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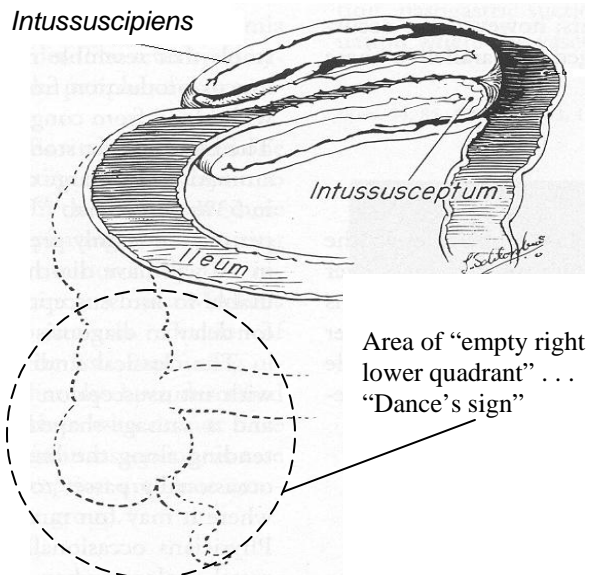
Your patients deserve consistent care from experienced surgeons who are Board Certified in Pediatric Surgery. Regardless of which PSA surgeon is on call, or which one is rounding on the group's patients that day, you will find little variation in expertise among the four of us; we have the most total years of surgical experience, and most importantly, each of us is Board Certified in Pediatric Surgery.

INTUSSUSCEPTION

Intussusception is a relatively frequent cause of intestinal obstruction in infancy and early childhood. It occurs when a section of proximal bowel (the intussusceptum), generally the terminal ileum, telescopes into the more distal bowel (the intussusciens) and is drawn through the ileocecal valve into the proximal colon. Two-thirds of all cases occur by 1 year of age, 80% by 2 years, and 90% by 3 years. The peak age for intussusception is between 5 and 10 months of life. Intussusception occurs more commonly in boys than girls (by a 3:2 ratio), and most babies are well-nourished and otherwise healthy; children with cystic fibrosis or Henoch-Schonlein purpura are exceptions.

The cause of most cases involving children less than 2 years of age is rarely identified. Approximately 1/3 of cases in this age group follow an episode of viral gastroenteritis or an upper respiratory infection, which may explain the higher incidence of intussusception in the spring and fall. Perhaps the most prevalent theory for the etiology of otherwise idiopathic intussusception is that an adenovirus or some other infectious agent causes primary lymphoid hyperplasia or hypertrophy of a mesenteric lymph node, which then becomes entrapped in the bowel wall and serves as the lead point for the intussusception. In older children, intussusception is more likely to be caused by a distinct pathologic lead point and must be investigated; such diagnoses include a B-cell lymphoma, a Peutz-Jeghers polyp, an inverted Meckel's diverticulum, a submucosal hemangioma, a carcinoid tumor, or an *Ascaris lumbricoides* worm infestation.

The clinical presentation of intussusception typically includes a sudden onset of abdominal pain (85%) with episodic screaming, sweating, and drawing up of the legs to the



abdomen. Vomiting may follow (85%); this may initially be clear (as early on it is reflexive in nature), but it will eventually become bilious as obstruction worsens. Blood in the stool is a common finding varying from occult blood to bright red bleeding; the classic description of "currant-jelly stool" (blood mixed with mucus) is most common. The ab-

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domen is often distended, the right lower quadrant may feel empty (Dance's sign), and a sausage-shaped mass may be palpable in the upper right to mid-abdomen (65%). In extreme cases the intussusceptum can be palpated on rectal examination and may be mistaken for rectal prolapse. Lethargy is a common presenting sign, and in 10% of children presenting with intussusception, it is the only sign or symptom, sometimes mimicking meningitis. The child is often pale and febrile, and the blood count may show a leukocytosis. Plain flat and upright abdominal radiographs may show dilated loops of small bowel, air-fluid levels, or a mass effect in the right upper quadrant. A contrast enema may outline the intussusceptum--the so-called "coiled spring sign".

An infant with suspected intussusception is managed by intravenous fluid resuscitation, insertion of a nasogastric tube and administration of antibiotics. Only after rehydration is the child taken to the radiology suite for diagnostic ultrasonography and attempted hydrostatic reduction of the intussusception. The surgeon should always be alerted prior to attempted reduction in case the procedure is unsuccessful or worse, perforation of the intussusciens occurs.

Hydrostatic reduction by enema has been the mainstay of non-operative treatment since 1876 when Hirschsprung in Denmark demonstrated cure rates by this technique to be superior to surgical intervention. Water was used initially, followed by saline, then barium. Currently, a water-soluble contrast medium is used and the procedure is performed with fluoroscopy. Air reduction of intussusception was first reported in a large number of cases in China. This technique is now commonly performed in the United States and Canada. Reports suggest that the air reduction technique is as effective as the barium enema. Gentle continuous hydrostatic pressure with a maximum of 110 mm Hg in children and 80 mm Hg in infants is delivered until either complete reduction is achieved or progression of the reduction ceases. Reduction is considered to be complete when the intussusceptum passes through the ileocecal valve and the contrast material refluxes into multiple small bowel loops. The rate of

successful reduction varies from center to center, but generally ranges between 50 and 75%. Perforation occurs more commonly in babies less than 6 months of age and when symptoms have been present for more than 3 days; the perforation rate is similar between the hydrostatic and air techniques. Some centers will not attempt reduction if the infant has had symptoms for longer than 72 hours and has a severe obstructive bowel pattern on plain abdominal radiograph.

Unsuccessful reduction is followed by an immediate trip to the operating room. Laparotomy is carried out through a transverse right lower quadrant abdominal incision. The intussusception is identified, and manual reduction is attempted using a "milking" technique to squeeze the mass retrograde through the ileocecal valve. Following reduction, an appendectomy is always performed, both because leaving the appendix *in situ* may contribute to recurrence and because most future examiners, in seeing a right lower quadrant incision, would infer that an appendectomy had been performed. Failure of manual reduction is often a sign of bowel necrosis and bowel resection is required in 1/4 to 1/3 of all operative cases. A primary anastomosis is generally performed except in rare circumstances when perforation with severe peritonitis has occurred; under such circumstances a temporary enterostomy is necessary.

Admission is advisable following successful hydrostatic reduction because of the concern for recurrence. Clear liquids are reinstated immediately if the reduction was smooth and rapid but should be delayed 12 or more hours if the reduction was difficult. A nasogastric tube is generally required for a day or two if open reduction was necessary and even longer if resection and reanastomosis were required.

Postoperative complications include prolonged adynamic ileus, fever, and wound infection or dehiscence. Recurrence of intussusception after hydrostatic reduction is said to be between 8 and 12%, but recurrence following surgical reduction is extremely rare. Recurrence is more common in older children than in infants. Despite considerable morbidity, the mortality rate in recent studies has been zero.

OCTOBER

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 Tom Black	2 Glaze Vaughan	3 Tom Black	4 David Bliss	5 Glaze Vaughan	6 Tom Black
7 Glaze Vaughan	8 José Iglesias	9 Glaze Vaughan	10 José Iglesias	11 David Bliss	12 José Iglesias	13 David Bliss
14 José Iglesias	15 Glaze Vaughan	16 Tom Black	17 Glaze Vaughan	18 David Bliss	19 Tom Black	20 Glaze Vaughan
21 Tom Black	22 David Bliss	23 José Iglesias	24 David Bliss	25 Tom Black	26 José Iglesias	27 Tom Black
28 José Iglesias	29 Tom Black	30 José Iglesias	31 Tom Black	We are available 24 hours every day. Please page directly to the number listed for direct referrals or for an immediate consultation.		

Disclaimer: All material is intended for informational purposes only and is not intended, and should not be used, to replace medical advice offered by a qualified physician. We are always available and willing to discuss questionable conditions with you and we invite your request for our assistance.