

VERMIFORM APPENDIX IN ADULTS

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ABSTRACT: Aim of our present study was to observe variations of Position of vermiform appendix in local population primarily in adults. Totally 50 adult cadavers were dissected during last 3 years for under graduates in the Department of Anatomy, Government Medical College, Ananthapuramu, Andhra Pradesh. Length and Breadth, Extent of mesoappendix, Position of appendix and Arterial supply of appendix were studied. In our study most common position was retrocaecal, least common was preileal & post ileal position. Retrocaecal position was seen in 66%, pelvic position was in 26%, subcaecal in 4%, preileal 2%, postileal 2% and paracaecal position was not observed in any cadaver. In males average length of appendix was 77.20mm, breadth was 12.42mm, where as in females length was 69.33mm, breadth was 10.80mm. In 34% cases mesoappendix extended up till tip and in 66% cases mesoappendix failed to reach the tip of appendix. In 70% cases single appendicular artery was observed and in 30% cases two appendicular arteries were present. Morphological & positional variations of vermiform appendix is a very important information, to be remembered before planning or during any surgical procedures to prevent post-operative complications.

KEYWORDS: retrocaecal, preileal, post ileal, pelvic, mesoappendix.

INTRODUCTION: As per the universally accepted standard text book, GRAYS TEXT BOOK OF ANATOMY, Vermiform appendix is worm like tubular, narrowest part of large intestine at structure arising from posteromedial wall of caecum just below the ileocaecal junction. Vermiform appendix is present mainly in humans & few arthropod apes. Mesoappendix is a peritoneal fold which suspends the appendix and contains blood vessels, lymphatics, lymphnode & nerves. Appendix is the only part of large intestine which is devoid of taeniae coli, sacculations & appendicis epiploicae. Length of vermiform appendix is 2 – 20 cm, with average being 9 cm. The average diameter at the base is 6mm. The vermiform appendix is described as having 3 parts: they are base, body and tip.

MATERIALS AND METHODS: The present study is of 50 adult vermiform appendix obtained from 21 cadavers of department of Anatomy & 29 observed from the mortuary of Forensic Medicine, Government Medical College, Ananthapuramu. The vermiform Appendix was observed in cadavers after routine dissection by the medical students and after routine post mortem examination. The length, width, mesoappendix, position of appendix, blood supply of appendix were observed. We observed a few variations which were more regional and such information is essential for all Surgeons.

Instruments required are – scale (plastic), divider & other dissection instruments.

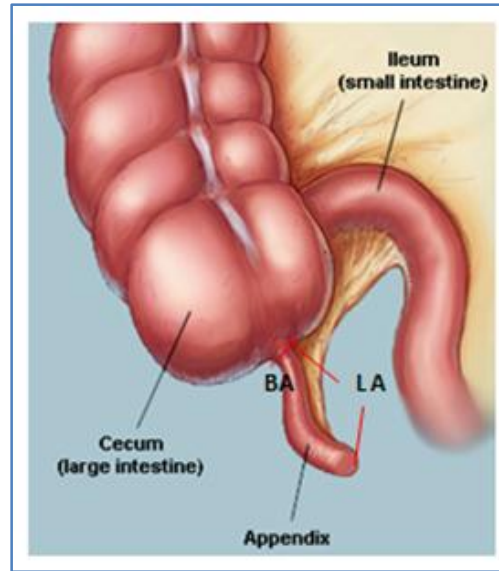


Fig. 1: Measurements of vermiform appendix

(LA – Length of appendix, BA-Breadth of appendix)

RESULTS:

LENGTH and BREADTH OF APPENDIX: In 35 adult male specimens the length of appendix ranged from 30 mm – 120 mm with an average being 77.2mm. Breadth of the appendix at the base ranged from 7mm – 22 mm with an average being 12.42 mm.

Adult male specimen No	Length in mm	Breadth in mm	Adult female specimen no	Length in mm	Breadth in mm
Total: 35 (70%)	Range: 30mm-120mm Average: 77.2mm	Range: 7mm-22mm Average: 12.42mm	Total No. 15 (30%)	Range: 30mm-100mm Average: 69.33 mm	Range: 5mm-20mm Average; 10.8 mm
Measurements of vermiform appendix in adults					

MESOAPPENDIX: Meso appendix in 17 adults specimens (34%) extended upto the tip and in 33 adults specimens (66%) the meso appendix failed to reach the tip.

Adult specimen No.	Meso appendix extends up to tip	Meso appendix failed to reach the tip
Total No. 50	17 (34%)	33 (66%)
Meso Appendix In Adults		

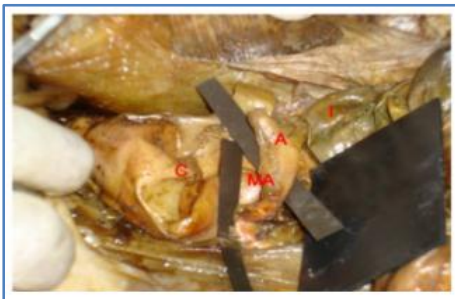


Fig. 2: Mesoappendix extending up to the Tip of Appendix



Fig. 3: Mesoappendix extending up to middle of Appendix

POSITION OF APPENDIX:

In Adults:

- In 33 (66%) adult specimens the appendix was found to be Retrocaecal position.
- In 13 specimens (26%) it was in pelvic position.
- In two specimens (4%) it was in sub caecal position.
- In one specimen (2%) it is in pre ileal position.
- In one specimen (2%) it was in post ileal position.

Adult specimens	Pre ileal	Post ileal	Pelvic	Retro Caecal	Sub Caecal	Para Caecal
50	1	1	13	33	2	Nil
Percentage	2	2	26	66	4	Nil
Positions of vermiform appendix						

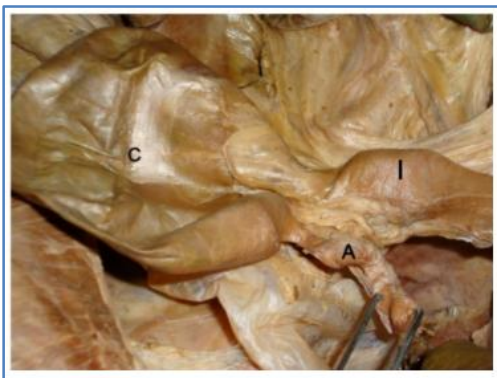


Fig. 4: Vermiform appendix in preileal position



Fig. 5: Vermiform appendix in post ileal Position



Fig. 6: Vermiform appendix in subcaecal position



Fig. 7: Vermiform appendix in retrecaecal Position

ARTERIAL SUPPLY OF APPENDIX: In 35 (70%) adult cadavers single appendicular artery was observed and in 15 (30%) cadavers double appendicular arteries were observed.

No. of cadavers	One appendicular artery	Double appendicular artery
50	35	15
Percentage	70%	30%
Arterial supply of appendix		



Fig. 8: Single appendicular artery



Fig. 9: Double appendicular artery

APPENDIX IN OTHER ANIMALS: Although appendix like structure does exist in wombats, civets, rodents, and a few other lower animals, the appendix is evidently a specialized formation, unique to anthropoid apes and man, where it probably performs similar functions. Some other animals such as the wombat, opposum and the rabbit (and some rodents) may have a vermiform appendix, however phylogenetic analyses have shown that these are not homologous to the appendix of apes.

DISCUSSION: A clear cut picture of size, shape & position of appendix is very important to diagnose, based on only clinical presentation of a patient with appendicitis. The area of tenderness in appendicitis will depend upon the position of the appendix, length, part of the appendix with inflammation, direction of the appendix, presence of kinking or adhesions.

According to Wakeley (1933)¹, Sandhya sathyavan(1985)² retrocolic and retrocaecal position of appendix were seen in 65.28%, 70 % of cases respectively. While Delic (2002)³ Ravi Kumar (2009)⁴ reported retrocaecal position in 38% and 35.8% of cases. In our present study retrocaecal position was observed in 66% of cases respectively. Retrocaecal position was the common in our study and least common position was preileal & post ileal position. Parecaecal position was not observed in any case. The percentage of pelvic position seems to be high in Andhra Pradesh i.e. Ravi Kumar (2009)⁴ 35.8% and in present study with 26%. This may be due to the increase in length, thickness & function of the appendix due to the presence of extensive mesoappendix.

In our study, the length of the appendix was longer in Males than Females. According to Rajaram.V (2004)⁵ length of appendix in adult males was 9.2 cm and in adult females was 9.12 cm but average length was 7.72 cm.

According to Wood jones (1948)⁶ and Varma.P.K.et al (2007)⁷ breadth of the appendix was 5mm and 6.7mm respectively. but in present study breadth was in the range of 6-12mm. the increased thickness of appendix in our local population may be related to their dietary habits. Ravi Kumar. U (2009)⁴ observed mesoappendix extending up to the tip in 43.28%, in 41.1 % mesoappendix was short, & in 9.7 % mesoappendix was absent. In our present study mesoappendix was present in all the cases i.e in 66 % mesoappendix ended approximately in the middle of appendix, but extended up to the tip in 34 % of cases.

Katzarski. M (1979)⁸ and Ajmani ML & Ajmani K (1983)^{9,10} observed one appendicular artery in 39.8% & 39 % of cases respectively. In our present study one appendicular artery was present in 70 % of cases and 2 arteries were observed in 30 % of cases.

CONCLUSION: High incidence of Retrocaecal position and incomplete mesoappendix in our population explains that - diagnosis of acute appendicitis is difficult & slightly delayed. Complications are also comparatively more than other groups of population. So duration of hospitalization and expenses are increased in our population.

REFERENCES:

1. Wakely C P C (Grays): The position of vermiform appendix as ascertained by an analysis of 10000 cases. J. Anat; 1933 67: 277 – 283.
2. Sandhya sathyavan, Maheshwari.S, Bala Subramanyam. C, Banumathy. S. P & Muthu Meenakshi, Ramanatham: Study of position of the appendix in abdominal operations. Anatomical Adjuncts. 1995 Vol.2, No.1, Sep. 1995, Page 78.
3. Delic.J. Savokovic. A. Isakovic. E. Variations in the positions and point of origin of the vermiform appendix. Med.Arh. 2002: 56 (1): 5-8.

ORIGINAL ARTICLE

4. Ravikumar. U, Bapuji. P, Ratna prabha.Ch, Kannan M, Jyothi P, Swayam jyothi. S: Human vermiform appendix. The position and extent of mesentery, arterial supply studied in 134 adult cadavers.J. Anat. Soc. India; 2009: 58 (1) 47 -111.
5. Raja Ram.V Position of appendix in 50 cadavers and post mortem bodies. Anat. Adjuncts. 2005: Volume 4. No -2 Sep. 2005 Abstract 24.
6. Wood jones.F. Buchanans manuals of anatomy Woodjones.F, Ballizar Tendail Co., London. 1948: 8th Ed.756 – 759.
7. Varma. P.K, Alam.K the morphological and histological variations in the appendix from human to herbivores and carnivores mammals. J. Anat. Soci. India, 2007 56(1) 55-108.
8. Katzarski.M.M, Gopal rao.U.K, Brandy.K Blood supply and position of vermiform appendix in zambians.Med.J.Zambia 1979 april –may: 13 (2): 32-4.
9. Ajmani.ML, Ajmani.K. The position, length and arterial supply of appendix, Anat.Amz.Jena, 1983: 153: 369 -74.
10. Scheye. Th, Dechelotte. P, Tanguy. A, Dalens. B, Vanneuville G, Chazal. J Anatomical and histological study of ileocaecal valve. Journal surgical and radiological anatomy. June 1983, Volume no.5, Number 2/ pg 83 – 92.

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