International Engineering Journal For Research & Development

Vol.6
Issue 3

Modern Views on The Problems of Diagnostics And Treatment of Duodenal Damage

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ABSTRACT

Injury of the duodenum (Duodenum) is one of the most severe in terms of both diagnosis and treatment. The issues of surgical tactics for this type of injury to this day cause a lot of controversy and disagreement, which makes this problem especially urgent. In this article, the authors attempt to summarize the experience in the diagnosis and surgical treatment of traumatic duodenal injuries. The opinions of different authors on the tactics of managing this severe category of victims are presented.

Key words: duodenal trauma, abdominal trauma

INTRODUCTION

Epidemiology. Injuries of the duodenum and frequency of closed injuries makes up 0.4 of 100000 of population or 0.6-12 percent of the number of abdominal imjuries. In our scientists have more than a century of experience. Despite that, the development of severe life- threatening complications, is still seriously and unsolved problem in emergency surgery because this disease is rarity.

Every surgeon who works at emergency surgical care, they encounters duodenal trauma (DT) at best situation from 1 to 3 times during the entire time of his own professional activity. And the positive outcome of each duodenal trauma is a matter of chance, depending on many conditions. Duodenal trauma accounts for 0.93- 10% of open and closed abdominal injuries [2,7,11] and among injuries of the gastrointestinal tract 0.43-6.5 %. And able-bodied men stands at 76-80% in aged of 20-40. The post-operative period with this type of trauma in 25-60% of cases is accompanied by early complications, of which the most terrible and more prevalent are failure of the stitches of the duodenal lacerations, retroperitoneal phlegmon. In this regard, mortality in case of damage to the duodenum is very high and ranges from 11-30%, and with developed retroperitoneal phlegmon reaches 100%.

Analyses of the medical literature , has revealed that damage to the duodenum in male is recorded much more frequently, from 71% to 97 %, in female from 3% to 36 %.

In closed trauma damages most often (until 45.8%) lower-horizontal part of the duodenum. Injuries to the descending part of the duodenum stands at 33.8%, and to the upper- horizontal part- 20.4% of trauma [3,5,15]. Some authors note the prevalence of retroperitoneal injuries among closed duodenal injuries, which reach 68% [8]. Thus, with a closed injury to the duodenum, frequency of damage to its retroperitoneal part reaches 90%. At the same time, according to D.M. Krasilnikov and others retroperitoneal localization of injuries in the structure of duodenal trauma does not exceed 68%.

According to the mechanism of damage, the duodenum is divided into: traumatic-closed and open; pathological and iatrogenic [4,9].

The latent nature of the damage to the retroperitoneal parts of the duodenum creates difficulties in the course of urgent diagnostics, which requires increased vigilance from the surgeon [9,13,28]. And the delay in recognizing the true nature of the injury, while remaining a scourge for surgeons providing emergency care, greatly burdens the patient's fate.

Classification of injury to the duodenum. Analyses of the medical literature, that at the present day have not generally- accepted classification and damage of duodenum A.X.Davletshin [14] separated in: traumatic, pathological and iotrogenetic. Traumatic injurias are also divided as open and closed.

MAIN PART

In relation to the intestinal wall to the parietal peritoneum, there is extraperitoneal and intraperitoneal injuries [27,33]. A.E.Romashenko (1978) has suggested classification of duodenal injuries with details of the types of damage. The need to isolate this group of injuries is due to the fact that in a significant number of cases, the prognosis and outcome of injury is determined not by damage to the duodenum, but by concomitant damage to other vital organs and great vessels (aorta, vena cava inferior).

A.B.Prayerslovov [18] identified 4 types of damage to the wall of the duodenum:

1) Hematoma of the wall of the duodenum - there is no communication with the lumen.
2) Tear of the duodenal wall- there is damage to the mucous layer
3) Rupture- there is damage to all layers and communication with the duodenum lumen
4) Complete transverse rupture of the duodenum.

In this day present day most comfortable, optimal for practical application is the classification proposed by E.Mooge with co-authors in 1990 and accepted for use by the American Association of Surgeons [40]. Depending on the degree of damage to the duodenum, the classification makes it possible to determine further surgical tactics and prognosis. In accordance with it, 5 degrees of damage to the duodenum are distinguished. A classification based on the same principles was later proposed by G.Kline with co-authors in 1994.

First degree- Hematoma occupies one section of the duodenum or there is a tear, walls that do not penetrate the intestinal lumen;

Second degree – The hematoma occupies more than one section of the duodenum or there is gap less than 50% of the circumference of the duodenum.

Third degree - Rupture of 50-75% of the circumference of the second section of the duodenum or 50-100% of the circumference when localized in the first, third and fourth sections;

E-ISSN NO:2349-0721

Fourth degree- Rupture of more than 75% of the circumference in the second section, damage to the vial or the distal part of the common bile duct.

Fifth degree- Massive damage to the pancreatoduodenal zone or devascularization of the duodenum.

Diagnostics and treatment damage of duodenum. In the diagnosis of damage to the duodenum, the anamnesis remains the main one, in which there is a fact of injury - a blow to the abdomen of any force. Manifestations of damage to the duodenum can be purely individual and depend on many factors: abundant blood supply to the hepato-duodenal zone, the presence of vital nearby organs, the severity of damage [21,22]. The clinical picture depends on the nature of the injury and the degree of manifestation of traumatic and hemorrhagic shock. Errors are often of a technical nature, due to the massiveness of the damage and the insufficiency of the performed revision [10,11,29].

If, in the course of urgent diagnostics, it is possible to diagnose duodenal damage in a timely manner, then in most cases, primary reconstructive operations are successful. At the same time, with a late diagnosis, not only more complex types of surgical care are required, but also a real threat of severe complications arises, which often end in the death of the victim [7,27,31]. Thus, the time from the moment of injury to the start of treatment is the most important factor in determining the likelihood of complications and the outcome. Meanwhile, the complexity of diagnostics of duodenal lesions often leads to their recognition with a delay exceeding 12 hours in 53% of victims, and in 28% - the diagnosis time exceeds 24 hours. It is known that if the true diagnosis is delayed for more than a day, the fatality rate is 40%, and in 30% of the victims, duodenal fistulas develop [10,19,27]. When the recognition of duodenal lesions was carried out at a later date, the mortality rate approached 100% of all cases. Therefore, in case of remaining doubts about the possibility of damage to the duodenum, surgeons have the right to resort to the last diagnostic technique - diagnostic laparotomy [5,11].

Due to the rarity of damage to the duodenum, they are characterized by high percentage of diagnostic errors. During primary surgery for trauma, damage to the retroperitoneal part of the duodenum is not diagnosed in 10.0-30.0% of cases [10,21]. During primary surgery for trauma, damage to the retroperitoneal part of the duodenum is not diagnosed in 10.0-30.0% of cases [10,21]. There is a high percentage of complications in the postoperative period, which, according to various sources, is noted in 25.0-72.5% [3, 20, 38]. After closed duodenal lesions, complications are almost twice as common as after open lesions (61.9% and 33.3%, respectively) [5]. High postoperative mortality is associated with late diagnosis and late hospitalization.

An objective examination sometimes reveals traces of trauma to the abdominal wall in the form of wounds, abrasions, bruises on the skin. Particular difficulties in diagnosis arise when the retroperitoneal part of the duodenum is damaged. With retroperitoneal DNA damage, some authors note that the abdominal wall remains soft, painless for a long time, without external signs of damage [8,22]. If the retroperitoneal part of the duodenum is damaged, followed by a violation of the integrity of the parietal layer of the peritoneum and the outpouring of the duodenal contents from the retroperitoneal space into the free abdominal cavity, a positive Joyce symptom - percussion dullness in the right lateral canal,

whose boundaries remain unchanged when the patient's position changes [12,13]. This symptom indicates the spread of intestinal contents and gases into the free abdominal cavity, while hepatic dullness disappears and the appearance of a tympanic tone [3,4,6] highlights a pathognomonic symptom for rupture of the retroperitoneal duodenum - retroperitoneal emphysema, however, according to his data, this symptom occurs quite rarely [5].

Of particular diagnostic value in retroperitoneal rupture of the duodenum is Canavel's syndrome, which is manifested by the development of a septic state with repeated vomiting in a soft abdomen [15,20]. In the first hours after the injury, there will be no changes in the laboratory parameters. At a later date, there is an increase in leukocytes with a shift in the leukocyte formula to the left. There are no specific changes on the part of the blood. Laboratory research methods can indicate the presence of an inflammatory process in the abdominal cavity, indirectly confirming the traumatic genesis of inflammation [9]. When examining urine, changes are not detected. In the future, with an increase in the phenomena of intoxication and the development of peritonitis in the general analysis of urine, changes characteristic of a toxic kidney are noted [9]. When examining urine, changes are not detected. In the future, with an increase in the phenomena of intoxication and the development of peritonitis in the general analysis of urine, changes characteristic of a toxic kidney are noted [9].

In the diagnosis of closed duodenal lesions, instrumental research methods play an important role. Mandatory use of dynamic ultrasound is recommended to detect free fluid in the abdominal cavity and assess the state of the retroperitoneal paraduodenal and paracolic tissue [23,28,40].

Ultrasound examination (ultrasound) can reveal the presence of free fluid in the abdominal cavity in an amount of up to 100-200 ml, as well as to reliably establish the organ and the nature of its damage [28]. Ultrasound examination for injuries of the abdominal organs has a sensitivity of 75.0-86.7%, a specificity of 88.4-100.0% and an indication accuracy of 82.0-92.0% [1,2].

IEJRD E-ISSN NO:2349-0721

Damage to the retroperitoneal part of the duodenum can be suspected by ultrasound of the abdominal and retroperitoneal organs and diagnosed with subsequent performance of more informative computed tomography [37,39]. The reliability of X-ray diagnostic methods reaches 33.0 - 80.0% [2,18,37. The severity of the patient's condition is not a contraindication for emergency research. X-ray signs of damage to the duodenum are: high standing of the dome of the diaphragm with restriction of its movements [4,5,13], diffuse darkening to the right of the navel, unusually clear contour of the shadow of the right kidney due to gas accumulation [2,36]. Computed tomography (CT) is one of the most sensitive research methods in the study of the retroperitoneal organs, giving versatile information about the state of the duodenum, pancreas and retroperitoneal space, involvement of the biliary tract, adjacent vascular structures and parts of the gastrointestinal tract in the process [29,30,31 , 34]. Currently, CT is widely used in the diagnosis of damage to parenchymal organs. In the diagnosis of retroperitoneal duodenal lesions, CT is considered as a diagnostic method with a high percentage of positive results, as well as for the differential diagnosis of duodenal ruptures and hematomas.

Fibrogastroduodenoscopy for retroperitoneal injuries is the only non-invasive method for accurate and rapid topical diagnosis [17,18,41].

Some authors recommend using laparocentesis with a "groping" catheter and flushing of the abdominal cavity; the purpose of this method is to detect blood, the contents of the duodenum and pancreatic enzymes. If amylase or bile pigments are found in the peritoneal perfusate, it is possible to suspect damage to the duodenum, liver, biliary tract and pancreas [30,31,41]. However, laparocentesis allows one to determine only indirect signs of duodenal trauma (blood, pathological impurities) without assessing the severity of the injury. Therefore, laparocentesis is considered an ineffective research method for trauma of the retroperitoneal duodenum.

Diagnosis of damage to the retroperitoneal part of the duodenum during surgery is no less difficult than before surgery, and according to different authors, they are not diagnosed during primary surgery in 10.0-30.0% of cases [5,2,4]. The most common diagnostic errors occur with injuries of the retroperitoneal part of the duodenum, especially if they are combined with trauma to other organs [18,30].

Some authors propose a method for intraoperative diagnosis of retroperitoneal ruptures of the duodenum using various dyes introduced through a tube into the duodenum with possible subsequent distension of the stomach and duodenum. In the presence of a rupture, the colored solution penetrates into the retroperitoneal space and is translucent through the parietal peritoneum, and when the peritoneum is ruptured, it freely enters the abdominal cavity; when inflated, the flow of air into the abdominal cavity is determined [23,27].

Surgical treatment of duodenal injuries remains a poorly studied problem, which is associated with the small number of observations of this type of injury in the general structure of combined and multiple injuries of the abdominal cavity and retroperitoneal space [15,16,17,22]. During surgery, patients with duodenal trauma [8,14,15], as a rule, reveal retroperitoneal hemorrhage, emphysema with an admixture of bile. B.V. Sigua and others [20,21] developed their own classification of the severity of duodenal lesions and recommend a certain amount of surgery for varying degrees of severity of damage. R.N. Chirkov and others [28,29] in an experiment on dogs revealed that at the same time interval from the moment of injury, inflammatory and destructive changes in the areas of the duodenum located distal to the large duodenal papilla are more pronounced and progress much faster, which is explained by the damaging effect of bile and pancreatic juice. Therefore, from the point of view of surgical tactics, the authors distinguish between supra- and infra-papillary zones of the duodenum. As the experience of the authors has shown, if the time interval from the moment of injury does not exceed 4 hours, then the defect in the wall of the duodenum should be sutured with double-row sutures with an atraumatic thread. If the time interval exceeds 4 hours, then it should be approached differentially. If the infrapapillary part of the duodenum is damaged, taking into account the high risk of developing inconsistency of the sutures, a duodenostomy should be formed at the first stage, and at the second stage it should be eliminated after stabilizing the patient's condition.

CONCLUSION

The main causes of death is isolated duodenal lesions are intestinal stritches failure [16,19,33,34] and massive blood loss [25,31]. Also in the literature there are indications of the causes of death: pneumonia [10, 16] severe toxicosis due to progressive peritonitis and ertroperitoneal phlegmon, multiple organ failure, disseminated intravascular coagulation [19,20].

Therefore, as the analyses of domestic and foreign literature has demonstrated, mechanical damage to the duodenum is an unsufficiently researched problem. At the same time, the quality of diagnostics and the results of surgical treatment of patients with duodenal trauma remain at a rather low level, which is explained by the lack of a unified approach to diagnosis and unified surgical tactics for different types of damage to the duodenal wall. Mentioned problems are the subject of our scientific work.

REFERENCES

1. Abakumov, M. Injuries of the abdomen in trauma / M. M. Abakumov, N. In. Lebedev, I. V. Malyarchuk. – M.: JSC "Publishing house "Medicine"", 2005. – 176 p.
2. Abakumov M. M. Damage to the duodenum / M.
3. Abakumov, R. N. Teal // Publisher Binomial, 2014.
4. Baulin N. A.,Nikolashina.A.,Barebacke S. S.,Berenstein, M. M.
5. Laparoscopy in the diagnosis and treatment of penetrating wounds of the abdomen/ /Endoscopic surgery.-2004. - No. 1. - p. 32.
6. Bagnenko S. F., Shapot Yu. B., Tulupov A. N. et al. Closed abdominal injuries with a combined mechanical injury accompanied by shock. Diagnostics, surgical tactics and treatment. Combined mechanical injury: An educational and methodological guide / Under the general ed. of the member-cor. of the Russian Academy of Medical Sciences, prof. S. F. Bagnenko. Vol. 17. St. Petersburg, 2006. pp. 76-81.
7. Wagner E. A. Injuries of the duodenum / Wagner E. A., Urman M. G., Firsov V. D. / / Bulletin of Surgery. - 1984. - No. 8. - pp. 76-79.
8. Ivanov P. A., Grishin A.V., Korneev D. A., etc. Injuries of the organs of the pancreatoduodenal zone / / Surgery. - 2003. - No. 12. - pp. 39-43.
9. Ivanov P. A., Grishin A.V. Surgical tactics for duodenal injury / / Surgery. – 2004. – No. 12. – S. 28-34.
10. Ivanov P. A., Grishin A.V. Surgical tactics in trauma two narrativists gut // Surgery, 2014. - No. 12. – S. 28-34.
11. Davletshin A. H. Surgery damages the duodenum / Davletshin A. H. Izmailov, S. G., G. A. Izmailov, etc. - Kazan: Publishing house of Kazan University, 1998. - 200 p.
12. Danilov M. A. Abdominal sepsis in duodenal trauma / Danilov A.M., Mikhailov A. P., Sigua B. V., Napalkov A. N., Efimov A. L. / / The First Congress of Surgeons of the Southern Federal District(with international participation): Materials of the Congress. - Rostov-on-Don 2007,. - pp. 42-43.
13. Komarov N. V., Bushuev V. V., Lyakhmanov K. E., Komarov R. N. Damage Duodenum in the practice of a district surgeon / / Vestnik surgery.-2004. - No. 2. - p. 92-93.
14. Krasilnikov, D. M. Surgery of closed pancreatic injuries / D. M. Krasilnikov, I. M. Fatkhutdinov / / Bulletin of the St. Petersburg University. Ser. 11. Medicine. -

2010. - Appendix: Pirogovskaya surgical week: materials of the All-Russian forum. - p. 681.

15. Markarov A. E. Diagnostic and therapeutic tactics for duodenal injury: abstract of the dissertation of the candidate of Medical sciences. - Moscow, 2002. - 22 p.
16. Matigullin R. M. Prevention and treatment of retroperitoneal phlegmon in traumatic injuries of the duodenum: abstract of the dissertation of the candidate of medical sciences. - Ufa, 2010. - 23 p.
17. Makhnev A. B. Surgical treatment of duodenal injury / / Medical science and education of the Urals. – 2008. – № 3 (53). – Pp. 80-81.Mikhailov A. P., Sigua B. V., Danilov A.M., etc.
18. Duodenal injuries (Clinic, diagnosis, treatment) // Bulletin of Surgery named after I. I. Grekov. - 2007. - No. 6. - pp. 36-40.
19. Mikhailov A. P., Sigua B. V., Danilov A.M. Diagnostics, treatment of injuries and wounds of the duodenum // Bulletin of the St. Petersburg University. Ser. 11. Medicine. - 2010. - Appendix: Pirogovskaya surgical week: materials of the All-Russian Forum. - pp. 693-695.
20. Molitvoslavov A. B., Eramishantsev A. K., Markov A. E. Diagnostic and therapeutic tactics for trauma of the 12-duodenum. Surgery. - 2004. - No. 8. - pp. 46-51.
21. Sigua B. V., Mikhailov A. P., A.M. Danilov. 12 12-duodenum // Materials of the XI Congress of Surgeons of the Russian Federation. - Volgograd, 2011. - pp. 555-556.
22. Sigua B. V., Danilov A.M., Smirnova I. S. Diagnosis of closed duodenal injury // Materials of the First Congress of Surgeons of the Southern Federal District. - Rostov-on-Don, 2007. - p. 75.
23. Sigua B. V. Diagnosis and treatment of duodenal injuries: abstract of the dissertation of the candidate of medical sciences. - St. Petersburg, 2008. - 16 p.
24. Slavov, A. I. duodenal rupture in blunt abdominal trauma / A. I. Slavov, S. A. Slavov / / Materials of the XI Congress of Surgeons of the Russian Federation. - Volgograd, 2011. - p. 626.
25. Sovtsov S. A. A new standard of examination in case of abdominal organs injury / S. A. Sovtsov / / Emergency and specialized surgical care. The First Congress of Moscow Surgeons: abstracts of reports. Moscow, May 19-21, 2005-Moscow: GEOS, 2005. - pp. 190-191.
26. Urman M. G. Surgical tactics for injuries of the duodenum / M. G. Urman // Emergency and specialized surgical care. The First Congress of Moscow Surgeons: abstracts of reports. Moscow, May 19-21, 2005-Moscow: GEOS, 2005. - pp. 194-195.
27. Cherkasov M. F., Yuskov V. N., Sitnikov V. N., et al. Damage abdomen with multiple and combined trauma. - Moscow: Rostov-on-Don, 2005 – - 132 p.
28. Chirkov R. N., Abakumov M. M., Blokhin V. N., Feller V. S. Late complication of duodenal injury. Surgery. The magazine named after N. I. Pirogov. - No. 2. - 2008. - pp. 69-70.

29. Chadaev A. P. Comparative effectiveness of methods for diagnosing injuries of abdominal organs / Chadaev A. P., Klimiashvili A.D. / / Emergency and specialized surgical care. The First Congress of Moscow surgeons. Abstracts of reports [Moscow, May 19-21, 2005]. - Moscow: GEOS, 2005. - pp. 197-198.
30. Chirkov R. N., Abakumov M. M., Blokhin V. N. Diagnostics and surgical tactics in traumatic intramural duodenal hematomas / / Surgery. - 2008. - No. 5. - pp. 33-36.
31. Chirkov, R. N. Clinical and morphological justification of surgical treatment of patients with duodenal ruptures with a closed abdominal injury / R. N. Chirkov, M. M. Abakumov, I. A. Dubrovin / / Surgery. - 2009. - No. 8. - pp. 11-14.
32. Chirkov R.N. Mechanical damage to the duodenum:diagnosis and surgical treatment. dis ... doctor of medical sciences. - Tver, 2010 – - 238 p.
33. Khasanov A. G., Fayazov R. R., Timerbulatov M. V., Kayumov F. A.
Surgery of abdominal injuries.- Ufa, 2002. - 251s.
34. Tsybulyak G. N., Sheyanov S. D. Injuries and abdominal injuries:
Modern diagnostics and new approaches in treatment/ / Vestnik surgery.-2001. - No. 5; - pp. 81-88.
Asensio J. A., Petrone P., Roldan G., etc. Pancreaticoduodenectomy: a rare procedure for the treatment of complex pancreaticoduodenal lesions / / J. Am. Coll. Operation in 2003. Volume 197. N 6. pp. 937-942.
35. Beyruti M. And ... Beyruti R., Khaou I. et al. Injury of the duodenum. About 14 cases / / Tunis. Med. 2005. Volume 83. No. 2. pp. 73-82.
36. Bozkurt B., Ozdemir B. A., Kocher B. et al. Operative approach in case of traumatic injuries of the duodenum / / Acta Chirurgica Belgica. - 2006. - Vol. 106. - pp. 405-408.
37. Crippa S., Falconi M., Bettini R. et al. Isolated blunt trauma of the duodenum: delayed diagnosis and favorable outcome in decompression of the "four-tube tube" / / Journal of the Pancreas. - 2007. - Volume 8, No. 5. - pp. 617-620.
38. DesaiK M., DorwardI G., Minks R. K., Dillon P. A. Obtuse duodenum
Injuries in children/ / Trauma.-2003. - Vol. 54, No. 4. - pp. 640-646.
39. Girgin S., Gedik E., Yagmur Yu. et al. Treatment of duodenal injury: our experience and the value of tubular duodenostomy // Turkish Journal of Traumatology and Emergency Surgery. - 2009. - Volume 15, No. 5. - pp. 467-472.
40. Jansen M., Du Toit D. F., Warren B. L. Surgical treatment of duodenal injuries adapted to the circumstances / / Trauma. - 2002. - No. 33. - pp. 611-615.
41. Crippa S., Falconi M., Bettini R., etc. Isolated blunt trauma of the duodenum: delayed diagnosis and favorable outcome in decompression of the "four-tube tube" / / Journal of the Pancreas. - 2007. - Volume 8, No. 5. - pp. 617-620.
42. Moore E. E., Cogbill T. N., Malangoni M. A. ethyl. Organ damage of the II degree:pancreas, duodenum, small intestine, colon and rectum/ / J Trauma.-1990.-Volume 30, No. 11. - pp. 1427-1429.

43. Vig J. D., Kudari A., Yadav T. D., etc. The pancreas with the preservation of total duodenectomy with complex damage to the duodenum / / Journal of the Pancreas. - 2009. - Volume 10, No. 4. - p.