Duodenal Obstruction Due to Intramural Hematoma

Review of the Literature and Report of a Case

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ACUTE DUODENAL OBSTRUCTION due to intramural hematoma resulting from blunt trauma to the abdominal wall is very rare, judging from the scarcity of reported cases. The authors found reports of fewer than a dozen cases in the available literature.

REPORT OF A CASE

A 17-year-old boy was accidentally kicked in the epigastrium while playing football. He complained of moderate pain in the upper abdomen, but after resting for a short while he was able to take a shower and go home on a bus. However, he continued to have epigastric pain, became nauseated, and started to vomit.

He was first seen by one of the authors about three hours after the accident. He said that he had only moderate pain in the epigastrium, but he was greatly nauseated, was retching and vomiting. There was no blood or bile in the vomitus. The patient was not in shock, and the color of the skin was not indicative of loss of blood. The temperature was 98.6° F. the pulse rate 80 and the blood pressure 140/80 mm. of mercury. There were no external signs of injury to the abdominal wall. The abdomen was scaphoid and soft except in the epigastrium, where there was a little muscle spasm and tenderness. The bowel sounds were active. Since there seemed no immediate need for operation the patient was observed overnight without medication. The nausea and vomiting subsided and he was able to sleep well through the night.

Over the next few days, pain and tenderness were minimal and the patient was able to take clear liquid but became nauseated and vomited following ingestion of solid food. On the fifth day after the injury, he was given a small barium swallow. Fluoroscopic examination and an x-ray film showed pronounced narrowing of the lumen of the descending portion of the duodenum. The distal portion of the duodenal bulb was irregular in outline, and a very fine streak of barium went through the descending portion of the duodenum. It was thought that there was a great deal of edema and swelling in the wall of the duodenum and probably intramural hematoma. At this time also there could be felt a small mass in the epigastrium just to the right of the midline. This mass was only slightly tender.

Because it was felt that the swelling would subside in the course of the next few days and that the hematoma would resolve itself, relieving the obstruction, a conservative course was chosen. Wangensteen suction was started and measures were taken to preserve electrolyte balance. However, the expected improvement did not take place and the patient continued to vomit. Operation was done ten days after the injury.

The injury was confined to the duodenum. There was no free or clotted blood in the abdomen and no extravasation of blood or bile in the retroperitoneal area or mesentery. A necrotic looking, egg-shaped mass, six or seven centimeters in length and five centimeters in diameter was found occupying the anterolateral aspects of the descending portion of the duodenum. A vertical incision was made in the anterior aspects of the mass, revealing a partially liquefied clot of blood which had formed in the subserosal space. This had compressed the muscularis and mucosa toward the lumen of the bowel, thus causing obstruction. The compressed portion of the duodenal wall was rigid and of cartilaginous hardness, and the patency of the lumen after the removal of the clot was doubtful. An attempt was made, therefore, to maneuver through the stomach wall and to pass a Levine tube through the obstructed portion of the duodenum, but the attempt was not successful due to the tightness of the obstruction. Although it was felt that the obstruction would relieve itself in time after the removal of the hematoma, it was thought that a short-circuiting operation would insure recovery and make possible a smoother and more rapid convalescence. Therefore a relatively small anticolic gastrojejunostomy was done.

The postoperative course was uneventful and the patient was discharged from the hospital on the seventh postoperative day. Two weeks after the operation, roentgen examination after a barium swallow showed a well-functioning gastrojejunos-

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tomy stoma, but the duodenum was still obstructed. However, when examined four months later, the duodenum had opened up and there was very little deformity in it. The patient was feeling well and had gained about twenty pounds.

One other patient with proven duodenal obstruction due to hematoma following blunt trauma of the abdominal wall was observed at the San Jose Hospital within the past year—a girl, 12 years of age, who fell off a bicycle and started to vomit with crampy abdominal pain two days later. She was operated upon and recovered.

REVIEW OF LITERATURE

In 1893 Perry and Shaw[6] found record of a single case of duodenal obstruction due to hematoma among 17,652 autopsy reports and other material available at that time. This case was in a man 23 years of age who died of abdominal injury. Noted at autopsy were "recent clots in front of the pancreas and around the third portion of the duodenum." Also the "bowel was so much compressed and obstructed that it would barely admit a finger; and while the stomach and duodenum were filled with fluid, the jejunum was collapsed and empty."

Strachan[9] reported in 1920 the case of a man who was caught between two motor cars. At laparotomy it was observed that "the duodenum showed no signs of trauma, but very markedly pushed forward and to the left; distortion was due to a large retroperitoneal hematoma, the size of a large hen's egg, situated over the right psoas magnus. The hematoma was incised vertically and handful of blood clot was removed." The patient made uneventful recovery.

In 1933 Oppenheimer[5] reviewed the above two articles and added report of another case of duodenal obstruction due to hematoma which, however, was not due to external trauma. He said that the hematoma "may have resulted from the erosion of a small blood vessel incident to acute pancreatitis." The patient was a woman 42 years of age who had carcinoma of the head of the pancreas, cholelithiasis, acute dilatation of the stomach and peritonitis.

Dey,[1] reporting in 1952, mentioned two cases observed in Sydney, Australia. One patient had a clear-cut history of epigastric trauma. In the second case, which was reported in detail, such a history was lacking. A previously healthy girl of six and a half years complained of severe intermittent abdominal pain with vomiting. At operation there were found "hemorrhage into the retroperitoneum and the hepatic flexure of the colon" and "a tense cyst filled with blood clot . . . in anterior wall of the lower portion of the first part and second part of the duodenum." The clot was evacuated and the girl recovered.

In March, 1953, Stirk[8] reported a case in a nine-year-old boy who had gone over the handle bar of his bicycle. He complained of mild pain, which passed in a few hours. Two days later he was seized with sudden pain in midabdomen and started to vomit. There was no evidence of bruise or abrasion of the abdominal wall. The patient was operated on about one week after the accident. There was found a large subserosal hematoma involving the second, third, and fourth parts of the duodenum and the first four inches of the jejunum. The clot was removed and the serosa was left unsutured. The patient made a slow but uneventful recovery and was discharged from the hospital six weeks after the operation.

Maglandry and Mathewson[4] reported the case of another nine-year-old boy who "fell while riding a scooter, bruising his right anterolateral abdominal wall and right costal margin." Next day he began to vomit and complained of pain in the right upper quadrant of the abdomen. The vomiting continued and the pain increased. Upon x-ray examination it was noted there was pronounced narrowing at the second portion of the duodenum, causing partial obstruction. Laparotomy was done about a week after the accident. "The peritoneal cavity contained no free fluid. A moderate amount of retroperitoneal hemorrhage was observed immediately in the right retroperitoneal area. There was considerable subserosal hemorrhage of the duodenal loop. There was subserosal hemorrhage also involving the ascending colon, cecum, appendix, and terminal ileum. The second portion of the duodenum [was] found to be very ecchymotic and swollen to about three times the normal size. . . . A longitudinal incision was made in the wall of the second portion of the duodenum. After incising the muscularis, a large hematoma under tension was evacuated. . . . A sterile Levine tube was passed through the gastrostomy wound through the duodenum into the jejunum." The patient made uneventful recovery, the enterostomy tube being removed on the fifth postoperative day and the gastrotomy wound closing spontaneously about a week later.

Felson and Levin,[2] reporting four cases in 1954, emphasized characteristic roentgen findings in cases of intramural hematoma of the duodenum. They also mentioned Liverud's article in 1948[3] as being the first detailed description of roentgenologic features. Summaries of the four cases follow:

1. An 18-year-old boy was struck in the abdomen during a football game. Three hours later persistent dull pain developed. It slowly increased in intensity and the patient started to vomit. The patient was treated conservatively for a while and then was operated upon the tenth day after the injury. There was a subserosal hematoma 20 cm. in length in the distal duodenum and proximal jejunum. There was also another hematoma in the adjacent retroperitoneal space. Six hundred cubic centimeters of liquid blood and clots was evacuated and the patient made uneventful recovery.

2. A nine-year-old girl had roentgen findings typical of intramural hematoma. She improved on conservative treatment without operation; but her hospital stay was 20 days.

3. A nine-year-old boy fell over a wire and later had abdominal pain, nausea, vomiting and diffuse

abdominal tenderness. Laparotomy was done after diagnosis of acute appendicitis. No abnormality was found in the lower abdomen and the incision was closed. However, the symptoms persisted and x-ray examination five days later revealed narrowing of the descending duodenum and a coil-spring pattern. A duodenal polyp with intussusception was suggested. The abdomen was reopened on the tenth day after the injury. There was a hematoma in the posterior surface of the transverse duodenum in the retroperitoneal space. This was evacuated and the recovery was uneventful.

4. In the case of a 33-year-old man the only possible causative factor was an attack of severe hiccoughs and vomiting two days previous to the onset of his abdominal symptoms. At operation there was found a large egg-shaped subserosal hematoma in the transverse duodenum. The hematoma was evacuated and the patient recovered.

Felson and Levin stated that "roentgen demonstration of an intramural mass with coil-spring mucosal pattern overlying it is a pathognomonic sign of intramural hematoma of the duodenum."

DISCUSSION

One of the most rarely seen causes of duodenal obstruction is simple intramural hematoma resulting from blunt trauma to the abdominal wall. When the trauma is severe enough, it causes rupture of the duodenum in the same manner that scalp laceration is produced by a blunt object hitting the skull, for the duodenum is partly fixed against the spine and the striking object pinches the organ against it. Rupture of the duodenum causes extravasation of bile and blood into the retroperitoneal space, mostly on the right side and into the ascending and transverse mesocolon; and there may also be a collection of air about the right kidney and adjacent retroperitoneal area and along the psoas muscle. When the trauma is less severe or relatively minor, it may cause bleeding either into the wall of the duodenum or into the retroduodenal area, and sometimes it may lead to localized hematoma formation large enough to cause obstruction.

In either case, whether it is duodenal rupture or simple hematoma, there usually is a relatively asymptomatic phase following initial shock and pain. In the former, signs and symptoms of severe intraabdominal injury soon develop and immediate surgical intervention is a paramount necessity. In the case of hematoma, there may be only slight pain and tenderness in the epigastrium and right upper quadrant without signs or symptoms of severe intraabdominal injury. The symptoms of obstruction may be slow in developing. In such cases conservative treatment for a few days may be justified, and some patients will recover without operation. However, when obstruction is complete and persistent, laparotomy should be undertaken. In most cases, simple removal of the hematoma is all that is necessary. In cases where there may be possible scar formation, either from the actual trauma to the duodenal wall or due to long-standing hematoma, gastrojejunostomy may be indicated.

According to Felson and Levin, x-ray demonstration of coil-spring mucosal pattern is pathognomonic of intramural hematoma. In the case herein reported, that pattern was not present, but very pronounced narrowing of the second portion of the duodenum was observed roentgenographically. Maglandry and Mathewson also reported x-ray findings of pronounced narrowing at the second portion.

Siler[7] cited a review of 1,183 cases of subcutaneous rupture of the intestines in which 113 or approximately 10 per cent involved the duodenum. The duodenum comprises only a small portion of the entire intestinal tract, but the proportion of duodenal ruptures is very high in relation to ruptures in other portions of the intestines. This is because of its fixed location overlying the spine. And in view of the fact that there is such a large number of cases of blunt trauma to the abdomen in modern industries and on the highways, it seems possible that the actual number of duodenal obstruction due to intramural hematoma may be much larger than the scarcity of reported cases might indicate.

SUMMARY

A case of duodenal obstruction due to subserosal hematoma resulting from a kick in the epigastrium is presented. Laparotomy was done about ten days after the injury and evacuation of the hematoma and gastrojejunostomy resulted in complete recovery. Eleven similar cases reported in the literature are reviewed.

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