Commonly called “webbed” or “fused” fingers, syndactyly is one of the most common hand differences seen by pediatric hand and upper extremity surgeons.

Treating Syndactyly

Creating a safe environment

The importance of partnership

Facing spina bifida with confidence

New doctors around the state
Two decades of committed care for children

BY THOMAS T. SATO, MD

Twenty years ago, the pediatric specialists of the Children’s Wisconsin Health Group and the Medical College of Wisconsin launched a joint venture: The Children's Specialty Group. This group has become one of the most successful pediatric specialty practices in the country for a number of reasons, but principally because both organizations recognized that in order to recruit and retain top-tier medical talent, it is critical to have both an outstanding academic partner and a world-class children’s health system.

The Children’s Specialty Group comprises more than 620 physicians, advanced practice nurses and physician assistants who provide care throughout Wisconsin. Contemporary pediatric specialty services are now largely multidisciplinary, as specialized clinical and support services are well beyond the scope and scale of any individual.

For example, our pediatric neurosciences team includes experts in pediatric neurology, neuropsychology, neurosurgery, hospital medicine and critical care, and physical and occupational therapy. This type of multidisciplinary approach to taking care of kids with epilepsy or brain tumors, for instance, would be difficult to achieve outside of a major children's hospital.

The resources we have here at Children’s Wisconsin and the Medical College of Wisconsin are impressive, not only from a patient care standpoint, but from academic, educational and research standpoints as well. We have substantial bench-to-bedside research that occurs within the clinical practice. Some of our best examples are related to COVID-19. We have pediatric pathologists and infectious disease researchers who study respiratory viruses, and they have transitioned their research labs to make clinically applicable COVID-19 testing for children admitted to the hospital. It has been absolutely game-changing.

It has always been our mantra to provide safe and effective care to the children and families we serve. We also are doing our utmost to protect our providers and staff. If there is one thing that the pandemic has shown us, it is that individuals and institutions have to be both innovative and resilient.

Best,

Thomas T. Sato, MD, FACS, FAAP
CEO, Children's Specialty Group
Senior Associate Dean
Professor of Surgery, Division of Pediatric Surgery
Children’s Wisconsin/Medical College of Wisconsin
Creating a safe environment

A conversation with Children’s chief medical officer about safety in the time of COVID-19

Children’s Wisconsin is committed to the health and well-being of children. We are looking to our own nationally recognized infection prevention experts, as well as guidelines from the Centers for Disease Control and Prevention (CDC) and Wisconsin Department of Health Services (DHS) to help guide us through our COVID-19 response.

Pediatric Rounds spoke with Michael F. Gutzeit, MD, chief medical officer at Children’s, about how Children’s is creating the safest environment possible for our patients, families, staff and providers.

What is Children’s doing to prevent the spread of COVID-19 at the hospital and clinics?
The first element is the screening process. We actively engage every individual who enters our doors to assess whether they have evidence of illness.

The screening process involves asking questions about symptoms they might have, like fever or any type of respiratory symptoms. If they do, we implement appropriate safeguards to lessen the likelihood of any infection being spread. For our staff, we are also asking them to do temperature checks and self-screening before they come to campus, and we screen them when they arrive.

What else is different for patients and families who come to Children’s?
We attempt to contact families who have a scheduled appointment before they come to campus to prepare them for the changes they will experience and ask them to check themselves for symptoms. If they have certain symptoms, we ask them not to come to the hospital or to that appointment because of the risk of spreading the virus.

When they come, we are asking everybody to wear a face mask, and we will provide one if they don’t have one. We want to reinforce how important we feel that is, because we are in an environment where there are critically immunocompromised children in our care. We want to make sure that everybody in the organization realizes the importance of wearing face masks.

We’re also limiting the number of visitors allowed for patients in the hospital, as well as in the clinic setting. That was a difficult decision, because Children’s is very family-focused, but we feel it is in the best interest of our patients, families and staff members.

Is COVID-19 testing available at Children’s?
Currently, any of our staff who have symptoms are being tested. We are testing hospitalized patients and patients who are going to have a procedure, so we can assure that they do not have COVID-19 when they’re in the procedure area. And we are now able to test symptomatic patients, even those who might not be coming to the hospital.

The testing strategy is constantly evolving as we assess the best way to use the resources that are available.

How dangerous is COVID-19 for children?
In Wisconsin, 10% of all positive cases have been in individuals under 20 years of age and 3% in individuals under 10 years of age. So, relatively speaking, the overall impact has been less for pediatrics.

Continued on page 4
We all have been impacted by the coronavirus pandemic. In the spring, offices and schedules everywhere were disrupted. Both primary care and specialty care providers scaled back on the patients we saw, pushed back appointments and found creative ways to see some patients.

“We understand what our referring providers were going through because we were going through the same thing,” says Carey A. Ehler, MD, a neonatologist at Children’s Specialty Group and associate professor of Neonatology at the Medical College of Wisconsin.

As clinics and appointment schedules continue to adjust to the current conditions, we want referring providers to know that not only are we still there to support them, but we are committed to providing high-quality, safe care for kids.

“Our job is to make sure that when people are ready to come back, we’re going to provide the best and safest care,” Dr. Ehler says. “Throughout this whole process, we never stopped. Does it look a little different now? Absolutely. But it is still the safest we can provide.”

In fact, because Children’s hospital and clinics are entirely dedicated to caring for children, we are in a unique position. “Pediatrics has had a different experience with this virus compared to adult medicine in many ways. We are learning that the virus can show up differently in children, and we are staying sensitive to the fact...
that kids are experiencing the effects of social distancing in a way that can affect their mental wellness,” Dr. Ehlert says. “Now more than ever, it’s important to keep kids in a pediatric setting to protect them from unnecessary exposures and to ensure they are seeing providers who are trained to care for kids.”

As all providers work to balance safety with patient access to care, Children’s is here to take the burden off referring providers. “Send us your patients, and send us your referrals; we will take it from there,” Dr. Ehlert says. “If we can’t see your patient right away, we will partner with the referring provider to give you what you might need in the meantime. Our physician referral and consult line is still alive and well, and that’s a number that our referring providers can call 24/7 to speak with a specialist any time, any day of the week in order to get what they might need to bridge the gap until the patient can be seen.”

Sometimes, the way we see patients looks different, too. “Though telemedicine was on our radar before the pandemic, we pushed the fast forward button and jumped right in,” Dr. Ehlert says. “I think we’re all going to emerge from COVID-19 having learned a lot.”

And though the lessons learned about the role of technology in patient care are exciting, the real takeaway is the importance of partnership.

“We are more dependent on each other than ever,” Dr. Ehlert says. “We’re all learning that it’s the relationships we should be focused on.”

**Physician referral and consultation**
(414) 266-2460 or toll free (800) 266-0366

- Discuss a case
- Arrange a transport
- Arrange a direct admission
- Staffed 24 hours a day for urgent and non-urgent needs

**Continuing collaboration**

In 2019, Children’s repeated our biannual referring provider survey. Responses came in pre-COVID-19, but the points the survey highlights are especially relevant today.

“These are stressful times, and we all want to provide excellent care to our patients and give them the care they deserve,” Dr. Ehlert says, “so how we’re going to continue to collaborate with each other is really important.”

We thank referring providers for taking the time to give us their honest feedback. The results tell us where we’re succeeding and also guide us in making changes to improve our communication where needed.

**Key findings**

- 92% good to excellent
  - Courtesy and respect shown to providers
- 89% good to excellent
  - Returning patients for follow-up care
- 80% good to excellent
  - Communication when inpatient care is provided
- 86% good to excellent
  - Communication when outpatient care is provided
Facing spina bifida with confidence

Children’s Spina Bifida Program helps parents get the unique care their child needs

Learning that their baby has spina bifida can be confusing and scary for parents — especially because the severity of complications is unique to each child. Obstetricians can ease these fears by connecting parents with experts and resources to give their child the best chance for a healthy, active, independent life. Children’s Wisconsin helps approximately 300 families each year face those fears with confidence.

“When I counsel parents who are about to have a baby with spina bifida, I’m very optimistic,” says Andrew B. Foy, MD, a pediatric neurosurgeon in the Spina Bifida Program at Children’s. “The majority of our kids, with attentive parents and a program like ours behind them, have a lot of success.”

EXPERIENCED TEAM

The Children’s Spina Bifida Program has a multidisciplinary team that includes pediatric neurosurgeons, urologists, orthopedists and advanced practice nurses, as well as rehabilitation specialists, a social worker and a dietitian. This team works together to provide a comprehensive care plan for each child, with the goal of maximizing their physical potential and independence.

Spina bifida is sometimes called a “snowflake condition,” because it affects every person who has it differently. Most children with spina bifida who come to Children’s arrive as infants who need immediate surgery and ongoing therapy to address complications in growth and development. A patient’s functional independence will vary from case to case, but interventions can help children achieve a range of abilities, from walking to bowel and bladder control.

“When I meet with a family, one thing I always say is, ‘We’ve been doing this a long time, and we’ll see you through this,’” says Eileen Sherburne, an advanced practice provider and clinic nurse coordinator at Children’s. “We want them to get a sense that we’re in a partnership.”

SPECIALIZED CARE

That partnership includes the referring physician. Obstetricians and pediatricians play a key role in diagnosing spina bifida and caring for babies born with the condition. When a patient is referred to Children’s, our multidisciplinary team keeps the lines of communication open with referring providers. We recognize that referring providers have a deep understanding of their patients, and working collaboratively leads to the best quality of care.

In the first year of life, it’s important for children with spina bifida to have access to specialized care close to home. The frequency of appointments and range of specialists a child may need can be overwhelming for parents, so Children’s provides a clinic coordinator — like a personal team captain quarterbacking care for each child.

“We’re part of the team defining what’s working and what’s not for this patient population.”
Depending on a child’s diagnosis and circumstances, a social worker can help families apply for services and resources. And a liaison from the Spina Bifida Association (SBA) facilitates connections between families at Children’s and other families affected by spina bifida, creating a support community.

SBA, which advocates for people with spina bifida, recognizes Children’s as a Clinic Care Partner. Clinics that get this designation must meet 10 standards of care for people with spina bifida. “These clinics have dedicated health care professionals who partner with people living with spina bifida and their families to provide expert care and help identify research priorities,” the SBA says on its website.

ADVANCING TREATMENT
Children’s Wisconsin is among just seven spina bifida clinics in the country that receive funding from the Centers for Disease Control and Prevention (CDC), granting it access to exclusive data on spina bifida treatment. The CDC created the National Spina Bifida Patient Registry to track patients with spina bifida, the medical treatments they receive and their outcomes. The CDC also developed the Urological Protocol for Young Children, a program that enrolls babies with myelomeningocele spina bifida in a kidney-protection treatment plan and records their progress.

Both the registry and the protocol gather valuable data about patients living with spina bifida to continually advance care and reveal the latest results of medical interventions. Because Children’s is a CDC-funded member of both, patients benefit from the findings surfaced from these databases.

“We’re part of the team defining what’s working and what’s not for this patient population,” says Dr. Foy. “The more data we have on kids with spina bifida, the better their care will be.”

Because of the uniqueness of each case of spina bifida, there is no general prognosis, but Dr. Foy says children can achieve great outcomes when providers work together to provide the right medical interventions early in life.

To refer an expectant parent to Children’s Wisconsin’s Spina Bifida Program, contact the Fetal Concerns Center at (414) 337-4776. To refer a child with spina bifida, call (414) 607-5280.
Fracture care close to home

Our pediatric specialists know how to treat growth plate damage

Same-day fracture care is available with Children’s Wisconsin’s pediatric orthopedic specialists at four convenient locations with expansion to Kenosha once a week. Care is simplified and streamlined thanks to onsite services such as radiology, which allow for evaluation, imaging, treatment planning and immobilization all in one visit.

Because our orthopedists are pediatric specialists, they are able to evaluate every fracture for injury to or near the growth plates. Damage to the growth plates can cause long-term problems as the bones and joints develop if it is not treated appropriately. Providers who focus on adults or in standard ERs may overlook these subtle but important differences in pediatric fracture care.

When families are concerned about a fracture, direct them to Children’s — with locations in Milwaukee, Delafield, Greenfield and Mequon — for the best in pediatric fracture care. Learn more at childrenswi.org/fracture.

Download specialty care guidelines

Children’s supports you with educational resources

At Children’s Wisconsin, we focus on delivering what’s best for children. And we know that sometimes it’s best for patients to receive care from their own primary care physicians.

To support you, Children’s offers specialty care guidelines, as well as educational resources, that can be viewed online or downloaded. These resources cover a number of specialties and topics, including:

- Adolescent medicine
- Asthma, allergy and immunology
- Birthmarks and vascular anomalies
- Cardiology
- Craniofacial
- Dental and oral health
- Dermatology
- Diabetes
- Down syndrome
- Endocrinology
- Gastroenterology
- Imaging
- Neonatology
- Neurosurgery
- Orthopedics
- Otolaryngology
- Psychiatry
- Sports medicine
- Urology

Find specialty care guidelines for these and more topics at childrenswi.org/careguidelines.
Treating syndactyly

Surgery can correct the functional challenges caused by this common congenital hand difference

BY JESSICA HANLEY, MD

Syndactyly is one of the most common congenital hand differences seen by pediatric hand and upper extremity surgeons. Colloquially known as “webbed” or “fused” fingers, syndactyly occurs in approximately 1 in 2,500-3,000 live births. In addition to the obvious cosmetic disparity, there are many functional challenges this congenital difference presents. Independent movement of all digits and adequate web spaces between fingers provides unique capabilities, such as manipulating objects and performing many fine motor functions in daily life.

Jessica Hanley, MD, is an orthopedic surgeon who specializes in pediatric hand and upper extremity surgery at Children’s Wisconsin and assistant professor of Orthopedic Surgery at the Medical College of Wisconsin.
The prevalence of syndactyly is slightly higher in males and is more commonly seen in Caucasians. It is frequently bilateral and can also be seen in toes, although the functional deficits in affected feet often are not as significant as the hands.

Additionally, there are certain fingers that are more commonly affected than others: the third webspace, or the space between the long and ring fingers, comprises approximately 50% of syndactyly cases. The fourth webspace is the second most often affected, with 30% of cases involving the ring and small finger. The index and ring fingers (second webspace) are affected approximately 15% of the time, while the first webspace (between the thumb and index finger) is the least often involved in syndactyly.

CAUSES
Genetics certainly play a role in the occurrence of syndactyly, and many cases are thought to be autosomal dominant with variable expressivity and penetrance.

Syndactyly can be associated with other childhood congenital conditions. For example, children with Apert’s syndrome often have syndactyly and can have varying degrees of involvement. The most common presentation is a “rosebud hand,” which is a complex bony syndactyly involving the index, long and ring fingers.

Syndactyly also can be seen in conjunction with other congenital hand differences, including amniotic band syndrome, cleft hand (ectrodactyly), polydactyly, or symbrachydactyly. However, there are many cases that are sporadic, so a genetics referral is not necessary in every case.

Syndactyly is generally thought to be a “failure of differentiation.” During the fifth week of gestation, the hand segment is essentially a paddle that separates into five individual digits via apoptosis of the interposing tissue. If there is a glitch in the system, the digits are not adequately divided, resulting in syndactyly.

CLASSIFICATION
Not all syndactylies are created equal. There are varying degrees of complexity and severity of syndactyly. Luckily, there is a simple and easy-to-remember classification system that allows for an accurate description of the case as well as insight into whether further genetic testing should be performed.

Syndactyly is classified as “simple” or “complex” and “complete” or “incomplete.” Simple refers to syndactyly that only involves soft tissue, whereas complex syndactyly includes bony fusion of the adjacent digits. Clinical examination in addition to a single posterior-anterior (PA) radiograph will help to differentiate the two. Complete syndactyly refers to fusion of the digits from the webspace all the way to the most distal fingertip (Figure 1). An incomplete syndactyly has a distal web commissure ending proximal to the fingertips.

TREATMENT
Surgical release is recommended for nearly all levels and presentations of syndactyly. While the decision to operate is not controversial, there is some debate about the timing and technique of surgical release. Generally, children with border digit syndactyly (fusions involving the thumb or small finger) are recommended to have surgery early, around 6 months of age. This is to prevent tethering and growth disruption to the longer

“Syndactyly is one of the most common congenital hand differences encountered by the pediatric hand surgeon.”
digits — the ring finger in a fourth webspace syndactyly and the index finger for a first webspace syndactyly. If ignored for too long, these digits can develop flexion contractures and angular deformity as the child grows. For central syndactyly, or syndactyly involving the second or third webspace, surgery is usually initiated around 9-18 months of age. Contraindications to surgery are few and generally seen in complex syndactyly cases when surgical release of the syndactyly would result in worsened hand function or motion.

While there are many different techniques for release, the surgical concepts remain the same. The surgeon often uses a Z-plasty graft design to rearrange and separate the fingers (Figure 2). When the digits are separated in surgery, this leaves behind several areas devoid of skin. Thus, extra skin is often needed from another source. There have been many efforts to design skin flaps that provide circumferential coverage to both fingers while avoiding skin grafts; however, this is quite challenging. Full thickness skin grafts are required in the majority of cases to cover the areas of missing skin between digits. The donor site for skin graft is largely dependent upon surgeon preference. Most commonly, a full thickness skin graft is taken from the groin or antecubital fossa. Skin flaps are sewn in with absorbable sutures, and children are usually placed into a long arm mitten cast covering the digits completely to protect the surgical sites until healing is complete.

Postoperatively, the cast is removed around three to four weeks, and the wounds are inspected. Sometimes scar massage and further wound care is necessary and often facilitated by a certified hand therapist. The most severe surgical complications include graft failure, infection or intraoperative neurovascular injury. However, the most common complication in a syndactyly release is “web creep,” which occurs in 7%-60% of cases. Web creep is the distal migration of the newly created web commissure. This is often caused by inappropriate flap design or failure to maintain adequate separation of the digits while the wounds are healing. Families can be prescribed a silicone or elastomer splint to keep pressure at the webspace for several months after surgery to combat web creep.

CONCLUSION
Syndactyly is one of the most common congenital hand differences encountered by the pediatric hand surgeon. Treatment is often surgical release at an early age and usually requires full thickness skin grafts from the groin or antecubital fossa. Most children with syndactyly do quite well after surgical release and achieve satisfactory cosmetic and functional results.

REFERENCES
The Orthopedics department at Children’s Wisconsin has repeatedly been recognized by *U.S. News & World Report* among the nation’s best providers of orthopedic care for kids. Within the Orthopedics department, the Hand and Upper Extremity Program offers rare specialty care for kids with traumatic hand injuries and congenital conditions of the upper limbs.

Because hand and upper extremity anatomy is complex, injuries can be overlooked or misdiagnosed. That’s where this program’s expertise is particularly valuable.

The only practice of its kind in Wisconsin, the Hand and Upper Extremity Program is led by Jessica Hanley, MD, a fellowship-trained orthopedic surgeon, and supported by a team of specialists, including a certified hand therapist, an athletic trainer and cast technicians.

Since the fall of 2019, the team has been treating a broad spectrum of conditions. Infants, children, adolescents and young adults all can receive multidisciplinary care for conditions of the shoulder, arm, elbow, wrist and hand through the program.

Orthopedic surgery may be needed for traumatic injuries, such as when a broken bone needs plates or pins to heal. Surgery may also be recommended for congenital differences, like polydactyly, or neuromuscular conditions, such as cerebral palsy. Depending on a child’s treatment plan, the team also can offer casting, bracing and therapy.

“Some upper extremity conditions and injuries may require surgery, but many can be treated nonoperatively,” Dr. Hanley says. “Our program offers a multidisciplinary approach for each child.”
In this together
*Children’s CME events move online*

As our lives have been impacted by the COVID-19 global pandemic, Children’s Wisconsin continues to monitor the daily changes and implements policies as more information is discovered.

The safety of our patients, families, staff, referring providers and community is our top priority. Children’s also is committed to supporting CME for medical professionals. To be stewards of our organization and adhere to safety policies, we will hold virtual CME events, in lieu of our traditional CME dinners, for the remainder of 2020. Get updates and learn from our specialists in urology, endocrinology, dermatology, cardiology and more.

Participants are eligible to earn *AMA PRA Category 1 Credit™* if they participate live and complete the evaluation. Presentations will be recorded and available on-demand, however post-event viewing is not eligible for *AMA PRA Category 1 Credit™*.

We are here for you, your patients and families.

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2020 Connect with Children’s webinars and virtual events

Join Children’s live online for these upcoming CME events:

**Tuesday, Oct. 13**
Karen Zorek, MD; Janice Bitong, MD;
Tara Turner, CD, CNSC, RD;
Mindy Aldinger, SLP | Nutrition
Stephanie Handler, MD | Pulmonary
Hypertension Screening in Premature and Newborns

**Wednesday, Nov. 11**
Ankur Chugh, MD | Celiac Disease and Gluten Sensitivity
Laura McCauley, MD | Pulmonary Medicine

**Tuesday, Dec. 8**
Sophie Shay, MD | Otolaryngology
Becky Buelow, MD | Asthma and Allergy

Register
childrenswi.org/cme

Contact for CME events
Betsy Malten, (414) 266-6242
or emalten@chw.org
Daniel Beacher, MD, is a pediatric cardiologist at Children’s Wisconsin and assistant professor of Pediatric Cardiology, Medical College of Wisconsin.

Ashley Bolin, MD, is a pediatric emergency medicine physician at Children’s Wisconsin and assistant professor of Pediatric Emergency Medicine, Medical College of Wisconsin.

Veronica Korthals, MD, is a pediatric emergency medicine physician at Children’s Wisconsin and assistant professor of Pediatric Emergency Medicine, Medical College of Wisconsin.

Alison Coren, MD, is a pediatric endocrinologist at Children’s Wisconsin and assistant professor of Pediatric Endocrinology, Medical College of Wisconsin.

Alicia Sprecher, MD, is a neonatologist at Children’s Wisconsin and assistant professor of Neonatology at the Medical College of Wisconsin.

Retirements

Children’s Wisconsin thanks these providers for their years of service.

Michael J. Chusid, MD | 1984–2020
Infectious Disease

Stephen F. Conley, MD | 1990–2020
Otolaryngology

John Humphrey, MD | 1981–2020
Critical Care

Earnestine Willis, MD | 1995–2020
Community Pediatrics
Niyati Mehta, MD, is a pediatric neurologist at Children's Wisconsin and assistant professor of Pediatric Neurology, Medical College of Wisconsin.

Kant Y.K. Lin, MD, is medical director of the Center for Craniofacial Disorders at Children's Wisconsin and chief and professor of Pediatric Plastic Surgery, Medical College of Wisconsin.

Sara Dawson, MD, is a pediatric pulmonologist at Children's Wisconsin and assistant professor of Pediatric Pulmonary Medicine, Medical College of Wisconsin.

Sara Sabbagh, DO, is a pediatric rheumatologist at Children's Wisconsin and assistant professor of Pediatric Rheumatology, Medical College of Wisconsin.

Neurology

Plastic Surgery

Pulmonology

Rheumatology

KEY TO SYMBOLS: DEGREE RESIDENCY FELLOWSHIP BOARD CERTIFICATION

Children's Wisconsin would like to thank the following providers for their contributions. We wish them well in future endeavors.

Rita Alvarez, MD, Critical Care
Charles Bergstrom, MD, Critical Care
Sarah Dobroszi, MD, Hematology/Oncology
Michael Earing, MD, Cardiology
Ben Earle, MD, Hospital Medicine
Kristin A. Hoff, PsyD, Orthopedics
Kavi Madhani, MD, Hospital Medicine
Ameya Patil, MD, Nephrology
Brittany Player, DO, Hospital Medicine
Ann R. Punnoose, MD, Cardiology
Yan Zhan, MD, Emergency Medicine
Sarah Zuk, MD, Emergency Medicine
Here for you whenever or wherever you need us

The Children's Wisconsin physician liaison team is available to you in-person or virtually and is dedicated to developing and maintaining relationships with referring physicians.

In addition to serving as a link between Children’s and referring physicians, our liaisons can:
  • Provide information about Children's services and programs
  • Direct you to continuing education opportunities
  • Facilitate solutions to referral issues

Contact your liaison:

**Northeast Wisconsin**

Nancy Pontius
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**Metro Milwaukee**

Lisa Magurany
(414) 266-4743
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**Racine/Kenosha**

Christa Armeli
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**Outside a physician liaison territory:**

Physician Support Services
(414) 266-2310