

# A transforming week

## A visit to Tanzania's Muhimbili Hospital



When presented with the opportunity to share his knowledge and skills with the neurosurgical staff of a hospital in Tanzania during a week-long visit, Roger Härtl set to work arranging donations of implant technology and tools. While his stay may have included a dinner with the president of the country, he was most impressed by the enthusiasm and commitment of the medical teams he worked with. He shares some of this professionally and personally rewarding experience with InSpine.

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Years ago as a medical student I had spent time in a hospital in the central African country of Malawi. This turned out to be one of my most memorable experiences, from an educational as well as a personal perspective. When the opportunity to visit Tanzania became available, I decided to visit Muhimbili Orthopedic Hospital in Dar es Salaam, where three neurosurgeons attempt to provide neurosurgical care for 40 million Tanzanians.

### Preparation

In preparation for my visit I had the opportunity to talk to South Carolina Neurosurgeon Dr Dilan Ellegala about the work that he had been able to do in Tanzania during two separate stays of six months each at Haydom Hospital. In addition I had the opportunity to discuss my trip to Tanzania with several individuals involved with FIENS (Foundation for International Education in Neurological Surgery). I had also been in touch with the Barrow's Neurological Institute in Phoenix where interest exists in supporting a neurosurgery training program in Tanzania.

Here at Cornell I learned that we have had a deep and productive involvement with Tanzania for considerable time: Dr. Warren Johnson, who is the chief of the Division of International Medicine and Infectious Diseases, has a long history of research and training in resource-poor countries. He is currently running a program at Bugando Hospital in northern Tanzania. Sandy Weill is supporting the medical school there. Bugando Hospital serves a population of 13 million Tanzanians.



### Looking for donations

I had asked several companies whether they'd be interested in donating tools, implants and equipment for spinal neurosurgical procedures for Tanzania. This was met with great enthusiasm by Synthes Spine as well as Anspach. Synthes Spine donated instrumentation equipment worth USD 423,000 and Anspach donated a drill to perform neurosurgical and spinal procedures. This equipment was shipped

to Tanzania, and only because of very significant help through the Ministry of Health, it was possible to clear the surgical instrumentation and equipment in a timely fashion and deliver this material to the hospital. Without the help of the officials, this would have been a problem.

### My arrival

On the day of my arrival, I met with Robert Hamilton, a PhD and consultant who works with the Physician Training Partnership (PTP) and the Barrows Neurological Institute. We had a very constructive discussion regarding the plan for the upcoming week

On Tuesday November 11, I had the first opportunity to meet with Dr Kinasha and we discussed the upcoming week at Muhimbili Hospital. Dr Kinasha informed me that the equipment had arrived safely at the hospital and that the hospital cleared the equipment for surgery.

### Dinner with the president

On Wednesday, I spent my first day in the hospital with Dr. Kinasha. That evening I had the great honor to be invited to a dinner at the State House which was held by President Jakaya Kikwete. His Excellency President Kikwete has been in the office since 2005 and is the fourth president of the United Republic of Tanzania.

### Proposal: neurosurgery training program

The purpose of this dinner was to discuss the possible support that the Ministry of Health could lend outside parties in their effort to develop a neurosurgery program for Tanzania.

During this dinner, we had several conversations about the dire situation of neurosurgery in Tanzania. *The President personally and very explicitly expressed his support for the plan to establish a neurosurgery training program in Tanzania with a center of excellence at Muhimbili Hospital.* He acknowledged the fact that his country loses tremendous amounts of resources due to patients being shipped abroad and wealthier Tanzanians traveling to Europe and to the United States to receive expensive medical care.

From Dr Kinasha, for example, I had learned that patients who survive a subarachnoid hemorrhage are sometimes air-lifted to India in order to undergo cerebral angiography or even surgery. I was assured that even patients without resources are being sent abroad and that the government usually covers these costs.

Currently, there is no vascular neurosurgeon available, there is no angiography, and there are no capabilities for vascular imaging studies in Tanzania. The President also expressed the need to support foreigners who want to help neurosurgery in Tanzania, to secure their stay and make their stay comfortable while they are visiting.



### Into the operating room

On the following day, Thursday, we saw a patient in the hospital that had suffered from a motor vehicle accident with a significant craniocervical injury that involved a subluxation of C2 in front of C1 with the odontoid process positioned in front of the ring of C1.

A CT scan was available from several weeks previously but an MRI scan was not available. There is one non-functional MRI scanner in Tanzania, at Muhimbili Hospital, and during the week while I was there it was being repaired. The patient was treated with a cervical collar and bedrest and was neurologically intact.

We decided to take this patient to the operating room to perform an occipitocervical fusion procedure. Operating at Muhimbili Orthopedic Hospital was much more straightforward than I had imagined. The nurses were well trained. The main problem in my opinion was the poor organization that results in the inability to start cases before 9 or 10 o'clock in the morning. This means that it is not possible to do more than one or two complex procedures per day.

In terms of basic surgical equipment, the hospital is well-equipped. There is an old Zeiss/Wild microscope available, they have radiolucent tables for spinal surgery, and they

have all the basic tools and instruments available. However, there is no spinal instrumentation. There is a fluoroscope available that functions very nicely, cell saver or any type of hemostatic agents other than Surgicel are not available. Typed and crossed blood is available.

We positioned the patient in the prone position on a Wilson frame with the head immobilized in a Mayfield headholder. Fluoroscopy showed that the fracture had spontaneously reduced and we performed an occipitocervical fusion using the Axon system. Since we did not have an OC plate available or cortical screws, we placed Axon 8 mm and 1 cm screws into the occiput and placed C2 pedicle screws as well as lateral mass screws in C3 and C4 and connected these with rods. We used autograft bone from the hip for the fusion. This patient did well after surgery. All operations were done with Dr Kinasha and an orthopedic surgeon with interest in spinal surgery.

### Lack of resources

There were many other patients that I saw with cranial and spinal problems which would have required urgent or elective surgery and who did not undergo surgery because of lack of instrumentation, operating room time, and manpower. One of these patients included a type 2 odontoid fracture with approximately 1 cm subluxation with an incomplete spinal cord injury that had been on the ward for several

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weeks in a cervical collar. A halo is available at the hospital, but is rarely used. Other cases involved patients with brain tumors, head injuries, and so forth.

### Brain injury lecture

On Friday morning, I had the opportunity to deliver a lecture outlining the basic principle of traumatic brain injury management. We talked about resuscitation of these patients, the concept of early surgery, ICP monitoring, and so forth and basically went through the “Guidelines for the management of severe traumatic brain injury”. This talk was received with great enthusiasm and it was my impression that the concepts of this talk were well understood and accepted.

### Press conference

In summary, this week was immensely interesting, productive and satisfying. Tanzania is an exciting “up-and-coming” place where people are highly motivated, the infrastructure is basic but functional and the leadership is progressive and competent. When it comes to Neurosurgery the main problem right now appears to be the lack of manpower, the lack of a well-structured and organized training program, and a lack of equipment and instrumentation for cranial and spinal surgeries. I think the leadership in the country as well as the physicians understand these problems and are actively trying to solve them.



## Where to go from here?

It would be important to draft a memorandum of understanding (MOU) between Muhimbili Orthopedic Institute and Dr Kinasha and individual outside institutions such as Cornell or other universities in the United States or Europe that want to send over fellows, residents or attendings. An MOU will facilitate a visit and will address issues such as liability insurance and supervision of visiting residents. This is a very informal, but very important document.

Outside parties interested in supporting Neurosurgery in Tanzania should sit together and come up with an agenda for the upcoming years. There needs to be consistent and reliable presence at Muhimbili Hospital of experts that train and support the local surgeons. One could envision, for example, a rotational schedule where every 3 months or so a surgeon from a different institution visits for at least 1-2 weeks.

A simple database should be implemented tracking neurosurgical/TBI/spine patients to gather some very basic information. For example: How many spinal cord injuries or TBI patients come in? How many receive surgical treatment? How long do they stay in the hospital? Finally: Does any intervention (For example, implementing spinal instrumentation) make a difference? This type of information will be crucial, especially when it comes to expanding this model to other hospitals/regions. I have discussed this with Randy Chesnut, a spine and TBI expert from Seattle, who will be at Muhimbili in January. An individual at Muhimbili Hospital will have to be identified and funded to maintain this database.

Spinal surgery is not going to happen in this country unless instrumentation is affordable. The very generous donation by Synthes will not have a significant impact unless instrumentation is made available at competitive and affordable prices. Otherwise these facilities will rely on foreigners to come in to donate more instrumentation, which would obviously not be feasible.

A web site should be established that will allow easy exchange of imaging studies between East Africa, Europe, and the United States and online consultations between neurosurgeons. José Piquer Belloch from Spain is working on this. Another possibility, for example, would be to get AOSpine involved in this.



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