



Study On The Varying Position Of Appendix In Madurai Tamil Nadu Population

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Abstract:

The annual current incidence of appendicitis is 10/ 100,000. The vermiform appendix is part of the digestive tract lying, in right iliac fossa of the abdomen. It is a worm-like structure and emerges during embryological life from posteromedial aspect of the cecum, which has a widely varied position. It is connected to the place where three taenia coli converge on posteromedial wall of the caecum, about 2 cm below the ileocecal valve. Depending on the position of vermiform appendix, signs and symptoms of appendicitis may differ and complicate the diagnostic process. **Materials and Method:** A total of 55 cadavers were studied of which 35 male and 20 female with an age group ranging from 20 to 60. The appendix was dissected and observed in cadaver during the routine dissection of 1st year M.B.B. The following parameters were observed: 1. Location of the appendix, 2. Position of the appendicular orifice, 3. Direction of the tip of appendix and position of the shaft of appendix, 4. Distance between ileo-caecal junction and appendicular orifice, 5. Relation between appendicular orifice & Mc Burney's pt, 6. Direction of tip and position of shaft was observed. **Result:** Appendix occupied right iliac fossa in 64%, Pelvic region in 24%, inguinal region 2% & in umbilical region 10%. In the present study the appendicular orifices were present in posteromedial wall of caecum in 52%, the distance between ileo-caecal junction and appendicular orifice was between 15 to 35mm. The appendicular orifice was within 5cm medial to the Mc Burney's point in 24 cases (48%). **Conclusion:** This position leads to difficulty in early diagnosis and also leads to unusual complication like peritonitis, small bowel ischemia, which increases the morbidity and mortality in appendicitis cases. Depending on the position of the vermiform appendix, signs and symptoms of acute appendicitis may vary and impede the diagnostic process.

Key words: Vermiform appendix, Retro-caecal, pelvic, Retro-colic, Ilio-cecal

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Introduction:

The vermiform appendix is studied as an organ since the 15th century it was distinctly described in Leonardo da Vinci's anatomical drawings in 1492, first reported in detail by Berengario da Carpi in 1521, and finally, the worm-like organ was termed the vermiform appendix in 1530 by Vido Vidius (Guido Guidi). The late acknowledgment of the appendix in the scientific association is probably due to the fact that early anatomical observation were typically done on animal species having no such organ(1). Appendix is considered to be a vestigial organ from early days recent finding reports, histologically appendix has considerable amount of lymphoid tissues related to gastro intestinal tract called as GALT. This lymphoid tissue helps in the growth of normal flora in the gut system by forming biofilms which consist of

immunoglobulin A & mucin. More over these protein helps in the growth of normal bacterial colonies and permit the survival of symbiotic flora on occasion of diarrhea(2)

The vermiform appendix is part of the digestive tract that lies in right iliac fossa of abdomen. It is a worm-like structure and emerges during embryological life from posteromedial aspect of cecum, which has a widely varied position. It is connected to the place where the three taenia coli converge on posteromedial wall of caecum, about 2 cm below ileocecal valve (3,4). In appendicitis surgery there may be a possibility that it will require extra muscle splitting or extension of a transverse incision. This varied anatomy may present difficulties during appendectomy and both of these scenarios may lengthen the surgical procedure and make it more difficult. Planning ahead for surgery requires being aware of these anatomical variances(5,6).

The incidence of appendicitis has been reduced steadily since the late 1940s, and the current annual incidence is 10/ 100,000 (7). Depending on the position of vermiform appendix, signs and symptoms, appendicitis may differ and complicate the diagnostic process. Moreover, morphometry of vermiform appendix is an important diagnostic criterion of an inflammation (3).The aim of this study was to determine the frequency of various positions of appendix in cadaver Tamilnadu.

Materials and Method:

A total of 55 cadavers were observed of which 35 male and 20 female with an age group ranging from 20 to 60. The appendix was dissected and observed in the cadaver during the routine dissection of 1st year M.B.B.S students according to the Cunningham's manual of practical Anatomy (Volume- 2). The study was conducted in Institute of Anatomy, Madurai Medical College, Madurai, during the post-graduation period. The following parameters were observed: 1. Location of appendix in abdomen, 2. Position of appendicular orifice, 3. Direction of tip of appendix and position of the shaft of appendix, 4. Distance between ileo caecal junction and appendicular orifice, 5. Relation between appendicular orifice & Mc Burney's point, 6. Direction of tip and position of the shaft was observed. The observations were photographed after the study.

Result:

The following observations were made from the study of 50 specimens of human appendix under different methods.

(a) Regions occupied by the appendix (fig-1)

In the present study it has been observed, appendix occupied right iliac fossa in 32 cases (64%). It was in Pelvic region in 12cases (24%), in inguinal region in one case (2%) and in umbilical region in five cases (10%).

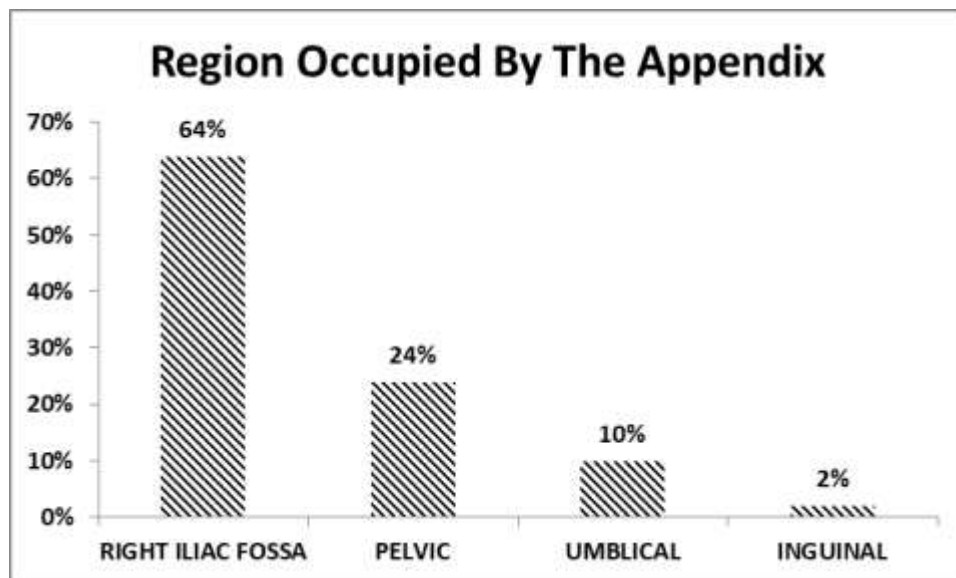


Table: 1 Showing the region occupied by the appendix.

(b) Position of ostium (or) base of the appendix (fig:2)

In the present study, appendicular orifices were present in posteromedial wall of caecum in 26 cases (52%), in middle of the lower pole of caecum in 19 cases (38%) and in anterior wall of caecum in 5 cases (10%).

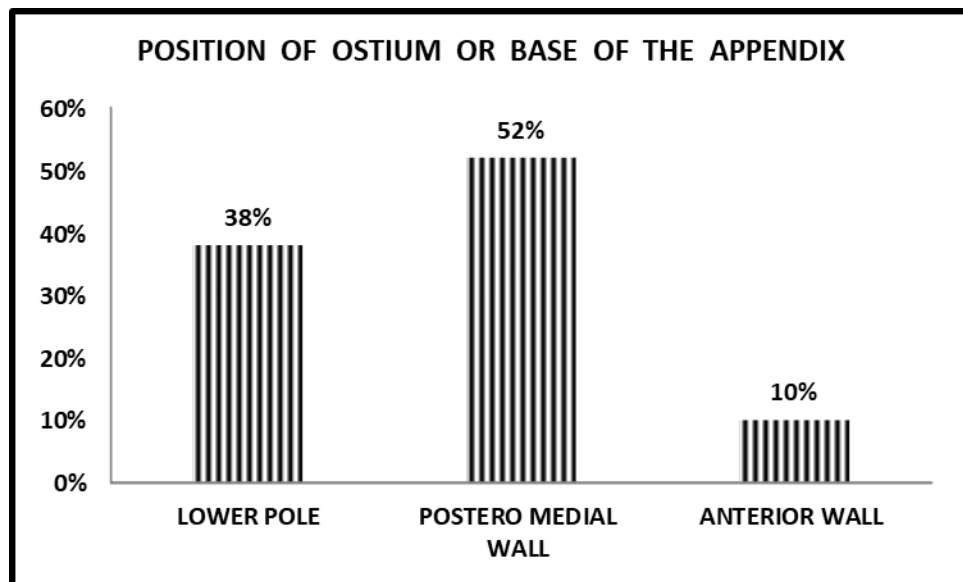


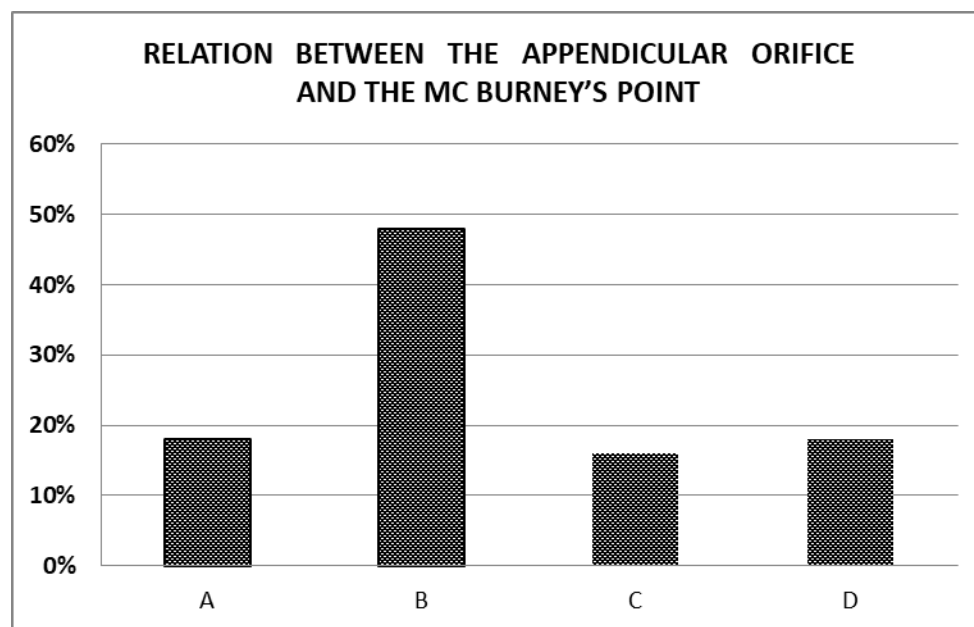
Table :2 Showing the position of the ostium or base of the appendix.

(c) Distance between the ileo caecal junction and the appendicular orifice

In the present study, the distance between ileo-caecal junction and appendicular orifice was ranging between 15 to 35mm. The average distance was 23.7mm. The longest distance being 35mm and the shortest was 15mm.

(d) Relation between the appendicular orifice and Mc Burney's point

In this work it is observed that orifice was within 5cm medial to Mc Burney's point in 24 cases (48%), within 10 cms medial to Mc Burney's point in 8 cases (16%), lateral to the Mc Burney's point in 9 cases (18%) and in Mc Burney's point in 9 cases (18%).



A: Base situated in the Mc Burney's point. B: Base situated medial to and within 5cms of Mc Burney's point. C: Base situated medial to and within 10cms of Mc Burney's point. D: Base situated lateral to Mc Burney's point.

Table: 3 Showing the relation between the appendicular orifice and the Mc Burney's point.

(e) Direction of tip and position of shaft (fig:3&4)

Direction of the tip:

Direction was vertically upwards in 32 cases (64%), obliquely upwards in 5 cases (10%), and downwards in 13 cases (26%).

Number of appendicular tips situated in 11'o clock position was 15 cases (30%), 12'o clock position in 17 cases (34%), 2'o clock position in 5 cases (10%), 5'o clock position in 12 cases (24%) and 6'o clock position in 1 case (2%).

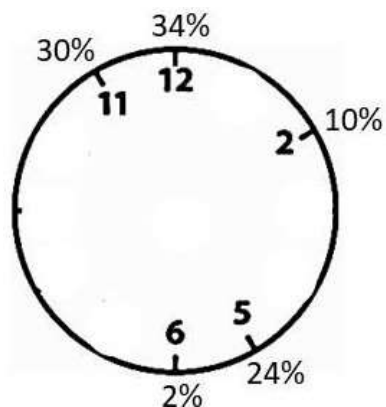


Figure.1 Showing the different position of the tip of appendix

Position of the shaft:

In the present study it is retrocaecal in 20 specimens (40%), retocolic in 12 specimens (24%), pelvic in 12 specimens (24%), postileal in 4 specimens (8%), preileal in 1 specimen (2%) and subcaecal in 1 specimen (2%).

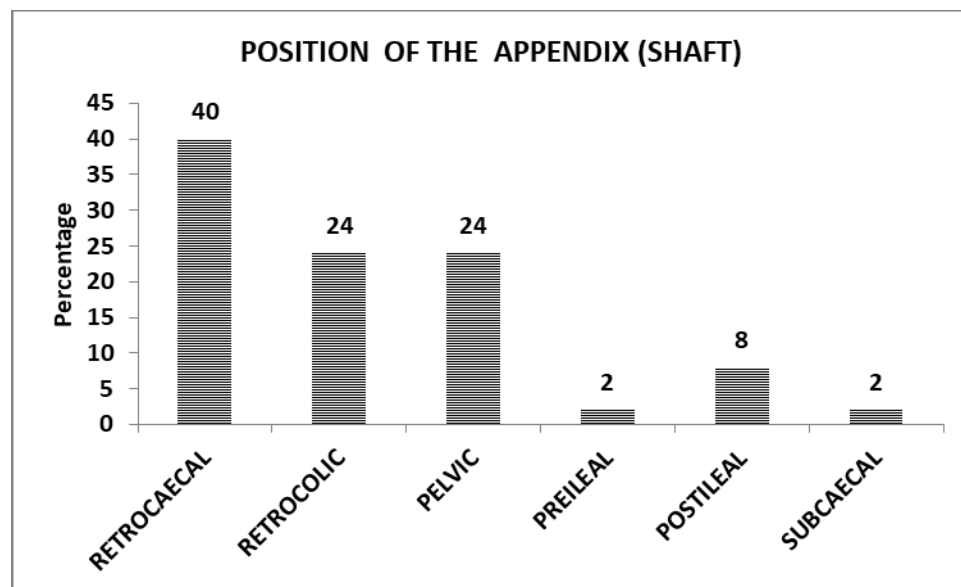


Table : 4 Showing the position of appendix

Discussion:

The cecum descends from right upper quadrant to right iliac fossa after the 10th week of foetal life, when the midgut has returned by means of umbilical aperture to abdominal cavity. During its descent, appendix may fold under the cecum, and if peritoneal fixation takes place at this time, the appendix will be fixed in this adherent retro posture. The asymmetrical expansion of

cecum during the development of the GIT in the fetus is the true cause of the appendix's position. The left cecal sacculation shrinks in size while the right one grows more or less symmetrically. Concurrently, the anterior cecal wall grows faster than the posterior. As a consequence the appendicocolic junction is relocated to the left, upward and backward, leading to retrocecal position in the maximum of scenarios. The caecum mobility or fixation ultimately determined the position of the appendix(8).

Anatomically appendix varies in the following features like location, position of shaft, position of ostium and its orifices. The position of appendix varies from one geographic location to another as we go through literature survey. This is mainly in major position like retro-caecal, pelvic and retro-colic. In present study it has been observed that appendix occupied right iliac fossa in 32 cases (64%). It was in Pelvic region in 12cases (24%), in inguinal region in one case (2%) and in umbilical region in five cases (10%). Similar types of finding was observed by Wakely, 65%(9), Solanki's, 38%(10) Ajmani and Ajmani, 68%(11) . In this study retrocaecal position was higher than pelvic position. Mirza Oru et in his study, found that number of complications was lower in retrocaecal appendix position than in others positions. Average number of days spent in hospital is higher for two days in patients with retrocaecal anatomical position then in patients with other anatomical appendix position. Retrocaecal anatomical appendix position is more often seen in male patients(12).

In our study we are able to observe the orifice was within 5cm medial to the Mc Burney's point in(48%), within 10 cms medial to Mc Burney's point in(16%), lateral to the Mc Burney's point(18%) and in the Mc Burney's point in(18%) similar type of finding was observed in D.Hegde et al(13). The position of the appendix is of utmost importance to understand the different appendix locations since they affect the signs and symptoms of appendicitis. This will aid surgeons in accurate identification and treatment of appendicitis(14,15).

In our study the direction of the tip of appendix was vertically upwards in 64%, obliquely upwards in 10%, and downwards in 26%. Number of appendicular tips situated in 11'o clock position was 30%, 12'o clock position in 34%, 2'o clock position in 10%, 5'o clock position 24% & 6'o clock position in 2%. Our study is directly correlated to R J. Gladstone et al(16).The direction of the tip and shaft is very essential for the surgeon to understand the relative frequency of the various situations in which the appendix may be found and its relationship to the surrounding pouches and folds of peritoneum. The position of an inflamed or gangrenous appendix and its relationship to adjoining parts frequently determine the site of an abscess.

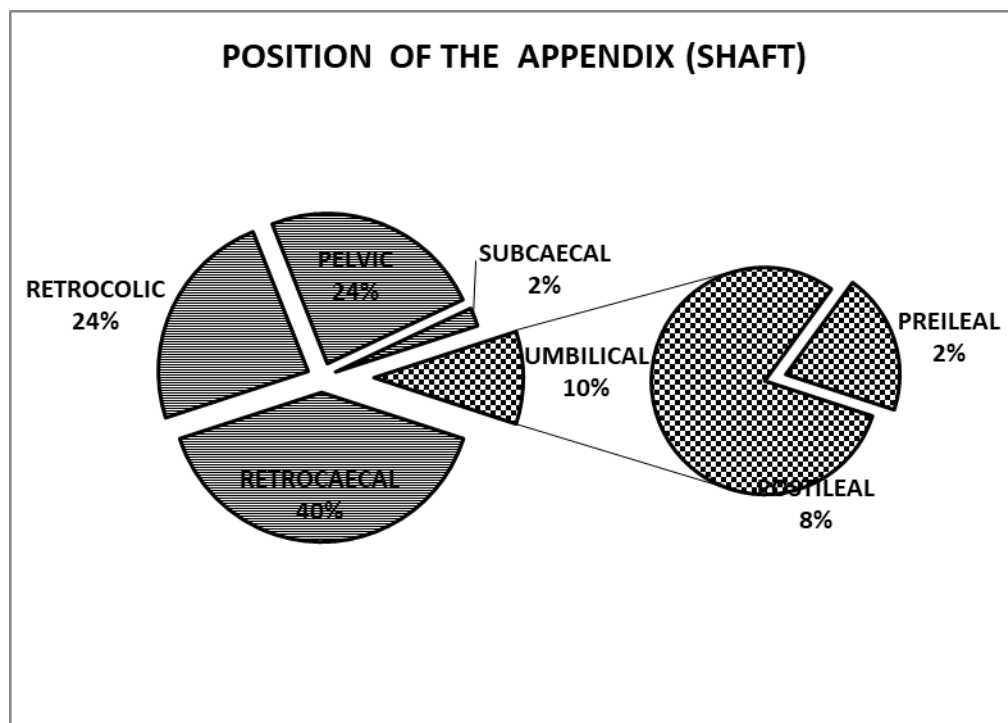


Table : 4 Showing the position of appendix

Conclusion:

We conclude that position of appendix may be present in retrocaecal, retrocolic, pelvic, preileal, postileal and subcaecal regions in the descending order of frequencies. Form our study we found, significant number of appendix is occupying the umbilical region (preileal & postileal). This position leads to difficulty in early diagnosis and also leads to unusual complication like peritonitis, small bowel ischemia, which increases the morbidity and mortality in appendicitis cases. Depending on the position of the vermiform appendix, signs and symptoms of acute appendicitis may vary and impede the diagnostic process. Moreover, dimensions of the vermiform process are an important diagnostic criterion of an inflamed vermiform appendix in imaging techniques

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Figure – 1 Post ileal position of the appendix

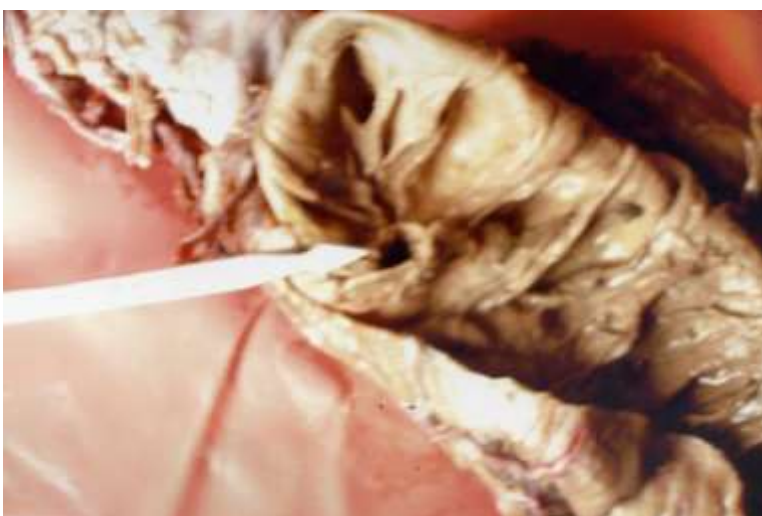


Figure – 2 Appendicular orifice situated in the postero medial wall of caecum



Figure – 3 sub caecal position of the appendix



Figure – 4 the longest appendix of the present study – 16 cm in length, reterocolic in position