



Orthopedic Care Center Hand and Orthopedic Upper Extremity Program Constriction Ring Syndrome

Whether your child or loved one suffers a broken arm, a sports-related injury or the most complex spine condition, The **Orthopedic Care Center** at Children's Hospital Boston is committed to providing comprehensive and compassionate care. Established in 1903, we are among the world's most experienced pediatric orthopedic programs, treating a high volume of some of the most complex orthopedic conditions. And with 10 specialty clinics, we are the largest in the country. We are also one of the busiest. Each year, our staff attends to about 80,000 patient visits and conducts about 5,000 surgeries. In 2010, we were ranked #1 in pediatric orthopedics by *U.S. News & World Report*.

The **Hand and Orthopedic Upper Extremity Program** provides comprehensive care for infants, children and adolescents with a wide range of complex upper limb conditions. Multidisciplinary care involving occupational and physical therapy, splinting, casting and reconstructive surgeries is provided for congenital, neuromuscular, sports-related oncologic, traumatic or post-traumatic conditions.

What is constriction ring syndrome?

Constriction ring syndrome, also known as amniotic band syndrome, is a congenital (present at birth) disorder that occurs when fibrous bands of the amniotic sac (the lining inside the uterus that contains the fetus) become entangled around a developing fetus.

In some cases, the bands wrap around the fetus's head or umbilical cord. More commonly though, the bands wrap around a limb, fingers or toes, creating severe constrictions -- similar to what happens when you wrap a rubber band around your arm or leg.

This sometimes results in nothing more than an unsightly, circumferential cleft (indentation) extending around a finger or limb. However, deeper bands can cause severe swelling, cut off of lymphatic or venous flow, and interfere with development of the appendage. If a band is tight enough, the constriction may even cause an in utero (before birth) amputation of the appendage.

What causes constriction ring syndrome?

The exact cause of the syndrome is unknown, but it is not believed to be hereditary. Many cases seem to occur for no apparent reason.

How common is constriction ring syndrome?

Constriction ring syndrome occurs in about 1 in every 10,000-15,000 births. It is believed to occur more frequently in the upper extremity rather than lower extremity.

How is constriction ring syndrome diagnosed?

Occasionally, constriction ring syndrome can be diagnosed before birth by prenatal ultrasound. However, the majority of cases are diagnosed at or shortly after birth. The diagnosis is typically made by the treating physician after a thorough medical history and physical examination. X-rays of the affected limb are also used to help assess the degree of involvement.

How is constriction ring syndrome treated?

Treatment of constriction ring syndrome is individualized according to your child's specific condition. In general, if your child has shallow, incomplete constriction rings, he may be treated with a simple day surgical procedure. If your child has deep constriction rings, one or more surgeries may be required to improve the appearance and function of the affected hand. Surgeries are usually performed after your child and his hand have had time to grow (6 months -1 year). Deep constriction rings that impede blood flow must be addressed immediately, however. It is important to note that despite the differences in appearance, affected hands/fingers generally have excellent long-term function.

Synonyms

ADAM Complex, amniotic band sequence, amniotic band syndrome, amniotic disruption complex, amniochorionic mesoblastic fibrous strings, congenital amputation, constriction band syndrome, congenital constricting bands, Streeter bands, tissue bands.

Clinical Team

Peter M. Waters, MD
John E. Hall Professor of Orthopedic Surgery, Harvard Medical School
Clinical Chief, Orthopedic Surgery, Children's Hospital Boston

Donald S. Bae, MD
Assistant Professor of Orthopedic Surgery, Harvard Medical School

Apurva S. Shah, MD
Clinical Fellow in Orthopedic Surgery

Locations

Children's Hospital Boston
300 Longwood Avenue
Fegan 2
Boston, MA 02115

Children's Hospital Boston
at Waltham
9 Hope Avenue
Waltham, MA 02453

Children's Hospital Boston
at Lexington
482 Bedford Street
Lexington, MA 02420

Boston Children's North
10 Centennial Drive
Peabody, MA 01960