A 43-YEAR-OLD white woman, “Laura,” sought care at an emergency department for crampy epigastric abdominal pain, severe nausea and vomiting. The symptoms had begun 12 hours prior.

Laura reported that symptom onset had been sudden and had been preceded by general malaise. Vomiting was bilious in nature. She had no fever, diarrhea, constipation, urinary symptoms or vaginal symptoms. Laura said she had experienced a similar episode exactly 1 week prior. At that time, however, she had experienced no vomiting. That episode had lasted approximately 8 hours, after which she had had a full recovery.

The examiner gathered a past medical history pertinent for hypertension, systemic lupus erythematosus, hypothyroidism, mitral valve prolapse and endometriosis. Laura’s surgical history was positive for cholecystectomy, two cesarean sections, a tubal ligation and uterine ablation. She reported no tobacco, drug or alcohol use.

The physical examination found that Laura had mildly elevated blood pressure, mild tachycardia, no fever, a distended abdomen and diminished bowel sounds. Palpation of the epigastric region elicited tenderness. Laboratory test results were significant only for slightly elevated amylase and lipase. All other lab work was normal.

An acute abdominal series revealed markedly distended small bowel loops with air-fluid levels and little gas in the colon. These signs suggest possible mechanical obstruction. A subsequent ultrasound was nondiagnostic due to small intestine gas patterns. Computed tomography with and without contrast was definitive for ileocecal intussusception with associated acute appendicitis. The diagnosis was confirmed with a barium enema, which showed a filling defect in the area of the ileocecal valve.

Laura was moved directly to the operating room, where approximately 16 cm of the terminal ileum and 8 cm of the cecum, including the ileocecal valve and

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appendix, were removed. The surgeon performed a bowel resection. The surgical team noted scarring on the terminal ileum, suggesting previous episodes of intussusception, but there was no obvious cause for the occurrence. This was confirmed with histologic and cytologic studies.

Discussion
Intussusception is the invagination or telescoping of one portion of the intestine into an adjacent segment. It is the leading cause of intestinal obstruction in children younger than 2 years, but it is rare in adults. Only 5% of cases of intussusception occur in adults. The diagnosis accounts for only 1% of all adult bowel obstructions. Ninety percent of intussusceptions in children are idiopathic, but 90% of adult cases have an identifiable etiology. The mean age for occurrence in adults is 50, with no clear gender preference.

Four Types
Two portions of bowel are involved in an intussusception. The proximal segment, the intussusceptum, telescopes into a distal segment, the intussuscipiens, which gives rise to the classification system that is used. Intussusceptions are classified by each segment location: enterointeretic, confined to the small bowel; colocolic, confined to the large intestine; ileocolic, prolapse of the terminal ileum into the ascending colon; and ileocecal. The ileocecal valve is the lead point and is difficult to distinguish from ileocolic. Intussusceptions are further classified by their etiology: benign, malignant or idiopathic.

Causes
Ninety percent of adult intussusceptions are caused by benign or malignant pathology (see table). In general, lead points from the small intestine are usually benign; approximately 30% have a malignant cause. These may include benign neoplasms, inflammatory lesions, Meckel’s diverticulum, or adhesions from previous abdominal surgeries. Approximately 66% of colonic intussusceptions have a malignant origin, however. Patients with HIV are at a higher risk.

Symptoms
Unlike children, who have the classic symptom triad of sudden-onset crampy abdominal pain, “currant jelly” stools and a sausage-shaped abdominal mass, adult intussusception does not have an obvious presentation. It may present as acute, subacute, intermittent or chronic. In adults, the presentation is usually similar to that of a bowel obstruction. Intermittent abdominal pain is the most frequent complaint, followed by nausea, vomiting and melena. Nausea, vomiting and pain are most common in benign enteric cases with a duration of 1 day to 5 years (mean 37.4 days). In many of these cases, the patients have had multiple previous studies with normal results. Melena is more common with malignancy and has a shorter duration of 10 days to 2 weeks. Physical findings include abdominal distention, hypoactive bowel sounds, abdominal tenderness and possibly guaiac-positive stools, with an abdominal mass identified in only about 10% of cases.

Diagnosis
Acute abdominal series x-rays are usually the initial imaging studies. But these can only distinguish between a small and large bowel obstruction and identify its location, not the cause. Ultrasound is the best study for children due to its quickness and noninvasive nature. It can achieve 100% accuracy. Ultrasound is the second most accurate diagnostic study for intussusception in adults. Classic signs include the doughnut or target sign on the transverse view and the pseudokidney sign on the longitudinal view. Large bowel loops and gas patterns may limit the usefulness of results. Ultrasound is also favored in children due to its diagnostic and treatment abilities. Its accuracy in adults is 50% to 85% when the intussusception is colocolic or ileocolic and shows a cup-shaped filling

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### Overview of Intussusception

<table>
<thead>
<tr>
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<th>Children</th>
<th>Adults</th>
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<tbody>
<tr>
<td>Percentage of all cases</td>
<td>95</td>
<td>5</td>
</tr>
<tr>
<td>Etiology</td>
<td>Sudden onset of crampy abdominal pain, nausea, vomiting.</td>
<td>Acute to chronic onset of crampy abdominal pain, nausea, vomiting.</td>
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<tr>
<td>Symptoms</td>
<td>Ultrasound, barium enema</td>
<td>CT scan, ultrasound, barium enema</td>
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<td>Diagnostic studies</td>
<td>Reduction with barium or air enema</td>
<td>Surgery with resection</td>
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<tr>
<td>Treatment</td>
<td>Ultrasound, barium enema</td>
<td>CT scan, ultrasound, barium enema</td>
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defect, spiral or coil-spring appearance.\textsuperscript{6,7} It is not used as a treatment option in adults.

The most common and accurate study for adults is the abdominal CT scan.\textsuperscript{6,7,10} The characteristic feature of an intussusception is a target or sausage-shaped mass (see image).\textsuperscript{6,7} CT can identify a lead point in some cases, but it cannot reliably determine whether it is benign or malignant.\textsuperscript{4}

**Treatment**

In children, definitive treatment is a barium or air enema, thus avoiding surgery.\textsuperscript{7} In adults, most surgeons agree that surgical intervention is mandatory.\textsuperscript{4,6-8} Some favor manual reduction before resection when the intussusception occurs in the small bowel.\textsuperscript{6,8-10} This allows for a smaller portion of the bowel to be removed.\textsuperscript{4,6-8,10} The clinical consensus is that intussusception occurring in the colon must be resected without reduction due to the high probability of malignancy.\textsuperscript{4,6-8,10}

**Laura’s Outcome**

Without treatment, intussusception can have life-threatening implications. Upon further questioning, Laura acknowledged a 2-year history of episodes of abdominal pain, nausea and anorexia. She had never sought medical attention because she had recovered each time. These episodes were more than likely cases of intermittent intussusception that had self-reduced.

**References**