



MITAC Turkey Project 2000

K. Mitchell Russell, M.D.
May 26 – June 6, 2000

Project Goal

The principal goal of this mission was to explore distance education in the context of treating land mine victims.

Project Overview

Two members of the MITAC team, K. Mitchell Russell, M.D., and Nathaniel Merriam, accompanied the Physicians For Peace (PFP) mission to Turkey May 26 through June 6, 2000. The mission was divided into two logical parts. The first part of the



mission was spent in a small city in southeastern Turkey called Diyarbakir. Here, some 30 patients, mostly victims to land mine injury with below knee amputations, were fitted with a modern type of prosthesis. We followed all the members of PFP and captured the process on digital video, complete with the clinical teaching that was exchanged between the PFP members and the local Turkish health care workers and physicians. The second part of the mission was spent in Istanbul and nearby Imit, which had experienced a disastrous earthquake in 1999, resulting in a great many amputees. Here, the PFP presented didactic lectures on several important aspects of prosthetics, and gave demonstrations of the prosthesis fitting.

The Mission Team

Brad Butkovich, Senior Medical Student, MCV

Tim Evans, Certified Prosthetist

Craig Gavras, Limbs For Life Foundation

Ronald Hopkins, Certified Prosthetist, Hanger, Inc.

Charles E. Horton, M.D., Plastic Surgeon, PFP Founder and Chairman

David A. Lawrence, M.S.P.T., A.T.C., Clinical Specialist in Amputee Rehabilitation and Sports Medicine

Austin I. Merhof, M.D., D.D.S., Chairman of Plastic Surgery Department, MCV

Richard T. Sieller, P.T., C.H.T., Physical & Hand Therapist

Harjot Singh, Senior Medical Student, MCV

Mike Quigley, C.P.O., Certified Prosthetics & Orthotics Specialist, Hanger, Inc.

Jane P. Wootton, M.D., Physiatrist / Physical Medicine and Rehabilitation, Sheltering Arms Physicians Rehabilitation Service

David B. Young, M.D., Orthopaedic Surgeon

E. Ralph Hostetter, PFP Trustee

John F. Hussey, PFP Trustee, Chairman PFP Public Relations Committee

Nancy Hussey, Chairman, PFP In-Kind Contributor Liaison Committee

K. Mitchell Russell, M.D., MITAC

Nathaniel Merriam, MITAC



May 28, 2000 – Diyarbakir

Diyarbakir is a city of 500,000 located in southeastern Anatolia region of Turkey, north of Mesopotamia. It is near the Eastern Taurus Mountains, and straddles the Tigris River. The city itself dates back 7,500 years, and enjoys a rich history of agriculture due to its proximity to the river. The university in Diyarbakir is Dicle University, or ‘The University of the Tigris.’ The university was founded in 1974, and embodies ten different schools teaching medicine, science and literature, dentistry, education, engineering and architecture, law, agriculture, veterinary medicine, and divinity. The Diyarbakir School of Medicine actually opened in 1966 as part of Ankara University, and moved to Diyarbakir in 1968. The university hospital can accommodate 1400 patients, and there is



presently construction underway on two freestanding structures for pediatric care and for cardiac care, which will expand the overall capacity of the hospital system to 2000 beds. The hospital draws a patient base from a vast area of southeastern Turkey. The medical school and the hospital are governed by the university and ultimately reside

under the guardianship of the Rector of the university, who plays a very large role in the political arena of Diyarbakir. The medical school is presided over by the dean, Prof. Dr. Recep Isik.

The technology available to the University Hospital is comparable to most all of Turkey, although they may have less resources than perhaps Istanbul or Ankara, Turkey’s capital. We were able to survey part of their technological infrastructure, but not all due to time constraints. We visited the hospital automation facility, which is a modern climate-controlled computer shop that handles all the computer services of the hospital. The database services such as patient admission records and laboratory records, was handled on a Sun server running Ingres database, and contained 80 gigabytes of RAID storage. In this facility they also have a primary and binary NT domain server, which provides domain services to all of the facility’s desktop Windows machines. Every physician has a computer on their desktop connected to the Internet. The actual Internet link is somewhat unclear. The consensus we reached was that they were connected to the Internet through a 512 kbps link to Ankara. This is uncertain however. I did observe that they were using modern switches, and had a fiber-optic connection into one of their switches. No more details than this were obtained. The actual experience we had when we plugged in our laptop was not bad. We plugged right into their 10baseT ethernet and obtained an address automatically from their DHCP server. We browsed the web and didn’t run into problems. The main nuisance was not that the connection was slow, but that it was intermittently slow. Periodically, we would receive a burst of data, then be left hanging waiting for data to come. I’m not sure what to attribute this to. I’m not certain of the exact topology of the local network. I noticed the ethernet cards of the nearby machines registering numerous ‘packet collisions’ while we used the local network. This may be a problem reflecting the use of unmanaged hubs instead of switches to control traffic (I did note above however, that they had



modern switches on their racks), or perhaps that the network interface cards were running full duplex. I am not certain, but this may explain the sporadic nature of the network. This problem, along with the limited bandwidth, may prevent effective use of live videoconferencing, but that remains to be seen.

Diyarbakir, like much of southeast Anatolia, has been witness to an internal conflict involving the Turkish and the Kurdish people, for sovereignty within Turkey. Turkey also borders Georgia, Armenia, Iran, Iraq, Syria, Azerbaijan, Greece, and Bulgaria. Cyprus is a short sail on the Mediterranean Sea. As a result, southeastern Turkey has witnessed periods of heated conflict. During such conflict, some parts of the region have been heavily infested with land mines. Dicle University hospital treats a great many of the victims of these land mines.



The activities of the PFP at Diyarbakir started by setting up the prosthetic shop within the existing prosthetic clinic. The prosthetics shop contained all the necessary heavy -equipment for designing and fitting prostheses. Prior to arrival, prosthetic components were flown in from the United States by the Turkish Airforce. Specifically, a large number of these components were donated by the Limbs For Life Foundation, which was founded by Craig Gavras, who himself has an above-knee amputation. The Limbs For Life Foundation accepts donated used prosthetic components from amputees in the US, and channels them for use in countries that need them. This was a tremendous asset for the

mission. The components are not allowed by law to be reused in the US, so these are components that would have gone to waste had they not been put to good use by Mr. Gavras.

May 29, 2000 – May 31, 2000 – Prosthetic Fitting

During the following three days, all the members of the team worked diligently and harmoniously toward the common goal. It was anticipated that about 30 amputees could be fit with new prostheses during this time.

Substantially more than 30 amputees turned out for the affair. There were close to 200 amputees from a vast surrounding area that made their way to the hospital by whatever means possible. This presented a challenge for the team. The most effective use of time and resources to treat as many patients as possible had to be weighed against the pressures of disappointment that came from those that could not be treated during the brief time spent at the hospital. Dr. David Young and Brad Butkovich headed up the triage process, and evaluated close to 200 amputees to select the most urgent, the most needed, the most acceptable amputees. The task was arduous, and their job was not an enviable one. This is possible one of the



most difficult aspects of a mission such as this. Typically a great turnout will occur secondary to the rumor that American doctors are coming to the area. Once the amputees were evaluated, Dr. Young organized the group over lunch and cay (tea) to review all the candidates, and narrowed it down to 28 amputees that we could help. Dr. Young spoke about his perception of Diyarbakir, “the need here is great, but we are making a meaningful contribution to helping these people who have lost so much.” One of the amputees that PFP was able to help was a young boy who had encountered a land mine in his garden that took his leg and his mothers life. He had been walking with crutches since the incident some 3 years ago. After fitting with a new prosthesis and physical training, he was found kicking a soccer ball with another boy in the large waiting area outside the clinic. The smile on his face said it all.

The actual prosthetics were made by Ronald Hopkins, Mike Quigley, and Tim Evans. They used a high-tech carbon fiber composite material for the socket of the prosthesis, eliminating the time-consuming process of casting and molding. We were able to follow the process of fitting these prostheses from beginning to end, and capture them on digital film. During the fitting, the US prosthetists were teaching the Turkish prosthetist how to use such a system.



David Lawrence, a physical therapist with experience in sports medicine training players with and without amputations, was instrumental in the training of the new recipients of prostheses, particularly the younger amputees, who may not have ever had a prosthesis before, such as the child described above. He is an expert in gait analysis, and after working with someone, would periodically make suggestions to the prosthetists for adjustments for the amputees new prosthesis. This ensured that the amputees leaving the clinic were walking with the most normal appearing gait possible. Much of his interaction with the amputees has been captured on digital tape.

Richard Sieller, a specialist in hand therapy, was involved in the treatment of a young child who had attempted to pick up a land mine and lost most of his forearm. A special myoelectric arm was shipped from the US to use for this child. Mr. Sieller really used every available material to be found in the hospital to construct the shell that would hold the motorized graspers, and adapt it to the boys arm. Once complete, a latex sheath covered the structure, giving the appearance of a normal hand. We captured most of the process on digital video, including the boy finally holding a soccer ball between his normal and his new mechanical hand.

After the clinical work was done, a seminar was sponsored by the PFP team, and was attended by a varied array of physicians, physical therapists, students, and nurses alike. The team lectured about aspects of pre-operative and operative care of the amputee, how to design prostheses for below and above knee amputations, gait analysis, and physical therapy and rehabilitation. The quality of these lectures was fair, however due to problems with translation, it will be difficult to use these lectures in digital format and organize them for an education product. However, a viable alternative exists, please read on.



June 3, 2000 – Istanbul

Istanbul is a city of 12 million people that resides half in Europe and half in Asia, separated by the Bosphorus. This strait connects the Black Sea with the Sea of Marmara, which empties into the Mediterranean by way of the Aegean Sea. The medical technology in Istanbul is as advanced as anywhere in the world. Because of this, the PFP's mission there differed from that in Diyarbakir. The focus of this time was spent on education. At the University of Istanbul, an excellent seminar was hosted by the PFP team. The lectures included and superseded the lectures given in Diyarbakir, and proved to be of excellent quality for digitizing and using in an educational package. Part of the reason for the successful seminar was that the University used wireless headsets to provide on-the-fly translation as the lecturers spoke. Therefore, the lectures were given smoothly and in a very organized format. We have the digital video of these lectures and the audiovisual aids of the speakers that can be used to put together an educational package.

June 5, 2000 – Ismit

The city of Ismit has 700,000 people and is located southeast of Istanbul. This region was recently devastated by an earthquake of 7.3 magnitude on the Richter scale in 1999. Parts of the city were completely destroyed. An estimated 40,000 people were killed during the event. The team's work in Ismit involved working with the local physicians, therapists, and prosthetists by giving demonstrations of new techniques, and educational seminars about topics in prosthetics. Three amputees that were victims of the earthquake's devastation were fit with new prostheses during the demonstrations. All the events were captured on digital video for use in an educational package.



MITAC's Involvement

We were approached to participate with PFP on this mission because of our interest in education and use of multimedia to convey educational material for remote learning. Of particular interest was the involvement of both land mine injuries and earthquake injuries. MITAC has in the past acted to facilitate the medical treatment of victims at a distance, such as during NASA's Spacebridge to Moscow and Spacebridge to Armenia. It seemed natural for us to become involved in the mission work that PFP offered. We have had much experience in designing and developing multimedia material for education, and approached the Turkey project from this perspective, and not from a live telemedicine consultation perspective. We committed to following the PFP's every move during their mission, and to capture as much as possible on digital videotape. We ended up with some twenty tapes each with ninety minutes worth of material. The content was as described in the narrative of the daily activities: mostly clinical treatment and hands-on clinical teaching, as well as some very good quality lectures. Our intent is to sift through all this material and develop a multimedia experience that encompasses the most important parts of the mission. We will produce streaming video of treatment procedures, lectures with the speaker's audio and visual aids, and learning modules for the treatment of a land mine or earthquake victim with an amputation.



Conclusion

It was quite a wonderful experience working with the dedicated members of this PFP team. Everyone worked like a finely tuned machine in achieving the excellent results. Turkey has a real need for the efforts of people like the PFP. “Turkey’s earthquake left thousands of amputees. And rebel fighting along the borders of Iraq, Iran, and Syria has taken a terrible toll of innocent civilians, particularly children,” said Dr. Charles Horton, founder and chairman of PFP. PFP has the wisdom to recognize that its not enough to send missions to remote areas to provide ephemeral assistance. They emphasize the role of education during their missions. A great deal of time was spent with the very willing health care workers of all type in Turkey, teaching them how to do new things, sharing experiences, and learning from them as well. The University hospital in Diyarbakir has as it’s goal to become the regional center for excellence in prosthetics. This was encouraged by the PFP team, who will continue their interaction with them in the future. It is my belief that MITAC’s educational goals overlap those of PFP. Nathaniel and I were very well received by the PFP. They were very enthusiastic about our mission in telemedicine and education, and showed a lot of interest in including some of the technologies that we can provide into their missions. The product of this particular mission will be education multimedia. The seminars and demonstrations as well as the clinical experiences will be packaged into a multimedia educational experience that can be shared by the PFP and the participants in Turkey who may not have been present during our visit, or would like to learn more. I think this is an excellent first step in providing an open exchange of learning about the issues of land mine injury, amputations, and prosthetics between MITAC, the PFP, and Turkey.

