**Orthopedic Mission to Jinotega, Nicuragua March 2005**

**A Report**

**Carried out under the auspices of Project Health for León**
**(3816 Carnegie Lane, Raleigh, NC 27612, Dr. John Paar)**

## Team Members

Chip Allen (Emergency Medicine)
Arun Aneja (Medical Student – Translator)
John Barrington (Orthopedic Resident)
Laurence Dahners (Orthopedic Surgeon – Trauma)
Carroll Jones (Orthopedic Surgeon - Foot)
Warner "Luke" Lucas (Anesthesiologist)
Debbie Marcinko (CRNA)
David McDaniel (Surgical Technician/ Stryker Product Representative)
Daniel Murphy (Orthopedic Surgeon - General)
Pam Presley (Surgical Technician)
Jennifer Short (Orthopedic OR nurse)

## Contacts in Jinotega

Dr. Felix Balladeres (Ortopedista Hospital Victoria Motta)
Dr. Noel Blandon (Director Hospital Victoria Motta)
Dr. Felix Gonzales (Ortopedista Hospital Victoria Motta)
Dr. Felipe Paredes (Ortopedista Hospital Victoria Motta)

## The Location

As a result of the Sandinista war, Nicaragua is quite poor but seems to recovering at a rapid rate with significant improvements noted each year when we return. Jinotega (the city of the mists) is located about 100 kilometers north of Managua, Nicaragua at an altitude of about 1,000 meters. The drive from Managua took about 2.5 hours, the first half on a portion of the Pan American Highway which is in very good condition but the second half on a potholed, twisting mountain road, though it is much improved from the first two years. Like other tropical cities at higher altitudes Jinotega has a very pleasant climate and ranged from 65-75 degrees during our stay there. It is placed in a small valley in the coffee growing mountains and has a population of about 100,000 people. We stayed three blocks away from the hospital in the Hotel Café, a very nice facility which was very clean and had a fine restaurant. We went out to several other nice restaurants during our stay and they also provided good food. Arun Aneja became quite sick after eating fish with tartar sauce but the rest of us did well (however most of us were taking daily Doxycyline for Malaria and diarrhea prevention).

**The Facility**

The hospital is in the middle of the city and moderately old with large multibed wards in narrow wings for ventilation. There are some "private" wards with private rooms for patients with insurance but we didn't visit them.

The operating theater has three rooms, of which they kindly allowed us the use of the two largest. The third was mostly used for C-sections during our stay. Much of their equipment is in poor condition. Sterile practice was unusual to our way of thinking, as they place great emphasis on shoe covers and not leaving the OR in scrubs, but allow people in the OR with noses (and often mouths) out of their (cloth) masks. They are not careful about the sterile field and gowns and drapes often have perforations. They do not use sterile waterproof barriers on their back tables or surgical field. Circulators and Anesthesia Technicians (who provide the anesthesia) often leave the rooms for extended periods of time.

They do not have a fluoroscope and because their portable x-ray machine is broken are no longer able to shoot portable x-rays in the. They are using the Black and Decker 12v Firestorm drills we brought (and left) over the past few years, wiping them down with alcohol for "sterile" surgical procedures. We brought some battery powered drill-saw combos last year and they are using them, however, they do not have a flash autoclave and so cannot sterilize the batteries (which still must be wiped with alcohol and covered with stockinette or a glove). They have a video tower with which they have done a few arthroscopies over the past year using the arthroscopes and instruments we brought last January.

The hospital has three orthopedists (listed above) who are all quite young (2-3 yrs out of residency) and were very enthusiastic, scrubbing in with us on all the cases and going out with us every night. Dr. Felipe Paredes has been appointed director of orthopedics at the hospital. Dr. Rivera, who is older and has taken vacation during our previous visits did come by the OR to watch a TKR during this visit. He has a cervical radiculopathy which makes it difficult for him to operate.

**The Schedule**

We traveled all day Saturday, arriving in the evening.
We held clinic from 8 to 2 on Sunday
We operated from 8 to 2-5 on Monday – Thursday.
Friday we put on a miniconference with demonstrations of Total Knee Replacement using sawbones and a lecture by Dr. Jones on the nonoperative treatment of clubfoot according to the method of Ponseti.
We left for Managua Friday afternoon and flew out on Saturday at 8AM.

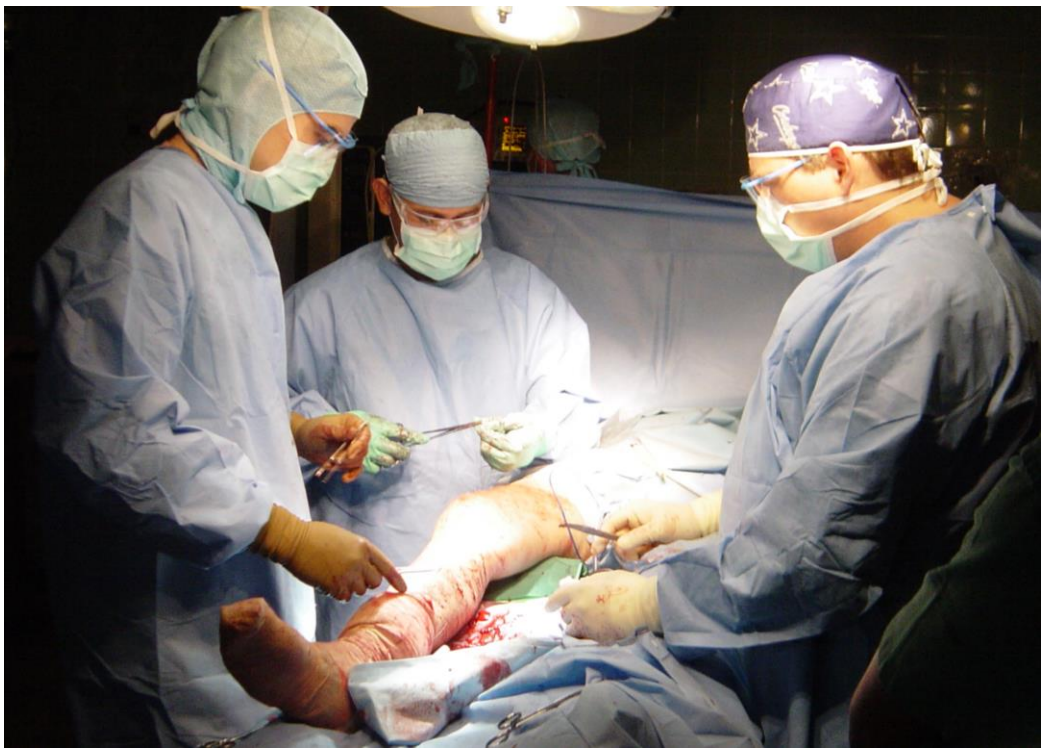
**The Patients**

We saw about 75 patients in the clinic on Sunday with about 15 more "consults" during the week between surgical cases. Many of the patients had conditions that were untreatable or that we did not have the expertise to treat.

We performed 27 procedures for patients who are listed in the table below.

| Name | Age | Diagnosis | Procedure |
|---|---|---|---|
| Cardoza | 68 | R knee DJD | R TKR |
| Ivan Leon | 43 | Recurrent R Shldr Disloc | R Bankart repair |
| Maria Christina Rivas | 47 | Madelung's deformity | R Darrach |
| Juan Ranciso Castro | 3 | CP | B TAL |
| Rodolfo Criedo Blandon | 14 | Charcot Marie Tooth | R TAL, transfer peroneus longus to brevis, plantar fascial release, 1st metatarsal ostetotomy |
| Sora Yada Castiblanco | 45 | 5th MTP deformity, (post op) | L 5th EDL lengthening 5th MT condylectomy |
| Josephina Davil deBalanos | 65 | DJD | R TKR |
| Felipe Jiminez | 51 | MMT | R knee scope, meniscectomy |
| Rosa Orellano | 70 | DJD | R TKR |
| Isquias Isacc Centerro | 16 | Post traumatic infection R radius, ulna (sequestered bone) | Debride R Radius, Ulna, apply ex fix to ulna and a woundvac |
| Maria Davila | 54 | R knee DJD post HTO | Remove plate tibia |
| Manuel Suarez | 64 | DJD | R TKR |
| Reynoldo Orosco | 64 | 24 day old R shldr disloc | Closed reduction under anes |
| Maria Lourdez | ? | Difficult intubation during emergency C-Section (twins) | Assisted with intubation and resuscitation |
| Digna Perez | 54 | RA | R TKR |
| Betty Hernandez | 5 | Arthrogryposis B Vertical Talus | L Talectomy, tibial shortening |
| Crisbel Saralie Gomez | 10 | OI | B segmental femoral osteotomies with IM nails and hip spica cast |
| Patrcia Reyes Rivera | 9 | R Coxa Vara | Proximal femoral valgus osteotomy with blade plate |
| Farlin Elizar Gutierrez | 13 | Webbed elbows (ROM= 130-160) | Distal humeral shortening-extension osteotomy (postop ROM 80-110) |
| Nestor Jacinto Espinolas | 25 | Recurrent R shoulder disloc | R Bankart |
| ? | 9 | Machete wound to quadriceps | Debride apply woundvac |

| | | | |
|---|---|---|---|
| Ismail Peralta Catero | 18 | Varus malunion L tibia | Open osteotomy and IM nail L tibia |
| Juan Ramon Carrion | 39 | L femoral neck fx | ORIF L femoral neck |
| Yeyzin Lopez | 6 | CP | B TAL B adductor release |
| Milago ONlia Landero | 22 | CP | L TAL, Hamstring release |
| Antonia Cruz Herrera | 53 | Residual R Clubfoot | R Triple arthrodesis |
| Jarel Francisco Juarez | ? | R EPL laceration | R EPL repair |

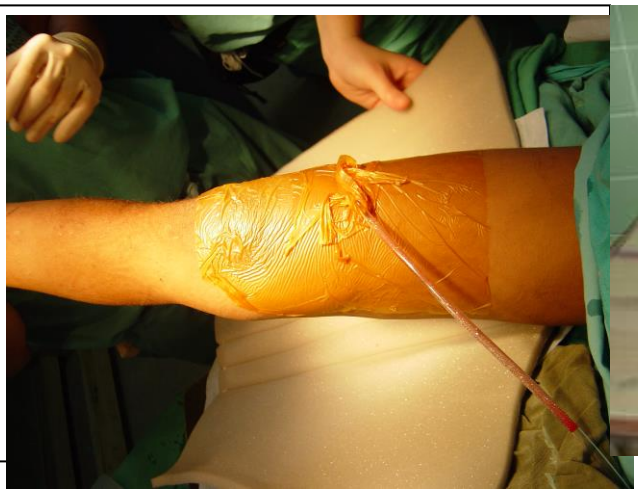


We had no known complications this trip (which I find astonishing considering that we put in a blade plate in a coxa vara, pinned a femoral neck and nailed bilateral femurs in OI, all without fluoro).

**The Equipment**

We took approximately 1600 pounds of tools, supplies, equipment and implants with us, most of which we left behind.

We also took, set up and trained them in a “wound vac” type system using aquarium pumps to generate suction, gauze instead of sponges and ioban to seal the wounds. It seemed to work well and they were pleased.



**Results from the previous surgery**

We saw three patients from January's trip.

| | | | |
|---|---|---|---|
| Isquias Isacc Centerro | 16 | Machete wound to radius and ulna, he was still in the hospital with infection | He is listed above, during this trip we debrided his Radius and Ulna, applied an external fixator and placed a woundvac |
| Leonardo Gonzalez | 67 | Knee arthrodesis for infected machete wounds and hand amputation | He was still in the hospital but his arthrodesis was very well healed for 6 weeks |
| Leonard Gonzalez | 15 | L hemiplegia with finger in palm clawhand who we did a radial-ulnar shortening to relax his muscles | He came by for a visit and his hand was MUCH looser but his thumb was still inside his fingers. I told him that Jan might lengthen his FPL in '06 |

**Construction and Repairs**

No new construction was done on this trip but we did bring a grinding wheel to attach to their drills for sharpening.
Items that could still be done:

1. Tighten OR lights to that they don't wander ESPECIALLY so that they can be raised off of the back of the surgeons necks, replace bulbs
2. Repair wheelchairs and gurneys that don't roll properly.
3. Have canvas bags sewn up for sterilization of IM nails and reamers

4. Bring a quiet air pump so that having the suction on in the rooms isn't so painful.
5. Repair their cautery grounding pads – this would require a soldering iron, heavy wire and electrical tape. The current ones fault all the time until the are wiggled indicating bad connections.

**NEXT YEAR**

We all had a wonderful time with very gracious hosts, believe we did some good for the people of Nicaragua and are ready to go back next year.

**Equipment to take**

- Monitoring equipment such as ecgs and sat monitors for their recovery area
- Gowns and towels. Perhaps we can get Sterile Recoveries to donate some old gowns/towels. Good sterile disposable drapes to do joint replacements with.
- Antibiotics
- 3.2 and 2.5mm drill bits
- Steinman pins and K-wires
- More cautery pencils
- pliers, wire cutters, out of chrome cobalt so they will tolerate autoclaving
- pin/bolt cutters
- X-ray machines of any type
- videotapes or books (in Spanish if possible) that demonstrate
    1. sterile technique, how to setup the back table and drape the patient
    2. AO technique
    3. Campbell's

**Equipment to invent**

- Autoclavable impervious drapes for back table and "U" drapes for patient limbs
    - Tarps?
    - Plastic sheeting?
- A quiet OR suction setup so that having the suction on in the rooms isn't so painful.