

Role Of Multislice Computed Tomography In Diagnosis Of Acute Appendicitis

Essay

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Introduction

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Aim of the work

Introduction

Appendicitis is common, with a lifetime occurrence of 7 percent. Abdominal pain and anorexia are the predominant symptoms. The most important physical examination finding is right lower quadrant tenderness to palpation. A complete blood count and urine analysis are sometimes helpful in determining the diagnosis and supporting the presence or absence of appendicitis, while appendiceal computed tomographic scans and ultrasonography can be helpful in equivocal cases. Delay in diagnosing appendicitis increases the risk of perforation and complications. Complication and mortality rates are much higher in children and the elderly. **(Hardin, 1999).**

So as the clinical diagnosis of acute appendicitis is still challenging ,diagnostic imaging offers rapid and accurate confirmation or exclusion of this entity as well as identification of alternative conditions that clinically mimic it. **(Rao et al, 1999).**

Accurate and prompt diagnosis is essential to minimize morbidity, prevent unnecessary hospitalization and laparotomy. **(Birnbaum and Wilson, 2000).**

The use of multislice computed tomography (MSCT) as a diagnostic examination for acute appendicitis has increased during the past few years. **(Shelton and Mckinlay, 2003).**

This increased use is attributed to many factors ,including the high accuracy, speed of the examination and ease of interpretation. **(Jacobs et al, 2001).**

Aim of work

The aim of the work is to describe the value of using multislice computed tomography in diagnosing suspected cases of acute appendicitis.

Review of Literature

[1]

Anatomy

Of the Appendix

Anatomy

Gross anatomy:

Vermiform appendix is a blind ended tube connected to the cecum from which it develops embryologically the term vermiform comes from latin and means "wormlike in appearance" the cecum is a pouch-like structure of the colon the appendix is near the junction of the small intestine and the large intestine [Fig.1]. **(Ryan &McNicholas, 2005).**

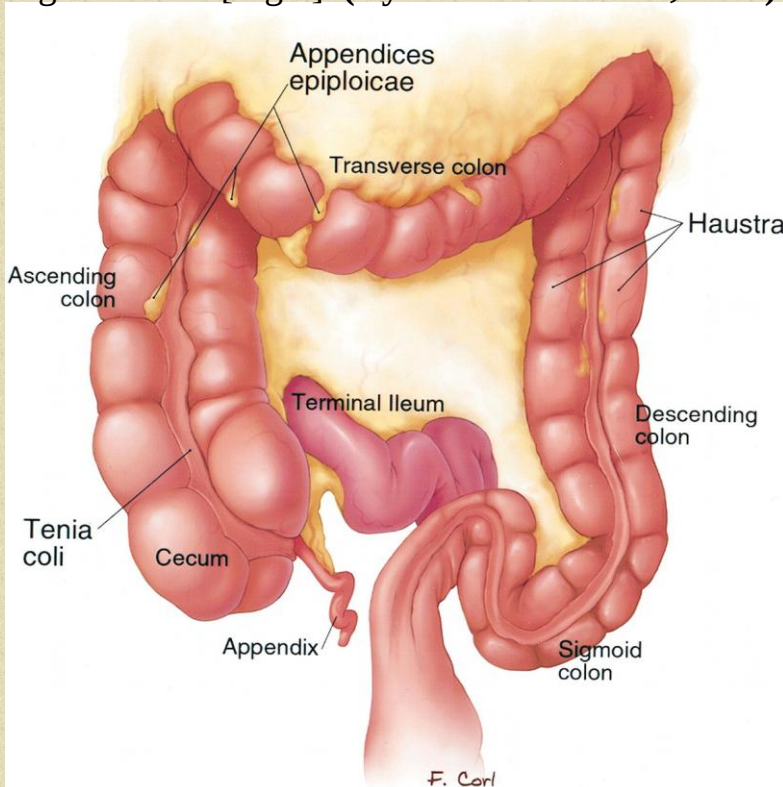


Fig. (1): normal location of the appendix relative to other organs of the digestive system frontal views. **(Horton et al., 2000).**

The appendix averages 10 cm in length, but can range from 2 to 20 cm. the diameter of the appendix is usually between 7 and 8 mm the longest appendix ever removed measured 26 cm. It is longer in the child than in the adult and may atrophy and become smaller after mid adult life. **(Warwick and Williams, 2005).**

The appendix is located in the lower right quadrant of the abdomen or more specifically the right iliac fossa. Its position within the abdomen corresponds to a point on the surface known as McBurney,s point is the name given to the point over the right side of the human abdomen that is one third of the distance from the ASIS (anterior superior iliac spine) to the umbilicus, this point roughly correspond to the most common location of the base of the appendix where it is attached to the cecum. The anterior cutaneous branch of iliohypogastric nerve is found near McBurney,s point. [Fig.2]. **(Warwick and Williams, 2005).**

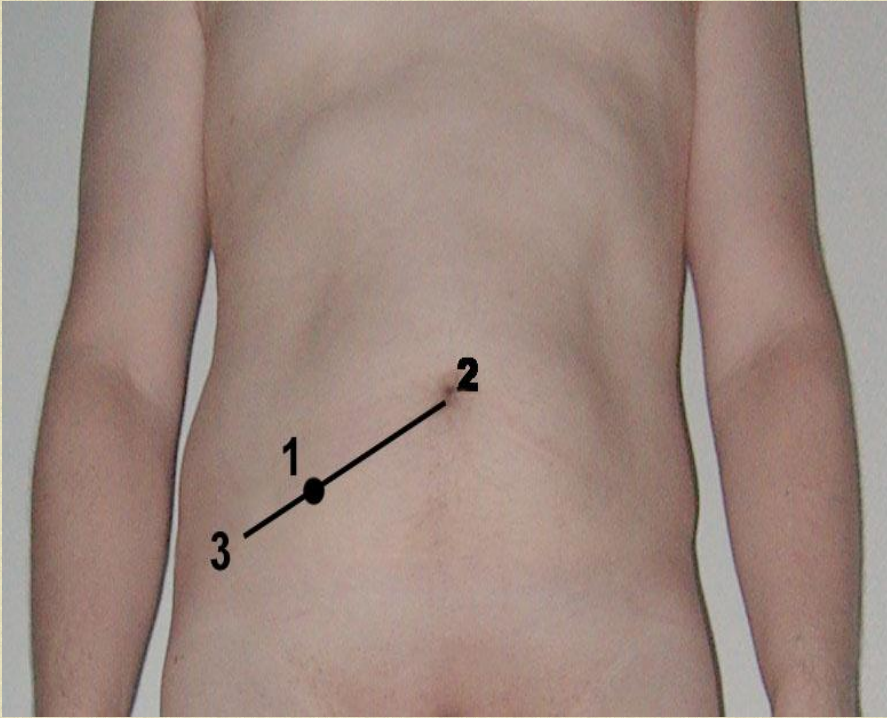


Fig. (2): location of McBurney,s point (1), located two thirds the distance from the umbilicus (2) to the anterior superior iliac spine (3). **(Richerad C et al., 2005).**

The base of the appendix is located in a fairly constant location, 2 cm below the ileocaecal valve at the medial side of the caecum where the taeniae coli fuse. The appendix is attached to the ileocaecal segment by a mesoappendix containing the appendicular artery, a branch from the ileocolic artery. **(Warwick and Williams, 2005).**

The location of the tip of the appendix is extremely variable in position and may occupy one of several conditions [Fig.3]:

- A. It may lie behind the caecum and lower part of the ascending colon (retrocaecal and retracolic) 65.5 % [Fig.4].
- B. It may hang down over the brim of the pelvis in which case it lies in close relation to the right uterine tube and ovary in the female (pelvic or descending) 31%.
- C. It may lie below the caecum (subcaecal) 2%.
- D. It may lie in front of the terminal part of the ileum and may then be in contact with the anterior abdominal wall (peri-ileal) 1%.
- E. It may lie behind the terminal part of the ileum (postileal) 0.5%.
- F. With situs inversus the appendix may be located in the lower left side. **(Warwick and Williams, 2005).**



Fig. (3): position of vermiform appendix .the appendix position were classified into subcecal, pelvic, preilial, postilial and retrococal. (Warwick and Williams, 2005).

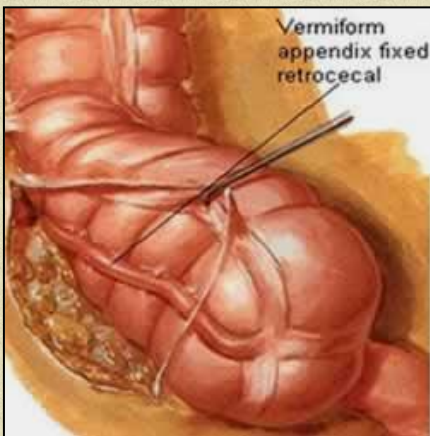


Fig. (4): retrocecal appendix fixed to the caecum. (Warwick and Williams, 2005).

The base of the appendix is opposite the junction of the lower (lateral) and middle thirds of the line joining the anterior superior iliac spine to the umbilicus (McBurney's point). The three taeniae coli of the ascending colon and caecum converge on the base of the appendix, where they merge into longitudinal muscular layer of the appendix, the anterior taenia of the caecum is generally distinct and can be easily traced to the root of the appendix thus affording a readily guide to it, the vermiform appendix is connected by a short mesenteriole (mesoappendix) to the lower part of the triangular in shape, and as a rule extends along the entire length of the tube [Fig. 5]. **(Warwick and Williams, 2005).**



Fig. (5): it is derived from the post.side of the terminal ileal mesentery.it attaches to the cecum &to the proximal appendix. It contains the appendiceal vessels. **(Warwick and Williams, 2005).**

The canal of the appendix is small and communicates with the caecum by an orifice which is placed below and a little behind the ileocaecal opening. The orifice is sometimes guarded by a semilunar valve formed by a fold of mucous membrane, this valve is probably does not function in life although occasionally the appendix even with patent lumen will not fill immediately at the time of barium enema and will be seen to contain barium 24 or more hours later. (**Warwick and Williams, 2005**).

The lumen of the appendix may be partially or completely obliterated after mid adult life. (**Warwick and Williams, 2005**).

Structure:

As regard the structure of the appendix it is formed of four coats which are serous, muscular, submucosa and mucous membrane [Fig.6].

- 1- **Serous Coat**: forms a complete investment for the tube except along the narrow line of attachment of its mesentery beneath the serous coat lays a layer of subserous areolar tissue.
- 2- **Muscular Coat**: consists of an outer longitudinal and inner circular layer the longitudinal muscular fibers

forms a uniform thick layer which invests the whole organ, except at one or two points where both the longitudinal and circular layer may be deficient, so that the peritoneal and submucous coats are contiguous over small areas at the base of the appendix, the longitudinal muscle becomes thickened at three points around the perimeter to form incipient taenia coli which become continuous with those of the colon. The circular muscular fibers form a thicker layer than the longitudinal fibers and separated from them by a small amount of connective tissue.

3- **Submucous Coat**: it is well developed, and contains a large number of masses of lymphoid tissue which cause the mucous membrane to bulge into the lumen and so render it of small size and irregular in shape (**Warwick & Williams, 2005**). This lymphoid tissue undergoes progressive atrophy during life to the point of complete disappearance in advanced age, in the elderly, sometimes undergoes fibrous obliteration. (**Cotran et al., 2005**).

4- **Mucous Membrane**: it is lined with columnar epithelium and resembles that of the large intestine, but the intestinal glands are fewer in number and penetrate