



A STUDY OF MORPHOLOGY OF VERMIFORM APPENDIX IN 50 CASES

KEYWORDS

Vermiform appendix; mesoappendix; position; length

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ABSTRACT

The Vermiform appendix is considered by most to be a vestigial organ. The aim of this study is to determine the frequency of the various positions of the appendix, the average length, extent of mesoappendix in cadavers. This cross sectional study was done in 50 cadavers used for routine dissection for undergraduates. The anatomical variations were photographed, tabulated and compared with previous studies. Variations in position, length of appendix, and length of mesoappendix were determined. Vermiform appendix is involved in different disease processes such as appendicitis, carcinoma and diverticulitis. Appendicitis is the most important clinical condition. Inflammation of atypically located vermiform appendix may initiate inflammation of other organs which leads to diagnostic errors and life threatening complications that it can cause. Deadly infection of the appendix at youthful age is common. Appropriate anatomical knowledge about vermiform appendix is important for surgeons, pathologists and other physicians for proper diagnosis and management of appendicitis and carcinoma.

INTRODUCTION

The Vermiform appendix present only in human beings, certain arthropod apes and the wombat (a nocturnal, burrowing Australian marsupial) was probably first noted as early as the Egyptian civilization (3000 B.C). The Appendix is a narrow worm like structure present in the right iliac fossa, arising from the posteromedial wall of the caecum about 2 cms below the ileo-caecal junction and has no constant anatomical position. The attachment of the base of appendix remains fairly constant, but the tip can be found anywhere in Retrocaecal, Pelvic, Subcaecal, Para caecal, Post ileal and Pre ileal positions. The length of appendix [1] varies from 2 to 20 cms with an average of 9 cms. Microscopically, the vermiform appendix is a muscular tube containing a large amount of lymphoid tissue [2]. The appendix is suspended by a peritoneal fold called mesoappendix covering its variable length and carrying the blood supply to the organ, by appendicular artery, a branch derived from ileocolic artery. Appendicitis in different positions may mimic other diseases in retro colic - colitis, Post ileal ureteric colic, Pelvic inflammatory disease, torsion of ovarian cyst in female & Ruptured tubal gestation, Sub hepatic- hepatitis, biliary colic [3]. Anatomic variations in the position of the inflamed appendix lead to deviations in the usual physical findings. Hence knowledge of these variations is essential for accurate diagnosis and treatment [4] of the condition. At present, appendectomy for appendicitis is the most commonly performed emergency operation in the world. The lifetime rate of appendectomy [5] is 12% for men and 25% for women, with approximately 7% of all people undergoing appendectomy for acute appendicitis during their lifetime.

MATERIALS & METHODS

The present study was carried out irrespective of age, sex, race in 50 cadavers preserved in formalin solution. The anterior abdominal walls were incised and reflected following the method of Cunningham's dissection manual (the peritoneum was opened and viscera were carefully separated and cleaned. All the viscera in situ were observed). Immediately following incision of the anterior abdominal wall and exposure of appendix, its general features were studied. After noting down its position, the length of appendix, mesoappendix were observed. The length of the appendix was measured using divider, scale, thread and vernier caliper and % was calculated. Study of various positions of the appendix, the average length, extent of mesoappendix, outer diameter, distance between the base of the appendix and ileocaecal junction were carried out and the following results were concluded.

RESULTS

The percentages of different positions of the appendix were as follows Retrocaecal 40%, pelvic 28%, Subcaecal 16%, pre ileal 8%, post ileal 8%. The average length of appendix was 6.1cm in both sexes. The longest appendix length was 8cm and shortest appendix length was 4.4cm. In 84% of the cases, the mesoappendix extended to the tip of the appendix, whereas in 16% cases it failed to reach the tip. The distance which separated the base of the appendix to the ileocaecal junction varied between 1.6- 2.5cm in 36 (72%) of cases, 2.6- 3.5 cm in 12 (24%) of cases, 3.6- 4.5 cm in 2 (4%) of cases. Outer appendicular diameter in this study ranged between 5-10 mm in 42 (84%) of cases and 11- 15 mm in 8 (16%) of cases.

Table.1 shows the position of vermiform appendix in present study (Figure.1 Retrocaecal position, Figure.2 Pelvic position, Figure.3 Subcaecal position, Figure.4 Pre ileal position, Figure.5 Post ileal position)

TABLE- 1: Position of appendix

Position	No of specimen	Percentage
Retrocaecal	20	40%
Pelvic	14	28%
Sub caecal	08	16%
Pre ileal	04	08%
Post ileal	04	08%

The length of appendix ranged between 6.1- 7 cm was observed in maximum frequency in this study. The results are tabulated as below:

TABLE -2: length of appendix

Length of appendix (cm)	No of specimen	Percentage
4.1- 5	14	28%
5.1- 6	8	16%
6.1- 7	18	36%
7.1- 8	10	20%

TABLE -3: Variations of the mesoappendix

Mesoappendix	No of specimen	Percentage
Extending up to tip	42	84%
Not extending up to tip	08	16%

TABLE: 4 Distance between the base of the appendix to the ileocaecal junction

Distance between the base of the appendix to the ileocaecal junction (cm)	No of specimen	Percentage

1.6 - 2.5	36	72%
2.6 - 3.5	12	24%
3.6 - 4.5	02	04%

TABLE-:5 Outer diameter of the vermiform appendix at the base

Outer diameter of appendix at the base (mm)	No of specimen	Percentage
5 -10 mm	42	84%
11 -15 mm	08	16%

Figure 1: Retrocaecal Position of Appendix

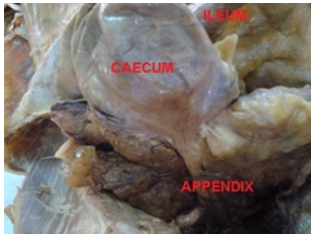


Figure.2 Pelvic position



Figure.3 Subcaecal position

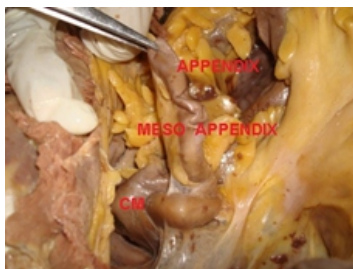


Figure.4 Pre ileal position

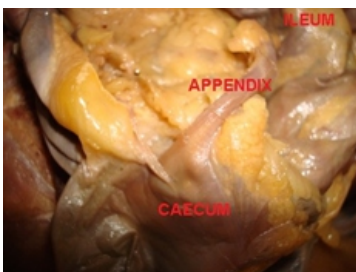


Figure.5 Post ileal position



DISCUSSION

The vermiform appendix is subject to considerable variation in position. As the ascending colon elongates the appendix may pass posterior to the caecum (Retro caecal appendix) or colon (Retro colic appendix). It may also descend over the brim of the pelvis (Pelvic appendix).

In the present study, the Retrocoecal position was highest (40%) followed by pelvic (28%), Subcaecal (16%), Pre ileal (8%) and post ileal (8%). Promonteric and ectopic were not found. The findings of the present study were similar to the findings by Wakeley^[6], Maisel^[7], Solanke^[8], Ajman^[9], Uttam Kumar Paul^[10], Gladstone^[11], and Manisha et al^[12] where Retrocoecal position was higher than the pelvic variety. But in other studies pelvic position was commonest like Gopalpour et al^[3], Rahman MM et al^[13] and Geethanjali^[14].

Here, Retrocoecal variety was found to be the most common variety instead of pelvic variety. It is thought that in the pelvic position, the blood vessels of the appendix are free from pressure, whereas in the retro caecal and retro colic position the vessels are compressed or kinked by the loaded caecum or the ascending colon. The findings of the distance which separated the base of the appendix to the ileocaecal junction and outer diameter of the appendix were similar to the findings by Nodoye JM et al^[15].

CONCLUSION

In the present study, the Retrocoecal position was highest (40%) followed by pelvic (28%). The knowledge of variational anatomy regarding the position of appendix is very much essential when attempting to diagnose a case as appendicitis. In Retrocoecal appendicitis it is difficult to find tenderness on palpation in the right iliac region. Irritation of the psoas muscle occurs in Retrocoecal or Para caecal appendicitis. In pelvic variety appendicitis, tenderness mainly elicit in the suprapubic region. Pelvic variety appendix principally cause is suprapubic pain from irritation of urinary bladder. It is to hope that this will provide some information and will be helpful to diagnose and to be successfully accomplished in surgical, oncological or interventional procedure to be carried out in this region.

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