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Case Report

Clinical Case of Post-Traumatic Thrombosis and Perforation of the Distal Department of the Twelve-Type and as a Consequence of Steering Trial

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Abstract

The article presents a clinical case of traumatic injury of the distal duodenum as a result of blunt abdominal trauma in the form of complete rupture and segmental post-traumatic thrombosis of the proximal part of the small intestine with the analysis of literature data for the diagnosis and choice of surgical correction tactics. Injuries of such localization are relatively rare and account for 0.9-5% of abdominal organ injuries, but complicated diagnostics, lack of standardized surgical tactics and high lethality - from 10 to 40% determine the relevance of the problem for research and sharing of own experience. The method of choice of surgical intervention is mobilization of the retroperitoneal department of the intestine with the imposition of duodenoic anastomosis and disconnection of the gastro-duodenal passage according.

Keywords: Post-Traumatic; Thrombosis; Distal; Distal

Introduction

Injuries of the duodenum (duodenum) are relatively rare and account for 0.9-5% of abdominal injuries or 0.4 cases per 100,000 population [1,2,4,5]. However, complex diagnosis, lack of standardized surgical tactics and high mortality - from 10 to 40% [1,6,7] determine the relevance of the problem for research and exchange of personal experience. Here is a clinical case of damage to the retroperitoneal duodenum in closed abdominal trauma, which arose due to post-traumatic segmental thrombosis. Patient O., 30 years old (medical card of an inpatient №12226), was taken by the SMD team to Vinnytsia MCL SHMD on November 10, 18 at 11:26 pm from the scene of the accident. Mechanism of injury: a direct blow to the abdomen at the wheel of a car. On examination: severe condition, consciousness - stunned. The skin is pale. Pulse - 110 beats/min. Blood pressure 90/60 mm Hg The abdomen is moderately tense throughout. Peristalsis is sharply weakened. On ultrasound - free fluid in the abdomen. Laparocentesis - blood is obtained. Emergency surgery: laparotomy. In the abdominal cavity up to 1500 ml of blood with clots. Revision: rupture of the root of the mesentery of the small intestine, mesentery of the lumen of the colon, gastrointestinal tract, rupture of the lumen of the colon, hungry intestine, hematoma mesentery of the lumbar-colon, hematoma of the root of the mesentery of the small intestine, massive retroperitoneal hematoma. Completed: Suturing of ruptures of the root of the mesentery of the small, lumbosacral intestine, gastrointestinal tract, suturing of ruptures of the lumbar colon, hungry intestine. Pneumopressure: no discoloration or fluid leakage. After the bleeding stopped, the following operations were performed: 1) PHO of the lower lip wound. 2) PHO wounds of the nose. 3) Carry-

ing a needle for the heel bone for skeletal extraction for a fracture of the tibia of the right lower extremity.4) Plaster immobilization of the left forearm for a fracture of the radial bone on the left.

In the postoperative period he was in VAIT №1, from where on 12.11.18 he was transferred to the polytrauma department. At 15:00 on the same day, there was discharge from the drains of the small intestine. Consilium created. 11/12/2018 - relaparotomy. Up to 1000 ml of bile content was detected. In the area of the ligament of Treitz, the small intestine is blue-purple for 15 cm, above the ligament (after mobilization) the duodenum is the same color for 5-7 cm with a gap of 3/4 of the lumen. This is regarded as post-traumatic vascular thrombosis duodenum and initial small intestine with necrosis and perforation of the duodenum into the retroperitoneal space. The pancreas is enlarged, swollen, with hemorrhages, the gallbladder is enlarged, tense. Performed: mobilization of the duodenum according to Dederer with resection of the distal part of the duodenum and hungry intestine (up to 20 cm), duodenojejunostomy "end to side" after mobilization of the duodenum according to Kocher, gastrojejunostomy, saccharіasis, exclusion, exclusion.

The patient was diagnosed with clinical: I. Severe connective tissue injury: traumatic brain injury. Concussion. Slaughter wounds of the lower lip, nose. Closed blunt chest injury. Heart and lung contusion. Traumatic pulmonitis. Closed abdominal trauma with damage to internal organs: rupture of the root of the mesentery of the small intestine, mesentery of the lumbar colon, gastrointestinal ligament. Rupture of the lumbar-colon, hungry intestine. Hematoma of the mesentery of the lumbar colon. Hematoma of the root of the mesentery of the small intestine. Slaughter, post-traumatic segmental vascular thrombosis of the duodenum and initial small intestine with necrosis and perforation of the duodenum into the retroperitoneal space. Massive retroperitoneal hematoma. Hemorrhagic shock III. Traumatic shock of the III century. Closed fracture of the left radial bone in a typical place with displacement. Closed fracture of the tibial elevation of the left tibia without displacement. Closed fragmentary fracture of the right calcaneus with heel dislocation of the foot.

II. Intra-abdominal bleeding. Posthemorrhagic anemia of the III century. Post-traumatic pancreatitis. Posttraumatic bilateral polysegmental lower lobe pneumonia.

In the postoperative period was in VAITN№1, where he received therapy: poseneg 2.0 in/in kr. 3 r/d; ornidazole 100ml in/in kr. 2 r/d.; levoflox 100 ml IV blood. 2 r/d; transton 5.0 in/in kr. 2 r/d; L-lysine 10 ml intravenously. 2 r/d.; etamzilat 2.0 in/in kr. 3 r/d; oktra 1.0 v/v kr. 2 r/d; glycosteril 400 ml iv cr. 2 r/d; neuromidine 100 ml intravenously cr. 2 r/d; gliaton 4.0 in/in kr. 2 r/d; pantasan 40 mg iv v kr 1 r/d; sorbilakt 200 ml in/in kr 2 r/d. Caver 2 ml in/in kr 3 r/d; omnopon 1 ml v/m 2 r/d; transfused 4 doses of air mass; 4 doses of SZP; albumin 20% 100ml IV blood. 1 r/d; 19.11.18, transferred to the surgical department, where he received: ceftriaxone 1.0 IV cr. 2 r/d (10 days); ornidazole 100ml in/in kr. 2 r/d (10 days); levoflox 100 ml iv 1 r/d (10 days), 5% -200ml solution of 5% glucose with KKB 100 mg and panangin 10 ml iv kr. 1r/d; caver 2 ml v/m 2 r/d; lactovit 1 caps. 2r/d, iron drug 2 ml v/m 2 r/d, fluconazole 150 mg.

The postoperative period was complicated by bilateral lower lobe polysegmental pneumonia. Drainage from the gallbladder was removed on the 8th day. Sutures were removed on day 9 (the lower corner of the wound healed with secondary tension). Abdominal drains were removed on day 10.

December 3, 2018 under SMA - operation: transosseous osteosynthesis of the right calcaneus with Ilizarov apparatus.

On December 10, 2018, the patient was discharged in satisfactory condition for outpatient treatment.

Thus, the above clinical case once again shows that the choice of surgery for duodenal injuries should be differentiated and determined by the general and intra-abdominal situation (concomitant damage to the pancreas, probable spread of thrombosis, degree of traumatic shock).

The duodenum is known to be the initial division of the small intestine, which is located to the right of the spine at level I of the lumbar vertebra, starting from the pyloric pulp and ending at the duodenal ligament of Treitz. Conventionally, the duodenum is divided into four departments. The upper (D1), in contrast to others, is located mostly intraoperitoneally, extends from the stomach dorsally and upwards, in the direction of the neck of the gallbladder. The second (D2), or descending (vertical), extends down at an acute angle to a length of 7-8 cm. The third (D3) transverse part of the duodenum, about 12 cm long, is located

horizontally and in front of the right ureter, below the inferior vena cava, lumbar spine and aorta; in front of it cross the superior mesenteric artery and vein. The fourth (D4) division is located along the spine and ends at the duodenal ligament of Treitz, 2-3 cm long. The anatomically deep location of the duodenum provides a strong enough protection for anterior and posterior injuries due to the spine and a massive muscle layer. As a result, mechanical damage is quite rare, but from a clinical point of view, such natural protection has negative consequences due to complex, sometimes late, diagnosis, which leads to the development of severe complications and high mortality. Thus, the period from injury to treatment is a determining factor that determines the likelihood of complications and, of course, the outcome of treatment. However, the complexity of the diagnosis leads to a delay in determining the damage to the duodenum > 12 hours. In 53%, and in 28% the diagnostic time exceeds > 24 hours [8]. It is known that the delay in timely diagnosis of duodenal injury for more than a day, leads to an increase in mortality up to 40% [8], while the diagnostician at a later date causes mortality, which is close to 100% [8].

The first report of successful treatment of duodenal injury in blunt trauma of the abdomen belongs to Herczel (1896), the first perforation of the duodenum caused by a shot was described by Summers in 1904 [7]. Back in the early twentieth century. closed duodenal injuries ended in 100% mortality. Thus, statistical reports of 132 cases of duodenal injuries out of several. London clinics witnessed the death of all injured. In 1905 Goodvin reported 1 case of recovery, and in 1916 Miller - 5 successful cases out of 26 injured. An important achievement in the treatment of damage to the duodenum was, proposed by Kocher in 1903, the method of mobilization and revision of the retroperitoneal departments of the duodenum. The proposed method of disabling the passage through the duodenum Jamers also significantly improved the results of treatment. However, despite modern advances in surgery, anesthesiology, intensive care - the treatment of duodenal injuries remains a difficult and often thankless task, as the complexity of timely diagnosis, combination with other severe injuries of the abdominal cavity in 60-80%, still cause a high level of complications and mortality.

Isolated damage to the duodenum is rare. If during the urgent diagnosis of a closed abdominal injury it is possible to detect damage to the duodenum in a timely manner, then in most cases the primary reconstructive operations are successful. In cases of late diagnosis, not only is there a need for complex surgical procedures, but also increases the risk of serious complications, which leads to high mortality.

In most cases (up to 50%) with duodenal injury, primary suturing of the intestinal defect is performed [4,7]. Tactics for complex and late diagnosed injuries require the performance of various combined surgical techniques.

Today, surgeons widely use the classification proposed by the American Association for Surgery of Trauma (Duodenot Organ Ingury Scole), 1987, according to which there are 5 degrees of damage to the duodenum (Table 1).

Class	Type of injury	Description of injury	ICD-10	AIS-90
And	Haematoma	Attracting one portion of the duodenum	863,21	2
	Gap	Partial thickness, without perforation	863,21	3
II	Haematoma	Attracting more than one part of 12 PCs	863,21	2
	Gap	Розрив < 50% окруності	863,31	4
III	Gap	Gap 50% -75% circumference D2	863,31	4
		Розрив 50% -100% окружності D1, D3, D4	863,31	4
IV	Gap	Gap > 75% of circumference D2	863,31	5
		Involvement of an ampoule or a distal common bile duct		5
In	Gap	Massive violation of the duodenopancreatic complex	863,315	5
	Sudinniy	Deascularization of the duodenum	863,315*	5

Table 1: Duodenal injury scale.
Note: ICD-10 - ICD-10 (ed. 2016).

D1-first part of the duodenum; D2-second part of the duodenum; D3-third part of the duodenum; D4-fourth part of the duodenum According to Moore., *et al.* [6]; AIS - abbreviated scale of injuries (ed. 2005).

Duodenal injury due to blunt abdominal injury accounts for 20% of all duodenal injuries [6,7]. The main mechanism of injury is a high-kinetic impact in the projection of the duodenum into the spine. The second part of the duodenum (D2) is most often damaged, the third (D3), the fourth (D4) and the first part (D1) are less common [3,7].

Grade I injuries can be treated non-operatively by placing a nasogastric tube and long-term parenteral nutrition, which give the lowest mortality (8.3%) [6].

In cases of grade I-II injuries (damage to D2 or D3 of the duodenum), "pyloric exclusion" is recommended (primary recovery of duodenal lesions, pyloric closure by gastrotomy, cholecystectomy with bile duct decompression and gastroenteroanastomosis [4].

The surgery consists of an upper-middle median laparotomy (if necessary, supplemented by a cross-section), which allows to provide appropriate access and operative field. Adequate access, revision and manipulation of the duodenum require Kocher mobilization and Cattell-Braash maneuver (in case of D2 rupture), depending on the area of intestinal damage.

The placement of the decompression probes described by Stone and Fabian in 1979 is another surgical alternative currently in use [7].

Grade III lesions, as in our patient, can be treated by resection and primary anastomosis or pyloric exclusion. Primary suturing or anastomosis is successful in 80% of cases [6].

In cases of severe lesions of the duodenum (IV and V degree), exclusion of pyloric evacuation, as well as diverticulation of the duodenum (described by Berné in 1968, consisting of duodenoraphy, anthrectomy, gastrojejunostomy, stem vagotomy, devastation, ducts and jejunostomy), combined with pancreatectomy - provides a high mortality rate (30.8-58.8%). In case of complete duodenal rupture, adequate mobilization and final anastomosis are recommended. If the first portion is affected, an anthrectomy with duodenoraphy and reconstruction according to Billroth II is sufficient. In cases of either D3 or D4 of the duodenum, duodenojejunostomy according to Y Roux is the operation of choice [6,7], as in our clinical case.

The use of laparoscopic access in duodenal injury was first described by Tygat in 2010. It can be considered safe for hemodynamically stable patients without other concomitant lesions [6].

Complications of operations for duodenal injuries include duodenal fistula (2% -16%), abdominal abscesses (15%), intestinal obstruction (5% -8%), and acute pancreatitis (0.5%) [7]. Early surgery within the first 24 hours reduces mortality from 25% to 6% [7].

Conclusions

Rupture of the duodenum after blunt trauma to the abdomen at the wheel - a statistically rare injury. In most cases, this is caused by a high-kinetic impact. It is rarely isolated, and is usually associated with other visceral lesions.

Early diagnosis is important to reduce complications and mortality, as most severe duodenal injuries require surgical treatment, the choice of which depends on the severity of the injury.

The method of choice for complete rupture of the duodenum in section D4 is its mobilization with the imposition of duodenojejunostomy according to Y Roux and disabling of the gastrointestinal duodenal passage.

Resume

The article presents a clinical case of traumatic injury to the distal part of the duodenum due to blunt trauma to the abdomen in the form of its complete rupture and segmental post-traumatic thrombosis of the proximal part of the jejunum with an analysis of the literature diagnostics and the choice of surgical tactics for the correction of similar injuries. Injuries of this localization are relatively rare and account for 0.9-5% among the injuries of the abdominal organs, but however, complex diagnosis, lack of standardized surgical tactics and high mortality - from 10 to 40% determine the relevance of the problem for research and exchange of own experience. The method of choosing surgical intervention is the mobilization of the transperitoneal part of the intestine with the imposition of duodenojunoanastomosis and the disconnection of the gastro-duodenal passage.

Bibliography

1. Semenyuk YS. "Observation of successful treatment of a patient with post-traumatic rupture of the duodenum department". *Hospital Surgery* № 2 (2011): 8687.

2. IA Krivoruchko., *et al*. "Traumatic damage to the duodenum". *Ukrainian journal of khirurii* № 3.12 (2011): 4145.

3. SD Sheyanov and GN Tsybulyak. "Damage to the duodenum". Vestnik Sankt-Peterburzhskogo Universiteta 11.1 (2006): 53-55.

4. Singh S., *et al*. "Blunt duodenal trauma". *Journal of College of Physicians and Surgeons Pakistan* 23 (2013): 350-352.

5. Siboni S., *et al*. "Isolated blunt duodenal trauma: Simple repair, low mortality". *The American Surgeon* 81 (2015): 961-964.

6. Gutierrez IM and Mooney DP. "Operative blunt duodenal injury in children: A multi-institutional review". *Journal of Pediatric Surgery* 47 (2012): 1833-1836.

7. Ahmad R., *et al*. "Isolated duodenal injuries after blunt abdominal trauma". *Journal of Ayub Medical College Abbottabad* 28 (2016): 400-403.

8. F Mendoza-Moreno I., *et al*. "Duodenal Rupture after Blunt Abdominal Trauma by Bicycle Handlebar: Case Report and Literature Review". *Nigerian Journal of Surgical Research* 25.2 (2019): 213-216.