

Length of Vermiform Appendix: A Postmortem Study

Uttam Kumar Paul¹, Humaira Naushaba², Md. Jahangir Alam³, Tahmina Begum⁴, Ashfaque Rahman⁵, Jesmin Akhter⁶,

Abstract

Context: The vermiform appendix is an abdominal organ having variable length and position. It provides immunological function. Vermiform appendix is involved in different disease processes such as appendicitis, carcinoma and diverticulitis. Appendicitis is the most important clinical condition. An appropriate anatomical knowledge about vermiform appendix is important for surgeons, pathologists and other physicians for proper diagnosis and management of appendicitis and carcinoma.

Study type : Descriptive type of study.

Place and period of the study: Department of Anatomy, Sir Salimullah Medical College, Dhaka from January 2006 to June 2007.

Materials and Method: Sixty (60) human postmortem vermiform appendix, age ranging from 0 to 65 years. Fresh samples were collected from the morgue of Sir Salimullah Medical College and Dhaka Medical College, Dhaka. The samples were divided into five (5) different age groups.

Result: Length of vermiform appendix decreases gradually with increasing age and was highly significant ($P < 0.001$) when compared between the groups.

Key words: Length, Vermiform appendix.

Introduction:

Vermiform appendix is the commencement of large gut but it is devoid of taenia coli, sacculations and appendices epiploicae¹. It extends from the posteromedial wall of the caecum, 2 cm below the ileum. Anterior taenia coli is usually distinct and traceable to the base of the appendix². Vermiform appendix is a narrow worm shaped blind tube suspended by mesoappendix.

Vermiform appendix varies considerably in length. The length varies from 2 to 20 cm and the average

length is 9 cm². It is longer in children and may atrophy or diminish after mid adult life². The appendix on an average is 0.5 cm longer in male than in female³.

Materials:

The present study was performed on sixty (60) human postmortem vermiform appendix of Bangladeshi people. The collected samples were divided into five age groups. The groups were Group-A (0-20 years), Group-B (21-30 years), Group-C (31-40 years), Group-D (41-50 years) and Group-E (above 50 years).

Methods:

The 10% formol saline fixed specimens were initially washed with the free-flowing tap water to wash away the formol saline so as to avoid irritation to the eyes and nasal mucosa. It also caused softening of the fixed issue. Then the specimens were taken in metallic tray, and the surrounding fat and other unwanted tissues were removed carefully with the help of sharp scissors, fine dissecting forceps and BP blade to expose vermiform appendix and its related structures.

1. Assistant Professor (CC), Department of Anatomy, Sir Salimullah Medical College, Dhaka
2. Professor and Head, Department of Anatomy, Sir Salimullah Medical College, Dhaka
3. Assistant Professor (CC), Department of Anatomy, Sir Salimullah Medical College, Dhaka
4. Lecturer, Department of Anatomy, Sir Salimullah Medical College, Dhaka
5. Lecturer, Department of Anatomy, Sir Salimullah Medical College, Dhaka
6. Assistant Professor, Department of Anatomy, Ibrahim Medical College, Dhaka

Correspondence: Dr. Uttam Kumar Paul

Parameter studied

Length of the vermiform appendix

Procedure for measurement of length of vermiform appendix

The length of the vermiform appendix was found out by measuring the distance from the base up to the tip of the appendix with the help of a measuring tape graduated in centimeter. The base of the appendix was identified where the taenia coli on the ascending colon and caecum converge. The anterior caecal taenia coli is usually distinct and traceable to the appendix, affording a guide to it (Borley 2005).²

The average length for each group was calculated by simple arithmetic mean.

Result:

Mean length of the vermiform appendix was 10.02±0.84 cm in group A (0-20 years), 9.74±0.75 cm in group B (21-30 years), 9.56±0.61 cm in group C (31-40 years), 8.75±0.70 cm in group D (41-50 years) and 7.70±0.45 cm in group E (above 50 years) (Fig.-1).

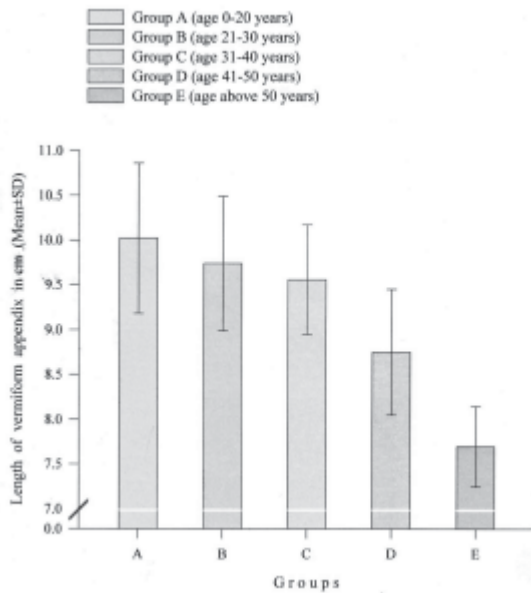


Fig.-1 : Length of vermiform appendix in different age groups

The mean difference in the length of the appendix was highly significant ($P < 0.001$) between group A and D, A and E, B and D, B and E and between C and E. The mean difference in the length of the appendix was significant between C and D ($P < 0.01$) and between D and E ($P < 0.01$). Other differences did not reach up to the level of statistical significance.

Figure: 2 shows the correlation between age and length of the appendix. The regression line showed negative correlation between age and length of the appendix which reached the level of significance ($P < 0.001$).

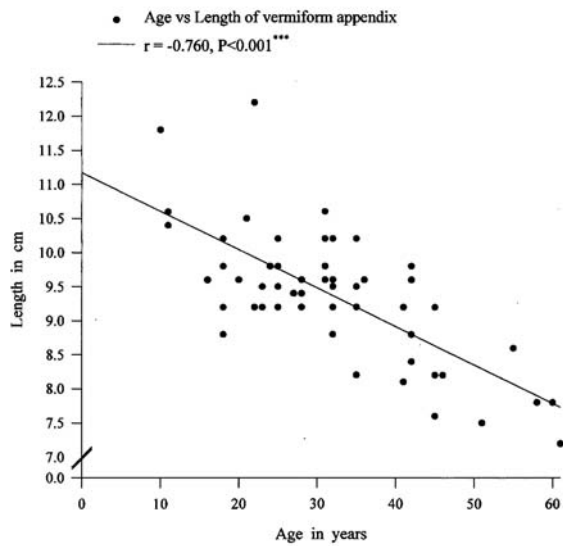


Fig.-2 : Relationship between age and length of vermiform appendix

Discussion:

In the present study, the highest mean length of the vermiform appendix was found to be 10.02±0.84 cm in group A (0-20 years), whereas the lowest mean length was found to be 7.70±0.45 cm in group E (above 50 years). This study showed that the length of the vermiform appendix decreased gradually with increasing age. It also showed that it is longer in children and in early adult life. Any organ diminishing in size by loss of cell substance leading to atrophy and one of its causes is aging process⁵.

The values were highly significant ($P < 0.001$) when group A was compared with group D and E, group B

was compared with group D and E and group C was compared with group E.

The length of the vermiform appendix showed negative correlation with age ($r = 0.760$) which was highly significant ($P < 0.001$).

In the present study, the average length of vermiform appendix was similar with Borley², Balthazar and Gade⁶, Solanke⁷, and Davis and Couplend⁸. The average length in the present study did not coincide with the study in Gorgan Teaching Hospital by Golalipour *et al.*⁹ on the anatomical variations of the vermiform appendix in people in the South-East of Caspian Sea (north of Iran) where average length was less. Delic *et al.*,¹⁰ findings regarding length in the people of Uttar Pradesh of India was higher than the present study. These variations were due to racial factor.

The present study also matched with Chowdhury¹¹. He concluded that the vermiform appendix is longer in children and in early adult life. With the advancing age, the appendix gradually shortens in length.

References:

1. Datta Ak. Essentials of human anatomy: thorax and abdomen. 6th ed. Kolkatta: Current Books International; 2003. 195-8.
2. Borley NR. Vermiform appendix. In: Standing S, Ellis H, Healy JC, Johnson D, Willimas A, Collins P, et al., editors. Gray's anatomy: the anatomical basis of clinical practice. 39th ed. Edinburgh: Elsevier Churchill Livingstone; 2005. 1189-90.
3. Russell RCG, Williams NS, Bulstrode CJK. Bailey and Love's short practice surgery. 24th ed. London: Hodder Headline Group; 2004. 203-6.
4. Glover JW. The human vermiform appendix. TJ Arch 1988; 3 (1):31-8.
5. Kumar V, Abbas AK, Fausto N. Robbins and Cotran pathologic basis of disease. 7th ed. Philadelphia: Elsevier; 2004. 870-1.
6. Balthazoar EJ, Gade M. The normal and abnormal development of the appendix. Radiology 1976; 121: 599-604.
7. Solanke TF. The position, length and content of the vermiform appendix in Nigerians. Br J Surg 1970; 57(2): 100-2.
8. Davies DV, Coupland RF. Gray's anatomy. 34th ed. London: Longmans Green and Co., Ltd.; 1967. 848-9.
9. Golalipour MJ, Aray B, Azarhoosh R, Jahanshahi M. Anatomical Variations of vermiform appendix in South-East Caspian sea (Gorgan-Iran). J Anat Soc India 2003; 52(2):141-3.
10. Delic J, Savkovic A, Isakovic E. Variation in the position and point of origin of the vermiform appendix. Med Arch 2002; 56(1):5-8.
11. Chowdhury GMI. Anatomical study of human vermiform appendix in Bangladesh [thesis]. Dhaka: Institute of Postgraduate Medicine and Research (now Bangabandhu Sheikh Mujib Medical University); 1993.