ANATOMY OF THE MESENTERY AND PERITONEUM

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All abdominal digestive organs develop in or on the mesentery and then remain directly connected to it (Figure 65.3). In the adult setting, these collectively comprise a discrete anatomical unit, the mesenteric domain (Figure 65.4). All genitourinary organs develop on and remain on the musculoskeletal main - frame of the abdomen. In the adult, these are collectively termed the non-mesenteric domain. Thus, the adult abdomen comprises two discrete anatomical compartments: the mesen - 65.2). teric and non-mesenteric domains (Figure 65.5) (When development is complete, the mesentery and con - joined digestive organs (intestine, pancreas, spleen and liver) have taken shape and adherence to the posterior abdominal wall is nearly complete. The dorsal mesogastrium, meso - duodenum, right and left mesocolon and mesorectum are anchored to the subjacent abdominal wall (or pelvic sidewall) (Figure 65.4). The small intestinal region of mesentery , trans verse mesocolon and lateral mesosigmoidal mesentery are not adherent and thus are mobile. Adhesion of the mesentery to the abdominal wall anchors the mesenteric to the non-mesenteric domain, maintained by peritoneal reflection at the periphery of the mesenteric domain (65.1 and 65.3). At the periphery , the peritoneal reflection bridges the surface lining of the mesenteric and non-mesenteric domains (Figure 65.6). The peritoneum thus comprises visceral peritoneum (corresponding to the surface lining of the mesenteric domain), parietal peritoneum (corresponding reflection joining both. Peritonitis refers to inflammation of any region (see Peritonitis). The surface contours generated by the organisation of the domains and the peritoneum explains the sacs, recesses, fos - sae and pouches in which abnormal fluid collections arise in 65.3). On completion of development, the the abdomen (free (non-adherent) surface of each organ of the mesenteric domain is peritonealised. The opposing adherent surface is not peritonealised. In the male, the peritoneal cavity is normally closed. In the female, the peritoneal cavity is open to the environment at the fimbrial entrance to the fallopian tubes. In both sexes (but more frequently in the male) a peritoneal tube (processus vaginalis) can persist at the deep inguinal ring and predispose to inguinal hernia formation. The interface between adherent regions of the mesenteric and non-mesenteric domains is termed the retroperitoneal space (65.4). The retroperitoneal space normally contains connective tissue fascia. The space (and fascia) continues into the thorax superiorly and into the pelvis inferiorly . The retro - peritoneum is deep to the retroperitoneal space. It includes the kidneys, ureters, gonadal vessels, lumbosacral plexus and the musculoskeletal frame of the posterior abdominal wall. The arterial inflow to the mesenteric

domain is limited to - the coeliac trunk and superior and inferior mesenteric arter - ies. The venous drainage of the mesenteric domain occurs via the hepatic veins at the junction of these and the inferior vena cava. In between the arterial inflow and venous drainage, the vasculature of the abdominal digestive org ans is entirely intramesenteric and aligned with the mesenteric regional anatomy (65.5). The limited routes of arterial inflow and venous drainage have significant implications when these are a ff ected by pathology (discussed in Vascular abnormalities of the mesentery).

Duodenum Pancreas Mesentery Figure 65.3 The right lateral aspect of the mesentery during develop ment. The mesentery has been sectioned to expose the developing stomach (red), pancreas (light blue) and major blood vessels. (a) (b) Dorsal Upper region mesogastrium Left Right mesocolon mesocolon Figure 65.4 The mesentery. (a–d) The adult mesentery (and mesenteric domain) as seen from anterior and

left anterolateral (d) perspectives.

(c) (d) Greater omentum Lower region Mesoileum and mesojejunum (mid-region) Mesorectum (a) , posterior (b) , right posterolateral (c)

A knowledge of the anatomical relationships between the mesenteric and non-mesenteric domains provides the student of abdominal surgery with a roadmap by which to perform safe and optimal abdominal surgery . The above description is termed the mesenteric model of abdominal anatomy . It is a model that matches observations during development with clinical observations in vivo and with radiological depictions of the abdomen. It provides the anatomical context on which surgical diseases of the abdomen and pelvis arise. Given this, it is rapidly substituting the peritoneal model in reference ana tomical texts.

The abdomen Figure 65.5 The mesenteric and non-mesenteric domains of the abdomen. (a) Intact abdomen. (b) Mesenteric domain (top) and non-mesenteric domain (bottom).

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