

## Original Research

# Study of Anatomical Variations of Vermiform Appendix at a Tertiary Care Centre

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**ABSTRACT**

**Background:** Vermiform appendix is a part of the digestive tract which lies in right lower quadrant of abdomen. This study was conducted to assess the anatomical variations of vermiform appendix.

**Materials and Methods:** 100 cadavers were used in the current study (50 males and 50 females). A random selection process was used to choose study participants from cadavers. They belonged to diverse age and gender groups.

**Results:** The findings showed that the appendix's anatomical placements were as follows: pelvic in 56 people, subcecal in 23 people, retroileal in 9 people, retrocecal in 7 people, ectopic in 04 people, and preileal in 1 people. For both sexes, the pelvic position was the most typical anatomical location. The positions of the subcecal, retroileal, retrocecal, ectopic, as well as preileal regions were as follows for both sexes. In the female population, there was no observed anatomical location for the preileal.

**Conclusion:** There is no correlation between the physical position of the vermiform appendix and sex. The vermiform appendix was most frequently found in the front anatomical location. The majority of comparable reports from western nations disagree with it. The position of the vermiform appendix may be affected by a number of variables, including dietary preferences, geographic shifts, and race.

**Keywords:** Vermiform Appendix, Variations.

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**INTRODUCTION**

Vermiform appendix is a part of the digestive tract which lies in right lower quadrant of abdomen. It has a worm-like structure and arises during embryological life from the posteromedial wall of the cecum, about 2 cm below the ileocecal valve.<sup>1</sup> The first comprehensive study made of the position of the appendix was completed by Gladstone and Wakeley in 1924, who studied 3000 anatomic dissections.<sup>2</sup> Previous to this, other authors had stated their belief, from observations at necropsy or operation, that the majority of appendixes are situated anteriorly and that they are free and hang over the brim of the pelvis. Though a remarkably constant structure in man, the appendix is nevertheless occasionally subject to the extremes of variation, that is, total suppression and duplicity. Its length varies from 2 to 20 cm, in average 9 cm.<sup>2</sup> The base of appendix is connected to the cecum, but its head can be placed in different situations. The diversity of situations is categorized into six locations: retrocecal, pelvic, subcecal,

preileal, retroileal, and ectopic.<sup>3-6</sup> This study was conducted to assess the anatomical variations of vermiform appendix.

**MATERIAL AND METHODS**

100 cadavers were used in the current study (50 males and 50 females). A random selection process was used to choose study participants from cadavers. They belonged to diverse age and gender groups.

**RESULTS**

The findings showed that the appendix's anatomical placements were as follows: pelvic in 56 people, subcecal in 23 people, retroileal in 9 people, retrocecal in 7 people, ectopic in 04 people, and preileal in 1 people. For both sexes, the pelvic position was the most typical anatomical location. The positions of the subcecal, retroileal, retrocecal, ectopic, as well as preileal regions were as follows for both sexes. In the female population, there was no observed anatomical location for the preileal.

**Table 1: Frequency (percent) distribution of appendix length among studied people.**

Length of appendix	<40 mm	40-79 mm	80-119 mm	>119 mm	Total
Frequency	03	35	58	04	100

## DISCUSSION

The vermiform appendix is the most variable abdominal organ in terms of position, extent, peritoneal, and organ relations.<sup>7</sup> Knowledge of the variations in the position of vermiform appendix is important because in appendicitis, its variable positions may produce variable symptoms and signs, which mimic other diseases.<sup>8,9</sup> An adult appendix is a long diverticulum, averaging 10 cm in length that arises from postero-medial wall of caecum, approximately 3 cm below ileocecal valve at confluence of 3 taeniae.<sup>10,11</sup> The origin of vermiform appendix is relatively constant; however, the tip can present variable positions. Variations of the appendix position usually result from a complicated and changeable embryonic development of the cecum<sup>12,13</sup>, and/or variable length of the appendix.<sup>14</sup> This study was conducted to assess the anatomical variations of vermiform appendix. In this study, the findings showed that the appendix's anatomical placements were as follows: pelvic in 56 people, subcecal in 23 people, retroileal in 9 people, retrocecal in 7 people, ectopic in 04 people, and preileal in 1 people. For both sexes, the pelvic position was the most typical anatomical location. The positions of the subcecal, retroileal, retrocecal, ectopic, as well as preileal regions were as follows for both sexes. In the female population, there was no observed anatomical location for the preileal. Joshi MM et al<sup>15</sup> investigated and compile extensive anatomical data on the location variation of the vermiform appendix in the cadavers of western Indians. The study of appendix was carried out on 25 cadavers available in the department of anatomy. Metrical parameters such as length, diameter and distance of appendicular orifice from ileum were measured. The different positions of appendix in and the variations of the mesoappendix were noted. Mean and standard deviations were calculated. Length of appendix was  $5.47 \pm 1.59$ , diameter at base was  $6.85 \pm 1.82$ , diameter at tip was  $3.94 \pm 1.11$ , distance of appendicular orifice below ileum was  $1.14 \pm 0.85$  and Distance of appendicular orifice below ileum inside was  $2.19 \pm 0.78$ . The most common position of mesoappendix was mesoappendix reaches the tip 37 (74%) followed by mesoappendix does not reaching the tip was 13 (26%). The most common position was retrocaecal 20(40%) followed by pelvic 15 (30%) least common was midinguinal. From various positions of vermiform appendix, we can understand the possible outcome of the appendicitis specifically location of site of pain. Yousaf M et al<sup>16</sup> conducted a study to identify the anatomical sites of the appendix, the length of the appendix and to examine the associations between these factors and age and sex. Together with a radiologist, they analyzed CT axial images, a coronal of 1.5 mm thickness, and a sagittal

reconstruction to assess the anatomical findings of the vermiform appendix retrospectively. There were 300 total participants in this research, 165 (55%) were female and 135 (45%) were male between 8 years to 60 years of age. In both sexes, the following sites were found Pelvic, Post ileal, Pre ileal, Retro caecal, Retro colic, Retro Para colic, and Sub caecal. Appendix length and site was shown to be significantly different in gender and age ( $p < 0.001$ ). Children less than 10 years old were more likely to have an incomplete mesoappendix. Males have a longer appendix than females do. On the other hand, we discovered that the appendix tends to become longer with age. The location of the appendix reportedly varies among ethnic and geographical groups. Preoperative planning requires knowledge of these variations. Although appendectomy is one of the most common operations, very little is known about vermiform appendix variation anatomy in the country. The high prevalence of anterior location and full mesoappendix in their group suggested that acute appendicitis may be more easily and quickly diagnosed in their demographic, with fewer instances of sequelae including perforation and gangrene.

## CONCLUSION

There is no correlation between the physical position of the vermiform appendix and sex. The vermiform appendix was most frequently found in the front anatomical location. The majority of comparable reports from western nations disagree with it. The position of the vermiform appendix may be affected by a number of variables, including dietary preferences, geographic shifts, and race.

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