

# Anatomical Positions of Vermiform Appendix in Bangladeshi People: A Postmortem Study

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**Abstract** The vermiform appendix is a worm-like, narrow, elongated, blind-ended extension of the large intestine of certain mammals, projecting from the posteromedial wall of the cecum, near its junction with the small intestine. It varies in position from person to person. Appendicitis is the most important clinical condition of vermiform appendix. The clinical presentation of appendicitis varies according to position of the vermiform appendix. An appropriate knowledge of the position of the vermiform appendix is important for surgeons, pathologists and other physicians for proper diagnosis and management of appendicitis and other appendicular diseases. In Bangladesh there is no sufficient data regarding position of the vermiform appendix. The present study is aimed to observe the anatomical position of the vermiform appendix among collected samples. With this aim the present study was carried out in the department of Anatomy, Sir Salimullah Medical College, Dhaka, from January 2008 to June 2009. After taking approval from the Institutional Ethics Committee sixty (60) postmortem vermiform appendices of different age groups collected by convenient sampling from unclaimed dead bodies of Bangladeshi cadavers which were under autopsy examination in the Department of Forensic Medicine of Dhaka Medical College (DMC) and Sir Salimullah Medical College (SSMC), Dhaka. The position of vermiform appendix was noted during collection of the sample from the dead bodies. In all the age groups, the pelvic position was the commonest (43.33%), followed by retrocecal-retrocolic position (33.33%), postileal position (20%) and subcecal-paracolic position (3.3%). Preileal variety was not found.

**Keywords:** anatomical, position, vermiform appendix, Bangladeshi people

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## 1. Introduction

The vermiform appendix is a worm-like, closed-ended, narrow, small tubular structure, projecting from posteromedial wall of cecum, having no known digestive function in human being for which it has been regarded as a vestigial remnant of a more developed distal cecum in man's herbivorous ancestors [1]. In view of its rich vascularity and histological differentiation, the vermiform appendix has been accepted as a complex and highly specialized organ rather than a degenerate vestigial structure [2]. Vestigial organs are sometimes pressed into a secondary use when their original function has been lost [3]. Currently available evidence suggests that it is an integral part of the Gut Associated Lymphoid Tissue (GALT) system. The mucosa and submucosa are thickened and dominated by lymphoid follicles. Secretory immunoglobins produced by the GALT function as a very effective barrier that protects the milieu interior against the hostile milieu exterior [4].

The vermiform appendix is the only organ in the body that has no constant anatomical position [5]. While the base

of the appendix is fairly constant, the position of the tip of the appendix varies from being retrocecal to being in the pelvis [6]. The commonest positions of the appendix are retrocecal-retrocolic and pelvic positions. The least common positions are preileal, postileal and subcecal-paracolic positions. The retrocecal-retrocolic position is moderately infrequent in Blacks compared to Caucasians [7]. Variations in the anatomical position influence pathogenesis, presentation, surgical approach and prognosis of appendicitis [8]. Appendicitis is commonest in the retrocecal and retrocolic position due to compression or kinking of appendicular vessels by loaded cecum or ascending colon [7]. The location of the tip of the appendix determines early signs and symptoms of appendicitis. Identification of the normal position of appendix is important because in appendicitis variable positions may produce symptoms and signs related to their position, and hence can mimic other diseases [9].

## 2. Materials and Methods

The present study was descriptive with some analytical components. The study was carried out in the department

of Anatomy, Sir Salimullah Medical College, Dhaka, from January 2008 to June 2009, after approval of the protocol of the research by the Institutional Ethics Committee of Sir Salimullah Medical College, Dhaka. The study was performed on sixty (60) postmortem vermiform appendices of different age groups of Bangladeshi people.

The study was done in situ in the cadavers, before displacement of the organ from right iliac fossa by manipulation and dissection. In each case, the abdomen was opened by a long midline incision and the flaps were reflected to give a good view of the abdominal cavity along with its contents. Then the teniae coli of the cecum were identified. The three teniae coli of the ascending colon and cecum converge at the base of the appendix and become its longitudinal muscle coat. The anterior cecal teniae coli act as the best guide for the vermiform appendix. This knowledge was used to identify the appendix. The relation of the base of the appendix to the cecum is constant, the position of the vermiform appendix, which is variable, was studied in relation to cecum, the terminal part of the ileum and the direction of the tip of the appendix. Accordingly, the position of the vermiform appendix was noted.

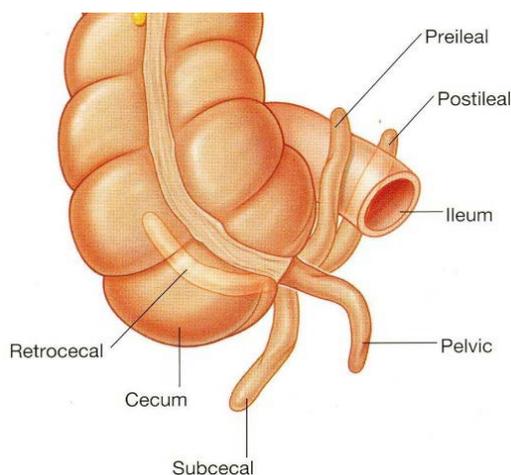


Figure 1. Various positions of the vermiform appendix [10]

### 3. Results

In the present study, the percentage frequencies of position of vermiform appendix were 43.33% pelvic, 33.33% retrocecal-retrocolic, 20% ileal, 3.3% subcecal-paracolic. Other position (promontoric and mid-inguinal) was not found (Table 1 and Figure 2).

Table 1. Position of the vermiform appendix in total study samples

Position	Number (n=60)	Percentage (%)
Pelvic	26	43.33
Retrocecal and retrocolic	20	33.33
Ileal		
• Preileal	0	0.00
• Postileal	12	20
Subcecal and paracolic	2	3.3
Others	0	0.00

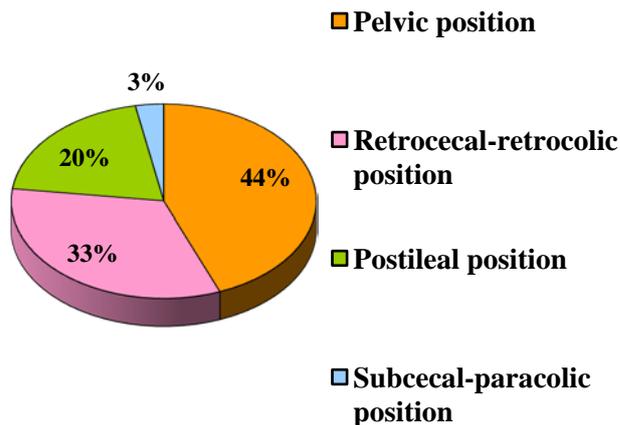


Figure 2. Different positions of the vermiform appendix in percentage frequencies (%) in total study samples (n=60)

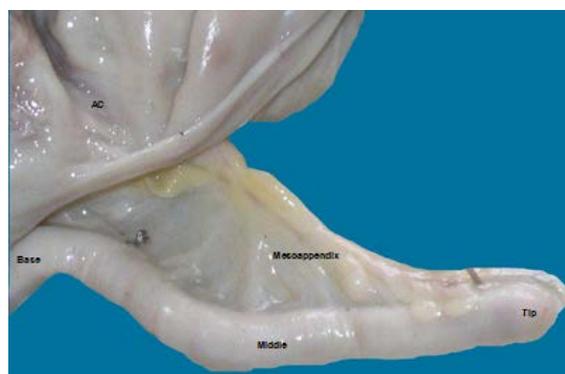


Figure 3. Photograph of a vermiform appendix found in the present study to be in the pelvic position (anterior view)

### 4. Discussion

In the present study, pelvic position was highest (43.33%), followed by retrocecal and retrocolic (33.33%), postileal (20%) and subcecal and paracolic (3.3%). But the preileal variety was not found.

The highest frequency of anatomical position of vermiform appendix found in this study was similar to study made by Katzarski and Datta [7], Katzarski *et al* [11], Maisel [12], Ndoye *et al* [13], Ojeifo *et al* [14]. All of them studied position of the vermiform appendix among African black populations and found pelvic position as the commonest position. They concluded that the retrocecal and retrocolic position was moderately infrequent in blacks compared to Caucasians. On the other hand, the result of the present study was not similar to Clegg-Lamprey *et al* [15] and Solanke [16], Abegaz *et al* [28], El-Amin *et al* [29] who also studied vermiform appendix in African black populations.

The result of the present study was similar to that of Collins [17] and Peterson [18], who studied vermiform appendix among American and European white populations. On the other hand, the result of present study was not similar to that of Buschard and Kjaeldgaard [19], Gladstone and Wakeley [20], Wakeley [21], de Souza *et al* [27] who also studied vermiform appendices among American and European white populations.

The result of the study among Asian populations was controversial, Rahman et al [5], Ghorbani A [26] found pelvic position as commonest, whereas others (Waas [22]; Ajmani and Ajmani [23]; Shah and Shah [24]; Paul [25]) found retrocecal and retrocolic position as the commonest position.

## 5. Conclusion

To establish a data for Bangladeshi people about the position of the vermiform appendix, future studies are necessary by using larger sample size from different age and sex groups. In addition, sonological studies can also be done to determine the position.

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