

= Suspensory muscle of duodenum =

The suspensory muscle of duodenum is a thin muscle connecting the junction between the duodenum , jejunum , and duodenojejunal flexure to connective tissue surrounding the superior mesenteric artery and coeliac artery . It is also known as the ligament of Treitz . The suspensory muscle most often connects to both the third and fourth parts of the duodenum , as well as the duodenojejunal flexure , although the attachment is quite variable .

The suspensory muscle marks the formal division between the first and second parts of the small intestine , the duodenum and the jejunum . This division is used to mark the difference between the upper and lower gastrointestinal tracts , which is relevant in clinical medicine as it may determine the source of bleeding in the gastrointestinal tract .

The suspensory muscle is derived from mesoderm and plays a role in the embryological rotation of the gut , by offering a point of fixation for the rotating gut . It is also thought to help digestion by widening the angle of the duodenojejunal flexure . Superior mesenteric artery syndrome is a rare abnormality caused by a congenitally @-@ short suspensory muscle .

= = Structure = =

The duodenum and the jejunum are the first and second parts of the small intestine . The suspensory muscle of the duodenum marks their formal division . The suspensory muscle arises from the right crus of the diaphragm as it passes around the esophagus , continues as connective tissue around the stems of the celiac trunk ( celiac artery ) and superior mesenteric artery , passes behind the pancreas , and enters the upper part of the mesentery , inserting into the junction between the duodenum and jejunum , the duodenojejunal flexure . Here , the muscles are continuous with the muscular layers of the duodenum .

= = = Variation = = =

Considerable anatomic variation exists , in terms of length and point of attachment . Despite the classical description , the muscle only solely attaches to the duodenojejunal flexure in about 8 % of people ; it is far more common , 40 to 60 % of the time to attach additionally to the third and fourth parts of the duodenum ; and 20 to 30 % of the time it only attaches to the third and fourth parts . Moreover , separate multiple attachments are not that uncommon .

According to some authors , who use the original description by Treitz , the muscle may be divided into two sections : a ligamentous portion attaching the right crus of diaphragm to the connective tissue surrounding the coeliac artery and superior mesenteric artery ; and a lower muscular portion from the connective tissue attaching to the duodenum . The superior portion is also described as the Hilfsmuskel . These two parts are now considered anatomically distinct , with the suspensory muscle referring solely to the lower structure attaching at the duodenum .

= = Function = =

The ligament contains a slender band of skeletal muscle from the diaphragm and a fibromuscular band of smooth muscle from the horizontal and ascending parts of the duodenum . When it contracts , by virtue of connections to the third and fourth parts of the duodenum , the suspensory muscle of the duodenum widens the angle of the duodenojejunal flexure , allowing movement of the intestinal contents .

= = = Embryology = = =

Embryologically , the suspensory muscle of the duodenum is derived from mesoderm . It plays an important role in the embryological rotation of the small intestine as the superior retention band .

= = Clinical significance = =

This ligament is an important anatomical landmark of the duodenojejunal flexure , separating the upper and lower gastrointestinal tracts . For example , bloody vomit or melena , black tarry stools , usually indicate a gastrointestinal bleed from a location in the upper gastrointestinal tract . In contrast , hematochezia , bright red blood or clots in the stool , usually indicates gastrointestinal bleeding from the lower part of the gastrointestinal tract . It is an especially important landmark to note when looking at the bowel for the presence of malrotation of the gut , a syndrome often suspected in young children when they have episodes of recurrent vomiting . Visualising a normal location of the ligament of Treitz in radiological images is critical in ruling out malrotation of the gut in a child ; it is abnormally located when malrotation is present .

During a Whipple 's procedure , commonly used to treat pancreatic cancer by removing the pancreas , duodenum , and part of the jejunum , the ligament of Treitz is separated from the duodenum and preserved . When the remaining jejunum is anastomosed with the pylorus of the stomach , it may be passed through the ligament .

Superior mesenteric artery syndrome ( SMA ) is an extremely rare life @-@ threatening condition that can either be congenital and chronic , or induced and acute . SMA Syndrome is characterised by compression of the duodenum between the abdominal aorta and the superior mesenteric artery , and may ? when congenital ? result from a short suspensory muscle . One surgical treatment is Strong 's operation , which involves cutting the suspensory muscle , though this is not often carried out .

= = History = =

The suspensory muscle of the duodenum was first named in 1853 by Václav Treitz , as the musculus suspensorius duodeni ( in Latin ) , and described as consisting of a lower muscular portion with a broad base , and an upper tendinous portion blending with connective tissue around the origins of the superior mesenteric and coeliac arteries . It is commonly termed the ligament of Treitz by clinicians and as the suspensory muscle of the duodenum by anatomists . It has also been likened to " a polar ice cap ... a structure that many refer to but few have seen . "

= = Additional images = =