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SIGMOID COLON VARIATION IN A CADAVER: A CASE REPORT

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ABSTRACT
Variations in the colon's anatomy are mostly developmental and may culminate in a number of acute and chronic health conditions. One of the most variable parts of the large intestine is the sigmoid colon. This part of the colon normally lies within the pelvis, but due to its freedom of movement it is liable to be displaced into the abdominal cavity. Redundancy can affect any segment of colon. Transverse colon and sigmoid colons are more often elongated than ascending and descending colon. This case study gives an insight into the variation of Sigmoid colon in the measurement, position and the effect of variation on other structures. A fundamental awareness of these variations and preoperative diagnosis is particularly important to avert surgical risk.
KEYWORDS: *Sigmoid Colon, Mesocolon, Hindgut, Large Intestine, Colon.*

INTRODUCTION

The sigmoid colon derives its name from the fact that it is curved in the form of an S (Greek *sigma*: σ)[1]. It is a part of large intestine located at the left lower quadrant extending from the left iliac fossa to the level of S3 vertebrae. It begins around the superior aperture of the pelvis and is continuous with the descending colon. The sigmoid colon curves back on itself and descends into the pelvis and forms S shape. Its length varies from 35-40cm usually. The sigmoid colon is completely surrounded by peritoneum (and thus is not retroperitoneal), which forms a mesentery (sigmoid mesocolon), which diminishes in length from the center toward the ends of the loop, where it disappears, so that the loop is fixed at its junctions, but it has a considerable range of movement in its central portion.

By the fourth week of development, the division of the gastrointestinal tract into the foregut, midgut, and hindgut will occur. The small and large intestines undergo rapid growth during weeks four and five of development. Embryological science believes that the enlarging intestines quickly outgrow the space available in the abdominal cavity causing the entire midgut to herniate into the umbilical cord forming a loop. The superior limb of the intestinal loop forms the ileum while the inferior limb forms the colon. Between the two limbs is the vitelline duct which connects the intestine to the yolk sac. Much like the rest of the colon, the sigmoid colon is derived from the three basic germinal layers (ectoderm, mesoderm, and endoderm) and develops as a hindgut structure relative to the blood supply and innervations[2].

The most variable portion of the large intestine is the sigmoid colon[1]; length variations are frequently documented, and greater length of it has potentiality to produce clinical conditions like volvulus and compressive effects on the small intestine. Thus, the prevalence and clinical significance of this illness need to be discussed here.

CASE REPORT

A 70 year old male cadaver was procured by Body Donation Cell of Department of Rachana Shareera, Sri Dharmasthala Manjunatheshwara college of Ayurveda and Hospital, Hassan, which was taken for PG dissection class. While dissection of abdomen, it was found that there was Variation in the length of sigmoid colon. The Variation was noted and separated from the surrounding structures and photographs were taken and documented.

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It was observed that sigmoid colon is 61cm long which is not normal. It began as an extension of the descending colon that descended at the left iliac fossa; after that, it ascended along the left pelvic wall upto the level of splenic flexure of colon and descended downwards forming a loop and continued as rectum at the level of third sacral vertebra.



**Fig:1, SC- Sigmoid Colon
TC- Transverse Colon**



**Fig:2, SMC- Sigmoid Mesocolon
TC- Transverse Colon**



**Fig:3, SC- Sigmoid Colon
SI- Small Intestine**

The sigmoid mesocolon had an atypical shape. It extended along the upper portion of the left external iliac artery, reaching up to the bifurcation of the common iliac artery. From there, it ascended upwards and to the left toward the left kidney, then descended along the abdominal aorta, the root of the mesentery, and finally terminated at the level of the third sacral vertebra in the midline.

DISCUSSION

The S-shaped sigmoid colon is the part of the hindgut and is the last section of the large bowel before the rectum. It usually lies within the pelvis, but can be displaced into the abdomen due to its relatively mobile nature. It starts at the pelvic superior aperture and continues along with the descending colon. After curving back, the sigmoid colon enters the pelvis. It runs in front of the sacrum, external iliac vessels, the left sacral plexus, left ureter, and the left piriformis muscle. It also lies anterior to the posterior abdominal wall.

During abdominal dissection, a variation in the length of the sigmoid colon was noted. The sigmoid colon, measuring 61 cm, was found to be longer than usual. It began as an extension of the colon descending into the left iliac fossa, then ascended along the left pelvic wall upto the splenic flexure of the transverse colon. Afterward, it descended, forming a loop before continuing as the rectum at the level of the third sacral vertebra[3]. Changes in the length and positioning of any segment of the colon can result in various acute and chronic health issues. When the sigmoid colon is abnormally long and attached to a short mesocolon, it may twist, cutting off its blood supply.

A redundant sigmoid colon could lead to sigmoid volvulus. Sigmoid volvulus is a disease that develops when the colon twists around its mesocolon; this occurs in the region of the sigmoid colon due to the morphological "S" shape of the colon and the high amounts of pressure that can form as the stool is compacted and prepared for excretion. When this occurs, the blood vessels that reside within the mesentery can become occluded and lead to ischemia of the bowel. Also, the twisting of the bowel creates a distal obstruction inhibiting the movement of stool into the rectum. This typically will present in people with redundant bowel, as well as those that are sedentary and prone to constipation. The physical exam will show a distended, and tympanic abdomen, and imaging will reveal large amounts of distended bowel, often referred to as the “coffee bean sign”[4]. Colonic volvulus can cause increased bloating constipation, and fecal impaction or leading to a colonic obstruction. If it is left untreated, constipation can cause complications, including hemorrhoids, anal fissures, or rectal prolapse, which causes the intestine to protrude from the anus and is often a surgical emergency.

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An increased length of the sigmoid colon can lead to difficulties with enema administration and interpretation, as a longer sigmoid colon can hold more fluid and potentially cause uneven distribution of the enema solution, making it harder to reach the desired area of the colon during a procedure[5]. A longer sigmoid colon is linked to a higher risk of colon cancer, as it can result in fecal stagnation, which is a major factor in the development of cancerous polyps in that area. Essentially the longer sigmoid colon, the more opportunity for potential carcinogens to accumulate and promote tumor growth[6]. Neoplasms can arise within the sigmoid colon and typically will present with changes in bowel habits such as decreased stool caliber and hematochezia. Colon cancers tend to metastasize to the liver through portal drainage and, eventually, the lungs via the inferior vena cava[4]. A barium enema, a diagnostic imaging procedure that uses contrast dye is often used to assess the length and shape of the sigmoid colon.

CONCLUSION

The sigmoid colon is the most variable segment of the large intestine. It exhibits variation in attachment, location, and length. Its length and the existence of a redundant loop are the most frequent variables. It helps radiologists and surgeons with accurate interpretation, diagnosis, and surgical procedures to know that such anatomical variances exist. It is also crucial for a doctor to treat the illnesses brought on by these variations.

REFERENCES

1. *https://en.wikipedia.org/wiki/Sigmoid_colon*
2. *https://www.ncbi.nlm.nih.gov/books/NBK549824/#:~:text=As%20the%20sigmoid%20colon%20develops,in%20specific%2C%20the%20sigmoidal%20branches.*
3. *https://www.researchgate.net/publication/341479488_Variation_in_the_length_of_Sigmoid_Colon_-A_Case_Report*
4. *https://www.ncbi.nlm.nih.gov/books/NBK549824/*
5. *https://www.google.com/search?q=increased+length+of+sigmoid+colon+relation+with+enema&oq=increased+length+of+sigmoid+colon+relation+with+enema&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIHCAEQIRigATIHCAIQIRigATIHCAMQIRigATIHCAQQIRifBTIHCAUQIRiPAjIHCAYQIRiPAtIBCjEzMDY0MGowajeoAhSwAgE&client=ms-android-oppo-rvo3&sourceid=chrome-mobile&ie=UTF-8*
6. *https://www.google.com/gasearch?q=increased%20length%20of%20sigmoid%20colon%20relation%20with%20ca%20of%20colon&source=sh/x/gs/m2/5*