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Visit the Pediatric Surgical Associates of Fort Worth website at <www.pedisurgdfw.com>. You will find information useful to you and your patients including maps, facts regarding children's surgical conditions, who we are, all back issues of this newsletter, and our office registration forms, which parents may download, print, complete at home, and bring to their child's office visit, saving them time. We welcome comments regarding other items which you or your patients would find useful!

JUNE

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
We are available 24 hours every day. Please page us directly to the number listed by date for a direct referral or for an immediate consultation.					1 José Iglesias	2 Glaze Vaughan
3 José Iglesias	4 David Bliss	5 Glaze Vaughan	6 José Iglesias	7 Tom Black	8 Glaze Vaughan	9 José Iglesias
10 Glaze Vaughan	11 David Bliss	12 José Iglesias	13 Glaze Vaughan	14 José Iglesias	15 David Bliss	16 Glaze Vaughan
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APPENDICITIS

It was inevitable that we would eventually discuss appendicitis, the most common condition requiring abdominal surgery in the pediatric age group. The mean age for developing appendicitis is between a child's 11th and 12th birthdays. Males outnumber females by only a few percent. There is probably a familial tendency as about 1/4 of all chil-

dren with appendicitis will have a sibling or parent who had the disease, a higher rate than being coincidental. One out of every 14 persons (7%) will develop appendicitis at some point during his or her lifetime, yet despite this high frequency, the diagnosis is still occasionally difficult to make.

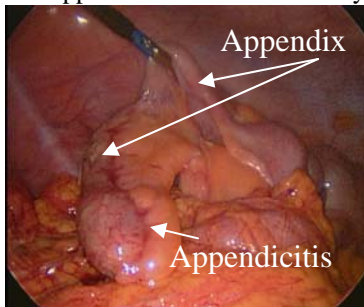
The appendix is a blind-ending diverticulum attached to

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|-------------------------|---|----------------------|
| W. Glaze Vaughan, MD | • | C. Thomas Black, MD |
| David P. Bliss, Jr., MD | • | José L. Iglesias, MD |

the cecum. The average appendix is about the width of a soda straw and half the length of a crayon. Although it contains a small amount of immunologically active tissue, it is safe to say that the appendix has no essential function since we know of no physiologic impairment following appendectomy. When asked what the appendix does, I generally answer, "It makes kids sick and keeps surgeons up at night!"

The history and physical examination of a patient with suspected acute appendicitis are frequently diagnostic since the signs and symptoms correlate well with the pathophysiology of the developing disease. Obstruction of the appendiceal orifice by an intraluminal object such as a fragment of stool, foreign body, or parasite impedes the outflow of normal appendiceal mucosal secretions and causes distention of the appendiceal lumen. Stretch receptors within the appendiceal wall produce an ill-defined abdominal pain, the most consistent finding with appendicitis. The pain begins as an ill-defined "stomach ache" in the periumbilical area. The pain is followed within several hours by nausea and often emesis, the results of continuing overdistension of a hollow abdominal viscus. This pattern of pain followed by nausea is so consistent should the history instead be that the nausea and vomiting preceded the pain, the diagnosis of appendicitis is now in doubt and gastroenteritis is more likely.

As the transmural inflammatory process reaches the parietal peritoneum several hours later, the pain localizes in the right lower quadrant. Occasionally the appendix is sufficiently isolated from the parietal peritoneum (e.g. a pelvic or retrocecal location) that this phase is bypassed. The physical examination in such patients may be misleading. Later, as intraluminal pressure increases and bacteremia occurs, the child will develop a fever followed even later by an elevation in the white blood count (WBC). A temperature less than 38 and a WBC less than 18,000 generally indicate that the appendix is intact. Other symptoms include anorexia,



pain in the right leg or hip, diarrhea, constipation, and dysuria.

There are definite institutional differences in the evaluation of patients with suspected appendicitis. Many physicians will order a WBC although the

study adds little to the evaluation. A plain abdominal film is helpful only if an appendicolith or a mass effect is seen. Free air is exceptionally unusual. A contrast enema may be helpful, but it is labor-intensive and quite uncomfortable for an already irritable child. Computerized tomography (CT) is widely considered the "gold standard" for the imaging of suspected appendicitis, and most children transferred to Cook Children's with a diagnosis of appendicitis based on imaging have undergone CT scanning. At Cook Children's, ultrasonography (US) is the imaging study of choice. It is faster, more available, less expensive, and free of X-ray exposure. With appendicitis, the maximal diameter of the appendix should be greater than 6 mm and the appendix should be non-compressible. Frequently hyperemia of the

organ can also be detected with color doppler. If the appendix is not visualized on US, the test is considered non-diagnostic and CT scanning may be indicated. This occurs most often with obese children. Non-visualization of the appendix on CT scanning generally eliminates appendicitis as a possible diagnosis; other pathology may be identified on CT scanning as the cause of the symptoms. US is highly operator dependent, whereas CT scanning is not; experienced US technicians are quite proficient at diagnosing appendicitis, and false positive and false negative studies are unusual.

If appendicitis is detected, appendectomy is generally indicated. The one exception may be the unusual individual with a very well-defined abscess in a location amenable to percutaneous drainage, who has been ill for several days to weeks but is still able to eat and drink normally. Once the abscess has been drained, usually percutaneously in the Radiology suite, the child may be discharged on antibiotics and should return in 6 weeks for elective appendectomy. Most other cases of appendicitis should undergo appendectomy.

Much has been written regarding the ideal method of performing an appendectomy, either by the open method or laparoscopically. In general, laparoscopic removal is best suited to large or overweight individuals, individuals (such as athletes) whose rapid return to strenuous activities is important, and it is generally contraindicated when perforation is likely. Thin or small children are generally better off undergoing appendectomy through a single tiny right lower quadrant incision rather than the three incisions needed for the laparoscopic approach. Nonetheless, the goal is to remove the appendix in as safe a manner as possible, and the technique by which that is accomplished will be discussed by the parents and the surgeon, and mutually agreed upon.

Prior to undergoing surgery, an IV must be established and the child well-hydrated since the oral intake has probably been diminished for at least a day. Intravenous antibiotics may be administered, particularly if perforation is likely.

An appendectomy takes about 45 minutes. If the appendix was not perforated, oral liquids are begun as soon as the child is awake, and the diet advanced as tolerated. If perforation has occurred, nasogastric suction may be required for a few days. If the appendix was not perforated, the child generally stays for 1 day; if perforated, for at least 5 days.

The management of a child you suspect of having appendicitis may be expedited as follows:

- 1) If the patient was being seen in your office, or if the symptoms related by a child's parents over the telephone sound highly suspicious, the child should be sent directly to the Radiology department at Cook Children's with a request for an emergency ultrasound examination. If you remember to call us directly when the child is on the way to the hospital, we can expedite the process. We will meet with the family once the study has been completed, either to reassure them that appendicitis was NOT found or to shepherd them through the admission process, minimizing their ER stay.

- 2) If your patient comes directly to the Emergency Department and you were first notified after the diagnosis was made, please request that the Emergency physician or charge nurse notifies the PSA surgeon on call; he will see the patient as soon as possible and assume his or her care.

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.