Delaying Surgery May Aid Perforated Appendicitis

BY DAMIAN McNAMARA
Miami Bureau

MIAMI — The overwhelming majority of children with perforated appendicitis do well with immediate antibiotics and delayed surgery—a strategy called interval management, Dr. Cathy A. Burnweit said at a pediatric update sponsored by Miami Children's Hospital.

"It is with great difficulty that I say perforated appendicitis is now a nonsurgical disease, at least in the short term," said Dr. Burnweit, a pediatric surgeon at the hospital.

Delaying surgery allows time for inflammation to subside. "The surgeon's reward is that appendectomy in 8-10 weeks is usually an easy operation," she said. Delayed surgery often is done on an ambulatory basis. And with laparoscopic removal, surgery can be virtually scarless.

Interval management improves outcomes and decreases complications compared with an immediate operation for about 90% of children with perforated appendicitis (J. Ped. Surg. 2001;36:165-8). "The problem is the kids who fail, although they are becoming less common," Dr. Burnweit said. The clinical challenge is early identification of children who fail interval management "so we can do something different—prescribe different antibiotics and/or [perform] an immediate operation."

The total complication rate is about 7% with interval management. For the 10% of children who fail the protocol, the total complication rate climbs to about 33%, Dr. Burnweit said. Complications associated with the old strategy—an immediate operation for children with perforated appendicitis—include wound infections in approximately 10%-25%, an intra-abdominal abscess in 4%-7%, and intestinal obstruction in 2%-5%.

Patient age can help clinicians determine whether an appendix is perforated. The likelihood of perforation increases with decreasing age. About 65% of those younger than 4 years presenting with appendicitis will have perforation. "Those under 3 years old will almost always be perforated," Dr. Burnweit said. Also consider the patient's general condition, duration of symptoms, white cell count, C-reactive protein levels, and imaging findings.

Computed tomography and ultrasound of the abdomen and pelvis (for a girl) are the most cost-effective imaging modalities, Dr. Burnweit said. With ultrasound, in particular, "you need great technicians and radiologists" to detect fat stranding, appendiceal formation, and/or free fluid, she added. A CT scan is the best first study in an obese child.

History and physical exam are critical. Also do a gut check—of the surgeon, Dr. Burnweit said. Use your clinical judgment and acumen to diagnose perforated appendicitis. "If the story or exam does not jibe, diagnosis cannot be made. If your work-up indicates appendicitis, but you examine the kid and he's eating chips from the vending machine and bouncing off the wall, send him home."

Once perforated appendicitis is diagnosed, admit the patient, hydrate, and administer broad-spectrum antibiotics such as gentamicin and clindamycin. Also, place a peripherally inserted central catheter (PICC) and provide pain management.

A patient who is tolerating diet (indicating no bowel obstruction), an appropriate home environment, availability of home nurse care, and a PICC in place are discharge criteria. "Fever is expected, but you should see a downward trend over time," Dr. Burnweit said.

Antibiotics are administered at home through the PICC for 5-14 days; it is removed when the white blood cell count is normal. If the white blood cell count remains abnormal, the PICC stays in longer, Dr. Burnweit said in an interview.

Unmitigated fever, small bowel obstruction, and/or a worsening overall condition for 2-4 days indicate the child is failing to improve. Undrained sepsis is usually the culprit for prolonged or worsening fever, she added.

Interval management allows for early discharge with oral antibiotics in many cases. Stop antibiotics when the patient is afebrile for 48 hours or longer and/or the white blood cell count is normal.

Laparoscopic removal of an appendix is relatively "scarless" at the hospital. A single incision is made through the umbilicus. "These are done through one port now," she said. "We started out doing these with three—one for the camera and two for instruments, then went to two, and now it's one. It is pretty amazing." ■