SPINE EDUCATION AND RESEARCH FOUNDATION

Activities Report of Operation Straight Spine

Kolkata, India

Jeff McConnell, MD

2/26/2012

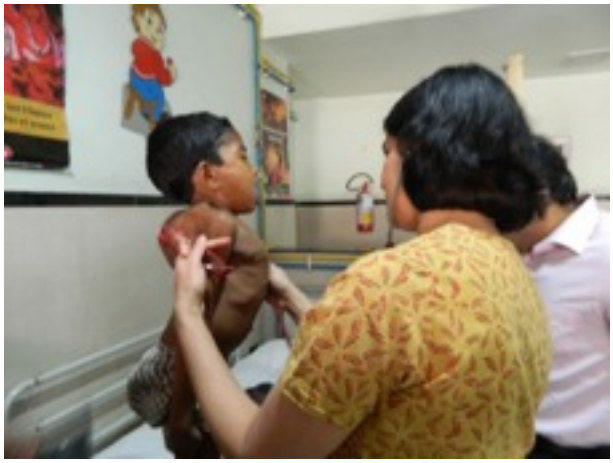
Activities report for Operation Straight Spine during February 2012 in Kolkata, India. This report includes a description of the surgeries performed on patients with a variety of spinal maladies.

16 FEB 2012

US team consisting of Jeff McConnell, MD, Holly Tavianini, RN, Johanna Zeigler, CST, and Dan Welsh arrive in Kolkata from New York (via Dubai, UAE) on Emirates Airlines at 19:15. They are accompanied by Mike Tacca, Patrick Gooing, and Niko Wiesnet, who are filming the activities of Operation Straight Spine. Team is met by Dr. Debnath at the airport and we travel to the Tollygunge Club where the team will stay for the coming week.

17 FEB 2012

Ramakrishna Mission Hospital: We conduct a clinic to see patients. Several patients we had operated upon previously. All were doing well. Saw two year old boy with fibular hemimelia and a congenital scoliosis due to hemivertebra. Agreed we would list patient for surgery.



Made rounds on the wards to see patients already admitted for planned surgeries. These included several young children with congenital scoliosis. One 6 year old boy with Neurofibromatosis and severe, progressive, thoracic kyphoscoliosis. X-rays from 2010 showed significant, dysplastic type approx 60 degree curve. New chest x-ray shows curve has siginificantly progressed to approx 100 degrees. He is the most worrisome case as his respiratory function is already compromised.

Sorted out equipment in the store room including the many boxes of implants and instruments shipped to RKMSP by Globus Medical from Audobon, PA via Chennai. Discovered one of the eleven boxes of supplies that I sent from the US has not arrived. It contains antiseptic skin preparation solution. Told by the monk in the front office said that it could not be shipped by air from New Deli because it contained liquids and must be shipped via ground. Hopefully it will arrive in the next day or two.

With as much sorting work that could be done that day we returned to the Tollygunge club to prepare for the evening's events. Drs Debnath, McConnell and Cacciola and the entire team from the US and UK were being honored by the Rotary Club International of Kolkata for their work through Operation Straight Spine. We were all given a bouquet of flowers and a plaque recognizing our contributions to the local community. This was proceeded by a series of speeches from Uttam Ganguli, President of the Rotary Club, Swami Satyadevananda, from RMSP and Brojen Gogoi, Director of TaTa Medical Center and others including a talk on the history of Operation Straight Spine by Dr. Debnath.

Following the formalities of the meeting we were pleased to be entertained by the most amazing dance troupe from the Hope Foundation. The Hope Foundation is an Irish based charity that cares for the orphaned and indigent street kids of Kolkata and have a number homes and schools where they care for these children. The foundation is where we transferred Juli Sharma whom we had operated on in March 2009 for a tuberculous abcess in the cervical spine causing bone destruction and partial paralysis. Juli recovered well and cured her TB under the care of the Hope Foundation. Juli was also now a member of the dance troupe that entertained us that evening. The troupe performed a series of theme-based dances and wore the most colorful costumes. There were about 30 girls and boys who performed and it was very special to see Juli happy, healthy and well looked after. Juli agreed to be interviewed by the film crew as part of the documentary about OSS.

18 FEB 2012

Traveled to the Fortis Hospital to perform a first surgery on Bulu Mitra, a 51 year old woman. She had been operated upon 6 months earlier for spinal stenosis and and leg pain. Initially she did well but then developed recurrent left leg pain and the inability to work or stand without severe pain. She had developed advanced degenerative disease and a spondylolisthesis at L4-5. Lacking the funds for another surgery we agreed to take up her cause and perform the surgery which consisted of left sided

L4-5 decompression with combined TLIF fusion, placement of 9 x 28mm PEEK interbody cage and pedicle screw stabilization at L4-5. Surgery went well with minimal blood loss.

In the afternoon Dr. Debnath and I participated in a seminar on Low back pain and Degenerative Spondylolisthesis for local physicians and sponsored by the Fortis Hospital. I gave a lecture on the surgical management of degenerative spondylolisthesis with spinal stenosis.

That evening the entire team was invited to the home of Anil Bhargava, a prominent businessman in Kolkata for drinks and a delicious meal. His lovely wife, Ritu, had arranged for a gentleman by the name of Gautam Ghosh to accompany the film crew and act as an interpreter for the film crew for their interviews. He is an extremely pleasant and knowledgeable gentleman. He is normally an academic and a freelance writer. The film crew was extremely delighted to have his services.

Caroline Davies, Marion Barry and Rachel Hunt arrive from the UK.

19 FEB 2012

Mostly a rest day. The team split up to do various activities with some visiting Mother Theresa's orphanage. The film crew went to do interviews with witnesses and survivors of the AMRI Hospital fire disaster which happened a month earlier. Tragically, 90 people died in the disaster, most of them patients.

Dr. Debnath, Neena Seth and I return to RKMSP and make rounds to do patient assessments. We are all concerned about the six year old with Neurofibromatosis and wether he can withstand the operation and especially if post-op ITU care will be adequate given that he will likely need prolonged intubation. We also see a 16 year old girl with paraparesis and inability to ambulate due to tuberculous abcess and vertebral destruction at L2. We agree she will need surgery and she is added to the list.

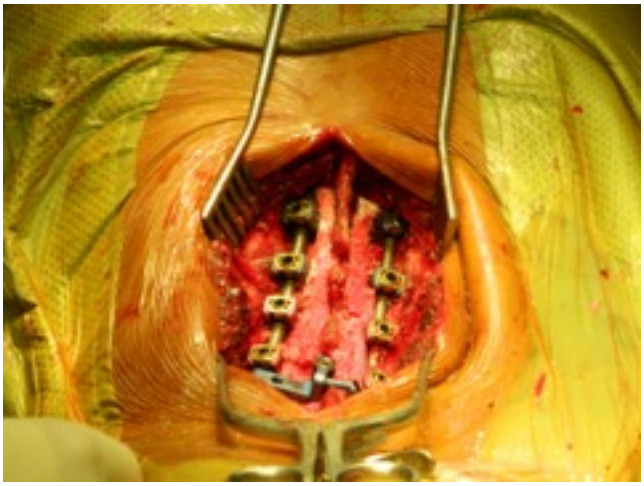
It is the 175th birthday celebration of Sri Sri Ramakrishna so it is a holiday at the RMSP. The whole place is decorated and very colorful with many flowers adorning the courtyard area. There is a large picture of Swami Vivekanada, disciple of Ramkrishna, set among the floral display in the courtyard. A special luncheon is served for all the staff and the OSS team participates. Some of the team found it challenging to eat the rice, dal and fish with their bare hands.

Dr. Debnath and I travel to the TaTa Medical Center Cancer Hospital and given a personal tour by Dr. Gogoi. It is a brand new facility built by the charitable trust of the TaTa company. The facility has state-of –the-art laboratory and diagnostic radiological services and operating theatres.

Returned to Tollygunge Club and invited to dinner and outdoor music show after club sponsored golf tournament.

20 FEB 2012

First day of full operations at RKMSP. We got started very late in the morning. The anesthetists had to spend quite a bit of time in the morning gathering all their supplies from the store room and establishing a home base in OT #6. Finally got our first patient in the room around 11:30 AM. Debleena Sengupta is a 12 year old girl with a Lenke Type 5 primary left lumbar scoliosis. Pre-op her curve measures 50 degrees from T11 to L4 and the compensatory right thoracic curve measures 46 degrees. Tough getting started with the case. Typical problems occur like the suction machine does not work and the Bovie machine is incompatible with our hand piece. Neuromonitoring equipment is not working properly so we did the whole case without the security of monitoring. Despite the equipment glitches the case went well and she was fused from T11 to L3 with all pedicle screw construct. Was able to derotate the spine to a degree and an excellent correction was achieved.



We had planned to do a second scoliosis case but because we started so late with our first case we decided it was best to postpone the second case until the next day.

Dinner at local Bengali restaurant .

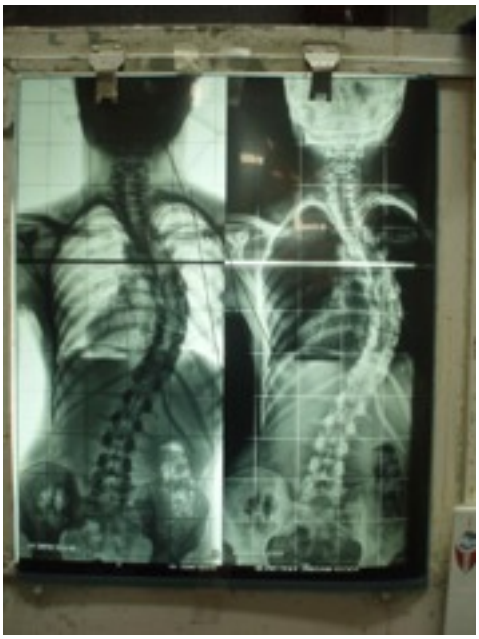
21 FEB 2012

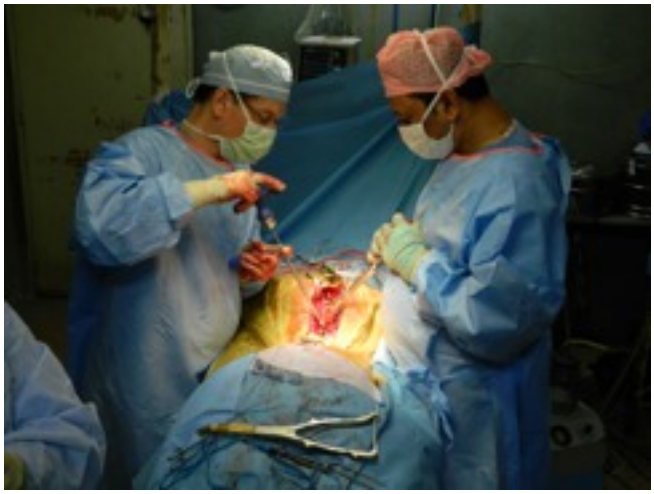
Second full day of surgeries. Day started late due to some technical issues with the anaesthesia machine. The electrical wiring in the room is very old and therefore prone to power surges. The anaesthesia machine is sensitive and will shut off when a surge occurs and then has to be rebooted. Christine Reiber , neuromonitoring specialist informs us that she has sorted out the issues with neuromonitoring equipment. Apparently one of the boxes was overheating causing the machine to suddenly stop working. It's a relief to know that is working.

Caroline Davies and Neena Seth, our anaesthesiologists from the UK, make another assessment of the young boy with neurofibromatosis and severe, dysplastic scoliosis. With reluctance and great sadness we elect to not perform surgery on the boy. It is simply too risky for the boy from a pulmonary standpoint. Even if the boy survived the surgery he would require prolonged ventilator support and intense aftercare which would be extremely difficult to provide at the RMSP. Caroline informs the boy's mother of the decision. She tells Caroline that she would rather see him die soon then to see

his childhood robbed and watch him die slowly. We all know the boy will eventually die from his condition and it difficult to leave him to this fate.

First case was a 14 year old boy, Hemant Kumar with severe right thoracic scoliosis of 55 degrees. The curve was very stiff. His surgery consisted of posterior fusion and instrumentation from T3 to L1. We had to utilize a lot of hooks in the case due to the fact that his pedicles were very small. The small pedicles, especially around the apex of the curve made it very difficult to place screws for fixation. The hooks made it more difficult to get good curve correction, but we achieved our primary goals of arresting curve progression and restoring better truncal balance.

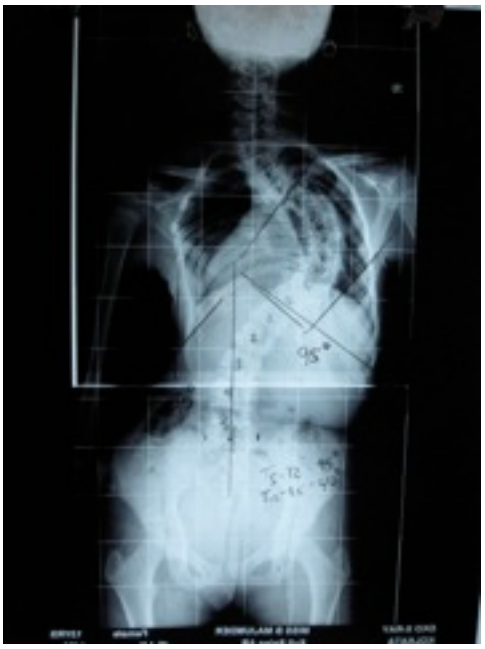




Our second case was Rupam Pal, a four year old boy with severe congenital scoliosis of the lumbar spine involving multiple vertebral anomalies including an ipsilateral bar and contralateral hemivertebra. He had significant pelvic obliquity complicated by leg length discrepancy. Our goal is to improve alignment, especially kyphosis of the lumbar spine, and arrest growth on the convexity via a hemivertebrectomy at the L3 level. We stabilized the spine with cervical lateral mass screws and 3.5mm rod.

We did not complete our day until 9:30 PM. Go back to the hotel at 10:30PM and had a meal of take-out Chinese food.

22 FEB 2012



First and only case for the day is Bipasa Majumdar, a 15 year old girl with a 95 degree right thoracic scoliosis. She presented the year before to have her operation performed however she had a chest infection and so the team decided to cancel the case. Her scoliosis had progressed over the ensuing months. The curve was very stiff, correcting very little on side bending X-ray. The case was difficult especially getting fixation points around the apex of the curve. To aid correction of the curve we performed Ponte osteotomies from T5 to T9 and concave rib osteotomies at four or five levels. Instrumentation extended from T2 through L2 including three titanium sublaminar cables at the apex of the curve in order to help translation or the spine. The cable had to be purchased from Synthes for 25,000 Rs. The case was a bit stressful due to the fact neuromonitoring was never adequate. Christine, the neuromonitoring specialist was unable to get adequate signals from the lower extremities form the start. She thought that the child may have been getting too much propofol (which is normally used in conjunction with fentanyl) and the signals were greatly suppressed. Overall we were satisfied with the operation given the circumstances and we estimate correction was about 50%.

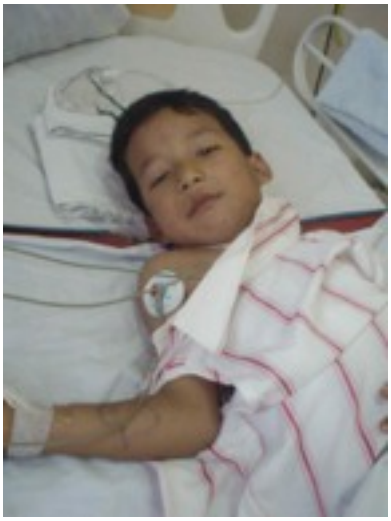
23 FEB 2012

It is formally Ramakrishana's birthday and RMSP is mostly shut down due to the holiday. We are allowed to have two operating theatres for the day so we booked three cases. Got started a bit late once again due to a variety of problems.

The first case is Quadra Ritam Mitra, a 3 year old boy with multiple congenital anomalies including left fibular hemimelia, mild hydrocephalus, absent kidney, hypospadius, T11 hemivertebra, T10 butterfly vertebrae and semi-segmented hemivertebra at T9. The vertebral anomalies cause a 66 degree kyphoscoliosis. Surgery consisted of T11 hemivertebrectomy and instrumentation with Protex CT cervical screws and rods from T9 to T12 plus fusion. Surgery worked well but the boy had to be reintubated later in the day due to respiratory problems.

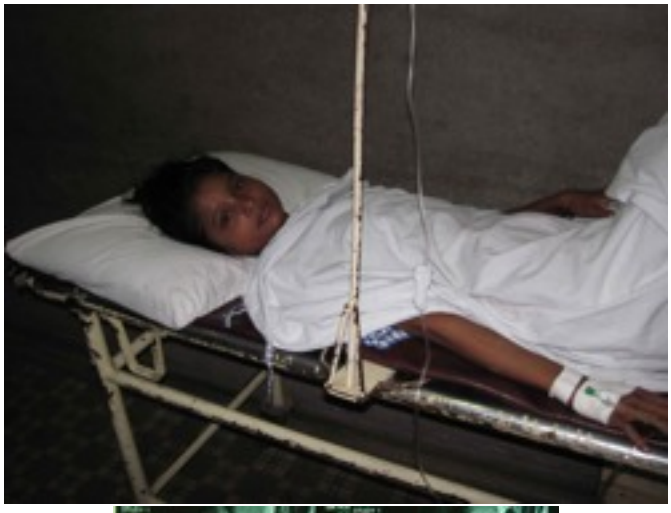
The second case was Dolan Naskar, a 15 year old girl with thoracolumbar scoliosis of 45 degrees from T10 to L3. The curve is treated by Drs Debnath and Cacciola with all-screw construct T10 to L3 resulting in excellent curve correction.

Third case is Neil Lama, a six year old boy with congenital right thoracic scoliosis, absent ribs on the right hemithorax, L1-2 syrinx and a tethered spinal cord at L3. It is elected to perform convex fusion at the apex of the curve and placement of "growing" rod construct with cervical lateral mass screws and 3.7mm rod at T10 and T11 and hook claw over the third rib on the left.

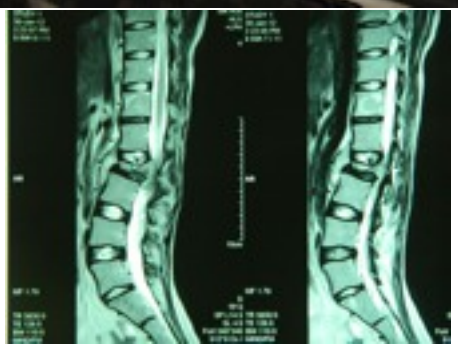


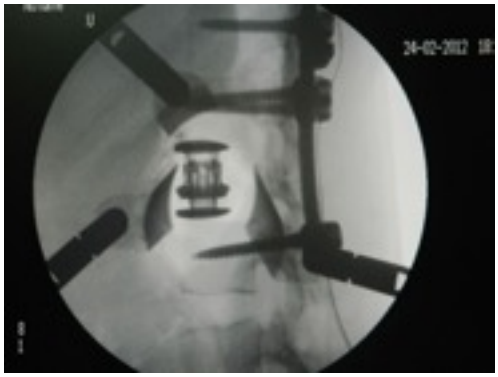
Finished in the OR at 9:30 PM and the whole team is exhausted.

24 FEB 2012



Our last day of surgery. The final patient is a 16 year-old girl Sandipa Biswas who has been in the hospital for 6 weeks suffering with tuberculosis of the spine. She originally developed a febrile illness and malaise but was misdiagnosed by her village doctors. Eventually she came to RMSP where she was diagnosed with TB and during that time she went "off her legs" and was unable to ambulate due to weakness in the legs and pain in her back. X-rays and MRI revealed destruction of the L2 vertebrae with circumferential abcess, kyphosis and compression of the thecal sac. There is also involvement of the T12 vertebrae on the right but no collapse or canal involvement. Surgery involved a dual approach with a posterior approach with reduction of kyphosis, fusion and instrumentation from T11 to L3. The anterior approach involved and drainage of abcess, L2 corpectomy, decompression and placement of a titanium expandable cage from L1 to L3.





We pack up our supplies and return them to the store room. The team is beginning to gather in the courtyard so that we can get in our cars and go back to the Tollygunge Club. The father of the 3 year old boy from yesterday's sugery approaches me to ask for an update on his condition. The boy had some breathing problems the first night post-op and had to be reintubated. As I am speaking with the father, Marian comes running through the courtyard shouting that the "child has arrested, emergency!" We all run back into the hospital, but must first stop at the store room to get a paediatric ambu bag and oxygen tubing which is not available in the (adult) ICU. Marian and Holly run up the 5 flights of steps to reach the ICU. Caroline Davies, our paediatric anaesthesiologist tells us what had happened. Sandipa was fully awake and breathing but then she apparently chewed on her ET tube, causing it to kink, and shut off the airway. Her oxygen saturation levels quickly dropped and she went into respiratory arrest. Luckily, Caroline and the orthopaedic resident were in the ICU checking up on one of our other patients when the event occurred and were able to intervene quickly. After reintubating the patient, administering fluid and a unit of blood her condition stabilizes.

25 FEB 2012

Wrap up day. Dr. Debnath and I go to the Fortis hospital and discharge the woman with the L4-5 TLIF procedure. We return to RMSP and meet up with the rest of the team in the ICU. Sandipa is doing very well and she is now extubated and complains about her NG tube. The 3 year-old boy pulled out his ET tube and his bladder catheter. Dr. Davies fears he may have aspirated. The chest x-ray doesn't look too bad. Dr. Davies suctions the ET tube and, all things considered, he appears relatively stable. We sign out the 3-year-old boy to the attending paediatrician at RMSP who will care for the boy after we leave.

The OSS team completes ward rounds on all the remaining patients and all are doing quite well. The team returns to the hotel to finish packing after which we travel to Dr. Debnath's mother prepares us a wonderful send-off lunch. We are sad to leave but glad to be going home.