



THE SIGN POST

NEWSLETTER OF THE SURGICAL IMPLANT GENERATION NETWORK
JULY 2002

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Our Mission: To get the injured out of bed

A SNAPSHOT OF SIGN

By Lewis G. Zirkle, Jr., M.D., Founder and President of SIGN

SIGN continues at a fast and determined pace. To recap recent weeks:

- The First Annual SIGN Charity Golf Tournament was held in June. The event was a remarkable success. SIGN raised over \$15,000 and 120 golfers enjoyed a round of golf at Columbia Point.
- In May, Jeanne and I returned from a SIGN trip to Vietnam and Myanmar. Refer to Jeanne's article below for more details.
- I was in Honduras with Mercy Ships June 16-22. SIGN re-supplied surgeons from El Salvador and Honduras with implants, and donated a SIGN instrument set to Mercy Ships.
- My plans to travel to India this fall were cancelled due to the unrest there. Nevertheless, SIGN remains very active in India. Dr. Antao in Mumbai continues to send many emails of pre- and post-operative X-ray fractures. The president of the India Orthopaedic Association has invited SIGN to go to Ahmedabad to start programs in hospitals there. We will wait for the political situation to calm down first.



The Acumed / SIGN foursome still smiling after finishing next-to-last in the SIGN Charity Golf Tournament

Continued on page 3



ANTEGRADE FEMUR NAIL:

X-ray images of a femur fracture of a Vietnamese citizen before and after treatment with the SIGN nail. The nail was inserted into the femur at the hip, referred to as "antegrade".



Insertion at the knee is referred to as "retrograde".

The nail passes through the central canal of the bone, aligning the bone so it can heal properly and rapidly.

TRIP REPORT: MYANMAR & VIETNAM

By Jeanne Dillner, Executive Director

In May, Dr. Zirkle and I traveled to Vietnam and Myanmar to visit three existing SIGN projects and start three new ones (two in Vietnam, one in Myanmar). This was the first SIGN trip I have made overseas. My goal was to meet with existing project managers, to instruct them in the use of our data collection system, and to obtain video footage for future fundraising and training videos. It was a joy for me to witness the surgical skill of the in-country surgeons, as well as their desire to provide their patients with the best care. The trip strengthened my commitment — and gave me a deeper understanding of Dr. Zirkle's commitment — to improving fracture care worldwide.

In Ho Chi Minh City, Vietnam, we visited CTO and Cho Ray Hospital, two of the first SIGN project locations. More than 200 SIGN surgeries are performed annually at each of the hospitals. However, the hospitals still need more nails to treat fractures; SIGN nails are reserved for only the most difficult cases because they do not have enough of them. Until now we have depended on Dr. Zirkle and other travelers to serve as couriers and deliver replacement nails and screws. We are now considering shipping the nails and screws so our projects can have the supply they need.

During our five days in Myanmar, twelve surgeons received hands-on training as Dr. Zirkle oversaw the insertion of ten SIGN intramedullary (IM) nails. At first many of the surgeons thought that we were there to sell the SIGN nail system. As they learned that we were donating the system, they expressed — at times with great emotion — their deep gratitude. Many patients in Myanmar do not have the money to pay for antibiotics, or even food. Consequently, the surgeons (who earn as little as \$10 per month) will often personally purchase drugs and meals for their patients.

I was filled with pride each time the surgeons complimented SIGN's system because I know the dedication of our staff to making quality instruments that function properly surgery after surgery. SIGN staff members tell me that they take great pride in knowing their mechanical skills are providing the implants that have enabled 1,500 people to regain their ability to walk. Our Production Manager, Richard Grizzell, lost the use of his legs in his twenties; giving the gift of walking to others is particularly meaningful to him.



Jeanne & Dr. Zirkle in Myanmar with General Abel and Dr. Thit Lwin



Dr. Zirkle teaching surgeons between operations in Myanmar



Vietnamese post-op patient shows off his X-rays



PROJECT LOCATION: *Bangladesh*



Population: 131,269,860
GDP per capita: \$354
Life Expectancy: 58 yrs

SIGN currently has 30 projects worldwide, and we are expanding. With each newsletter, we will focus on one geographic region to provide an in-depth view of the impact that SIGN is having.

NITOR: SIGN's START IN BANGLADESH

In February, 2001, SIGN started a project at the 500-bed National Institute of Trauma and Orthopaedic Rehabilitation (NITOR), situated in the Bangladeshi capital of Dhaka.

NITOR, founded in 1978, has six operating rooms that are very busy. Roughly 16,000 operations are performed annually at NITOR. Sometimes two patients are operated on simultaneously in the same room (*at right*).

Four new operating rooms were built in 1997, but remained unused because the resources were not available to furnish them. SIGN agreed to help furnish these four rooms and has since sent a shipment to NITOR containing anesthesia machines, cautery machines, drills and saws. One of these rooms will be devoted to SIGN implant cases.



Dr. Ayjaz with a patient treated with a SIGN nail.

IN MEMORY OF DR. AYJAZ

Dr. Ayjaz Khan was instrumental in bringing SIGN to Bangladesh. Of Indian descent, Dr. Ayjaz immigrated to Bangladesh and became a professor at NITOR.

Dr. Ayjaz recognized the value of SIGN and made valuable contributions to the development of the SIGN technique. He was a very busy surgeon who did many free operations at NITOR and at other hospitals in Dhaka. He was known as a doctor who would provide care to anybody who sought his expertise.

Sadly, cancer took the life of Dr. Ayjaz this past spring. SIGN lost a good friend. We are grateful for his efforts in bringing SIGN to Bangladesh, and for his dedication to his profession and to serving the poor.



Friends and partners in healing the poor: Dr. Ayjaz and Dr. Zirkle.

THE DIVERSITY OF MANKIND: A CHALLENGE TO SIGN

SIGN manufactures an excellent implant system for treating the poor all around the world. Our worldwide focus, however, does present some special challenges. There is diversity among humans in many respects, and bones are no exception. In different regions of the world, bone may vary by shape, size, and/or hardness. Accommodating this variation has challenged SIGN, prompting innovations in our product.

Bangladesh provides an excellent example. SIGN discovered that the bone of the Bangladeshi people is exceptionally hard. This appears to be due to genetics as well as lifelong physical labor. Initially, SIGN's drill bits slid off of the bone when surgeons attempted to create the holes for the interlocking screws. This led to the redesign of our drill bits. Furthermore, our cortical screws had to be redesigned to accommodate for the harder bone. The taper angle of the screws was changed, and an additional flute was added.

BANGLADESH: FAST FACTS

- Religion: 88% Muslim, 11% Hindu, 1% other
- Area: 144,000 sq. km., slightly smaller than Wisconsin. With 131 million people, nearly one-half the population of the entire USA, Bangladesh is the most crowded country in the world.
- Bangladesh is situated on the vast delta of the Ganges and Brahmaputra Rivers, which respectively drain the foreslope and the backslope of the Himalayas. The Ganges-Brahmaputra delta is largest in the world. Ample water and fertile alluvial soil are superb for agriculture, but Bangladesh is prone to frequent and severe flooding.
- The region now known as Bangladesh came under the influence of the British East India Company in the mid-1700s. A century later the British government took control of the region.
- In 1948, the region was incorporated into East and West Pakistan, two Muslim-dominated regions separated by Hindu-dominated India. Between 1948 and 1971, Bangladesh was known as East Pakistan.
- Bangladesh achieved independence from Pakistan in 1971 after a 9-month civil war.

THE REWARD: TO HEAL A PATIENT



Healing patients: this is what SIGN is all about. To fracture victims who cannot afford treatment, the SIGN nail can literally make the difference between lifelong disability and full recovery. These two Bangladeshi patients are demonstrating full knee flexion after receiving the SIGN treatment. They are two of several hundred Bangladeshis who are walking and working again because of SIGN.

TRAFFIC

In the streets of Dhaka, bicycle rickshaws, taxis, buses, pedestrians, and many different types of vehicles negotiate the same congested roads. Many accidents and leg fractures result from these traffic conditions. There is a desperate need for quality fracture treatment in Dhaka and in cities throughout the developing world.



A DEFINING MOMENT

By Lewis G. Zirkle, Jr., M.D.

While in Bangladesh, I stayed at the Baptist Guest House near where the rickshaw drivers lived (*at right*). A rickshaw is a human-powered three-wheeled bicycle that serves as a taxi. As I looked and watched the rickshaw drivers bathing in and cooking with the same canal water, I felt especially grateful to them for transporting me back and forth to the hospital. I recalled the book *City of Joy*, and realized that I could just as well have been born a rickshaw driver in Bangladesh as a surgeon in the United States. It was a seminal event for me. I pledged to help the rickshaw drivers, and decided that my first step would be to buy NITOR a fluoroscan so that SIGN surgeons there can safely x-ray their work while still in the operating room. I will continue to use the abilities given to me to help the rickshaw drivers.



The homes of rickshaw drivers, who earn less than \$1 per day

A SNAPSHOT OF SIGN *(Continued from front page)*

- Our Bangladesh project received a large shipment from SIGN containing anesthesia machines, saws, drills, and other surgical equipment. The supplies will equip four operating rooms that have remained largely unused because of a lack of resources. A similar shipment also arrived in Vietnam.
- Dr. Bruce Browner of the University of Connecticut has asked SIGN to participate in the Bone & Joint Decade and United Nations collaboration to improve the health-related quality of life for people who suffer from musculoskeletal disorders.
- Jeanne and I spoke with Pete Wehner, who is the deputy speechwriter for President George Bush. He has ideas about how we might be able to work with World Vision.

WELL RECEIVED IN BANGLADESH *(SIGN in the words of Dr. Faruque Quasem)*

SIGN continually receives praise and encouragement from partnering surgeons worldwide. The following are excerpts from emails we have received from Dr. Quasem, the SIGN project manager at NITOR, Dhaka, Bangladesh.

“Thank you very much for all the equipments you are sending to us. Thank you once more for all your sincere efforts for getting us so many valuable instruments that will help us a lot. Your friendship will be remembered for a long, long time by all at NITOR.” (April 2002)



Dr. Faruque Quasem

“SIGN is on its way here. We have now done near about 200 cases... I LOVE doing SIGN & thinking about its improvisations... Lewis [Zirkle], I know you have spent much of your valuable time & money for collecting those equipments for us. We really are very much grateful to you for that. And I can assure you that I will do my level best for the proper use of those in helping the poor.” (April 2002)

“We are receiving wonderful follow-ups of early union, good joint motion and remarkably no knee infection at all... Patient needs very limited stay at the hospital and can be mobilized very early as the fixation is very strong. This helped early recovery and avoiding loss of joint motion... We can help a lot of people by this wonderful device and this program needs to be spread throughout the country.” (February 2002)

“...Over and above the din of desires there is a calling, a demanding, a waiting, an expectation. There is a question that follows me wherever I turn. What is expected of me? What is demanded of me?”

—Abraham Heschel



ASK DR. Z

Fracture treatment is not common knowledge. With each newsletter, Dr. Zirkle will impart a bit of his orthopaedic expertise to give us a better understanding of the SIGN implant system.



QUESTION: The SIGN nail passes through the central canal of the long bones of the leg (the tibia and the femur). Isn't this where the bone marrow is? Is blood production diminished?

ANSWER: In adults, the marrow in the long bones is primarily yellow marrow, consisting of fat cells. The red marrow that produces blood cells is found in the flat bones of the body (especially the pelvis and the ribs). Consequently, inserting the SIGN nail does not disrupt blood production. Displacing the yellow marrow poses no problems.

A SPECIAL THANK YOU:

SIGN would like to extend a special thank you to three companies that have assisted us considerably. **Acumed, Inc.**, an orthopaedic implant company, has contributed machining equipment, SIGN's first implants, financial assistance, and management and technical expertise. Dave and Missy Schlotfeld, the owners of **United Home Builders**, have volunteered many hours at SIGN and have supported SIGN financially. **Framatome** has provided SIGN with engineering and manufacturing expertise and recently donated a Smart Scope machine to make precise inspections of our instruments and implants. SIGN is grateful for their help.

Printing Donated by The Digital Image

IN THE SHOP

Richard Grizzell, Production Manager

It can seem like a large leap from the machine shop to the operating room, but in the SIGN shop we maintain a perspective that goes beyond machines, tools and metal. We envision people walking because of the product we make.



We are continually looking for ways to increase our product quality and our production capacity. Being a small shop allows us to respond rapidly to the needs of the surgeon and patient. When SIGN's Bangladesh project revealed a need to change our Cortical Screw design to accommodate the harder bone of Bangladeshis, a new prototype was presented to Dr. Zirkle within days. A modification to an existing product may seem minor but can have a major impact in the way a product is manufactured.

In 2002 SIGN has designed and manufactured 21 new products: the Locking Bolt, the Depth Gauge, the 25 mm Cortical Screw, the Exttractor Rod and Handle, 11 mm and 12 mm Tibia Nails each at six different lengths, and 11 mm and 12 mm Retrograde Nails each at two different lengths. Product improvements have been made to the Distal Cap Screw, the T-Handle, the Slot Finder, the Cannula, and the Hand Reamer.



Swiss Screw Machine in SIGN's shop, daily producing SIGN nails and screws

THANK YOU to all FRIENDS of SIGN

1st Annual SIGN Golf Tournament

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