

Presence of a Splenicocolic Ligament and an Unusual Vascular Peritoneal Fold Close To Spleen and Splenic Flexure of Colon – A Case Report

Satheesha Nayak B, Surekha D Shetty*, Naveen Kumar and Ashwini Aithal P

Melaka Manipal Medical College (Manipal Campus), Manipal University, Karnataka State, India

*Corresponding author: Surekha D Shetty, Department of Anatomy, Melaka Manipal Medical College (Manipal Campus), Manipal University, Karnataka State, India, Tel: +91 820 2922519; E-mail: ds.surekha@gmail.com

Rec date: Jun 04, 2015; Acc date: Jun 29, 2015; Pub date: Jun 30, 2015

Copyright: © 2015 Nayak BS. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Spleen is the largest lymphatic organ and variation in its shape, location, number, and size are frequently seen in humans. However, peritoneal anomalies of spleen are very rare. We report a splenicocolic ligament which extended from the visceral surface of the spleen to the left colic flexure and the proximal part of the descending colon. Another unusual fold extended from the right end of the transverse mesocolon to the proximal part of the descending colon. The fold was vascular and was raised by a branch of the left colic artery. The vascular fold was in continuity with the splenicocolic ligament. Knowledge of these peritoneal anomalies is important for gastroenterologists, surgeons and radiologists.

Keywords: Peritoneum; Spleen; Ligaments of spleen; Vascular fold; Variation

Introduction

In humans, spleen is the largest, highly vascular, secondary lymphoid organ [1]. Being connected to both lymphoid and circulatory systems, it performs immunological as well as hematological function. The spleen is situated in the upper left quadrant of the abdominal cavity between the fundus of the stomach and the diaphragm. It measures about 1 inch in thickness; 3 inches in breadth; 5 inches in length and 2 ounces in weight. It frequently shows variations in size, shape fissures, location and peritoneal folds attached to it [2-5]. Spleen is almost completely covered by peritoneum, which is firmly adhering to its capsule [6]. Recesses of the greater sac separate the spleen from the stomach and left kidney. The peritoneal ligaments that are usually attached/related to the spleen are gastrosplenic, phrenocolic and renosplenic (splenorenal/lienorenal). These ligaments maintain the spleen in its anatomical position. Most of the peritoneal folds are derived from the embryonic mesenteries. These folds are important because they determine the direction of the flow of fluid in the peritoneal cavity and also spread of the diseases. The spleen develops in the dorsal mesentery of the stomach during the fifth week of fetal life from a mass of mesenchymal cells. Growth of the dorsal mesentery of stomach and rotation of the stomach help in moving the spleen from its original midline position to the left side of the abdominal cavity. Rotation of the dorsal mesentery of the stomach results in the formation of gastrosplenic and splenorenal ligaments [7]. The left colic artery is the first branch of the inferior mesenteric artery. It runs behind the peritoneum, upwards and laterally to reach the margin of the descending colon where, it divides into ascending and descending branches [6]. In the literature, there is no mention about peritoneal folds carrying the branches of left colic artery. Peritoneal folds extending from transverse mesocolon to descending colon are very rare. We report such a rare type of fold here. Aim of this report is to make surgeons and radiologists aware of a vascular peritoneal fold in relation to transverse mesocolon and descending colon.

Case Report

During routine dissection classes for medical students, we observed some peritoneal anomaly in relation to the transverse colon and the spleen. Spleen was connected to the greater curvature of the stomach through gastrosplenic ligament and to the left kidney through the lienorenal ligament in usual manner. In addition to these two ligaments, there was an additional splenicocolic ligament which extended from the visceral surface of the spleen to the left colic flexure and the proximal part of the descending colon. The splenicocolic ligament was quadrangular and was in continuity with the gastrosplenic ligament and the left border of the greater omentum.

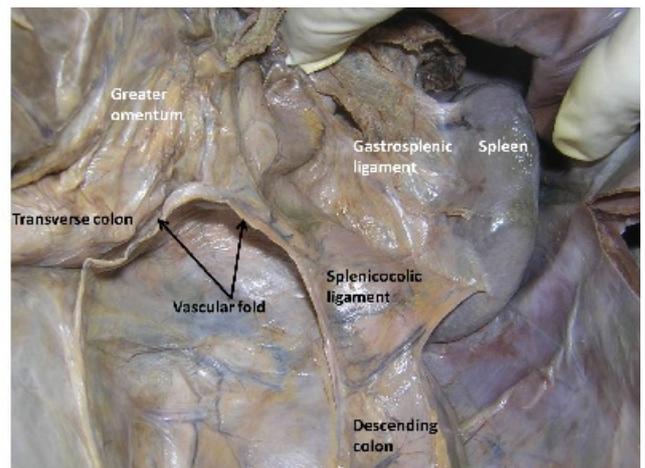


Figure 1: Photograph of dissection of the upper abdomen, showing the peritoneal folds. Gastroplenic, splenicocolic and an unusual vascular fold have been labelled.

There was another sharp, vascular fold of peritoneum that extended from the right end of the transverse mesocolon to the proximal part of

the descending colon. This fold was vascular and was raised by a branch of the left colic artery. The vascular fold arched in front of the lower part of the left kidney, leaving a space between it and the left kidney. Traced to the left, this fold was in continuity with the splenicocolic ligament (Figures 1 and 2). This variation was found in a male cadaver aged 55 years approximately.

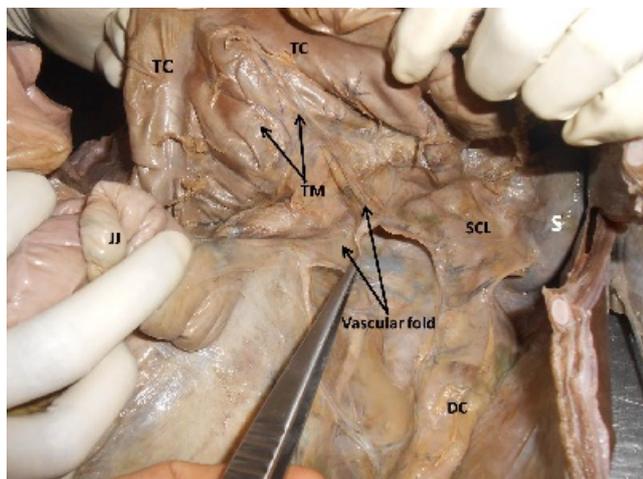


Figure 2: Photograph of dissection of the upper abdomen, showing the unusual vascular peritoneal fold. Transverse colon (TC) has been reflected upwards to show the continuity of the vascular fold with the transverse mesocolon (TM). Spleen (S), splenicocolic ligament (SCL), Jejunum (JJ) and descending colon (DC) have been labelled.

Discussion

Abnormal peritoneal folds are often observed during surgery and cadaveric dissections. Most of them are asymptomatic and may be unnoticed throughout life. Some of them may be involved in hiding disease processes or serve as routes for the spread of malignancies. Another problem associated with such abnormal peritoneal folds is compression and obstruction of the hollow viscera. Spleen shows some congenital anomalies such as lobulations, accessory spleens, wandering spleens and polysplenia. Wandering spleen and polysplenia are rare anomalies of spleen [7] Accessory spleens may be pulled to ectopic location by the splenic ligaments. They may be on the left side of the midline due to the rotation of spleen in that direction during embryogenesis [8]. Anomalous vascular folds of peritoneum have been reported earlier, but reports are not similar to the current case. A thick vascular band passed from right lobe of liver to ascending colon in one of the earlier studies [9]. A vascular fold of peritoneum extending between greater omentum and falciform ligament of liver has also been reported [10]. Though in most of the textbooks there is a mention of only gastrosplenic ligament, splenorenal ligament and phrenicocolic ligaments as the ligaments closely related to the spleen, according to Skandalakis et al. [11], there is a possibility of having the following 8 ligaments in relation to the spleen.

1. Gastro-splenic (containing short gastric blood vessels)
2. Spleno-renal (containing splenic blood vessels)
3. Spleno-phrenic

4. Spleno-colic
5. Pre-splenic folds
6. Pancreatico-splenic
7. Phrenico-colic
8. Pancreatico-colic

A splenicocolic ligament is often encountered during the surgical procedures and that is one of the leading causes of splenic rupture during colonoscopy [12,13]. Nayak et al. [5] also have observed uncommon phrenicocolic ligaments during their cadaveric dissection classes for medical students. All the above mentioned unusual ligaments may result in the iatrogenic tear of spleen during surgical procedures [14].

Novelty and Clinical Importance of the Current Case

In the literature there is a mention of presence of splenicocolic ligament and it extends from the hilum of the spleen to left colic flexure. In the current case, the splenicocolic ligament extended from the visceral surface of the spleen to the left colic flexure and also merged with the greater omentum and gastrosplenic ligaments. Though there is a mention in the literature about splenicocolic ligament, the ligament in the current case is different since it extended from the visceral surface of spleen to left colic flexure and descending colon. It might restrict the movements of the spleen, compress the colic flexure and even result in iatrogenic injuries of spleen during abdominal surgeries, especially when the traction is applied or retractors are used.

In the present case, we also observed an unusual fold of peritoneum that extended from the right end of the transverse mesocolon to the proximal part of the descending colon. This fold was vascular and was raised by a branch of the left colic artery. The vascular fold arched in front of the lower part of the left kidney, leaving a space between it and the left kidney. Blindly cutting this fold during surgery might result in hazardous bleeding. The space between this fold and the left kidney might retain blood, pus or fluid after surgical procedures. In the literature there is no mention about such a vascular fold yet.

We feel that a good knowledge of these two peritoneal folds may be useful to the surgeons during the operations of the upper abdomen. It may be also useful to radiologists and nephrologists.

References

1. Kato T, Tzakis AG, Selvaggi G, Gaynor JJ, Takahashi H, et al. (2007) Transplantation of the spleen: effect of splenic allograft in human multivisceral transplantation. *Ann Surg* 246: 436-444.
2. Nayak SB, Somayaji SN, Soumya KV (2011) A Study on the Variations of Size, Shape and External Features of the Spleen in South Indian Population. *Int J Morphol* 29: 675-77.
3. Nayak SB, Shetty P, Sirasanagandla SR, Shetty SD (2014) A lobulated spleen with multiple fissures and hila. *J Clin Diagn Res* 8: AD01-02.
4. Nayak SB, Kumar V, Kumar N, Jetti R (2012) Unusual fissure on the diaphragmatic surface of the spleen – a case report. *International Journal of Anatomical Variations* 5: 96-98.
5. Nayak SB, Rao SS, Pamidi N, Guru A, Shetty SD et al. (2013) Uncommon Peritoneal Anomaly of Spleen Associated with the Unusual Relationship of Spleen with the Left Lobe of the Liver. *Journal of Surgical Academia* 3: 47-49.
6. Standring S (2006) *Gray's Anatomy. The Anatomical Basis of Clinical Practice*. 39th ed. Edinburg: Churchill Livingstone- Elsevier: 1239-40.

7. Moore KL, Persaud TV (2003) *The Developing Human, Clinically Oriented Embryology*. 7th ed. Philadelphia: Saunders: 256-75.
8. Calin B, Sebastin BN, Vasile B, Andrea O (2012) Lost and found: the accessory spleen. *Med Con* 2: 63-66.
9. Akgür FM, Tanyel FC, Büyükpamukçu N, Hiçsönmez A (1992) Anomalous congenital bands causing intestinal obstruction in children. *J Pediatr Surg* 27: 471-473.
10. Colak T, Dalçık C, Ozbek A, Filiz S, Sahin M, et al. (2002) A rare multiple variation of the greater omentum. *Okajimas Folia Anat Jpn* 79: 159-162.
11. Skandalakis PN, Colborn GL, Skandalakis LJ, Richardson DD, Mitchell WE Jr, et al. (1993) The surgical anatomy of the spleen. *Surg Clin North Am* 73: 747-768.
12. Ostermann PA, Schreiber HW, Lierse W (1987) [The ligament system of the spleen and its significance for surgical interventions]. *Langenbecks Arch Chir* 371: 207-216.
13. Sarhan M, Ramcharan A, Ponnappalli S (2009) Splenic injury after elective colonoscopy. *JSL* 13: 616-619.
14. Sharma D (2004) Iatrogenic splenic injury: Prevention and treatment. *Indian J Surg* 66:146-51.