

*Acute Right Iliac Fossa Pain: The
Problem of Diagnosis and Management*

*Thesis submitted for partial fulfillment of the Master
Degree in General Surgery*



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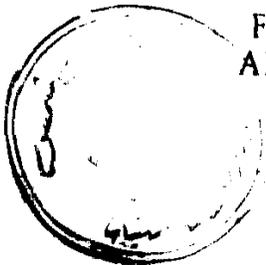
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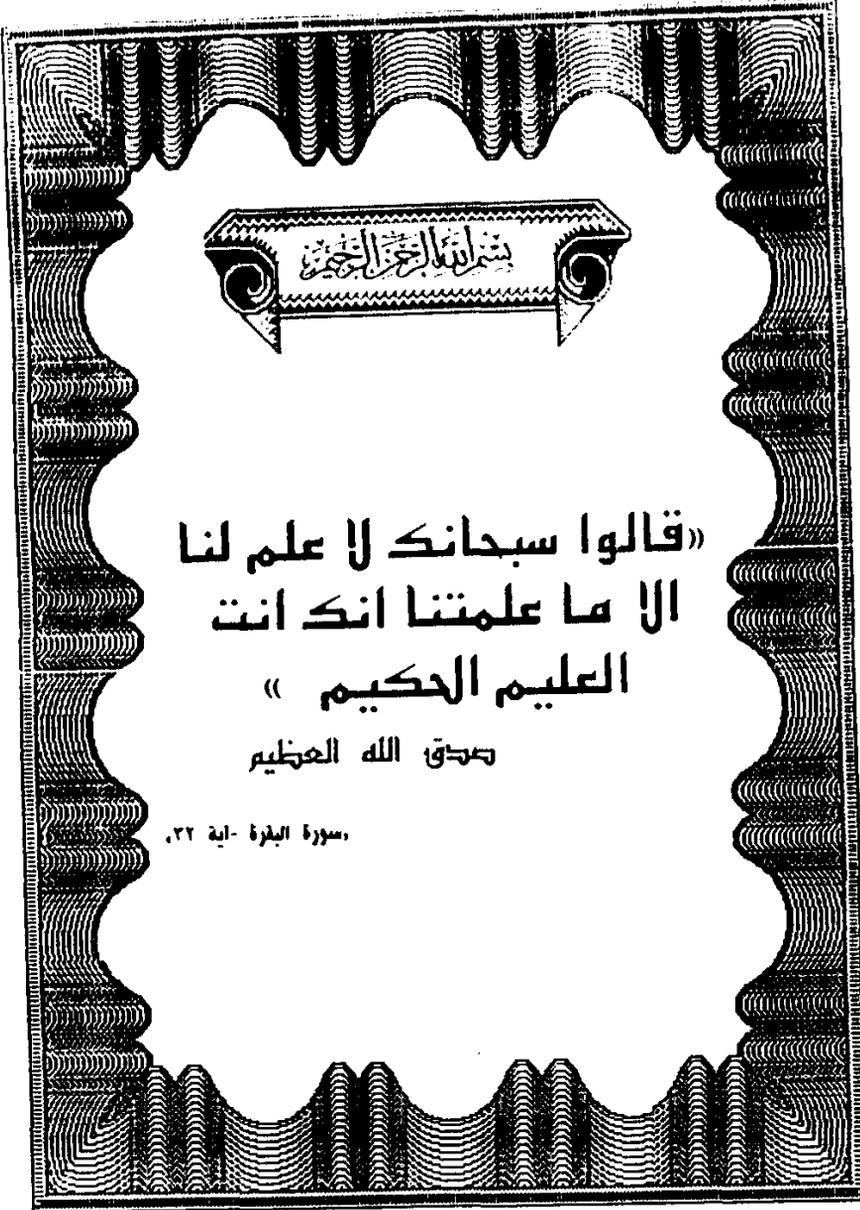
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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

« قالوا سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم الحكيم »
صدق الله العظيم

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Introduction

The term "acute abdomen" denotes any sudden non-traumatic disorder whose chief manifestation is in the abdominal area and for which urgent operation may be necessary. Since there is frequently a progressive underlying intra-abdominal disorder, undue delay in diagnosis and treatment adversely affects outcome (*Boey, 1994*).

The objective of physician who is confronted with a patient with such problem is to reach an early and accurate working diagnosis so that a correct plan of treatment may be instituted promptly. The physician frequently must exercise careful judgment to determine when evaluation of the patient must be curtailed in order that treatment may be started.

In some instances minutes may be critical if the patient is suffering from intra-abdominal hemorrhage, while in other patients, a few hours of conservative management may be advantageous even though operation is indicated (*Beal, 1986*).

The approach to a patient with acute pain in the right lower abdomen must be orderly and thorough. It must be suspected even if the patient has only mild or atypical complaints. The history and physical examination should suggest the probable cause and guide the choice of the diagnostic studies (*Boey, 1994*).

A patient with acute right lower abdominal pain remain a diagnostic challenge. Although acute appendicitis is the most common surgical disorder its accurate and timely diagnosis can be difficult.



Historically females of childbearing age are the most difficult patient group in whom to make the diagnosis of acute appendicitis, they have reported negative laparotomy rates ranging from 30 to 50 percent (*Evetts et al, 1994*).

Acute appendicitis must be differentiated from other causes of acute abdomen in right iliac fossa as mesenteric lymphadenitis, acute diverticulitis in Meckel's diverticulum, intestinal intussuception, regional enteritis, primary peritonitis, urological and gynecological problems, i.e. such differentiation in diagnosis can be extremely variable from simple paradigmatic situations to the most intriguing ones. This concept is well emphasized by William Silen when he says that "differential diagnosis of acute appendicitis is an encyclopedic compendium of every abdominal disease that causes pain" (*Malnati et al, 1994*).

Aim of the Work

Is to study different causes of right lower quadrant abdominal pain and the best methods to reach an early diagnosis and treatment.

Acute Appendicitis: Typical and Atypical Presentations

A) HISTORICAL PERSPECTIVE

The catastrophic potential of abdominal problems that currently are included in the category of the "acute abdomen" has been recognized since the era of Hippocrates. "Iliac passion" and "ileus" both terms were familiar to Celsus, Hippocrates and Caelius Aurelianus and can be considered synonymous with acute abdomen (*John, 1986*).

In the sixteenth century, appendicitis was called perityphlitis. In 1886, Reginald Fitz clearly outlined its main symptoms and employed the term appendicitis although Melier in 1827 correctly ascribed the origin of purulent "iliac tumor" to inflammation of the appendix.

The first surgeon to correctly diagnose acute appendicitis prior to rupture, perform appendectomy have the patient recover and reported his experience was *Senn (1889)*. In 1889, McBurney described the clinical findings of acute appendicitis prior to rupture, including description of the point of maximal abdominal tenderness that now bears his name. The grid iron incision commonly attributed to McBurney was actually devised by McArthur (*Condon, 1986*).

Although appendicitis itself has existed for millennia having been found in an Egyptian mummy, it has been epidemic only during the 20th century. Indeed there is now evidence that as we move to the end of this century the incidence is declining (*Noer, 1976*).

B) IMPORTANT ANATOMICAL ASPECTS

The relation of the base of the appendix to the cecum is constant but the tip of the appendix may be found in a variety of locations. Most commonly, the appendix lies behind the cecum although still in an intraperitoneal location. This low retrocecal position is found in 65% of patients (fig. 1) and is due to the fact that several inches of the cecum usually remain in an intraperitoneal position since the reflection of the peritoneum to the parietes from the cecum occurs opposite the ileocecal junction. The second most common position of the tip of the appendix found in about 30% of patients is at brim of or in the pelvis. In about 5% of patients, the tip of the appendix lies extraperitoneally either behind the cecum and ascending colon or passing behind the distal ileum along the right margin of the ascending colon (*Condon, 1986*).

Malrotation or maldescent of the cecum is associated with abnormal locations of the appendix, which may be found anywhere between the right iliac fossa and the left infra-splenic area. In case of transposition of the viscera, the appendix is in the left lower quadrant. Abnormal positions of the cecum are important because they introduce difficulties in diagnosis should appendicitis supervene (*Condon, 1986*).

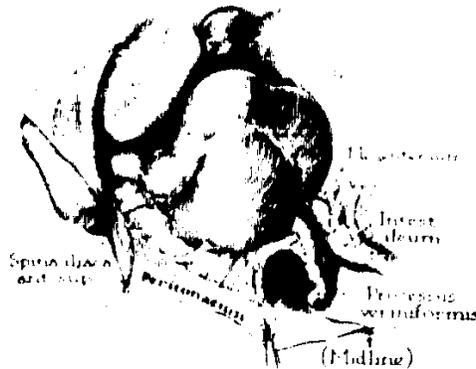


Figure (1): The most common position of the appendix is behind the cecum (Anson et al, 1971).

C) ETIOLOGY AND PATHOGENESIS

The appendix is a secretory organ producing mucus both at rest and in response to chyme in the lumen. It also contains a large number of lymphoid follicles and in this respect it may act like the tonsil and protect the gut from injurious agents in the luminal contents. Of the many etiological theories proposed only two seem important; obstruction and infection.

Since the appendix is a narrow organ its lumen can be easily obstructed and this can lead to distention and susceptibility to colonization. Faecoliths and lymphoid hyperplasia are probably the commonest causes of obstruction though tumors and a variety of foreign bodies have also been implicated such as vegetable seeds and inspissated barium. Pin worms (*enterobius vermicularis*) are the commonest parasites causing appendicitis beside taenia and ascaris. Many studies have considered the role



of dietary fibers since this is largely a disease of the developed world (*Heaton, 1987*).

The final event in appendicitis is invasion of the appendicular wall by organisms from the enteric flora. Infection was actually the initiating event leading to lymphoid hyperplasia and luminal obstruction. Since children and young adults have the most lymphoid tissue in relation to luminal size, this theory might explain the age pattern of presentation. Such infection could be enteric or carried by blood from distant sites (*Martin and Gustafson, 1985*).

Obstruction without infection may lead to the development of a mucocele and some patients give a history of chronic pain or previous attacks. There is considerable argument as to whether a truly chronic form exists. Nevertheless, some patients with right iliac fossa pain are relieved by removal of a histologically normal appendix (*Schisgall, 1980*).

D) PATHOPHYSIOLOGY

Following obstruction, the mucus accumulates in the lumen of the appendix while virulent bacteria convert the accumulating mucus into pus. The pressure within the lumen increases. Obstruction of lymphatic drainage ensues leading to edema of the appendix, beginning diapedesis of the bacteria and ulceration of the mucosa, i.e. stage of acute focal appendicitis. The inflammation and increased pressure in the lumen present at this stage are perceived by the patient as poorly localized visceral pain in the peri-umbilical or epigastric region due to the same innervation of both small bowel and appendix (*Condon, 1986*).



Further rise in intra-luminal pressure which brings about venous obstruction and thrombosis, producing further edema and ischemia in the appendix. Bacterial invasion spreads through the wall of the appendix; this is the stage of acute suppurative appendicitis. The inflamed serosa of the appendix contacts the parietal peritoneum, somatic pain is perceived as the classic shift and localization of pain in the right lower quadrant.

Continuation of this pathological process eventually leads to compromise of the arterial blood supply. The mid-portion of the anti-mesenteric border is the poorest area of blood supply, undergoes gangrene. The development of gangrenous appendicitis leads to perforation, if the process does not progress too rapidly, inflammatory adhesions form between loops of bowel, peritoneum and omentum to hem the appendix, leading to localized peritonitis with eventual formation of peri-appendicular abscess. In 1 to 2% of patients, particularly the very young and the very old, rapidity of progression of the disease leads to generalized peritonitis (*Condon, 1986*).

E) CLINICAL DIAGNOSIS

INTRODUCTION

The accurate diagnosis of acute appendicitis continues to challenge even the most astute diagnostician. While computer-aided scoring systems have been shown to increase diagnostic accuracy and reduce negative appendectomy rates, they have not become widely adopted (*De Dombal, 1991*).

The use of ultrasound and computed tomography although helpful in selected patients, is unlikely to



improve diagnostic accuracy if used on a routine basis. History and examination remain the principal means of diagnosing appendicitis (*Lane and Grabham, 1997*).

-HISTORY

There is frequently a history of indigestion, gastritis or flatulence for a few days prior to the onset of the attack. It may be elicited that frequent slight attacks of pain have been experienced in the appendicular region. The attack can commence at any time but frequently it does so in the early hours of morning, awakening the patient from sleep (*Rains and Mann, 1992*).

-SYMPTOMS

a) Pain

The typical or classical manifestation found in 55% of cases begins with diffuse visceral abdominal pain, felt most prominently in the epigastrium or around the umbilicus not very severe, its vague due to distension of the appendix. After a variable time, pain shifts toward the right side and then becomes localized into the right lower quadrant. This somatic pain is very severe and well localized and constant.

Atypical abdominal pain, occur in 75% of patients in whom appendicitis initially is suspected but who prove to have some other diseases and 45% of patient who prove to have appendicitis. It does not follow the classic visceral-somatic sequence. More frequent in older in whom pain is always less intense and localizes much later and in patients receiving chronic antibiotic therapy for some unrelated condition (*Condon, 1986*).

Occasionally there is no classic shift of pain, the central pain might have occurred during sleep or because