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POST TRAUMATIC RETROPERITONEAL DUODENAL PERFORATION

PADMARAJU
Department of General Surgery,
STANLEY MEDICAL COLLEGE AND HOSPITAL

Abstract :
Duodenal injury is less common after blunt injury abdomen. Blunt injury constitutes 22 percentage of all duodenal injuries. It constitutes 3-5 percent of all abdominal injuries. Most common in the second and third portions. Usually accompanied by other intra abdominal injuries. There are various treatment for duodenal injuries according to grading. Treatment consists of simple suturing to whipples procedure. Here we report a case of duodenal injury who presented with abdominal pain, vomiting, fever and abdominal distension after blunt injury abdomen for 2 days. On examination patient is dehydrated, febrile, vitals stable. Abdomen distended, generalised tenderness, guarding, rigidity present. Free fluid present. Blood investigations normal except Hb-10.8 gram per deciliter. Serum amylase and lipase normal. Four quadrant aspiration positive. Plain x ray abdomen and contrast enhanced CT scan confirmed the diagnosis and showed retroperitoneal pneumoperitoneum. Laparotomy done, patient had perforation in D2, D3 junction in the posterior wall. Patient was treated successfully by suturing the perforation in two layers, duodenal diverticulization with Billroth II anastomosis, jejunojejunostomy and feeding jejunostomy. Post operative events uneventful. Patient is under regular follow up. To conclude, any bile staining in the peripancreatic area should be explored, both the Kocher manoeuvre and the Cattell-Braasch exposure is essential. Duodenal injury usually has late presentation, so early diagnosis and treatment can prevent morbidity and mortality.

Keyword :duodenal injury, retroperitoneal, duodenal diverticulization, pyloric exclusion.

INTRODUCTION

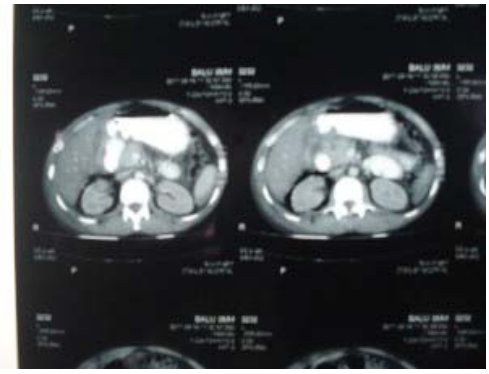
Duodenal injury constitutes 3-5% of all abdominal injuries. Most common in the second and third portions. Usually accompanied by other intra abdominal injuries. The treatment for duodenal injuries depends upon grading of the injury. Treatment consists of simple suturing to whipples procedure.

CASE PRESENTATION

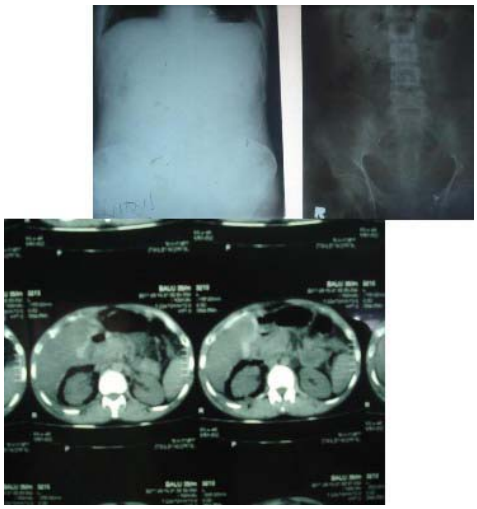
35 year old male patient came to emergency department with alleged history of assault with hand two days back followed by generalised abdominal pain for two days, sudden in onset, continuous, radiating to back. Vomiting for 2 days, 10 episodes, non bilious, not blood stained. Fever for 2 days, continuous, low grade. H/O abdominal distension, sleep disturbance, loos of appetite, burning micturition. H/O alcohol intake 2 days before. Known alcoholic for 5 years.

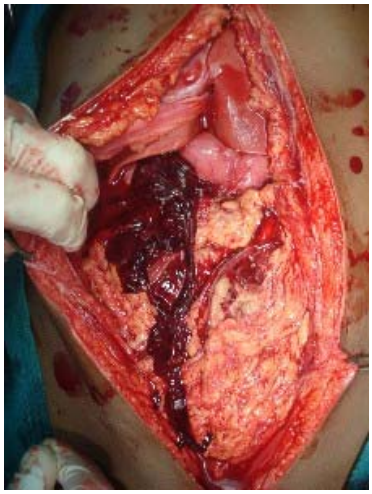
On examination, patient is dehydrated, febrile, pulse-110/min, BP-100/70 mmHg, Temp-101 F. P/A-distended, movements restricted, flanks full, warmth , generalised tenderness, guarding and rigidity present, bowel sounds sluggish.

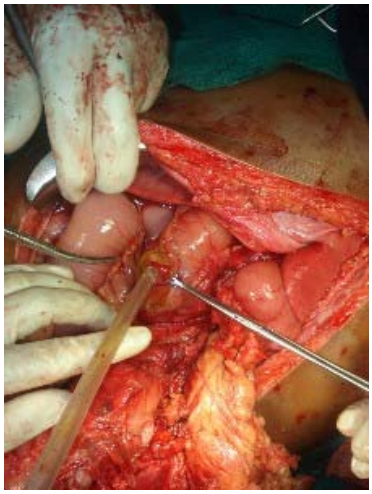
Blood investigation normal except-Hb-10.8 g/dl. Serum amylase and lipase normal. Chest x ray normal. Four quadrant aspiration blood staining. X ray abdomen erect view shows air around the right kidney. CECT abdomen and pelvis shows retroperitoneal extra luminal air and discontinuity in the posterior wall of duodenum at D2 D3 junction.



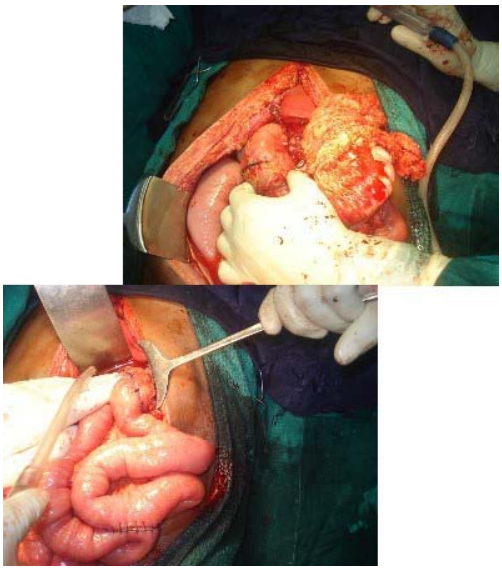
Preoperative diagnosis of post traumatic retroperitoneal duodenal perforation is made and emergency laparotomy done. There was a perforation in the posterior wall of the duodenum at D2 D3 junction, of size 2 cm (grade II). Bile staining in the transverse mesocolon near hepatic flexure. Hemoperitoneum of 1 litre. Two serosal tear in the antimesentric border of the transverse colon. Tear in the right side of the transverse mesocolon of size 2 cm, 5 cm form the hepatic flexure. Contusion in the transverse mesocolon.







Hemoperitoneum evacuated, primary repair of duodenal perforation done in two layer, inner with 3-0 vicryl and outer with 3-0 silk. Antrectomy, gastrojejunostomy, jejunojejunostomy and feeding jejunostomy done (duodenal diverticulization). Two units of blood transfusion done. Tears in the mesocolon and transverse colon is sutured in single layer with 3-o silk. Post operative events uneventful. Patient discharged on 15th post-operative day.



DISCUSSION

Larry provided the first description of penetration duodenal injury. Herczel reported the first repair of a duodenal injury[1]. 3-5% of all abdominal injuries is duodenal injuries. Most duodenal injuries accompanied by other intra abdominal injury, because of its close association with the other solid organs and major vessels [2]. Penetrating injury distributed more equally among the 4 segments , blunt injury is more common in D2 and D3 [1]. Mode of injuries – motor vehicle accidents, assault [2], gunshot wounds [3].

Mechanism of injuries

Complex crushing or shearing forces rupture the small vessels within the sub mucosal layers and cause an intraluminal duodenal haematoma. Duodenum is anatomically fixed by CBD and ligament of Trietz and the remainder of the duodenum remains highly mobile. Sudden changes in acceleration may shear the mobile segments of the duodenum from the fixed portion. Simultaneous closure of pylorus and contraction of the ligament of Trietz during powerful blow to the abdomen can resulting in a bursting type of injury to the fluid filled duodenum [1]. Retroperitoneal location of the duodenum has protective effect but prevents early diagnosis of duodenal injuries. Failure to recognise early leads to intra-abdominal abscess and sepsis [3].

TREATMENT Table. 1 [2]

Grade	Injury	Description
I	Hematoma	Involving a single portion of duodenum
	Laceration	Partial thickness, no perforation
II	Hematoma	Involving more than one portion of duodenum
	Laceration	Disruption <50% of circumference
III	Laceration	Disruption 50-75% of circumference D2 Disruption 50-100% of circumference of D1, D3 & D4
IV	Laceration	Disruption >75% of circumference of D2, involving ampulla or distal common bile duct
V	Laceration	Massive disruption of duodenopancreatic complex
	Vascular	Devascularisation of duodenum

Clinical features – severe pain in the epigastrium and back and intractable vomiting [5].Investigation – hyperamylasemia present in 50% of the patient but not diagnostic. Plain x ray of theabdomen erect view shows mild scoliosis, obliteration of right psoas shadow, absence of air induodenal bulb, air in retro peritoneum outlining the kidney. Gastrografin upper gastrointestinal seriesor CT scan abdomen and pelvis with oral and i.v contrast shows extravasation of contrast and extra peritoneal extra luminal air. In duodenal hematoma obstruction is seen [3].

Depends upon severity of injury. Graded by organ injury scaling committee of the American Association for Surgery of Trauma [3]. Grade I & II injury – duodenal haematoma managed conservatively by nasogastric suction until peristalsis starts. If patient does not shows clinical or radiological improvement in 3 weeks surgical exploration done. For duodenal perforation once diagnosed within 6 hours simple primary repair is done. If diagnosed after 6 hour any form of duodenal decompression is done after primary repair. Primary repair done 3-0 monofilament single layer running suture, closed in a direction that results in the largest residual lumen [2]. When laceration is present in the medial wall transduodenal repair is done [4]. Foleys catheter can be inserted through the duodenal defect and once a mature fistula track has been established it can be removed and spontaneous closure of fistula anticipated [6]. Grade III injury – primary repair, pyloric exclusion and drainage or Roux en Y duodenojejunostomy done. Extensive injuries of the D1 proximal to duct of Santorini repaired by debridement and end to end anastomosis. Defect in

D2 should be patched with a vascularised jejunal graft. Duodenal injury distal to ampulla of vater, proximal to superior mesenteric vein Roux en Y duodenojejunostomy with distal portion of duodenum over sewn. Duodenal injury distal to 3rd and 4th part behind the superior mesenteric vein is resected and duodenojejunostomy done on left side of the superior mesenteric vein [2]. Grade IV injury – primary repair of duodenum, repair of CBD, placement of T tube with a long trans papillary limb or choledocho enteric anastomosis [2]. Grade V injury – Whipples pancreaticoduodenectomy done [2]. Duodenal decompression can be done by triple tube duodenostomy, duodenal diverticulization and pyloric exclusion [1]. Complications – duodenal fistula, incidence is 5-15%. Managed by nasogastric suction, parenteral nutrition & aggressive stoma care. Usually closed in 6-8 weeks. [2]. Treated operatively if persists for more than 6 weeks [4]. Duodenal abscess incidence is 10-20 %. Percutaneous drainage done. Surgical drainage if multiple abscess or located between bowel loops. [2].

CONCLUSION

Duodenal injuries are usually diagnosed late and intraoperatively. High index of suspicious should be there to diagnose early.. Early diagnose of duodenal injuries and appropriate surgery can prevent morbidity and mortality. Any bile staining in the peripancreatic area should be explored.

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