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Morgan Stanley Children's Hospital of New York-Presbyterian/Columbia University Medical Center

Spasticity: Balancing Treatment Options

by Michael G. Vitale, MD MPH, *Chief of Pediatric Spine and Scoliosis Surgery*

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Children with neuromuscular disorders can develop a wide range of problems as a result of the overactivity or spasticity of their muscles. Fortunately, there are a wide range of treatment options for affected children. As a child grows and muscle tone, joints and limbs change, a preferred treatment option at one stage might not be ideal in the next.

Children with spasticity have the opportunity to be evaluated by our multidisciplinary group of pediatric orthopaedic surgeons, neurosurgeons, neurologists, physical therapists and nurses, and the entire gamut of treatment options are considered. At the Children's Hospital of New York-Presbyterian (CHONY), where "Quality of Life" research is our hallmark, our focus is on improving the quality of life and long term function of children with neuromuscular disorders.

Botox injections continue to prove beneficial in specific muscles of the lower and upper limbs for specific goals. The injections block overactive nerve impulses that trigger excessive muscle contractions. While these injections often need to be repeated over time, in some cases Botox can provide children with improvements in function that can be maintained with appropriate therapy and bracing. Our dedicated pediatric physical therapy and orthotics teams have extensive experience in this area.

Two surgical options have been gaining popularity, and both are performed with very positive results at CHONY.



Baclofen pumps can reduce spasticity, and are one of the surgical options to explore

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Spasticity Clinic Expands Hours

The Spasticity Clinic at the New York-Presbyterian Hospital opened its doors one year ago to 20 patients. Today, the Spasticity Clinic is expanding its hours to provide access for their more than 100 patients. Patients find Genevieve Chirelstein, Nurse Practitioner, coordinating their treatment plan that includes a team of healthcare specialists. During the initial evaluation with comprehensive measurements of tone and flexibility, patients and their families are introduced to physical therapists, occupational therapists, orthotists, pediatric neurologists, pediatric orthopaedic surgeons, and pediatric neurosurgeons. In addition, Spasticity Clinic team members provide professional education to caregivers throughout New York City. If you are interested in the services of this multidisciplinary team, call for an appointment at 212-305-9606.

Peter's CP Surgery at Young Age

by David P. Roye, Jr., Chief of Pediatric Spine Surgery

While we often prefer to delay surgery until later in childhood, the progression of Peter's symptoms forced his family and Dr. Roye to intervene just after he turned five years old. Dr. David P. Roye, Jr., Chief of Pediatric Orthopaedic Surgery, explained there was some concern that through his upcoming growth spurts, the surgery may need to be repeated. Parents and surgeon agreed that the significant improvements that Peter would experience would be worth the possibility that his symptoms might recur.

Peter was born 3 months premature weighing 1 lb, 10 oz, and was 12 inches long. At around age 2, his developmental delays were indeed diagnosed as CP. Peter's degree of the disorder, however, was relatively minor. His father Ken describes, "his gait is not natural – one knee doesn't perform, and his arms are sometimes not doing what he wants them to. But Peter has no mental retardation, and in fact is a very bright child." No research exists for CP patients who have these lesser degrees of physical issues and normal intelligence.



Peter, age 8, has cerebral palsy, but thanks to surgery is able to climb the rock-walls

The surgery performed included bilateral femoral osteotomy with muscle lengthening. In this procedure the leg bones were cut to separate them and change the rotation angles, and then reconnected with a special implant designed for kids. Surgery was done on both legs. "We saw significant improvement after the first surgery," said Ken. "Peter was joining in all of the kids' games. But after 2 years, his right knee was angling in again."

Peter's 2nd surgery was last year – when he was 7. This time, it was a repeat of the femoral osteotomy on the right leg, and removal of hardware on the left. Recovery followed the same pattern: hospital, home, and then to

a specialized hospital for therapy. And again, after surgery, Peter was able to participate in all of life's activities. Today he is a very active 8 year old – swimming, karate, and even rockclimbing.

"We have a very happy, social kid," described Ken as he explains how the surgeries have improved the quality of his child's life. "We are hopeful that the surgeries will delay future disabilities, but we are certain it was the right thing for him now."

Note Recent Research:

Assessment of health status in patients with cerebral palsy: what is the role of quality-of-life measures?

Vitale MG, Roye EA, Choe JC, Hyman JE, Lee FY, Roye DP Jr. *J Pediatr Orthop*. 2005 Nov-Dec;25(6):792-7.

Recently Published Research

"Osteogenesis Imperfecta: Determining the Demographics and the Predictors of Death from an Impatient Population"

J Pediatr Orthop, March 2007

"Coronal and Sagittal Plane Correction in Adolescent Idiopathic Scoliosis: a comparison between all Pedicle Screw vs. Hybrid Thoracic Hook Lumbar Screw Constructs"

Spine J, February 2007

"Epidemiology of Pediatric Spinal Cord Injury in US, Years 1997 and 2000"

J Pediatr Orthop, Nov-Dec 2006

Chest Wall Deformity Conference

The Pediatric Orthopaedics Division recently hosted a professional conference for pulmonary and orthopaedic surgeons to discuss treatments for children with compromised chest walls and chest wall deformity. Drs. Roye and Vitale led other national experts as they presented their latest findings in VEPTR and growing rod procedures. Bringing the two specialties together to discuss a common concern was a refreshing approach, described one of the conference attendees. Sharing clinical approaches helps to broaden the treatment options for all patients.



Orthopaedic and Pulmonary physicians come together at our conference, to discuss different approaches to a common problem

Spasticity: Balancing Treatment Options

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Michael G. Vitale, MD, Chief of Scoliosis and Spine Surgery, performs muscle release and tendon-lengthening procedures.

Richard Anderson, MD, Pediatric Neurosurgeon and Director of the Spasticity Clinic, performs implants of the Baclofen pump into the abdominal wall. The infusion of Baclofen has been clearly effective in reducing spasticity. In addition to this, he treats some children with severe spasticity with selective dorsal rhizotomy. This procedure isolates the sensory spinal roots and stimulates each one electrically to determine which is causing spasticity. The spastic roots are then cut, significantly reducing the amount of signals being transmitted to the muscles. With the normal roots left in place, spasticity is reduced.

Spasticity in children is often associated with spinal cord injury, brain injury or cerebral palsy. According to a recent report issued by Dr. Vitale and the Pediatric Orthopaedic Research Group, about 1,400 children and teens aged 0 to 18 years are admitted to U.S. hospitals each year for treatment of spinal cord injury. That translates to nearly two children or teens with spinal cord injuries per 100,000. Other reports indicate the incidence of cerebral palsy is thought to vary from between 1.5 to 4 per 1000 live births. This amounts to approximately 5,000-10,000 babies born with cerebral palsy each year in the United States. Physicians treating children with spasticity will look to a combination of orthopaedic and neurological treatment options, balanced with Quality of Life outcomes.

Alex Tepedino Fundraiser nets \$180,000



Kerry and Michael Tepedino simply asked their friends to help. Through a letter writing campaign, the Tepedinos described the care their son Alex received after he was diagnosed with a fibrous lesion. Alex, now age 3, has undergone surgery and has lived with an external fixator on his leg as he has learned to grow, walk and explore his surroundings. The Tepedinos are so grateful for the treatment plan and guidance they received from Dr. Roye; they are assured their son will be running and jumping soon. The Tepedinos asked their friends to help them start the *Alexander Tepedino Research Fund*, and to date they have received over \$180,000 in donations. The money will be used in our on-going research effort to improve children's quality of life, alleviate chronic pain and test new techniques to treat pediatric orthopaedic disorders with less invasive procedures. The research will focus not only on fibrous dysplasia, but also on the treatment of such disorders as spine deformity, scoliosis, chest wall deformity, clubfoot, pelvic fractures and hip disease. Donations are accepted on-line at www.childrenorthopaedics.com



Vincent A. Benenati, CEO of East Coast O&P, surrounded by his team, from left to right, Laura Bernal, Shirley Valle, Jon Feliciano, Tom Giordano and Carolina Cruz.

MEET THE ORTHOTICS TEAM

With so many of the Pediatric Orthopaedic treatment plans including braces or prosthetics, East Coast Orthotic & Prosthetic Corp., led by Vincent Benenati, a certified orthotist and East Coast's co-owner and CEO, is available on site. Their 10,000 sq ft lab, located in Nassau County, manufactures these custom braces and prosthetic limbs. East Coast is approved by nearly all insurance carriers.

This twelve-year-old organization has gained a leadership status in the New York area, for its innovation and understanding of New York Presbyterian's patient population. "Growing up is hard enough for an infant or youngster without the added burden of physical challenges," describes Mr. Benenati. "East Coast O & P recognizes that we are treating not only pediatric patients – but their parents and families. Physical and emotional comfort through the confidence demonstrated by the qualified East Coast team is critical for a successful patient experience."

Key to East Coast's success is its staff and the service they provide. There is a full time staff of fourteen employees at NY-Presbyterian and the back up of over 75 employees throughout the company. They are available 24 hours a day, seven days a week... something on which doctors, staff, patients and family members have come to depend on. With employees from over fourteen countries that speak seven different languages, they have built a staff that is just as diverse as NY-Presbyterian's patient population.

One of their innovations is a computer-aided device to capture measurements of a patient. What once took hours or days now takes just minutes. Traditionally patients that needed a prosthetic would need to undergo messy plaster casting and lengthy waiting time. East Coast O & P uses a CAD/CAM system that takes measurements with a "digital pen" by tracing the body part and transmitting measurements to the computer. This allows for a much quicker turnaround time which in turn gets the patient up and walking faster.

Mr. Benenati and his team encourage children to choose their favorite colors, sports imagery or cartoon characters to permanently adorn their therapeutic devices. This seemingly small step makes great strides in building the positive assurance and self-esteem of the children.

Vincent Benenati and the East Coast staff are very proud to be part of the NY-Presbyterian Team.

Support Pediatric Orthopaedic Research -see our inside stories and updates-, by donating online at www.childrensorthopaedics.com/donate.html

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Sunday, July 29, 2007 - KIDS' CLOWN WORKSHOP

Join the Big Apple Circus Clowns and the Pediatric Orthopaedic Surgery Team for a Benefit Program to help children with orthopaedic issues gain confidence and feel extra special. The Kids Clown Workshop is designed for past and present patients ages 10 and older. Participants will learn how to juggle, do tricks and learn the magic of laughter. Clowns have prepared instructions tailored to a child's abilities. If your child would like to attend this 3-hour Kids Clown Workshop, or you would like to sponsor a child, give us a call, at (212)-305-5475. The first Kids Clown Workshop is scheduled for Sunday, July 29, 2007 from 1:30 pm to 4:30 pm. Tickets and sponsorships are \$150 per child, or \$250 for 3 children. Partial sponsorships are welcome. All proceeds will help support the Pediatric Orthopaedic Research Fund - impacting the lives of patients today, and thousands of children in the future.

Serving the Tri-State area with 10 convenient locations

We have recently expanded our hours in our Eastside and Greenwich offices.
Call: 212-305-4565 for an appointment

Visit our website www.childrensorthopaedics.com

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(Printer please insert here your initials)