Role of Computed Tomography in Diagnosis of Appendicitis and Its Complications

Thesis

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List of Abbreviations

CT	: Computed tomography
IV	: Intravenous
MDCT	: Multidetector-row CT
MSCT	: Multislice computed tomography
US	: Ultrasound

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Introduction

Acute appendicitis is the most common surgically managed cause of abdominal pain, largely in the 10–30-year age group. Acute appendicitis was once a clinical diagnosis made without imaging, but computed tomography (CT) is now considered the standard of care.***(Kara Gaetke-Udager et al., 2014).***

For almost two decades CT has been widely used for diagnosing appendicitis; studies have consistently demonstrated the high sensitivity and specificity of CT for this diagnosis. Standard imaging practices include the use of intravenous iodinated contrast. Positive (high-attenuation) oral contrast, and sometimes positive rectal contrast, have also been recommended***(Naeger et al., 2011).***

CT scans perform uniformly high in diagnosing appendicitis with 99% sensitivity and 95% specificity , regardless of scanning techniques or combinations of oral, rectal, or intravenous (IV) contrasts.

There is a consequent increase in the use of preoperative diagnostic CT scans to reduce the negative appendectomy rate for suspected acute appendicitis ***(PiyapornApisarnthanarak et al., 2014).***

It is generally accepted that ultrasound (US) is a useful diagnostic tool for detecting Acute Appendicitis and has excellent specificity in diagnosing this disease. However, US also exhibits variable sensitivity and results with respect to the diagnosis of Acute Appendicitis due to its operator-dependent nature. Therefore, the use of computed tomography (CT) has become popular as the initial imaging study for suspected Acute Appendicitis in children, especially in emergency settings ***(Naoki Hashizumeet al., 2016).***

MDCT can be used effectively in the preoperative evaluation of appendicitis and provides high accuracy for detecting its complications and other incidental findings rather than appendicitis causing right lower quadrant pain, guiding the physicians for the proper management of these patients ***(RandaKaddah and AmrAyad, 2016).***

MDCT is recommended in cases of pediatric abdominal pain with confusing presentation in the ED that cannot be diagnosed accurately after clinical data and sonography. The use of MDCT scans can offer greater accuracy as well as an ability to identify alternative diagnoses such as appendicitis, neoplasms and gastrointestinal abnormalities ***(Wei-Ching Lin and Chien-Heng Lin, 2016).***

Aim of the Work

The aim of the work is to describe the value and role of Multislice computed tomography in diagnosing appendicitis and its complications.

Chapter (1)

Anatomy and CT Anatomy of the Appendix

Gross anatomy:

The word vermiform is derived from the Latin word "Vermiforma" means worm shaped or resembling worm, hence called 'vermiform', Appendix is narrow blind tube arising from the postero-medial wall of caecum. Anatomically, it is one of the mobile viscera of abdomen (***JanardhanRao.M et al., 2014).***

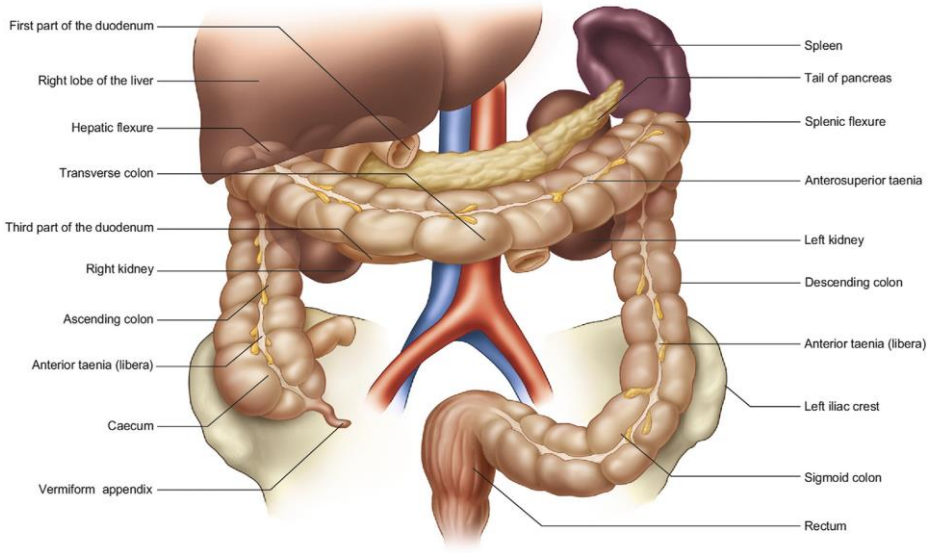

Fig. (1): *Normal location of the appendix relative to other organs of the digestive system, frontal views* ***(Mahadevan, 2017).***

The vermiform appendix is a blind diverticulum that arises from the posteromedial aspect ofthe caecum, about 2.5 cm inferior to the ileocaecal valve. Its length is, on average, 7:8 cm (range: 1:20 cm) ***(Mahadevan, 2017).***

The appendix lies deep at Mc. Burney's point which is the meeting point of proximal and distal thirds of the line which is drawn extending from anterior superior iliac spine to umbilicus ***(MianAzhar Ahmad et al., 2017).***

The appendix is the only organ that has no constant anatomical position in the body. The attachment of the base of appendix to the caecum remains constant, whereas the tip can be found in a retrocaecal, subcaecal, pelvic, paracolic, post ileal and preileal position. It is connected to the lower part of the ileal mesentry by the short mesoappendix.

Table(1): Positions of vermiform appendix.

SL No.	Positions of vermiform appendix	Numbers
1	Retrocaecal	**64%**
2	Pelvis	30%
3	Priileal	0 %
4	Post ileal	4%
5	Subcaecal	2%
6	Paracolic	0%

(Shashikala Patel &Anshuman Naik,2016)