

Report from the Sixth European Bone and Joint Infection Society Travelling Fellowship (EBJIS- TF) 2015

Ahmed N Mahmoud-Martins Malzubris-Bart
Vander Wal

Ahmed N Mahmoud MD, MS Orth, Assistant lecturer of orthopedic surgery, Ain Shams University, Cairo. Egypt

Martins Malzubris MD, Orthopedic trauma and limb reconstruction surgeon, TOS, Riga. Latvia.

Bart Van der Wal, MD, PhD, Consultant orthopedic surgeon, University of Utrecht, Netherlands

In 2009, The European Bone and Joint Infection Society (EBJIS) had started a traveling fellowship arranged by Professor Dr Konstantinos Malizos MD,PhD and former EBJIS president, during which three surgeons from around the world selected according to their curriculum vitae, were allowed to visit well known accredited orthopedic centers in different European countries through a kind grant from the EBJIS. The aim of this fellowship is to create solid friendship connections between new generations of orthopedic surgeons from different countries worldwide, stimulate an exchange of ideas in the field of bone and joint infections. and to share the most updated concepts of management of bone and joint infection practiced in highly accredited orthopedic centers in Europe known for their excellence in management of bone and joint infections , and spread it to different countries worldwide, for the benefit of the patients and human health.

In September 2015, and as a continuation of successful previous five fellowships, three surgeons have been selected by the EBJIS for the travelling fellowship: Bart V Wal, MD, PhD, The Netherlands. Martins Malzubris, MD, Latvia. And Ahmed Nageeb Mahmoud, MD, MS. Egypt. The destination host centers were Lausanne University Hospital (Centre Hospitalier Universitaire Vaudois -CHUV) in Lausanne, Switzerland, then Galeazzi Orthopedic Institute in Milano, Italy, then Klinikum Ingolstadt in Ingolstadt, Germany and finally Nuffield Orthopedic center, Oxford university in Oxford, UK. The host supervisors were, respectively according to the host centers, PD Dr Olivier Borens, Prof Dr. Carlo Romano, Prof Dr. Christof Wagner and Mr. Martin McNally.

The fellowship started actually from Thursday September 10th 2015, the first day of EBJIS 2015 annual meeting in Estoril, Lisbon, and apart from the most updated great scientific content of the EBJIS meeting, through the comprehensive lectures, talks, presentations and discussions about diagnosis and

management of bone and joint infections that kept us and the participants aware about the recent trends in the management of bone infection and limb reconstruction fields, the three days congress (from September 10th to September 12th), was extremely helpful to us in many other points. First of all, it gave us the opportunity to meet and know each other well and breaking the ice before the fellowship and discuss about our travel plans. Second, it gave us a concise course about what we are going to observe and find through our fellowship. Also, was great opportunity to meet all of our upcoming host centers' supervisors in one place to discuss about the fellowship activities in each center and establish some knowledge about each center activities, way of management and philosophy of patients' treatment, which varies from one center to another.

In the second day of the congress, during the general assembly meeting, we have been recognized and allowed to give a talk about each one's prospective and expectation from the upcoming fellowship.

After we have attended the very interested congress three days, we were able to gather very large amount of information about the most updated and the most successful proven techniques for management of Musculo skeletal infections. The congress really made us very well prepared for the fellowship, increased our self confidence and enthusiasm for obtaining such training and working with such expert surgeons, known for their excellent reputation in the limb reconstruction field.

Our next destination was the Lausanne, Switzerland (Figure 1). We flew first to Geneva airport from Lisbon on Sunday September 13th, and then we took the train to Lausanne to arrive there at the afternoon. We stayed at a nice hotel belongs to the CHUV hospital. At evening, we went together for a walk in the city and had dinner.

On the next morning at 7 am, we met with our host in Lausanne, PD Dr. Olivier Borens the head of limb reconstruction unit in the orthopedic department who he welcomed us and we had a brief conversation about our trip and prospective. Then we went to the morning clinical meeting of the orthopedic department where the admitted patients' medical

histories and investigations been discussed by the department physicians. The discussion was in French but Dr. Borens was keen to explain to us about everything in English. After finishing the daily meeting, Dr. Borens took us, with the attending physicians to the admitted patients' ward, where we passed on each patient with bone and joint infection there. Dr. Borens explained to us about each patient condition and management, which gave us both a concise but very comprehensive view about how the bone infection patients are being treated in the CHUV.

After that, we went to the surgery room with Dr. Borens, where we attended 2 cases. The first one was a case of infected non union of fracture ulna shaft on ORIF. The plate and screws were sent for sonication, the dead bone and unhealthy soft tissue were removed and extensively debrided, the dead space were filled with bio glass and re fixation with a new low contact small DCP was done. From this case, and through most valuable discussion from Dr Borens, we have learned too much about the bio glass that used extensively in bone infection cases at CHUV. And also we learned about the ideal bone

infection patient for single stage exchange prosthesis.



Figure 1: The EBJIS 2015 fellowship travel map

The second case was a revision TKA. The previously inserted cement spacer was removed and the new revision TKA prosthesis inserted in a challenging condition of bone loss. Dr Borens again explained to us about his protocol for revision arthroplasty, and indications and advantages of single versus two stages revision arthroplasty in Peri prosthetic infection cases.

After finishing the second surgery, Dr Borens invited us on lunch in the CHUV restaurant. We enjoyed a tasty Swiss local dishes and drinks and had a very interesting conversation with dr Borens regarding the future management of previous two cases.

After lunch we went to the O.R again to attend the third case of this day. It was really a very interesting case, of infected nonunion of tibia shaft on ILNT. We were allowed to scrub and assist in this surgery, which made the experience 'hands on' training. This patient already underwent a nail exchange surgery and filling the defect with anti biotic loaded cement as recommended in Masquelet technique. The current surgery included removal of cement, exchange of the nail with a larger one, RIA technique to obtain graft from the ipsilateral femur through the proximal nail incision. Then the RIA graft was mixed with bio glass and applied in the defect area. The pre formed membrane was carefully closed over the graft/ bio-glass composite and then wound closure was done.

After the last case, we went again to Dr. Borens office and had a very valuable discussion about the previous cases. Dr. Borens gave each one of us a very interesting and precious book, named 'infections of the Muscular-skeletal system' which covers all aspects of bone and joint infections from diagnosis to post management rehabilitation.

After finishing this day, we went to the hotel for short time, then we went for dinner at a restaurant of Dr. Borens suggestion. We had a very delicious Swiss cheese Fondue and we had a discussion regarding each one's opinion of today cases and how he would manage in his hospital. After having dinner we had a walk in Lausanne at night then we went back to the hotel.

The next morning, we met with Dr. Borens at his office on 7.00 am where we had coffee, then we attended the morning round on patients' investigations then patients' wards. During the ward round, we passed on all admitted limb reconstruction patients with Dr Borens and his team. He discussed

each case history, management and prognosis with us. Then we went to the outpatient clinic where we have attended with dr Borens his weekly clinic. We observed how he carefully listen to the patient history, how he examine the patients and we were allowed to share with him in examination and decision making,

On the end of the day at the afternoon, dr Borens advised us about the beautiful places in Lausanne to visit before departure. We said goodbye and visited Lausanne during the rest of the day.

We believed that our Lausanne visit made a great part of our scientific knowledge regarding the EBJIS fellowship, thanks to Dr. Borens frequent scientific discussions and valuable book.

Concluding our Lausanne trip, we had very valuable lessons and benefits, mostly about the management of bone defects in infection cases, the indications and outcomes of single and two stages reconstruction in prosthesis related infections, the importance of proper planning for revision

arthroplasty and the ideal method for performing Masquelet technique.

On the next day, Wednesday 16th September, we took the Lausanne-Milano fast train, which travels the whole distance in less than four hours. We arrived to Milan in the afternoon where we went to our hotels. Then we had a brief tour in Milano before meeting at evening for dinner.

On next morning at 7.30 am, we met with Professor Dr. Carlo Romano at his office in Galeazzi orthopedic institute. Dr Romano welcomed us and we had a discussion about our Lausanne trip and how will be our schedule in Milan. Then Dr. Romano presented to us the upcoming surgery cases we are going to observe in the O.R, and gave us other presentations and case reports about very complex cases treated in Galeazzi institute, which gave us a quick idea about Dr. Romano's philosophy and preferred methods for treatment of Musculo skeletal infection cases. At 9am we were taken to the OR with him to attend the scheduled surgery for this

day. We attended three surgery cases, the first one was a revision hip arthroplasty for recurrent hip dislocation after two stages exchange arthroplasty for Peri-prothetic infection. The decision was to insert a mega cup with mobile bearing exchange. The second surgery was a second stage hip arthroplasty for artificial joint infection. The temporary cement spacer was removed and revision prosthesis was inserted. The last one also infected knee arthroplasty case, for which the implants were removed and a custom made temporary cement-antibiotic spacer was inserted.

After finishing the surgery for this day at about 6.00 pm, we went with Prof. Romano and two of his assistant surgeons to dinner. We had a wonderful dinner at a famous Italian seafood restaurant. We experienced a real Italian food collection of dishes, desserts and drinks. During this, we had a very interesting conversations with Dr. Romano about the medical situation at our hospitals, and each one goals for the future. We went back to our hotels at about the midnight.

The next morning, we met at Dr. Romano office at 7.30 am. We had a wonderful Italian coffee, and a very rich discussion about the management of bone defects, then we went for the ward for the morning grand round. We saw the yesterday surgery cases and the other patients admitted in the ward. Dr Nicola, the first assistant of Prof Romano discussed with us about each case. After finishing the ward round we attended the outpatient clinic with dr Nicola where we had interesting discussion about the outpatient cases with bone and joint infection. After concluding the outpatient clinic, we were taken to the clinical pathology and lab department at Galeazzi institute, where we met Professor dr Lorenzo Drago and Dr. Elena De Vecchi. Dr Elena explained to us about the methods of sonication used in Galeazzi institute and how the chemical sonication greatly replaced the mechanical one. She also showed us how they handle the specimen and how the sonication process done. Also we examined some specimen with them and examined the substance of the bio glass under microscopy. We had very valuable discussion at the laboratory department which was really new experience for us.

We finished this day around 2 pm, and then we went for lunch at a local Pizza restaurant. Then we went for a city tour near to the city center. We were lucky to attend the 2015 EXPO festival, which is held this year in Milano. The festival was really very nice experience to know much about different countries and their culture.

Concluding our Milano trip, we became aware about other successful modalities for managing bone defects, proper surgical technique for revision hip arthroplasty, the methods and techniques for diagnosis of bone infection and the methods for handling samples in the infection labs and how the sonication is performed.

Next day morning, on Saturday 19th September, we flew to Munich from Milan, then we had the bus from the airport to Ingolstadt bus station, we arrived there at about 11 am, when we found professor dr Christof Wagner and his coworker, Dr Jurgen Hauffen waiting for us at the station with their cars.

Dr Wagner and Dr. Hauffen warmly welcomed us. Then they took us to the hotel, which is a very pleasant traditional hotel in Ingolstadt, near to the hospital and Dr Wagner home. Dr Wagner instructed us to prepare ourselves for long program during this day.

After about one hour, Dr. Hauffen drove his car to our hotel, where we met Dr. Wagner, then we all rode the car, directing towards Schwangau village, which is 200 km far from Ingolstadt. During the three hours' drive, we had very interesting talk with Prof. Wagner and Dr. Hauffen about the medical system in Germany and in each of our countries. It was sunny and clear day, and we have stopped many times in the way to watch the beautiful nature and the Donau River and take some food and refreshments Dr Wagner already prepared. We arrived to Schwangau in the afternoon. Dr Wagner and Dr Hauffen booked us tickets for the Neuschwanstein castle. We have very nice tour through the castle and the smaller castle of the King Maximilian. It was a very pleasant experience

where we enjoyed the beautiful old Bavarian architect and the most beautiful nature. We stayed there till the sunset, and then we rode the car, heading back to Ingolstadt. In the way home, we stopped in a small Bavarian village, to have dinner at a very traditional Bavarian restaurant already arranged and chosen by dr Wagner. We enjoyed a real Bavarian dishes and desserts, and most important, very interesting conversation with Prof Wagner and dr Jurgen. It was a very pleasant and nice experience. After dinner we continued our drive to the hotel, we arrived to Ingolstadt at the midnight.

Next day, around the noon time, Dr Wagner and his wife invited us for Lunch at their beautiful home. We had very delicious German food and drinks, and had a very friendly and interesting talks with them.

In the afternoon, Dr Wagner took us in a city tour, where we visited Ingolstadt city and the Audi cars museum.

And at evening, Dr. Wagner invited us for dinner at the restaurant of our hotel, which is well known in the city of Ingolstadt for its traditional nice food.

On the next day, Monday Sept 21th at 7 am, we went to the Ingolstadt hospital, which is the main hospital and tertiary referral center serving an area of about 80 square km. We met at Dr. Wagner office, where we discussed about the day program. We went then to the morning grand round. At first we attended the physician meeting and discussed the admitted cases investigations, and then we went for the patients' ward, where we saw the admitted limb reconstruction patients. We discussed each case with Dr. Wagner and his co workers.

After that, Dr. Wagner took us for dinner at the hospital restaurant, then we have attended the bone infection and limb reconstruction outpatient clinic, where we saw very complex cases. Dr. Hauffen also showed us many cases already operated and we had a very valuable discussion about the philosophy of managing the bone infection cases in Ingolstadt

hospital. During the clinic, we have seen many atypical infection cases of musculo skeletal infection around the hip, and in the foot. After finishing the clinic, we went to Dr. Christof Wagner's office, where we had a discussion of some complex cases already operated by him. He stressed about the management of poly trauma patients with external fixators and the management of fixator related problems. Also, he emphasized and stressed on the importance and the methods of soft tissue reconstruction for bone infection cases.

At about 4pm, we went back to our hotel, have short rest, then Dr. Wagner and Dr. Hauffen passed by and took us to the Ingolstadt central train station, where we had the train to Munich, to attend the Munich October festival till the midnight, which was really crazy and pleasant event aimed by people from around the world. We went back to home about the midnight.

On the next morning at 7am, we met at dr Wagner office, then we attended the ward round. After that

we were taken to the OR, where we watched two cases of limb and soft tissue reconstruction. During which we had discussion with Dr Wagner about the importance and ways of soft tissue coverage for exposed bones during limb reconstruction.

After finishing the surgery, the head of Trauma department, Prof Dr. Michael Wenzl, welcomed us for lunch in the hospital restaurant and we had some conversation with him regarding the morning cases in the round and the decision making for complex trauma patients. Then Prof Wagner arranged a presentation session for us. He showed us many presentations about limb reconstruction and bone infection cases and we had a very valuable and interesting presentation in the form of problem solving cases associated with patients' chronologic progress and medical history. The purpose was to optimize and arrange the decision making process for managing the bone infection cases. Finally we had another presentation and discussion about the biofilm and the recent trends in its diagnosis and treatment.

We finished this day at 7 pm, then Dr Wagner and his wife invited us for dinner at their home. They made a very kind farewell party for us and gave us nice Bavarian souvenirs. We really were impressed by Dr Wagner's generosity and great scientific and social program he arranged for us.

Concluding our Ingolstadt tour, we became more aware of management of open fractures and polytrauma patients and external fixators related problems. Also we became more aware about the proper surgical technique of skin grafting and soft tissue reconstruction. We knew very updated information about the biofilm material, and away from that, Dr. Wagner stressed many times about the importance for each one of us to arrange his future goals, in the medical career and in life.

Next morning, we flew to London from Munich airport, then we took the bus to Oxford, where we went to a luxurious hotel, which was arranged and booked by Prof Dr Martin McNally.

We had some rest in the hotel, and then we met Dr McNally and his co workers at the hotel conference room, where we had a very nice welcoming party. Then we had a small scientific meeting arranged by Dr McNally and his colleagues. They gave us four sessions about the bone filling materials and bone substitutes in management of bone infection cases, The rule of free flaps in soft tissue reconstruction, the rule importance of tissue cultures with the sonication for diagnosis of the infection associated organisms, and the proper anesthesia technique used in Nulfield center. After concluding the scientific session and the discussions about the philosophy of treating bone infection at Oxford university hospitals, we had a very delicious English dinner. Then we went to our rooms preparing for the next day.

On the next morning, at 8am, we were taken to the Nullfield Orthopedic center, where we were welcomed by Dr. McNally, and had a tour through the hospital. He gave us a brief introduction about the history of Oxford university hospital and famous

alumni, then we were taken to the outpatient clinic. We observed in the OPC for the whole day, where we had very valuable discussions about the complex cases. Dr McNally showed us very large number of his performed limb reconstruction cases and we were impressed by the favorable outcomes of too many complex cases of limb reconstruction following bone and joint infections. He stressed on the proper and different ways for using external fixators for infection cases and the rule of free muscle flaps for soft tissue coverage. We were impressed too by the very dedicated and cooperative team work in the limb reconstruction unit at Nuffield orthopedic center, which includes orthopedic surgeons, anesthesiologist, plastic surgeons and microbiologists. After finishing the outpatient clinic we attended the physician round with the attending staff, where they discussed about all the admitted patients data and decision making. After that we have a ward round on the admitted limb reconstruction cases with Dr. McNally, where we had valuable discussion about each case.

After finishing the rich day, Dr. McNally drove us back to the hotel at around the sunset. We had a brief rest then we went for a night tour in the city, and we have dinner at a traditional restaurant in Oxford suggested by Dr. McNally. In this meeting, we have discussed our great experience in the EBJIS 2015 fellowship, and how it will be reflected on our management of bone infection cases. We had a nice evening and we took many photos.

On the next morning, Dr. McNally took us from our hotel at 8 am to the Nuffield center, where we attended the morning outpatient clinic with him and discussed about many other complex cases. Then we were taken to the surgery room, where we watched a complex case of infected proximal femoral nail on united proximal femur fracture, the nail is removed and extensive debridement with insertion of calcium sulphate antibiotic beads.

Concluding our Oxford trip, we were more aware about the proper techniques and post-operative care for patients with external fixators, the importance

and different ways for controlling the bone defects and how to manage the soft tissue loss. We became also aware about the importance of having a talented, cooperative teamwork for achieving favorable results and maximum patient's satisfaction.

After finishing the surgery we went back to the hotel, where we had farewell meeting, during which we have discussed the lessons from this wonderful experience, and the targets that each one of us is willing to achieve in the near future. We discussed how this fellowship will affect our management methods for our patients, and we all agreed, that this experience will promote our career progress and help us to practice in a far more professional way. After greeting each other and promised for another friendly meetings in the future, each one of us departed to his home.

As the sixth EBJIS travelling fellowship tour concluded, we all agreed that the EBJIS-TF will represent an extremely valuable tool for updating and promoting our ideas for management of bone

and joint infection in our home facilities. And despite our different nationalities, we all realized that we have a unanimous goals and targets. We all finished this experience with great enthusiasm to continue research in this field. We hope that our future contributions may add new successful concepts for management of bone and soft tissue infections.

Presentations	Surgery cases	Outpatient clinic cases	case reports, problem solving	Ward pateints	Main scientific lessons
(Morning rounds)	3	10	5 cases	25	Masquelet technique Single vs two stage revisi Local management of bor
(Morning grand round, Microbiology lab)	3	10	5 Cases	15	Local management of bor Single vs two stages revisi Microbiological & Lab D Infections:
(Morning grand rounds- scientific presentation)	2	10	10 Cases	20	Local management of ski The rule of external fixate and the later management Biofilm formation and m
(Scientific meeting, morning rounds)	1	30	20	10	Methods and importance Local management of bor Different modalities and

Table 1: Approximate estimate of the clinical experience during the two weeks of the EBJIS 2015 TF.

We believed that 2015 EBJIS-TF had a deep impact on our minds by exposing us to very complex

The 2015 EBJIS travelling fellows encourage all young orthopedic surgeons, who are interested in bone and joint infections, to apply for the next EBJIS travelling fellowship.

It is really a priceless way to gain most updated knowledge and practice about the management of musculoskeletal infections based on a pursuit of excellence in research and patient care.

We hope that this fellowship should be continued and expanded uninterruptedly. Moreover, such fellowships have a profound effect on a personal level. They help to reevaluate personal goals, and clinical and academic priorities. Most importantly, it is helping to construct a very strong bond, mutual respect and lifetime friendship between the three of us that will definitely open doors to future cooperation in training and research, for the benefit of patient care and our personal fulfillment.

Concluding, we are really indebted and grateful to the Executive Committee of the EBJIS, to our generous hosts PD Dr Olivier Borens, Prof Dr Carlo Romano, Prof Dr Christof Wagner and Mr Martin McNally for their great and generous hospitality, scientific and social support during the fellowship, and to Prof. Kontantinos Malizos for his great effort in arranging and organizing the fellowship. We believe that we had been given a priceless opportunity to deal with great teachers, experienced

surgeons and wonderful humans. And we believe that our careers will be improved to the good after this experience. We have been given an unparalleled experience to interact with outstanding teachers that intrigued us to pursue excellence in our careers and professional life.

Summary of learning points from the 6th EBJIS-TF:

- 1- To create a solid friendship bonds between young orthopedic surgeons from around the world.
- 2- To create a new generation of EBJIS members, who share common experiences and memories, which should add to the future of the EBJIS, by making friend future delegates and members.
- 3-Establish deep relations between the current senior delegates and the new members
- 4-Encouraging the research enthusiasm between the fellows, to continue researching and exploring in the field of bone and joint infection, based on the most updated background they had during this fellowship.
- 5- To have a global view, regarding different philosophies for managing bone and soft tissue

infection cases that may vary greatly, while aiming to achieve one goal, for the sake of patients.

6- To generate and share the most updated and successfully proved concepts and methods for management of musculo skeletal infections around the world, for the sake of improving human health.

7- To encourage young orthopedic surgeons who are interested in bone and joint infection, to modify their career and promote their surgical and scientific skills.

8- To generate the idea of respecting, considering and accepting the others' opinion. And to be sure that despite the difference in management philosophy, diagnosis and treatment methods between the personnel and facilities, the unanimous goal of proper management and patients' satisfaction can be reached.

9- To propagate the idea of importance of cooperation and team work achievement, which should lead to more favorable results.

10- And to create a new generation of surgeons worldwide, who are able to carry, improve and spread the message of the EBJIS, about management of musculo skeletal infections for the benefit of the patients and the human being.

Conflict of interest: The authors have no conflicts of interest related to this work.