CASE REPORT

A Dolichosigmoid Colon - an Anomalous Course of the Sigmoid Colon: A Cadaveric Case Report

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Abstract

This case study describes the anatomical variations of the descending colon and anomalous course of the sigmoid colon observed in a 68-year-old male cadaver during routine cadaveric dissections. The descending colon was longer than normal, and a bowel loop was observed at 9.5cm from the splenic flexure. A diverticular pouch was observed anterolaterally just below the splenic flexure. The sigmoid colon was longer than normal and took an anomalous course. It consisted of a redundant ascending part and a normal descending part. The sigmoid colon took a sharp turn at its commencement from the descending colon, and its redundant ascending part extended parallel to the descending colon in the opposite direction. Then it took a sharp turn forming the descending part, which was shifted towards the midline due to the presence of the redundant ascending loop.

This is the first case of a Dolichosigmoid colon reported from Sri Lanka.

Keywords: abnormal sigmoid colon; dolichosigmoid colon; embryology; cadaveric study

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Introduction

The large intestine extends from the cecum up to the anal canal and consists of the caecum, colon, rectum, and anal canal. Parts of the colon include the ascending, transverse, descending, and sigmoid colon. The ascending colon extends from the ileocecal junction up to the hepatic flexure and is around 15cm long. The transverse colon extends from the hepatic flexure up to the splenic flexure and is about 50cm long. The descending colon commences at the splenic flexure in the left hypochondriac region and continues vertically up to the pelvic inlet. Its length is approximately 25cm. The sigmoid colon, which begins at the pelvic inlet and extends up to the third sacral level, is approximately 40cm in length (1). Embryologically, the gut develops from three parts, namely the foregut, the midgut, and the hindgut. The large intestine derives from the hindgut. During the 6th week of embryological development, the primary intestinal loops enter the extraembryonic cavity of the umbilical cord. Then the rotation of intestinal loops takes place, and meanwhile, the small and large bowel loops further elongate. During the 10th week of intrauterine life, the herniated intestinal loops start returning to the abdominal cavity. Excessive elongation of the bowel loops can cause redundant loops when returning to the abdominal cavity due to their extra length (2). Dolichosigmoid colon, or redundant sigmoid colon, is an abnormally long sigmoid colon that arises due to this variation in its embryological origin (3). This is of clinical significance as it can result in conditions like constipation and volvulus. Therefore, reporting this case will be important for fields like surgery, radiology, and gastroenterology.

Case report

This anatomical variation in the large intestine was observed in a 68-year-old male cadaver (at the time of cadaver donation in 2023) during routine dissections at the Department of Anatomy, Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka. The cadaver has been donated to the Department of Anatomy, Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka, with prior consent before death to be used for medical education and research. Annually, the Department of Anatomy uses 18 donated cadavers for medical and dental undergraduate dissection-based teaching (4). The age (at the time of donation of the cadaver) of the case report was obtained from the available records at the Department of Anatomy. Since year 2014 to date, the Department of Anatomy has utilized 182 donated cadavers for routine dissections of the undergraduates. This is the 1st reported case with Dolichosigmoid colon we encountered during routine dissection at Faculty of Medical Sciences, University of Sri Jayewardenepura.

The anomalies were found in the splenic flexure, descending colon, and sigmoid colon. A thorough dissection of the colon was performed to study its anatomical details, the surrounding organs, and the vascular supply.

Descending colon

The descending colon was retroperitoneal and longer than normal (30 cm in length). A bowel loop was observed at 9.5 cm from the splenic flexure. The arterial supply to the descending colon was from the left colic branch of the inferior mesenteric artery (Figure 01). The circumference of the descending colon appeared normal and typical anatomical features, including taenia coli, Haustra, and appendices epiploicae, were present.

Splenic flexure

A diverticular pouch was observed just below the splenic flexure (Figure 2). The pouch was located anterolaterally, and its size was 1cm.

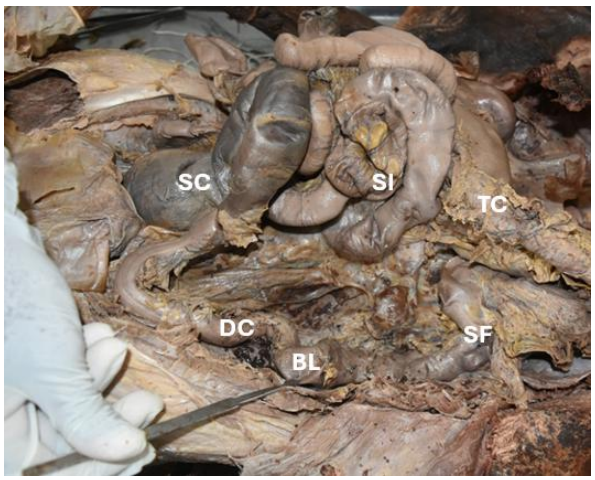


Figure 1: Descending colon: DC-Descending colon, BL-Bowel loop of the descending colon, SF- Splenic Flexure, TC- Transverse Colon, SC-Sigmoid Colon (Dolichosigmoid colon), SI-Small Intestine



Figure 2: Diverticular pouch: DP-Diverticular Pouch, SF-Splenic Flexure, TC-Transverse Colon, TM-Transverse Mesocolon, DC-Descending Colon, SI-Small Intestine

Sigmoid colon

The sigmoid colon consisted of a redundant ascending part and a normal descending part. The ascending part of the sigmoid colon was 16.5 cm in length, and its diameter was 2.5cm. It took a sharp turn at the end of the descending colon and extended parallel to the descending colon but in the opposite direction. At the commencement of the descending part, it took a sharp turn. The descending part was 29.5cm in length and 7cm in diameter. It was shifted towards the midline due to the presence of the redundant descending loop. The sigmoid colon was supplied by the sigmoidal branches from the inferior mesenteric artery (Figure 3).

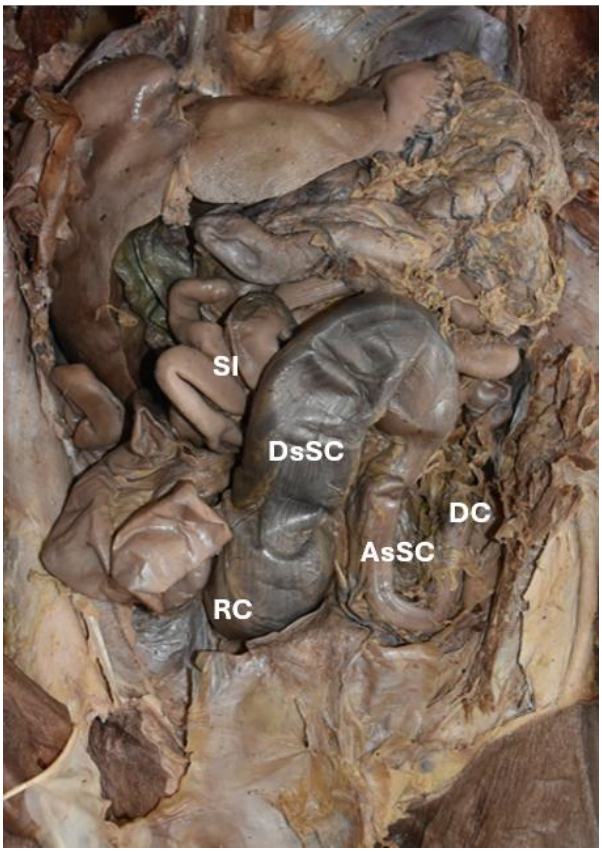


Figure 3: Dolichosigmoid colon AsSC-Ascending part of Sigmoid Colon, DsSC-Descending part of Sigmoid Colon, DC-Descending Colon, RC-Rectum, SI-Small intestine)

Discussion

The sigmoid and descending colons are known to have many anatomical variations due to their embryological origin. A redundant colon is too long to fit into its normal anatomical space (5). Having a long descending or

sigmoid colon can result in clinical implications like volvulus torsion and internal hernias (6). In addition, these anomalies can complicate imaging studies and instrumentation procedures. It can cause complications in the digestive and urinary tracts as well (5). The anomalies of the colon were classified by Kanagasuntheram and Loo for the first time in 1970. According to the classification, there are four main anomalies namely presence of complete ascending and descending mesocolon, double hepatic flexure, an extension of the sigmoid colon into the abdominal cavity, and displacement of the sigmoid colon towards the right side (7). Since then, many case reports have been published on the anomalies of the colon.

Zarokosta *et al.,* (2018) have reported a case of redundant sigmoid colon which was found in a hemicolectomy procedure in a patient with colon cancer. In this case, the surgeons have detected an abnormally long sigmoid colon with its mesocolon which was arranged as ascending and descending loops (5). Bertelli *et al.,* (2022) has reported a rare case of right sided fixation of the sigmoid colon in a recess posterior to the ascending colon, causing obstructed internal herniation of the ileum (8). Vulić *et al.,* (2022) have reported a case of dolochosigmoid colon complicated by chronic pseudo-obstruction (9). Ohno and colleagues have published a case of intestinal malrotation where the sigmoid colon was fixed to hepatic flexure and was located right and posterior to the ileocaecum (10). Cherian and Gandhalam (2014) have reported a case of a long descending colon measuring 31cm in length extending to the right pelvic brim and continuing as a right sided sigmoid colon, which was observed during routine cadaveric dissections (11). Gnansekaran *et al.,* (2021) have reported a case of a descending colon lying in the midline and continuing as a long tortuous sigmoid colon in the right iliac fossa (12).

In our case study we have reported a case of Dolichosigmoid colon, where the length of the sigmoid colon was higher than normal. In addition, the descending colon was longer than normal and consisted of loops and a diverticular pouch. A similar case has been reported by Nayak *et al.,* (2012) where the sigmoid colon was around 60cm in length and consisted of an ascending limb and a descending limb, arranged in an inverted U shape in front of the descending colon and left kidney, which was observed during routine cadaveric dissections (3). Badoria and colleagues have reported a case of a long descending colon consisting of vertical and horizontal segments observed in a cadaver. In this case, the vertical segment of the descending colon extended up to the L4-L5 vertebral level and the horizontal segment was 3.5cm in length extending to the right side (13). In contrast, in the present case, the additional part of the long descending colon was forming loops. Detailed documentation of this case will be important, especially for surgeons, gastroenterologists, and radiologists.

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Conflict of interest

The authors declare no conflict of interest

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