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Case report

Title of manuscript: Right Sided Sigmoid Colon –Rare Case

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ABSTRACT

Right sided sigmoid colon, rare anomaly was observed in a male cadaver of 45 year during routine dissection classes for first year medical students. The descending colon passed down to the left iliac crest and then crossed the middle line in front of the 3rd lumbar vertebra. It then passed to the right iliac fossa behind the free end of the caecum. The sigmoid colon beginning on the fossa passed down into the pelvic cavity, crossing the right brim of the pelvis and reached the left side of the sacrum to end in the rectum. The meso-sigmoid was attached to the right side from the ilio-caecal junction to the middle of the sacrum. The blood supply was derived from inferior mesenteric artery. The embryological reason and clinical importance of the condition is discussed.

1. Introduction

The sigmoid colon is 10 to 15 in. (25 to 38 cm) long and begins as a continuation of the descending colon in front of the pelvic brim. Below, it becomes continuous with the rectum in front of the third sacral vertebra. The sigmoid colon is mobile and hangs down into the pelvic cavity in the form of a loop. [1] The sigmoid colon initially descends adjacent the left pelvic wall, but then comes to lie in an extremely variable position. If long, the sigmoid loop may rise out of the pelvis into the abdominal cavity and lie in contact with loops of ileum. The sigmoid loop ends in a relatively constant position lying just to the left of the midline at the level of the third sacral body, where it bends inferiorly and is continuous with the rectum. The sigmoid loop is fixed at its junctions with the descending colon and rectum but quite mobile between them. [2]

The sigmoid mesocolon shows individual variation in length and depth. The root of the sigmoid colon forms a shallow inverted V with an apex near the division of the left common iliac artery but may vary from a very short straight line at the pelvic brim to a long curved attachment. The upper, left end of the attachment runs medially over the left psoas major. The lower, right end passes into the pelvis towards the midline at the level of the third sacral vertebra. The root extends for a variable distance over the brim of the pelvis and the lower posterior abdominal wall. [2]

Though the sigmoid colon is known to be extremely variable in position, right sided sigmoid colon in adult is rarely reported. So we endeavor to discuss the embryological reason and clinical importance of the condition.

2.Case report

The caecum was in the right iliac fossa. The ascending and the transverse colons were normally placed. The descending colon passed down to the left iliac crest and then crossed the middle line in front of the 3rd lumbar vertebra. It then passed to the right iliac fossa behind the free end of the caecum. From there the sigmoid colon went down into the pelvic cavity, crossing the right brim of the pelvis and reached the left side of the sacrum to end in the rectum. (Fig: 1, Fig: 2)The meso-sigmoid was attached to the right side from the ilio-caecal junction to the middle of the sacrum. (Fig: 2) The blood supply was derived from inferior mesenteric artery. Branching pattern of artery was normal except being on right side. (Fig: 3)

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Fig: 1 whole extent of large intestine (small intestine coils are removed for better visualization) The caecum, ascending and the transverse colons were normally placed. The descending colon passed down to the left iliac crest and then crossed the middle line in front of the 3rd lumbar vertebra, then to the right iliac fossa behind the free end of the caecum. The sigmoid colon went down into the pelvic cavity, crossing the right brim of the pelvis and reached the left side of the sacrum to end in the rectum.

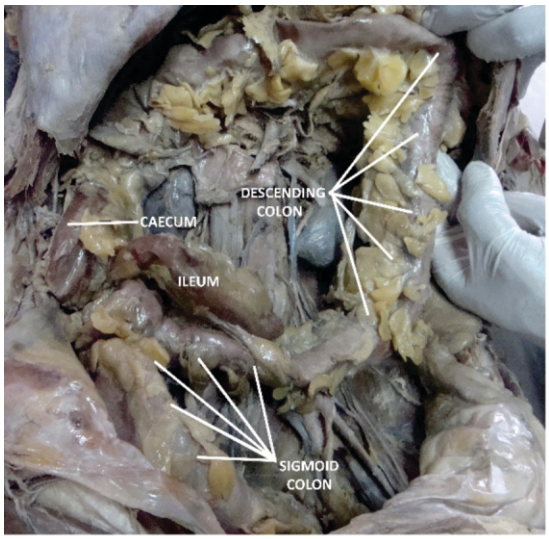


Fig: 2 The meso-sigmoid was attached to the right side from the ilio-caecal junction to the middle of the sacrum.

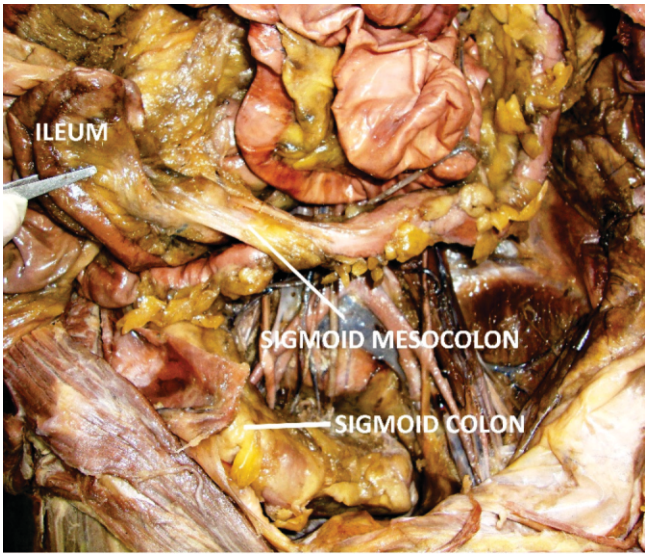
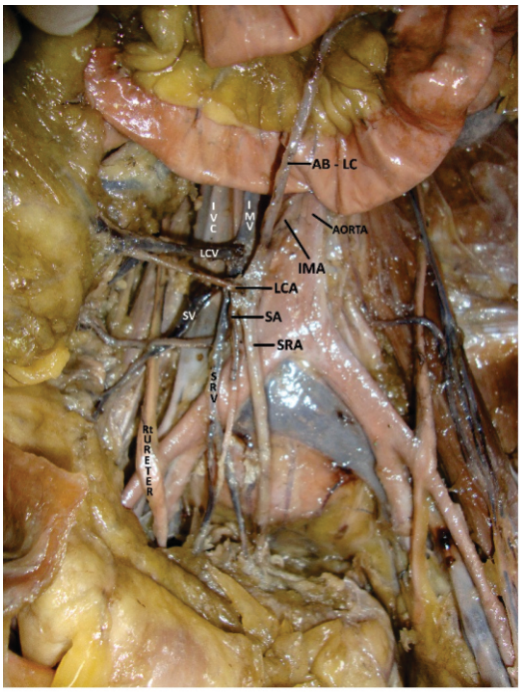


Fig: 3 inferior mesenteric artery- branching pattern



IMA - inferior mesenteric artery, IMV- inferior mesenteric vein,
LCA-left colic artery, LCV-left colic vein,
AB-LC – ascending branch of left colic artery
SRA-superior rectal artery, SRV-superior rectal vein,
SA-sigmoidal artery,

3.Discussion

The sigmoid colon lies in left iliac fossa. According to one study The sigmoid colon is normally positioned within the right lower quadrant in young children [ages were 1day to 5years (mean age, 13 months)]. The sigmoid colon was in the right lower quadrant in 74 (44%), in the left lower quadrant in 73 (43%), and in midline in 18 (11%). The position was variable in one patient and indeterminate in three. [3] Similar findings were reported by another author, the age of study group ranged from 2days to 13 years (mean age 2.3 years).there were 76 preoperative and 15 postoperative cases. Clinically suspected hirschprung's disease (60 cases; 65.9%) was the most common indication (in preoperative cases) for which request for enema was received. The position of sigmoid colon in the right lower quadrant, left lower quadrant, midline and indeterminate was 32(35.16%), 33(36.26%), 12(13.19%), and 14 (15.38%) respectively. There was no statistically significant difference in mean age (P= 0.87) or gender prevalence (P= 0.49) for different positions of sigmoid colon. [4] All the patients included in the study were clinically suspected to have large bowel disease. Hence, they cannot be considered to represent the normal population.

Three types of anomalies, namely redundancy of sigmoid colon and its mesentery, reduction of sigmoid mesocolon and megacolon were described in cadaveric study. The abbresion of the mesosigmoid was believed to be congenital which had probably resulted from excessive fusion of mesentery to posterior abdominal wall or under development of mesentery itself. [5] Redundancy of sigmoid colon was the commonest noted anomaly due its surgical importance. [6-12] Displacements of sigmoid colon to right iliac fossa or to abdomen were two types of redundancy reported in cadavers. [12] While majority of anomalies reported are by radiological imaging or at surgeries. [6-11] One author had described occurrence of right sided colon in three cadavers with different dispositions. Second case described was similar to our case report. [13] Another case reported, the distal part of the colon, including the sigmoid colon, was excessively long and formed a loop behind the ascending colon. This anomalous colon consisted of four parts. The first part began in the left iliac fossa and passed across the lower posterior abdominal wall into the right iliac fossa; the second turned upward and ascended along the posterior surface of the ascending colon to the inferior surface of the right lobe of the liver; the third turned backward and descended to the right iliac fossa and was in contact with the posterior abdominal wall; the fourth curved medially and downward and ended in the rectum at the median line. Only the anterior surface of the anomalous colon was covered with the peritoneum, and its mesocolon was not found. The proximal half of the long colon (parts 1 and 2) was regarded as a part of the descending colon, and the distal half as the sigmoid colon depending upon blood supply of the area. [14]

The embryological basis of the abnormality is very difficult to explain. Probably there was secondary rotation of the large intestine while the primary rotation was taking place in the small intestine. This rare anomaly is interesting from a clinical point of view and may mislead the surgeons in various abdominal operations.

In conclusion, the frequency of the right-sided sigmoid colon in children is significant enough that it cannot be ignored. Awareness of this finding is of crucial significance in interpretation of plain radiographs of the abdomen. But not many cases are not reported in adults, nor are the studies done in adult age group. So it would be difficult to say by what age the sigmoid colon position is reverted to its normal left side. So we recommend carrying out more studies by radiologists and clinicians as well as vigilant reporting of any cases.

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