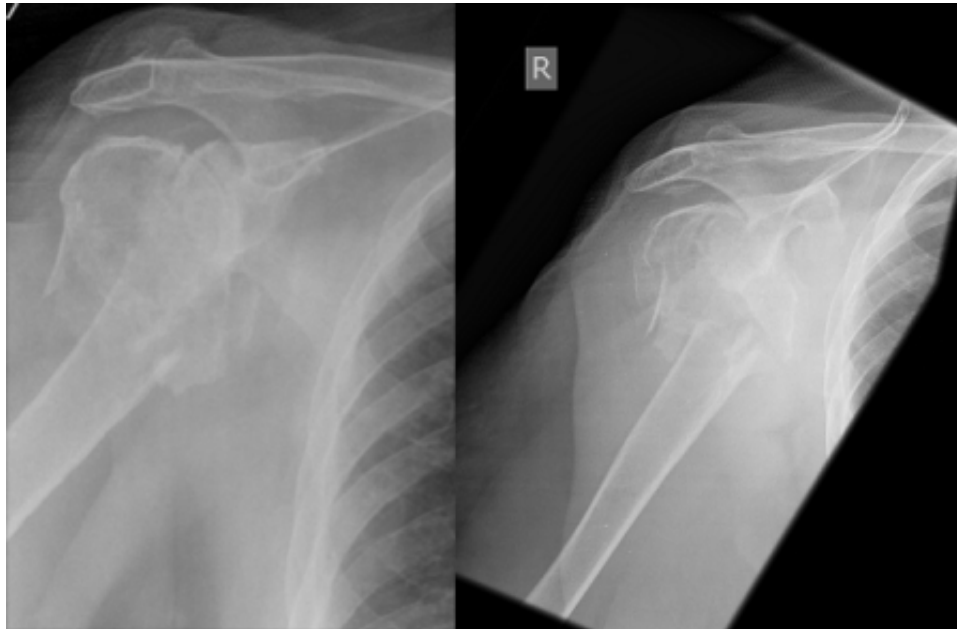
August 2014

### Postoperative Complication - Proximal Humeral Fracture

**Authors:** Solayar Gandhi, Shannon Fintan  
University College Hospital Galway, Galway, Republic of Ireland

#### History

An 81-year-old lady was admitted after a fall with injury to her right shoulder. She recently had a full course of chemotherapy for transitional cell bladder carcinoma. A plain radiograph of the shoulder was performed.



Q. What are your thoughts on the findings of the above radiograph?

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[Click here to read more...](#)

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The radiograph showed a comminuted and displaced fracture of the proximal humerus. This fracture can be classified as Type 4 as per Neer's Classification which was confirmed by CT.

Q. What is your treatment plan?

- i. Conservative treatment with broad arm sling
- ii. ORIF with locked plates
- iii. Shoulder hemiarthroplasty

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**[Click here to read more...](#)**

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A shoulder hemiarthroplasty was scheduled and performed under general anaesthesia. Immediately prior to the procedure, she received an interscalene and stellate ganglion brachial plexus block with 15ml of 0.75% ropivacaine. She then received general anaesthesia with an initial laryngeal mask airway, which was converted to a size 7.5mm endotracheal tube due to inadequate airway protection deemed by the consultant anaesthetist. The patient was placed in a standard shoulder beach chair position with the neck in neutral position maintained with a head positioner and straps following standard procedures. Surgery lasted 100 minutes and anaesthesia was maintained during that time with sevoflurane in oxygen/air. Postoperative observation in the recovery room was uneventful and the patient was transferred to the ward.

Postoperative radiograph was satisfactory.



2 days postoperatively, the patient complained of slurred speech and difficulty swallowing. Examination revealed deviation of the tongue to the right on protrusion and right-sided vocal cord paralysis. She did not exhibit signs of Horner's syndrome. The rest of head to toe neurological exam was non-contributory.

Q. What is your next step?

- i. CT head and neck/MRI brain
- ii. MR Brachial plexus
- iii. Carotid Doppler ultrasound/MR Angiography
- iv. Combination of the above

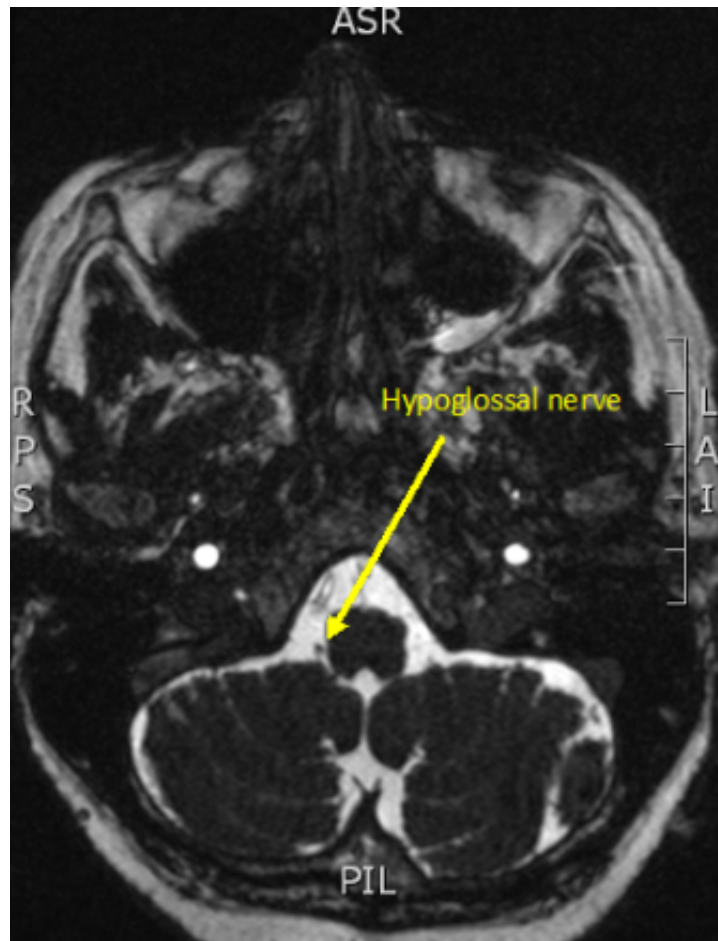
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The patient seems to have developed a neurological complication. It is important to rule out a cerebrovascular incident. Tongue deviation is a cardinal sign of hypoglossal nerve palsy (cranial nerve XII). Dysphagia in the setting of neurological insult directs the attention to the vagus nerve (cranial nerve X). Vocal cord paralysis would impart the possibility of recurrent laryngeal nerve palsy. Examining for Horner's syndrome (drooping eyelids – ptosis, pupillary constriction – miosis, decreased sweating – anhidrosis) is important to rule out pre-ganglionic brachial plexus palsy.

MRI of the brain was performed.



Magnetic resonance imaging of the brain, brainstem and neck revealed no significant abnormalities along the course of the hypoglossal nerve or soft tissue swellings. Similarly, carotid ultrasonography and magnetic resonance angiography revealed no signs of occlusive disease to suggest ischaemic cerebrovascular insult. Neurology follow-up one and four weeks postoperatively showed gradual resolution of symptoms, however mild tongue deviation continued to persist up to last follow-up at 6 months.

Q. What is your diagnosis?

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[Click here to read more...](#)

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### Diagnosis: **Tapia's Syndrome**

Antonio Garcia Tapia first described Tapia's syndrome in 1904 in an occupational incident where a bullfighter was gored in the side of the neck. The patient developed ipsilateral vocal cord paralysis and tongue deviation which was prescribed to direct trauma to cranial nerves X and XII (1).

Multiple aetiologies have been reported as causes in this phenomenon with the majority related to orotracheal intubation. Other causes include ENT, maxillofacial and shoulder surgery which may result in excessive manipulation of the neck and resultant traction on the cranial nerves/brachial plexus. There is also a theoretical risk following regional blocks to the brachial plexus (2).

Diagnosis of this syndrome is mainly clinical and supported by negative imaging of the brain (to exclude jugular foramen syndromes, internal or external carotid artery dissection and to identify courses of CN X and XII). Some authors have advocated the use of video-fluoroscopic swallowing studies to confirm the diagnosis. Electromyography can also be used to confirm the diagnosis and to ascertain prognosis (3).

Treatment of this condition is largely supportive. In the acute setting, one could consider a short course of steroids and some authors advocate vitamin supplementation (B1, B6 and B12) for 3 months. Early speech & language therapy involvement is key with consideration towards naso-gastric feeding/percutaneous gastrostomy for those with severe dysphagia. In extreme cases, tracheostomies are required for airway management (4).

The prognosis remains guarded with 30% of patients having complete recovery, 40% with partial recovery and the rest with no recovery. Prevention therefore is paramount. This involves awareness of the potential for cranial nerve palsy when intubating the patient and to avoid excessive manipulation/traction when performing shoulder or any other procedures in proximity to the neck. Care must be taken during patient positioning, prevent pressure over the pharynx and to avoid over-insufflation of the endotracheal tube (5).

### References

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### Hiranandani Orthopaedic Medical Education (HOME) Fellowship Report

#### **Prajyot Jagtap**

*SICOT Associate Member - Mumbai, India*

Having worked at Hiranandani Hospital as a registrar earlier, I was well versed with the Hospital and working pattern of Dr Vijay Shetty. However, over the years the department has grown and now there are a number of young doctors working in Hiranandani Orthopaedic Medical Education (HOME), academic unit of the Department of Orthopaedics at the Dr LH Hiranandani Hospital, Powai, Mumbai, India. I was over the moon when I was selected at the interview to join this Clinical Research Fellowship.

#### **Clinical work**

On 8 February 2013, I began my one-year journey as a clinical research fellow at HOME under the guidance of Dr Vijay Shetty. He briefed me about my duties and responsibilities. He taught me the basics of research and also detailed the process from writing a manuscript to the submission of a paper. He also handed over a well organised structure of the Fellowship for the entire year. I was given several projects, of which two are now published in international journals [1,2] and three are in the final stage of submission.

Being a clinical research fellow, my responsibility was mainly in the operation theatre. Besides, I was also responsible for the supervision of registrars and resident medical officers. In the theatres, it was my responsibility to prepare the patients for surgery and make sure that the "housekeeping" was perfect. Dr Shetty would always discuss the "worst-case scenario" before any major surgery and this would make our team more comfortable working in such an atmosphere. This has given me a huge amount of confidence in handling the entire project of surgery. A major bulk of the operations included primary and revision hip and knee replacement surgeries and arthroscopic surgeries of the hip and knee. Trauma surgeries were being performed regularly as well, although they were not as common as hip and knee replacement surgeries.

#### **Teaching, live surgeries and workshops**

Apart from clinical work, I was engaged in teaching and supervising the resident doctors and postgraduate students. Dr Shetty used to be engaged in doing live surgeries for various local and national conferences. Accompanying him nationally and helping him in live surgeries was great fun. I would do sawbone workshops for conference delegates. This opportunity used to come by default as I was part of Dr Shetty's team. We would travel together and this would give me plenty of opportunities to discuss out-of-work issues with Dr Shetty.



*During a sawbone workshop with Dr Vijay Shetty at KIMS, Bangalore*



*Getting ready for the live demonstration of complex primary knee replacement surgery at Pune*

### **Organising conferences**

Being a part of SICOT Young India, I was given the responsibility to be in charge of a lecture hall during the 34th SICOT Orthopaedic World Congress in Hyderabad, India, in October 2013. This opportunity gave me a platform to interact with various renowned faculty members from across the world. Dr Shetty also gave me another responsibility as a scientific committee member for the second International Biologic Orthopaedic Meet (IBOM) held in May 2014 in Mumbai.

### **Community lectures**

This Fellowship gave me a chance to be part of community lectures. The aims of these lectures were to educate the general population and raise awareness of the consequences of osteoarthritis. This activity was useful for me and eventually I learnt to face such large numbers of people (who are not doctors), and discuss their thoughts about arthritis and to answer their non-medical queries.



*During one of the community lectures*

### **Special event during my Fellowship**

The Ministry of Health of the Republic of Seychelles invited Dr Vijay Shetty and the team to conduct a special knee surgery clinic at Victoria Hospital, Mahe, Seychelles, as a charity event in November 2013. I had the opportunity to be part of the team and we performed 23 total knee replacement surgeries in three days.





*The O.T. team at Victoria Hospital*



*Dr Shetty & me after the surgery*

23 TKRs in three days was, for me, an excellent exposure. Although it was tiring to do non-stop surgeries, it was great fun. The theatre staff was very enthusiastic. At the end of the trip, we could take a day off and enjoy ourselves at the beach. We managed a beachside party, yacht ride to another island and some recreational snorkelling too!



*Beachside fun at an island, yacht ride and snorkelling*

### **Finally...**

To a large extent, this Fellowship helped me to improve my overall outlook towards clinical practice in particular and life in general. I sincerely thank my guide, Dr Vijay Shetty, who is a true guide indeed. I strongly recommend this Fellowship to young orthopaedic surgeons willing to make their career in research and orthopaedic practice.

Recently, Dr Vijay Shetty presented me with the Certificate of the Clinical Research Fellowship in advanced hip and knee surgery at the HOME office.

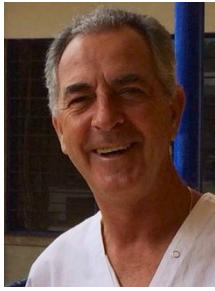


*Dr Vijay Shetty presenting the Fellowship Certificate to me*

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## FIMAC in Burundi

**Francesco Falez**

*SICOT National Representative of Italy – Rome, Italy*

Almost seven years ago I was invited by a fellow orthopaedic surgeon, Vincenzo Monti, to spend some time in Burundi, a small Central African country, for some humanitarian work he started after the ethnic-based civil war which took place in that country for so many years.

Together with a Burundian nun, he reactivated the Bubanza Hospital, which was destroyed by the revolutionaries during the war, with a non-profit organisation, the International Foundation of Doctors for Central Africa (FIMAC – Fondazione Internazionale Medici per l'Africa Centrale).

Accepting his invitation, I flew to Bujumbura, the capital city, and found myself in Burundi, a country that changes all your approaches to the health system and the management which you are used to. Working there is challenging due to the totally different needs of the patients and the limited resources you can count on, but it gives you the opportunity to rediscover certain aspects that you may have forgotten when you work in more business-oriented institutions.



*Dr Falez with staff members at Bubanza Hospital*

I found myself in the middle of a multitude of patients begging with absolute dignity for some relief from their suffering. At the end of the treatment the smile on their faces expressed all their gratitude and made me realise that I represented for these patients their only hope.

Despite the language barrier I had to develop a front line surgery far from my usual decisional patterns, the first goal of treatment being to have the patient resume work activities; better a well-performed amputation than a poorly managed external fixation and better well-positioned K-wires than an inadequate plate for stabilising a fracture. With no dedicated devices, orthopaedic surgeons need to adapt to every single situation and sometimes to be reinvented or taken from his or her origins.

Since my very first experience there I have been bewitched. Once I was back home, I started to collaborate with FIMAC. I was involved in not only its organisation and fundraising with personal donations, but more importantly also, whilst President of the Italian Orthopaedic Association, enrolling surgeons from different parts of the country willing to share with us their skills and knowledge, and trying to involve as many orthopaedic friends as possible in order to create a rotation and ensure a presence on site no less than every other month.

At the moment FIMAC can count on the support of many orthopaedic surgeons around Italy and will accept any others who would like to share their experience for the good of this country.

Traumatology, congenital disorders such as clubfoot, haematogenous osteomyelitis, acquired varus deformity (pseudo Blount) are the most typical pathologies to treat in a period of two and a half weeks spent in Bubanza, a small village 45 km from Bujumbura. Until now we have performed more than 2,000 procedures with an average

of 30-40 operations during each two-week time frame.

FIMAC is also seeking bilateral training programmes whereby local doctors visit surgeons in closer countries (Tanzania, Kenya) to improve their experience or assist surgeons visiting Bubanza Hospital.

For more information about FIMAC, please visit [www.fimaconlus.org](http://www.fimaconlus.org).

## History of Orthopaedics

### History and evolution of intramedullary nailing

**Ahmed F. Seifeldin & Ahmed Khedr**  
*SICOT Associate Members - Cairo, Egypt*

From the use of intramedullary wooden pegs by Aztecs (1) to the use of ASLS, intramedullary nailing has passed through several stages of development. There have been periods of great enthusiasm and days when the operation was described as a "daring operation" according to Time magazine (2).

In this article we will go through the development of intramedullary nails and highlight the important turning points in its history.

In the 16th century, the anthropologist Bernardino de Sahagun and other *conquistadors* in America reported on the treatment of delayed union of long bone fractures by Aztec healers with the use of intramedullary wooden rods (1).

During the 19th century and early 1900s most of the work was directed towards nonunions and not fresh fractures. Ivory pegs which reabsorb in the human bodies were used (3,4). In the 1890s, Gluck of Germany presented an intramedullary locking ivory device (5). A similar principle was reported, nearly at the same time, by the Norwegian Nicolaysen for proximal femoral fractures (6). In 1912, Ernest Hey Groves of the United Kingdom was the first to use metallic rods as intramedullary fixation devices. Following the manipulation of open femoral fractures during World War I, he described intramedullary nailing as an easy technique to allow for fixation through very small incisions without additional damage of the periosteum (7). However, due to high infection rates, Groves was nicknamed "septic Ernie" and his method didn't propagate. Later in 1917, Høglund in the United States reported on the use of autologous cortical bone graft for intramedullary splinting (8). In the 1920s, Smith-Petersen introduced a nail to fix subcapital femoral fractures (9). Later, the Rush brothers from Rochester, Minnesota, described the use of metallic pins placed in the medullary canal to treat fractures of the proximal ulna and proximal femur (10). Meanwhile, Gerhard Küntscher in Hamburg developed intramedullary nailing with the use of a metallic nail, starting the "Küntscher era".



*Fig. 1 - Diagram showing a rush nail*

Born in Germany in 1900, Küntscher's earliest interest in intramedullary fixation was influenced by his work with the Smith-Petersen. He conducted several cadaveric and animal studies during development of his "marrow nail" where he designed the V-shaped stainless steel nail that was inserted with an antegrade method. By 1947, he had performed 105 cases using the V-shaped nail with the help of Finnish surgeons as he was sent to the northern Finnish front because his work was not well appreciated in Germany at that time. By the late 1940s, Küntscher modified the design of the nail to become cloverleaf (11,12).



*Fig. 2 - Diagram showing Küntscher femoral nail with a cloverleaf cross-section*

The use of the Küntscher nail was first described in the United States in a 1945 Time magazine article entitled "Amazing Thighbone". It described the treatment of an American prisoner of war by German doctors. The American doctors called the rod technique "a daring operation" and wondered how their German colleagues inserted it without dangerously cutting down blood supply and without introducing infection (2,12). In the 1950s, Fischer in Germany started to use intramedullary reamers to increase the contact area between the nail and host bone, to improve stability of the fracture (13). However, it took another decade with Küntscher's introduction of flexible reamers for the concept to take hold. Later on the concept of using interlocking screws to increase stability emerged in 1953 by Modny and Bambara. They presented the multi-hole locking intramedullary nail at a 90-

degree angle (14). Also in 1953, Herzog modified the straight Küntscher nail by adding a proximal angle to allow the insertion of the nail above the tibial tubercle to avoid injury to the articular surface (15).

Although intramedullary nailing "slowed down" in the 1960s due to increased enthusiasm for compression plating, this period witnessed the birth of cephalomedullary nails (16). In 1967, Zickel used a proximally locked nail for the fixation of subtrochanteric femoral fractures.

The Zickel nail had a separate hole for a separate nail that could be placed through the lateral cortex of the proximal femur into the neck and head (17).

In the 1970s, the complications associated with compression plating renewed the interest in intramedullary nailing, especially with the development of image intensification techniques which allowed many surgeons to adopt closed nailing. A wide variety of intramedullary nails were used (AO and Grosse-Kempf). The concept of using unreamed nails for open fractures was introduced (16).

In the 1990s and early 21st century, the use of intramedullary nails expanded to include proximal and distal fractures and some intraarticular fractures. The gamma nail was designed to fix subtrochanteric fractures together with the retrograde supracondylar nail GSH (Green-Seligson-Henry). New titanium nails were introduced. Slotted cloverleaf designs were being replaced by non-slotted designs to provide greater torsional rigidity. Recon nails, expert tibial nails and ASLS (angular stable locking screws) were developed (16).

Intramedullary nailing has passed through several stages in its development. Although the work of Küntscher was met by scepticism early on, intramedullary nails are by far the standard treatment of diaphyseal fractures and their use in other types of fractures is expanding.

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## Women in Orthopaedics



### The challenges of a female trainee orthopod

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The residency training in Orthopaedic Surgery in Nigeria is divided into two parts, with three different examinations organised by two postgraduate examination bodies: the National Postgraduate Medical College of Nigeria and the West African College of Surgeons. The primary examination qualifies you for entry into the residency programme. The first part of the training lasts a minimum of 30 months with rotations through different surgical specialties leading to the Part 1 examination before one starts the orthopaedic training properly. This second part ends with the Fellowship after one has satisfied the panel of examiners in the part 2 examination.

Residency training in Orthopaedic Surgery is a male-dominated field world over, because of the perception among many that the field requires much energy which the female folks may not possess. Female enrolment in this field has therefore always lagged behind that of females in more 'female-friendly specialties' like Paediatrics, Anaesthesia, Public Health, and so on. Many of the males do not relate nicely with their female colleagues whom they often regard as being too daring. This attitude and others like it make life a bit difficult for the female orthopaedic trainee. And often, she may have to combine this stress with the domestic stress of running a home.

Being the only female during my time of training, and being interested in 'extracurricular' activities like medical politics, made life not so easy. Many of my male colleagues were antagonistic. Some thought I was being overly ambitious, not being satisfied with the more 'female-friendly' specialties of practice. For others, the antagonism might have stemmed from some bit of intimidation, based on a biased mindset that I wanted to prove that I could do it. Meanwhile, I was only being myself.

The home front was not always easy, but I learnt to adapt. I had to teach my children to read and to work and play on their computers. We learnt to work together, sitting on the same table while I managed to study. Of course, I often got distracted by the bickering and childhood rivalries. I also had to go to bed at the same time as them, and try to get up in the middle of the night to continue my work. Sometimes, I was not so lucky: I slept through the night. But anyway, it was a good compromise to attend to all things.

The most important aspect was getting my husband's support during the training. Initially, this was not easy as he, being non-medical, often thought I had more allegiance to the profession and to my consultants than to him, the marriage and the children. It took months and years of submissive persistence to convince him otherwise. I am grateful for the advice of a senior female practitioner, though she was not an orthopaedic surgeon herself. She said, "The only support you need is that of your husband. We live in a man's world and your colleagues may try to pull you down. If you have the home support, you will fly, baby".

How right she was. The moment I cultivated my husband's support, how much I soared.

Today, I have qualified as a female orthopaedic surgeon in Nigeria. I have also passed the SICOT Diploma Examination and I have completed some international trainings while hoping to take on some others. I enjoy so much peace and satisfaction.

In the same words, I will also encourage the females to cultivate the one best support: that of the most important person in your life, whether you are married or in a relationship. With that alone, you will excel. Without it, you will be distracted. You have to be focused. Have a vision of the kind of practice you wish to have and consciously work towards it despite any distractions. Refuse to be intimidated by your male colleagues. Be friends with those who would be your friends, and lose no sleep over those who want to push you down. Orthopaedic Surgery may require much stress, but that is the inner strength much more than the physical.

Best wishes to all my orthopaedic sisters worldwide.



## The deformity index as a predictor of final radiological outcome in Perthes' disease

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### Abstract

#### **Introduction:**

*The long-term outcome in Perthes' disease is related to the deformity of the femoral head and its congruency with the acetabulum. There is no satisfactory system, which allows assessment of outcome before skeletal maturity. The deformity index is a new radiological measurement of the degree of deformity of the femoral head in unilateral Perthes' disease. Its values represent a continuous outcome measure of deformity incorporating changes in femoral epiphyseal height and width compared with the unaffected side.*

#### **Methods:**

*The sphericity of the femoral head in 30 radiographs (ten normal and 20 from patients with Perthes' disease) were rated blindly as normal, mild, moderate or severe by three observers. Further blinded measurements of the deformity index were made on two further occasions with intervals of one month. We also reviewed retrospectively 96 radiographs of children with Perthes' disease, who were part of a multicentre trial, which followed them to skeletal maturity. We found that the deformity index at two years correlated well with the Stulberg grading at skeletal maturity. A deformity index value above 0.3 was associated with the development of an aspherical femoral head. Using a deformity index value of 0.3 to divide groups for risk gives a sensitivity of 80% and specificity of 81% for predicting a Stulberg grade of III or IV.*

#### **Results:**

*There was good agreement between the deformity index score and the subjective grading of deformity. Intra and interobserver agreement for the deformity index was high. The intraobserver intraclass correlation coefficient for each observer was 0.98, 0.99 and 0.97, respectively, while the interobserver intraclass correlation coefficient was 0.98 for the first and 0.97 for the second set of calculations.*

#### **Conclusions:**

*Deformity index at two years is a valid and reliable radiological outcome measure in unilateral Perthes' disease.*

### Comment by Shalin Maheshwari

The ultimate goal when managing a child with Perthes' disease is to maximize congruity of femoral head and acetabulum. The premise is that by limiting the degree of deformity of the femoral head, the likelihood of premature osteoarthritis and leg length discrepancy is reduced.

Deformity Index (DI) as defined in this paper is the maximal orthogonal differences in height and width between the affected and normal epiphyses summed and divided by the width of the normal growth plate.

Various radiographic classification systems have been developed to assess femoral head deformity. These include the Catterall, Salter-Thompson, lateral pillar of Herring in fragmentation stage and Stulberg's classification as an outcome measure at skeletal maturity. Numerous studies exist demonstrating inter and intra-observer reliability of these systems, however it is controversial as to which of these has the best prediction potential. Nelson et al, in their paper, cite various authors who have shown that Herring's method is the best predictor of outcome and the most reliable. Clearly the reliability of the different systems depends not only on factors intrinsic to the systems, but also on observer factors such as experience and interpretation of, and familiarity with, a given classification. So, is there room for yet another classification system? The answer to this is probably: Yes, as long as it fulfills the following requirement equal (or improved) prediction of long-term outcome with improved inter and intra-observer reliability when compared to existing classifications.

Deformity Index was designed as a grading system in the healing phase, which could reliably predict radiological outcome, thus giving a continuous outcome measure of deformity of femoral head. Newer treatment options for Perthes' disease are emerging, including pharmacological treatment, acetabular augmentation and distraction techniques. The authors have chosen a time period of two years after presentation at which to assess the DI and predict the final Stulberg score, this is roughly the time that remodelling begins. Nelson et al have suggested that an objective measurement of deformity of the femoral head by the deformity index at that time predicts the outcome at skeletal maturity. This contrasts with the lateral pillar classification which, although an early marker of prognosis has not been shown to be altered by intervention. The authors hope that the DI at two years will serve as a baseline research tool to monitor the effects of treatment protocols on outcome at maturity. This would call for large randomised, controlled trials, the results of which would have significant impact.

Perhaps the most obvious current pitfall of the DI as presented is its limitation to unilateral disease. The authors

rise to its defence by stating that patients with bilateral Perthes' disease may have an underlying disorder and therefore may not truly have Perthes' disease and should be excluded from research trials. While it is true that some patients with bilateral involvement will not have Perthes' disease, this is not universal. Bilateral Perthes' disease is recognized in 8 to 24% of cases; in one series being synchronous in 52% and metachronous in 48% of 50 patients. Does bilateral disease have a worse prognosis than unilateral? With emerging drug therapies will the incidence and outcome of bilateral disease be reduced or improved? It would be interesting to include patients with bilateral disease in any prospective research protocols. Their results could be analyzed separately.

The authors shun the use of current measures of sphericity such as Mose circles. It may be possible from a large database of normal hips of children at varying age to develop standards for use in assessing the DI in children with bilateral disease. This could have the additional benefit of limiting radiographs to one side in children with unilateral disease. In addition to sphericity of the femoral head, the age of the child at the onset of the disease is an important predictor of long-term outcome. Also a two dimensional analysis and rotation of hip during X-rays can alter the measurements. The authors have not addressed this in their current paper, but perhaps plan to do so in future.

In summary, there is no satisfactory system, which allows assessment of outcome before skeletal maturity. Since follow-up of at least 15 years is required to assess outcome, it is not feasible to use the Stulberg grading to evaluate new forms of treatment for Perthes' disease. Nelson et al introduced us to Deformity Index as a novel measure that allows prediction of Stulberg classification from radiographs obtained in children with unilateral Perthes' disease at two years following the onset of the disease. The use of a continuous outcome measure enables trials of a feasible size to be adequately powered to test the hypothesis that new treatments may reduce the progression of deformity of the femoral head. Trials with promising results at two years based on the deformity index could be expanded and extended to meet the Stulberg outcome. If reliable, the DI could be an important research tool for randomized, controlled trials of interventions in Perthes' disease. Certainly inter and intra-observer reliability in the hands of the authors is high; further evaluation by many observers is required.

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