

CANADIAN RECONSTRUCTIVE SURGERY FOUNDATION



BOLIVIA MICROSURGERY VE TRIP

December 13 to December 20th 2009

La Paz, Bolivia Microsurgery Educator trip

December 13th to December 20th, 2009

Author:

T.S.

Scope and Intention of the Trip

I was a participant in a team hand trip to La Paz in May 2009. At that time I discussed with Dr. J.T., Bolivia's only dedicated Hand Surgeon (and Interplast outreach provider) the possibility of returning later in the year to provide additional support in the sub-speciality of microsurgery, a capacity which is not provided by the present type of Interplast team hand trip. Several good microsurgical reconstruction candidates were reviewed in the clinic during the hand trip.



Thumb Amputation (May 2009 Clinic)



Mangled Hand (May 2009 Clinic)



Thumb and Toe (May 2009 Clinic)

A significant need was certainly readily identified: There is virtually no capacity for standard microvascular hand or reconstructive surgery in the entire country of Bolivia! This means that literally thousands of severe injuries are inadequately looked after, ranging from minor nerve injuries to severe amputations.

Dr. T. had access to several operating microscopes. None of these had double opposing binocular tubes, but several were of very good quality and I felt they could be used for microsurgery. He had some micro instrumentation as well, although he did not have a complete set, and did not have in particular adequate micro vessel clamps or approximators. During his own hand training in Brazil, he had done microsurgery training including some participation in rat lab preparations.



Microscopes: Military Hospital



Microscope: Clinica Del Sud

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Dr. T. was particularly interested in learning how to perform toe thumb transfers, both because of a large number of patients that would directly benefit from this type of procedure, and because this type of procedure would showcase his increased micro capacity and allow for expansion of microsurgery in general.

We decided that a week long course in microsurgery, focussing on rat dissections (the standard model for microsurgery courses in developed countries) would be useful if it could be arranged, possibly including a patient microsurgical case like a toe thumb. I pitched the idea to S.C., and he graciously agreed to allow me to arrange a trip and provide some funding and support. J. gave me 12 boxes of microsutures as well.

To further aid me in this endeavor, I enlisted my colleague Dr. S.W., who recently completed a microsurgery fellowship at MD Anderson in Houston and in addition had been the coordinator for an animal microsurgery lab for a few years in both Calgary and Hamilton in Canada.

I also acquired 4 compact sets of micro instruments under the auspices of the Canadian Reconstructive Surgery Foundation, to be used by participants during our proposed rat lab. I also bought about 100 non sterile microsutures for use on the rats.

In addition, Canada Microsurgical lent us a compact micro-doppler machine with beautiful disposable 8 HZ probes.

Logistic delays occurred, and the proposed time for the trip was pushed back from September to December, 2009.

F.and D. from the Interplast office volunteered to translate Sarah's abbreviated microsurgical manual, but unfortunately Sarah was not able to get the material to them until the week before we left. They still did a great job translating, and the material was incorporated into our powerpoint presentations and will be organized into a complete spanish manual for our next trip.

Dr. T. organized the acquisition of some laboratory rats, and signed up some participants for the course, and we took off...

We really didn't have a good idea how things were going to work out...

Travel and Accommodation

Arrangements were all made through Interplast contacts. We decided to stay at the Radisson, the same hotel that the team uses. Although very luxurious, we got bored with the same fare every morning, and it had become quite difficult to get to because of the construction of the subway which had advanced down close to the hotel and closed the main street less than a block away (I think the next team trip should inquire about this as the street around the hotel might close soon for several months).

American Airlines is really the only carrier to Bolivia, and were adequate. Of course, it would have been nice to have a shorter layover in Miami... How often is that complaint heard...

Day One (Dec 13)

Jorge met us at the airport at 0700. We checked in to the hotel and then met later on that afternoon and reviewed our equipment, and made some decisions about the course. There were apparently 6 participants, from a variety of surgical disciplines, plus Jorge and Ruben. At the last minute Jorge had decided to hold the course at the Clinic Del Sud, rather than at the Military Hospital, because of some political issues. This made it much less convenient for us to stay

at the Radisson because the clinic is a long cab ride way down the valley in Miraflores, rather than a quick walk from the hotel.

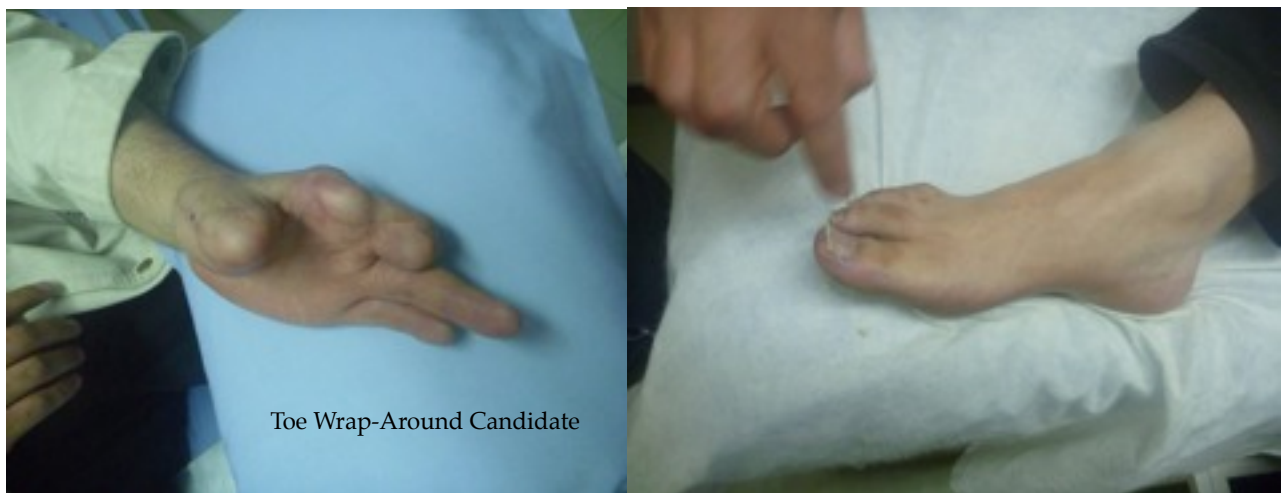
J. had acquired the rats from a research lab in La Paz, and we reviewed how and where to set up. It was decided to use the clinic boardroom (!), and we reviewed the available microscopes. He also was trying to procure a cadaver to allow us to demonstrate some flaps to the participants, and stated that there were four “really good” toe thumb candidates that were supposed to arrive at the clinic over the next couple of days. Demonstrating just how committed to the microsurgery project he is, J. related that he had travelled to Washington D.C. several months before with one of his patients and had participated in a successful toe thumb reconstruction on that patient, performed by an experienced Washington team. Unfortunately his camera was stolen shortly after this, and he lost all the evidence of the procedure and also lost all the pictures from our team trip back in May, which he had not backed up anywhere...

It turned out that Monday was a day when Jorge and several of the course participants were not going to be available so I decided to take S. to the **Tihuanaca** ruins north of the city on Monday, and start the course on Tuesday.

Day Two (Dec 14)

R. Z. took us to the ruins. The evening was taken up reviewing and organizing our teaching materials.

We also evaluated a patient for potential toe thumb, a man who had previously had a thumb lengthening procedure performed by an Interplast Hand team that had become infected and had suffered some significant shortening. He was an ideal candidate for a toe wrap-around flap, but to our frustration could not be convinced to undertake the procedure!!! The other patients failed to appear, and J. was very discomfited by this. He wondered whether it was too close to Xmas time, or something. We decided that we were unfortunately not going to be able to do a free flap on a patient as a result of having no candidates appear, unless something happened over the next 24 hours...



Day Three (Dec 15)

The course started in earnest. We were picked up by J. and R. and transported to the clinic, where we set up the laboratory. It was decided to split the course participants into two groups of three, with a morning shift and an afternoon/evening shift.



4 identical sets of microinstruments, plus a dissection set. Portable doppler is at upper right.



Setting Up the lab..

There were three microscopes available, plus we had 2.5X, 3.5X, 6.0X and 6.5X loupes. All of the scopes had problems. The lighting was inadequate for all of them, and two of them had straight barrel ENT tubes. We corrected the
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lighting as best we could by taping our LED headlights to the scopes.

I gave an introductory lecture on the possibilities of microsurgery, and then S. gave a couple on the basics of rat anesthesia and dissection (these were well received thanks to D. and F. translation)

We then introduced the micro instruments to the three surgeons and they practiced suturing on some ingenious latex models that S. had brought with her: cheap plastic embroidery hoops that gloves could be stretched over. After a few hours of this we broke for lunch.

Lunch stretched into siesta, and we didn't get back to the clinic until after 1900hrs. We gave the same lectures to the 3 evening participants, and then did similar work with the rubber models. We also anesthetized 2 rats, and attempted to do some femoral vessel anastomosis. The micro equipment worked fine, but we had significant difficulty with the scopes. Throughout the day, we worked on the various problems with them, getting some technical help changing some of the bulbs, and switching around components. The 6.0 X and 6.5X loupes worked reasonably well as assistant aids.

J. was very enthusiastic, and we decided to keep working until the rats were done, and this ended up being about 0200 in the morning. At least the traffic was light on the way back to the hotel!!!



Day Four (Dec 16)

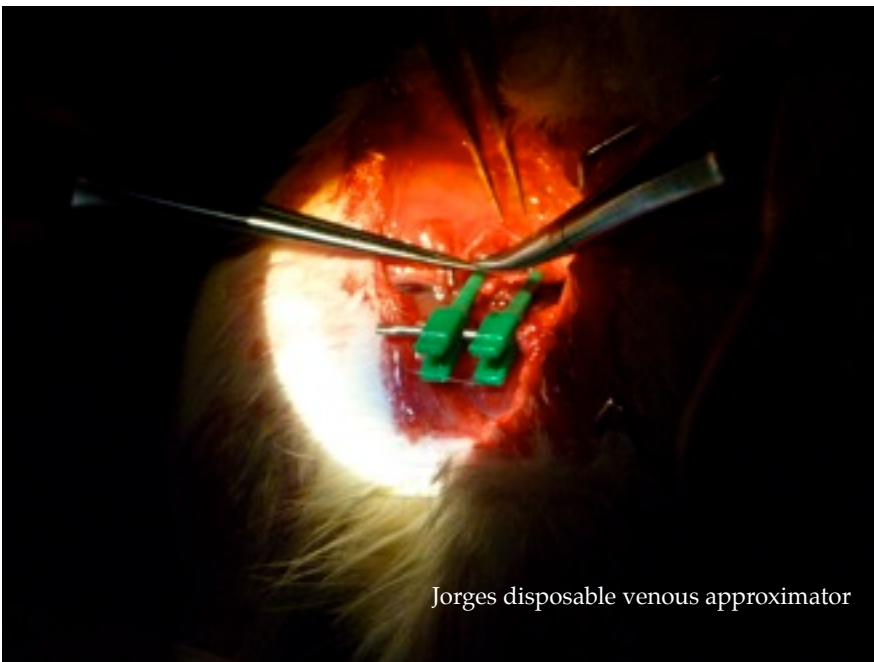
Once again we started at about 1000hrs (Jorge delayed by traffic), and started by presenting several videos that covered microanastomosis and toe thumb surgery techniques taken from W's new flap book, which we donated a copy of to J. and his group. We then went right into rat work, having some better success in getting some successful dissections started. After several hours, we took a break and went for lunch with Cesare Lopez, a vascular surgeon who is a good friend of Jorge. We had an interesting and provocative discussion about whether vascular surgery and especially microvascular surgery might be more challenging in the high altitude of La Paz, with the substantially lower pO₂, and increased coagulability in those who have acclimatized. After lunch we took a break and then went back to the "lab" and repeated the videos and set up a couple more rats and worked until about 2200 hours. We assessed the son of the mayor of La Paz, who had a strange overuse syndrome that was giving him pain in his posterior upper arms and forearms (we felt it was a form of tendonitis)

Later that evening, we were invited to the Vascular Society of La Paz Christmas dinner.

Day Five (Dec 17)

Last day of surgery. J. was not able to procure a good enough cadaver for dissection, so we abandoned the idea of doing a cadaver workshop for this trip. We once again reviewed dvd's from W.'s book, and worked on some rats. J. brought out a load of stuff that had been donated to him by the group in Washington. Included in this was an incomplete vascular set, a lot of microsutures, and a fairly large number of disposable vessel clamps and approximators (these are state of the art: not available in Canada yet!!!)

When we broke for lunch, R. stayed behind and continued work alone on one of the rats. When we returned, he had successfully done an artery and vein anastomosis, the only course participant who was able to. We continued for a few more hours and then broke everything up in the early evening. I didn't think that it was appropriate to award certificates for the course, as nobody was able to complete anything like the standard that is required for a North American course.



Jorges disposable venous approximator



The last 2 participants: Jorge and Ruben

I donated a complete set of titanium microinstruments, including vessel clamps, to J. with the plea that he “share them” with his colleagues. He and the remaining participants promised to run some rat labs on their own after we left. We then broke off and were taken out to a wonderful live Bolivian music and dance show by C., R., and J.

Day Six (Dec18)

We took the day to visit the Isle del Sol, getting up very early in the morning and doing a whirlwind tour, getting back in the early evening before meeting with J. He surprised us with an unexpected patient consult in the lobby of the Radisson when we got back: the patient that had undergone the toe thumb in Washington came by and we reviewed her results. They were just superb, and she was very happy. I also gave J. a flash drive with all of our talks, and also all my pictures from the May team trip to try to replace some of what he lost when his camera was stolen.



Jorge’s Washington Toe Thumb patient

We then went for a wrap up dinner. Although we did not do a single human case, we felt that the trip had been a groundbreaking success, and we made tentative plans to organize a follow-up trip with better organization several months from now, hopefully doing several free flaps while a rat lab was running at the same time. We also explored the possibility of helping J. to acquire a true reconstructive microscope. J. promised to keep in better contact with us in the planning stages for a subsequent trip, using Skype, regular email exchange, etc.

Day Seven (Dec 19)

We left. I had fears about getting things confiscated at the airport, but we had absolutely no problems in this respect.

I can't say enough about how great S.W. was on this trip. She had huge competence in handling the animals, she was totally calm, patient, and professional throughout, and never complained about anything, even working 18 hour days a few days in a row. I recommend her highly for inclusion in our organization as a trip surgeon in the future.



Sarah at 0200, serenely teaching...

Discussion:

I am grateful for Interplast for supporting us in take on this new type of VE trip. Free flaps have certainly been done in the developing world. For example, in 1998 and 1999, Interplast teams I participated on assisted Shafquat Khundakar in doing a few. To my knowledge however, running a full microsurgical training course in the developing world has not been attempted before. For me, this trip demonstrated a few important things.

First, it is possible for a very small team with equipment that is easily packed in standard luggage to pull off a complex course that includes animal dissection. This is very cost effective, in my opinion. The cost of an average North American micro course is in the range of \$2000.00 for each participant for a week, plus travel and accommodation.

Second, microsurgery represents an important new frontier where we can massively improve the quality of health care by transferring this technology to appropriate sites. La Paz and El Alto together hold four million people. Bolivia itself as a whole has some ten million. Presently, there is almost no capacity for even basic microsurgery to be performed anywhere in the entire country. This is tragic. Thousands of severe injuries are going without treatment that is routine in North America. I believe it is of vital importance to support altruistic individuals like J. in acquiring this skill. I am so looking forward to hearing that he has pulled off not just a toe thumb transfer, but a digital or arm replantation!!!

Third, we need to do more, both in La Paz and I believe elsewhere. We need to run a full course next time, and we now know what we need to pull this off. Better organization, especially pre-trip patient reviews and planning, more complete translated manuals (F. and D. can help further with this if they are willing...) and specific donated equipment will allow this to happen. To risk using an old tired Plastic Surgery pun, I really think this could be an exciting new “wrinkle” for the organization...

I look forward to further discussions!

Tim Sproule



La Paz Valley at night