ORIGINAL ARTICLE

JOURNAL OF AD-DIN AKIJ MEDICAL COLLEGE

Vol. 1 | No. 1 | July 2022
JAAMC 2022; 1(1): 19–22

Gross morphological study on the extension of mesoappendix of the vermiform appendix in Bangladeshi people

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Received: 17 Feb 2022
Accepted: 13 Mar 2022

Abstract

Background: *The vermiform appendix is a narrow worm-like structure extending from the posteromedial wall of the cecum, having no known significant digestive role in humans. It is connected to the lower part of the ileal mesentery by a triangular fold of the peritoneum called mesoappendix, which carries vessels and nerves to and from the appendix. Mesoappendix usually extends almost to the tip of the appendix. Failure of the mesoappendix to reach the tip reduces the blood supply of the tip of the organ, which makes it more liable to become gangrenous and hence early perforation during inflammation.* ***Objectives:*** *The study was done to determine the extent of the mesoappendix of the vermiform appendix in Bangladeshi people to magnify the knowledge regarding the vermiform appendix in our population.* ***Materials and Methods:*** *The study was conducted in the Department of Anatomy, Sir Salimullah Medical College, Dhaka, from January 2008 to June 2009 on 60 (sixty) postmortem (cadaveric) vermiform appendices of Bangladeshi people of different ages and sexes. The collected samples were divided into five groups; group A (0 to 20 years), group B (21 to 30 years), group C (31 to 40 years), group D (41 to 50 years), and group E (>50 years). The extent of the mesoappendix of the vermiform appendix was determined by simple observation. Then statistical analysis was done by Z test of proportion using SPSS software.* ***Results:*** *In the present study, the percentage of mesoappendix extending up to the tip was 66.67%, percentage of mesoappendix extending not up to the tip was 33.33%. It was statistically significant (P,0.05).* ***Conclusion:*** *This study provides certain basic information on the extent of the mesoappendix of the vermiform appendix of Bangladeshi people, which is responsible for the vascularisation of the organ and its severity during inflammation.*

Keywords: *Mesoappendix, vermiform appendix, Bangladeshi people*

Introduction

The vermiform appendix is a narrow, worm-like, blind-ended, tubular structure projecting from the posteromedial wall of the cecum, having no known major digestive role in humans. It is connected to the lower part of the ileal mesentery by a triangular double-layered fold of peritoneum called mesoappendix which carries vessels and nerves to and from the appendix. Usually, the mesoappendix reaches the tip of the vermiform appendix but sometimes fails to reach the distal third (1). Failure of the mesoappendix to reach the tip probably reduces the blood supply of the tip of the organ, making it more liable to become gangrenous and hence early perforation during inflammation (2, 3).

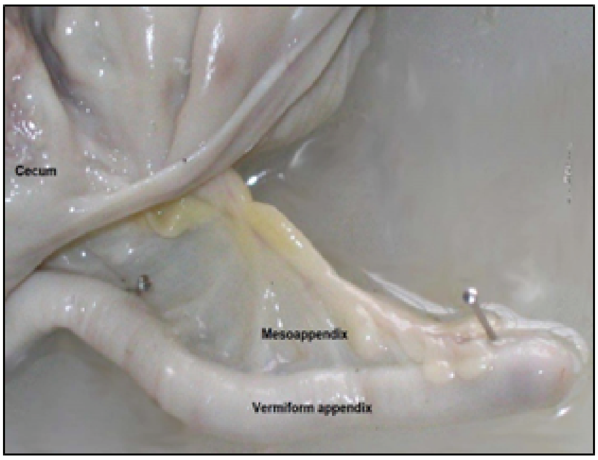

Fig 1. Anterior view of the vermiform appendix along with cecum and mesoappendix.

Materials and Methods

The present study was a descriptive cross-sectional type of study with some analytical component, performed between January 2008 to June 2009 on 60 (sixty) postmortem (cadaveric) vermiform appendices of Bangladeshi people of different ages and sexes. For the convenience of study, the collected samples were divided into five groups; Group-A (0-20 years), Group B (21-30 years), Group C (31-40 years), Group D (41-50 years) and Group-E (>50 years) (Table 1) (4). Samples of cadaveric vermiform appendices with surrounding structures were collected within 12 to 36 hours of death from unclaimed human dead bodies that showed no sign of putrefaction and that were autopsied on different dates in the morgues of the Departments of Forensic Medicine of Dhaka Medical College (DMC) and Sir Salimullah Medical College (SSMC), Dhaka. 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 tenia coli of the cecum was identified. The three tenia coli of the ascending colon and cecum converge at the base of the appendix and become its longitudinal muscle coat. The anterior cecal tenia coli act as the best guide for the vermiform appendix. This knowledge was used to identify the appendix. The position of the appendix was noted. The cecum and the proximal part of the ascending colon were mobilized by blunt dissection, using gloved fingers and the handle of a BP knife. About 10 cm from the cecum, the ascending colon was divided by a sharp knife between two ligatures to prevent soiling of the dissection. The distal 10 cm of the ileum was similarly divided between two ligatures. Then with a pair of scissors, the mesentery was cut radially as far away as feasible from the intestinal border. The mesoappendix was kept intact and separated from its root. The specimen was then taken to the basin, the ligatures were removed and the contents of the bowel were emptied (5). The specimen was washed thoroughly with running tap water. Blood and blood clots were removed as far as possible. A tag was attached to a specimen that contained the identification number and age of the cadaver. Then the specimen was mopped with blotting paper. Immediately after this, the length of the appendix was measured, and then the specimen was fixed and preserved in a 10% formol saline solution. Each 10% formol saline-fixed specimen was initially washed with running tap water to remove the formol saline to avoid irritation to the eyes and nasal mucosa by the formol saline vapor and also to allow softening of the fixed and hardened issue. The samples were taken in a metallic tray, and the surrounding fat and other unwanted tissues were removed carefully with the help of sharp scissors, fine dissecting forceps, and a BP blade to expose the vermiform appendix and its related structures. Whether the mesoappendix extended up to the tip or ended near the tip was observed by naked eye examination. Statistical analysis was done by Z test of proportion using SPSS software.

Results

Most of the appendices studied in this study were in the age group of 21-30 years according to Warwick Glover(**4) (Table 1).**

Table 1: Age grouping of the vermiform appendices (following Glover 1988)(4)

Groups	Age in years	No. of samples (n=60)	Percentage frequency
A	0-20	9	15
B	21-30	19	31.67
C	31-40	12	20
D	41-50	14	23.33
E	>50	6	10

The study revealed that in 1/3rd of cases, the mesoappendix reached up to the tip of the appendix which was significant statistically ($P<0.05$).

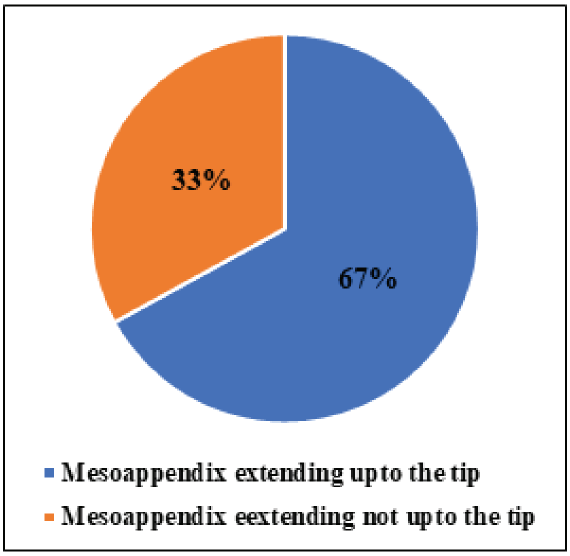

Fig 2. Extension of mesoappendix in total study samples (n=60)

Discussion

The appendix is supplied by a small artery, the appendicular artery, that passes through the mesoappendix. Failure of mesoappendix to reach the tip of the appendix reduces vascularity of the tip of the organ, making it more liable to become gangrenous and hence early perforation during inflammation (2). This study aimed to get an in-depth insight into the attachment of mesoappendix.

In the present study, the percentage of mesoappendix extending up to the tip was 66.67%. The result of the present study matched with that of Paul (2007) (5) as both of the studies were carried out on samples of the same source. On reviewing the literature, the study done by Swathipriyadarshini (5) et al in 2022 had the nearest incidence of 76.6%. According to the study by Geethanjali (6) in 2011 had an incidence of 69.23%, by Anderson et.al (7)., the mesoappendix reached the tip of the appendix in 80% of the cases. According to Tahir Iqbal (8) in 2012, there was a long mesoappendix frequently extending up to the tip of the appendix and often an ileo-caecal fold. Bakheit and Warille (1997) (9) studied postoperative resected vermiform appendix of Sudanese citizens in Khartoum province in Omdurman and Khartoum Teaching Hospitals from November 1995 to February 1996. They noted that the mesoappendix failed to reach the tip of the appendix in 46.7% of the patients. Golalipour et al (1999) (10) studied 117 postoperative vermiform appendices to determine the anatomical variations of the position, length, and mesoappendix from September 1998 to March 1999, in South-East of Caspian Sea in the North of Iran. They observed that the mesoappendix failed to reach the tip of the appendix in 65.8% of the patient and extended up to the tip in the case of 34.2% of the patients. The results of the present study did not match with those of Bakheit and Warille (1997) and Golalipour et al (1999) (6) as they studied postoperative resected samples.

Conclusion

On the background of the availability of the data, regarding gross morphological study on human vermiform appendix supplied by various standard textbooks and journals, it is found that very few research works have been performed on Bangladeshi people. The observations and results of the present study are expected to provide an idea about the gross morphological features of the vermiform appendix of Bangladeshi people and these findings will standardize the various measurements obtained by other observers in this country. The sample size was small but if the sample size was large, then the results might be more specific.

Source(s) of Support: Nil
Conflict of Interest: Nil

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