Issue No. 67 - April 2014

SICOT e-Newsletter

Editorial by Kenneth Cheung - *SICOT Active Member*

Should Orthopaedic Surgeons be running marathons?

This is often the first question I am asked when I tell my friends that I have, for the first time in my life, entered for the marathon in Hong Kong.

What my friends mean is that, as an orthopaedic surgeon, surely I should know better than to subject my knees and body to the constant pounding of a 42km race. Would that not just wear out my joints more quickly?

Indeed, this is a question that I have asked myself too. It would seem logical to a non-runner and therefore also to an orthopaedic surgeon. On the other hand, as an academic orthopaedic surgeon, I resorted to an evidence based medicine approach. From my review of the literature, there is no evidence of an increase in risk of joint replacement in long distance runners. Indeed, there is some suggestion that long distance running is associated with better weight control, a lower body mass index (BMI), and therefore mitigates other risks associated with the development of arthritis.

So armed with this knowledge, I began my running career five years ago. This was not an easy decision, since I hated running as a child and I hated the cross-country runs that I was forced to do at school. So for many years I settled for a more sedentary life style and exercising on golf courses.

What triggered my first serious run were my friends. They entered for a 10km marathon in 2009 and invited me to join... it was pure peer pressure. What kept me going, however, were its positive benefits and the changes that I saw in myself.

Running is the most efficient form of exercise that I am aware of, meaning that you can burn the largest amount of calories in the shortest possible time. Coupled with a proper diet, you are guaranteed to lose weight and I lost 10 pounds. Although I wasn't really obese to start with, I do enjoy eating! Doing regular runs means that I can continue to enjoy eating without the fear of gaining weight.

Running is also a means of relieving stress. I used to have bad allergic rhinitis and eczema requiring the regular use of medications. I am convinced that both were aggravated by my long work hours and late nights. Since starting running, both conditions have disappeared.

Running improves stamina, particularly long distance running improves core muscle strength and endurance. As a spine surgeon, I am used to surgeries that take hours. In the past, after long surgeries, my muscles would complain the next day. This is no longer the case. Indeed my family also feels this too, as I am more alert, have more energy, and am more participatory in family events.

Seeing all these benefits and after graduating from my first 10km race, I decided to enter for a race each year, giving myself a target and forcing myself to practice. I became more ambitious in the subsequent few years, entering for the half-marathon (21km). With this increase in distance, I also began to start feeling the strains of running. I suffered from Iliotibial Band Syndrome, learnt the importance of stretching and the use of a foam roller; I also suffered from anterior knee pain, and learnt the importance of running form and shoe-wear.

Long distance running is more than just putting one foot in front of the other. There is a great deal of science and mechanics involved, how the foot should strike the ground to avoid excessive extension moments on the knee, how to train and use your gastroc-soleus to "kick", how much knee bend should there be during the swing phase and how far forward should you plant your foot during stance, are all important elements of form that need to be considered to avoid injury. Then there is also the science of training, the interval runs used for increasing cardiovascular endurance, the weekend long runs to build tolerance, and the rest intervals and short runs to allow recovery. During the pre-race days and the race, one needs to remember the importance of carbohydrate loading, proper hydration and pacing.

All of the above became really important when I ran my first full (42km) marathon in February 2014. My pace was good and I was running as planned. I felt great at the half way mark and was still in good form by 30km. But despite my careful preparation, they were still insufficient to prevent me from "hitting the wall" by 34km. This is the phenomenon in long distance running when endogenous glycogen stores (liver and muscles) are depleted and there is a sudden feeling of fatigue. This hit me at the 34km mark, and for the next 6km it was a real mental challenge to put one leg in front of the other. The tenacity required to continue was huge, but I hung on summoning up every ounce of will-power that I could muster. It got a little easier as I reached the last 2km with by-standers cheering me on, and the adrenaline once again kicking in. I finished the marathon in 5 hours and 30 minutes, not fast, but just happy that I finished... intact and without injuries.

Reflecting back, it was an enormous sense of achievement, enduring the many hours of training, overcoming the mental and physical challenges involved made me a stronger and better person both physically and mentally. I am glad I took the challenge and I shall do so again next year.

If all this did not scare you and you are interested in running a marathon, don't worry, there are many resources on the web that will help you with your running form, training schedules, how to choose proper running gear, plan running routes and logging your runs (e.g. www.runnersworld.com). If you have a smartphone, there are downloadable free apps that will help you plan your training and log your runs. I used a free app called "RunKeeper", but this is just one of many.

So "should orthopaedic surgeons be running marathons"? My answer... absolutely!

SICOT Events

XXVI SICOT Triennial World Congress combined with 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.

- **Awards**

  Click here to find out more about the awards which are granted to young surgeons to help them attend the Congress.

- **Accommodation & Tours**

  Don't miss out on exclusive hotel and tour offers in Rio de Janeiro! Click here for more information.

- **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...

21st SICOT Trainees Meeting
1-2 June 2014 * London, United Kingdom

- **Registration**

  Registration is open here!

- **Awards**

SICOT Trainee Prizes for Best Oral Presentations will be awarded toward travel expenses to attend the next SICOT Triennial World Congress in Rio de Janeiro, as follows:
1st Prize: £1000
2nd Prize: £600
3rd Prize: £400

SICOT News

- **SICOT Ortho Excellence Programme (OEP)**

This programme has been organised under the aegis of SICOT Education. As conceptualized, a well-known international SICOT surgeon presents a webinar on the second Friday of every month. This is open to orthopaedic surgeons in India and other parts of the world. In India it is targeted to 5,000 surgeons. For more details please visit the OEP website at www.sicotoep.com or the SICOT website.

- **Online Lectures of SICOT Instructional Courses**

Lectures of the SICOT ICL held at Kochi, India are available for online viewing. The lectures were delivered by eminent faculty and emphasise on the 'Principles of Orthopaedics' including 'Best Evidence'. All aspects of Orthopaedics are covered in a series of 55 lectures. The Youtube links can be found here.

SICOT Global Network for Electronic Learning - SIGNEL

Article of the Month

April 2014

Regulatory authorities and orthopaedic clinical trials on expanded mesenchymal stem cells
Enrique Gómez-Barrena, Cristina Avendaño Solá & Carmen Painatescu Bunu

Skeletal injuries requiring bone augmentation techniques are increasing in the context of avoiding or treating difficult cases with bone defects, bone healing problems, and bone regeneration limitations. Musculoskeletal severe trauma, osteoporosis-related fractures, and conditions where bone defect, bone collapse or insufficient bone regeneration occur are prone to disability and serious complications. Bone cell therapy has emerged as a promising technique to augment and promote bone regeneration. Interest in the orthopaedic community is considerable, although many aspects related to the research of this technique in specific indications may be insufficiently recognised by many orthopaedic surgeons. Clinical trials are the ultimate research in real patients that may confirm or refute the value of this new therapy. However, before launching the required trials in bone cell therapy towards bone regeneration, preclinical data is needed with the cell product to be implanted in patients to ensure safety and efficacy. These preclinical studies support the end-points that need to be evaluated in clinical trials. Orthopaedic surgeons are the ultimate players that, through their research, would confirm in clinical trials the benefit of bone cell therapies. To further foster this research, the pathway to eventually obtain authorisation from the National Competent Authorities and Research Ethics Committees under the European regulation is reviewed, and the experience of the REBORNE European project offers information and important clues about the current Voluntary Harmonization Procedure and other opportunities that need to be considered by surgeons and researchers on the topic.

International Orthopaedics (SICOT)
DOI 10.1007/s00264-014-2332-z

Case of the Month

April 2014

Unusual Knee Injury

Authors: *Ashok Gavaskar, Prasad Sorganvi & Ramakanth Rajagopalan*

Case history:

- 20-year-old male presented at the ER with a swollen knee following a MVA.
- Clinical examination revealed a:
    - knee locked in 50 degrees flexion;
    - further extension or flexion not possible;
    - absence of patella in the trochlea.

Q. What are your thoughts on the possible diagnosis? Further investigations?

Click here to read more...

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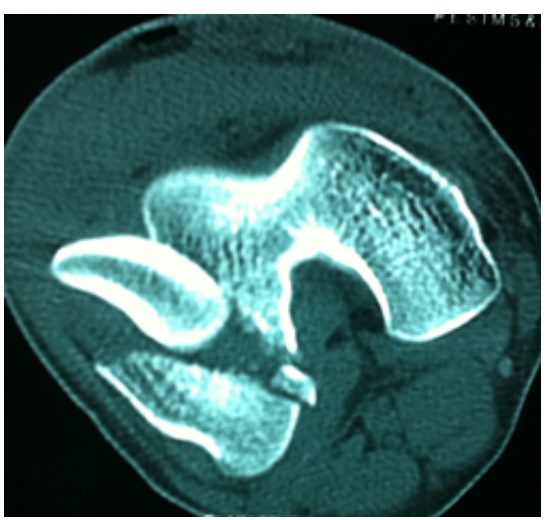
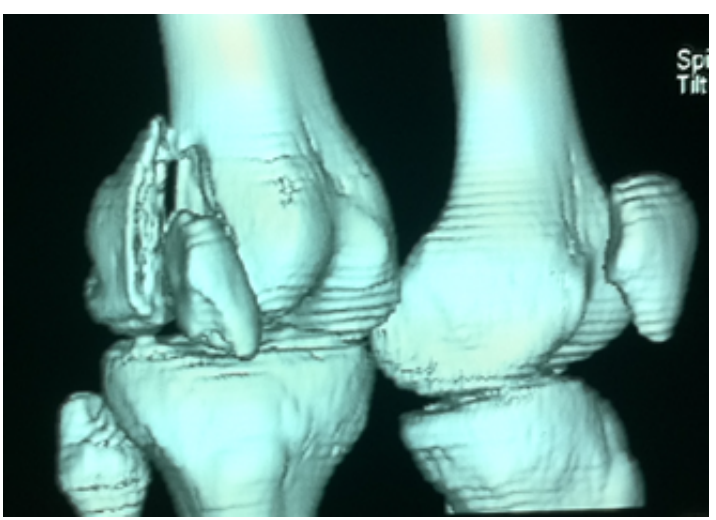
X-rays of the knee, followed by a CT, was performed:

Q. What is the diagnosis?

Click here to read more...

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X-rays and CT showed an extra-articular dislocation of patella with rotation on its vertical axis and incarceration into the fracture of the lateral condyle.

How would you manage this patient?

- A] urgent closed reduction in the ER
- B] urgent closed reduction under anaesthesia in OR
- C] urgent open reduction of the dislocation and internal fixation of the fracture

Click here to read more...

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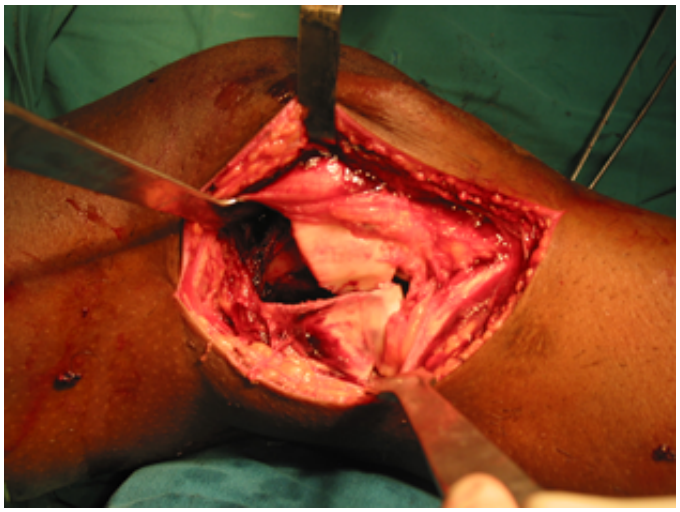
An urgent open reduction was planned for the patient through mini swashbuckler approach.

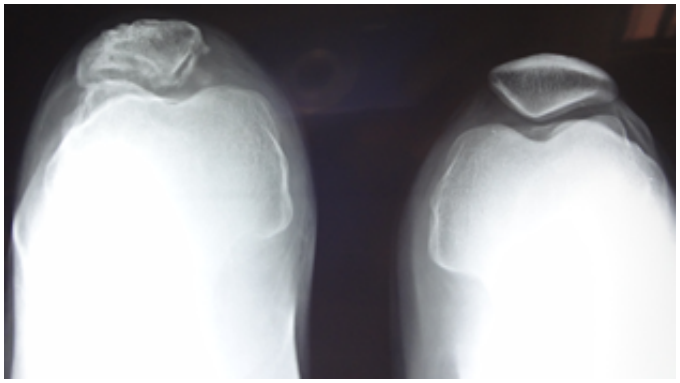
The fracture was fixed using two 6.5 mm screws.

There was partial tear of the MPFL and the quadriceps tendon attachment on the superomedial pole which were repaired with heavy non-absorbable sutures.

A degree of chondral damage to the patellar articular surface was evident and loose chondral fragments were debrided.







Follow-up radiographs at 2 years shows evidence of degenerative changes at the patellofemoral joint.

The patient was asymptomatic and had excellent joint function.

Discussion:

Two types of rotational dislocation of patella are described:

- 1. Intra-articular
  - A] horizontal (rotation along horizontal axis)

    - B] vertical (rotation along vertical axis)
- 2. Extra-articular (usually vertical, very rare)

Open reduction is recommended in view of limiting chondral damage especially when there is incarceration into a fracture.

There may be associated injuries to the medial soft tissue stabilizers, quadriceps (more commonly) and patellar tendon.

Either a medial or lateral parapatellar approach can be used depending on the dislocation.

If there is a severe medial soft tissue injury, a medial parapatellar approach will avoid further devascularisation of the patella.

References:

1. M Lowe, M Meta, K Tetsworth. Irreducible lateral dislocation of patella with rotation. JSCR 2012; 3:10
2. Shetty GM, Wang JH, Kim SK, et al. Incarcerated patellar tendon in Hoffa fracture: an unusual cause of irreducible knee dislocation. Knee Surg Sports Traumatol Arthrosc 2008; 16:378-81
3. Singletary EM, John Dobson. Intercondylar dislocation of the patella with vertical axis rotation. Am J Emerg Med 1999; 17: 75 – 77.
4. Chen Yang, Yubao Gong, Xiaoyu Wen et al. Extra-articular patellar dislocation with vertical axis rotation. The Knee 2011; 18: 512-513.

Fellowship News

German SICOT Fellowship 2013

Sherif Elnikety (United Kingdom) & Andrew S.L. Yip (Hong Kong)
SICOT Associate Members

We would like to report our travelling fellowship experience along with some information that was not available to us before starting the fellowship to act as a guide for the future fellows.

The fellowship was granted to us as an award for ranking top in the SICOT Diploma Examination held in Dubai during the SICOT Orthopaedic World Conference in 2012. The fellowship was first established by Prof Eulert, the previous SICOT National Delegate for Germany, whom we had the honour of meeting. The funding for this fellowship is covered by the SICOT German section.

The programme is over four weeks rotating through four leading orthopaedic centres in Germany. The order of rotation varies from one year to the other depending on the host surgeons' availability. The four centres participating in the programme are: 1) Rummelsberg Hospital near Nuremberg hosted by Dr Baur, 2) King Ludwig House Hospital at Würzburg hosted by Prof Rudert, 3) Hospital for Special Orthopaedic Surgery and Spinal Surgery at Berlin hosted by Prof Keinapfel and 4) Erlangen University Hospital hosted by Prof Frost.

The funding for the fellowship includes airline ticket, train tickets for transportation between centres, hotel booking as well as pocket money of EUR 100 per week. Some centres will pay for the internal transportation depending on the hotel location. The pocket money should be enough for your usual expenses, but consider some extra cash for your unexpected expenses, gifts and souvenirs.

The arrangements and communication regarding this fellowship are done by Prof Rudert, the current German SICOT National Delegate, and Dr Baur, the current German SICOT Treasurer.

The programme usually takes place in June every year although this may vary. The weather during our visit in June 2013 was summer most of the days with an average of 25-28°C, however on some days it was cold and raining. We advise you to have light summer clothes with a light jacket or coat and a small umbrella.

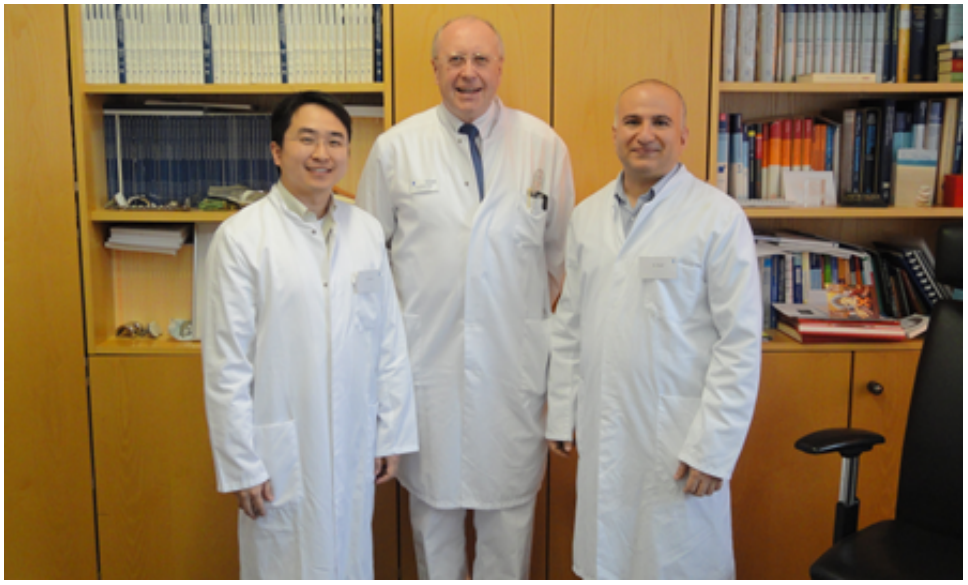
The typical day for the fellows starts at 07:30 to join the morning meeting to discuss over-night admissions, theatre lists for the day, and urgent cases. The meeting usually carries on until 08:00. Activities during the day after the meeting may vary between full day theatre lists where fellows are welcomed to scrub and assist, outpatient clinics or ward rounds depending on the local arrangement. Overall, the schedule is usually flexible and fellows can arrange their week according to their needs.

The general theme of the hospitals is joint replacement surgery. However, most of the subspecialties are available in the four centres. It is important to set your expectations right before starting your fellowship; you are going to be exposed to a different medical system, different disease pattern and different lifestyle. You might be able to pick some new surgical tips and tricks, see different types of implants and different ways of managing common orthopaedics problems.

It is preferable if fellows have some knowledge of German language to facilitate communication and maximise the benefit. Nevertheless, English is generally accepted for communication especially by medical staff.

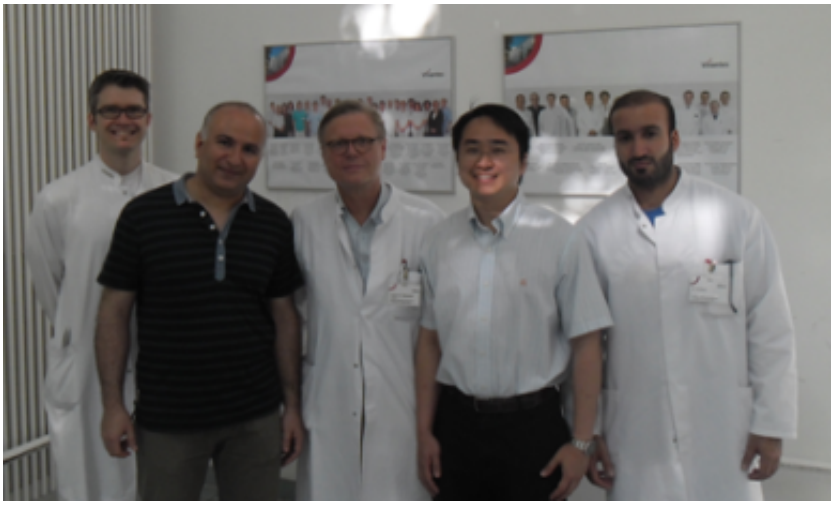
The winners of the fellowship are usually announced during the Closing Ceremony of the SICOT Orthopaedic World Conference. A few weeks later the conference administration will put you in contact with the German SICOT section and this will be the end of the SICOT administration involvement. The German SICOT section made the first contact around March to begin the arrangements and communicate the details of the fellowship.

The first centre in our journey was Rummelsberg Hospital, which is situated near Nuremberg, the historic city famous for trades in mid centuries and Nuremberg trials after World War II. It is a very nice city, with a vibrant town centre. The Hospital itself was the centre where Prof Wagner was practicing, who invented the conical cementless revision femoral stem. In his time it was one of the top orthopaedic centres in the world. The hospital operates one of the few worldwide unique operating theatres where the theatre is divided in four operating rooms each enclosed in glass with airflow system in each room. The four rooms are situated in a large theatre and the surgeons can see each other while operating. It was said that Prof Wagner supervised this design himself and he used to observe other surgeons' techniques while he was operating himself. We have seen a variety of operations including navigated tibial osteotomies for varus OA knee, hip and knee primary and revision arthoplasties as well as spinal, foot and ankle, paediatric and shoulder surgeries.



The second centre was Koenig Ludwig Hospital at Würzburg University. This is a regional elective orthopaedic referral centre and is headed by Prof Dr Maximilian Rudert. It is one of the oldest orthopaedic institutes in Germany (more than 100 years old) and the workload as well as quality of work reflected this. There was a good exposure to most major subspecialties. The minimally invasive anterior approach to hip replacement and custom made partial and total knee replacements were of particular interest. The hospital was active on the academic front, basic science laboratory is attached to the department which is led by Prof Nöth who is an exceptional surgeon as well as world-renowned in stem cell research. We presented some of our research to the department, which was well received.

After spending a week in Würzburg, we moved to the third centre in Berlin where we attended the Auguste-Viktoria-Klinikum headed by Prof Dr Heino Kienapfel. There were numerous opportunities to attend various surgeries particularly shoulder, spine and total joint surgeries. Prof Kienapfel is experienced in anterior spinal instrumented fusion for complex adolescent lumbar scoliosis, as well as revision hip arthroplasty. Prof Kienapfel is a well-informed surgeon; we had very stimulating discussions with him over various topics.



Our last centre was Erlangen University Hospital, which is located in the university town of Erlangen, famous for shopping and country life. Besides hip, knee and shoulder surgeries, this centre has a special interest in treating neuromuscular conditions as well as paediatric deformities.

We would like to thank all the hosting surgeons and their teams for their endless support, the SICOT administrative team and Prof Rudert for facilitating the fellowship process. Our special thanks go to Dr Baur whose generosity and hospitality were unmatched. He treated us like a father and made this wonderful experience much more enjoyable.

Courses by SICOT Members

SICOT CTLS Course 2014

The Comprehensive Trauma Life Support (CTLS) Course for the year 2014 is scheduled to be conducted under the aegis of SICOT International at Ganga Hospital, Coimbatore, India, on 30 and 31 August 2014.

This two-day course is designed based on WHO and International Trauma Care Guidelines. The course lays emphasis on team roles and preparation, primary survey with simultaneous resuscitation, re-evaluation, secondary survey, planning and definitive care management and tertiary survey.

The course comprises of a pre-test, which is mandatory, and the course material is sent to all participants in advance. The course also lays emphasis on a multi-disciplinary approach, case audit, interactive presentations, group discussions, interactive hands-on skill stations and in-course multiple choice questions.

The skill stations focus on emergency life-saving procedures in trauma patients like Cricothyroidotomy, Intercostal Drainage, securing airway, Intraosseous Infusions, and so on. The course incorporates feedback forms, which are thoroughly assessed. It is a must to do the in-course exams. The course is conducted by a CTLS Certified Course Director and Certified Course Faculties.

This course is a very popular programme in India as it is designed to suit the Indian doctors.

Photos of the 2013 Course:

Inaugural adress by Prof Dr Jochen Eulert

Address by Dr S. Rajasekaran, SICOT Treasurer

Hands-on Workshop:

Interactive Session:

Worldwide News

Young Age and Total Knee Arthroplasty: What is new in the Literature?

Kamal Bali
SICOT Newsletter Editorial Board Member - University of Western Ontario, Canada

As the indications for knee replacement expand, total knee arthroplasty (TKA) in young patients is increasingly becoming an area of utmost research and discussion in the domain of joint reconstruction. The current issue of JBJS America (April 2014) carries two research articles focused on the subject. The abstracts of these articles has been summarised below.

ARTICLE 1:

Younger age is associated with a higher risk of early periprosthetic joint infection and aseptic mechanical failure after total knee arthroplasty.
by Meehan JP, Danielsen B, Kim SH, Jamali AA, White RH.
in J Bone Joint Surg Am. 2014 Apr 2;96(7):529-35. doi: 10.2106/JBJS.M.00545.

Background:
Although early aseptic mechanical failure after total knee arthroplasty has been reported in younger patients, it is unknown whether early revision due to periprosthetic joint infection is more or less frequent in this patient subgroup. The purpose of this study was to determine whether the incidence of early periprosthetic joint infection requiring revision knee surgery is significantly different in patients younger than fifty years of age compared with older patients following primary unilateral total knee arthroplasty.

Methods:
A large population-based study was conducted with use of the California Patient Discharge Database, which allows serial linkage of all discharge data from nonfederal hospitals in the state over time. Patients undergoing primary unilateral total knee arthroplasty during 2005 to 2009 were identified. Principal outcomes were partial or complete revision arthroplasty due to periprosthetic joint infection or due to aseptic mechanical failure within one year. Multivariate analysis included risk adjustment for important demographic and clinical variables. The effect of hospital total knee arthroplasty volume on the outcomes of infection and mechanical failure was analyzed with use of hierarchical modeling.

Results:
At one year, 983 (0.82%) of 120,538 primary total knee arthroplasties had undergone revision due to periprosthetic joint infection and 1385 (1.15%) had undergone revision due to aseptic mechanical failure. The cumulative incidence in patients younger than fifty years of age was 1.36% for revision due to periprosthetic joint infection and 3.49% for revision due to aseptic mechanical failure. In risk-adjusted models, the risk of periprosthetic joint infection was 1.8 times higher in patients younger than fifty years of age (odds ratio = 1.81, 95% confidence interval = 1.33 to 2.47) compared with patients sixty-five years of age or older, and the risk of aseptic mechanical failure was 4.7 times higher (odds ratio = 4.66, 95% confidence interval = 3.77 to 5.76). The rate of revision due to infection at hospitals in which a mean of more than 200 total knee arthroplasties were performed per year was lower than the expected (mean) value (p = 0.04).

Conclusions:
Patients younger than fifty years of age had a significantly higher risk of undergoing revision due to periprosthetic joint infection or to aseptic mechanical failure at one year after primary total knee arthroplasty.

ARTICLE 2:

Revision total knee arthroplasty in the young patient: is there trouble on the horizon?
by Aggarwal VK, Goyal N, Deirmengian G, Rangavajulla A, Parvizi J, Austin MS.
in J Bone Joint Surg Am. 2014 Apr 2;96(7):536-42. doi: 10.2106/JBJS.M.00131.

Background:
The volume of total knee arthroplasties, including revisions, in young patients is expected to rise. The objective of this study was to compare the reasons for revision and re-revision total knee arthroplasties between younger and older patients, to determine the survivorship of revision total knee arthroplasties, and to identify risk factors associated with failure of revision in patients fifty years of age or younger.

Methods:
Perioperative data were collected for all total knee arthroplasty revisions performed from August 1999 to December 2009. A cohort of eighty-four patients who were fifty years of age or younger and a cohort of eighty-four patients who were sixty to seventy years of age were matched for the date of surgery, sex, and body mass index (BMI). The etiology of failure of the index total knee arthroplasty and all subsequent revision total knee arthroplasties was determined. Kaplan-Meier survival curves were used to evaluate the timing of the primary failure and the survivorship of revision knee procedures. Finally, multivariate Cox regression was used to calculate risk ratios for the influence of age, sex, BMI, and the reason for the initial revision on survival of the revision total knee arthroplasty.

Results:
The most common reason for the initial revision was aseptic loosening (27%; 95% confidence interval [CI] = 19% to 38%) in the younger cohort and infection (30%; 95% CI = 21% to 40%) in the older cohort. Of the twenty-five second revisions in younger patients, 32% (95% CI = 17% to 52%) were for infection, whereas 50% (95% CI = 32% to 68%) of the twenty-six second revisions in the older cohort were for infection. Cumulative six-year survival rates were 71.0% (95% CI = 60.7% to 83.0%) and 66.1% (95% CI = 54.5% to 80.2%) for revisions in the younger and older cohorts, respectively. Infection and a BMI of ≥40 kg/m2 posed the greatest risk of failure of revision procedures, with risk ratios of 2.731 (p = 0.006) and 2.934 (p = 0.009), respectively.

Conclusions:
The survivorship of knee revisions in younger patients is a cause of concern, and the higher rates of aseptic failure in these patients may be related to unique demands that they place on the reconstruction. Improvement in implant fixation and treatment of infection when these patients undergo revision total knee arthroplasty is needed.

A commentary by esteemed arthroplasty surgeon, Dr Kelly G. Vince, follows these articles and focuses on the key points highlighted by these research articles. Although both articles are level 3 studies, one is an institutional study (Aggarwal et al) while the other one (Meehan et al) is a large population-based study evaluating data all over the California state of the United States. Despite being completely different methodologically, both articles clearly document higher rates of aseptic failure in total knee arthroplasty patients under the age of 50 years. This is understandable as the younger population is likely to wear out a TKA sooner than their older counterparts.

With the advancement in the bearing surfaces and implantation techniques, the likelihood of early catastrophic mechanical failure of TKA even in a young active population group is very low. As Dr Vince points out, a well done primary TKA and a good first revision surgery should be able to serve a young patient through a lifetime with acceptable function. Unfortunately, this has not been consistently seen in these two studies as many young patients in the two studies faced their first revision within a year, rather than enjoying years of service by the artificial joint, because of infection or unsatisfactory function. To add to the pessimism as far as outcomes of TKA in young are concerned, Aggarwal et al also reveal the data on the number of first revisions that failed prematurely and eventually placed the limb in jeopardy.

One outcome, reported by Meehan et al, that is difficult to explain is the higher incidence of periprosthetic infection in the younger patients as compared to the older patients even after eliminating the confounding variables. Normal logic would imply higher immunity and protection from infection in youth. One explanation that these authors put forward is the higher incidence of post-traumatic arthritis in young patients. Specifically a previous history of arthrotomy, a recognised risk factor for infection, is likely to be more common in young patients with post-traumatic arthritis. However, a clear relationship between previous arthrotomy and aseptic loosening has not been established in the literature, and implant fixation issues in young (cemented vs. uncemented) are more likely to play a role in the pathogenesis of aseptic failure in this group of patients.

These studies reiterate the importance of patient education and understanding patient expectations. Knee arthroplasty continues to remain a good and reliable procedure for older patients as far as pain relief and function is concerned. Early failures reported in young patients due to unacceptable function are in part likely to result from unfulfilled "unique expectations" than from high activity levels. Thus, the fact that an artificial knee joint can never match the performance of a normal human knee joint needs to be communicated to all patients (especially young active individuals) with utmost clarity.

Both studies are limited by their retrospective design and reliance on administrative data. Both are unable to draw any conclusions regarding survivorship of specific implant designs or knee fixation techniques in young patients. Although the study by Meehan et al (unlike Aggarwal et al) involves patient population operated all over the California state by multiple surgeons, it fails to identify the effect of individual surgeons. However, Meehan et al do identify decreased incidence of periprosthetic infections at high volume hospitals, which supports the concept of utilising specialty service hospitals in reducing the incidence of complications following TKA.

Despite their limitations, both these studies are an invaluable addition to the limited literature on outcome of TKA in young adults and are a must read for anyone with interest and a predominant practice in knee arthroplasty surgery.

Industry News

- **Aesculap**

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International Society for Computer Assisted Orthopaedic Surgery

June 18-21

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Rue de la Loi 26-b.13, 1040 Brussels, Belgium
Tel.: +32 2 648 68 23 | Fax: +32 2 649 86 01
E-mail: edsecr@sicot.org | Website: www.sicot.org
