

Case Report

A case of traumatic duodenal perforation due to blunt abdominal trauma

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ABSTRACT

Duodenal injury following blunt abdominal trauma is a rare clinical entity and is often unnoticed leading to delay in management thereby increasing morbidity and mortality. We reported a case of duodenal perforation following blunt abdominal trauma with near complete transaction of duodenum at junction of D2 and D3 with grade 1 splenic laceration and highlight the challenges and decision-making dilemmas associated with its management.

Keywords: Trauma, Duodenal, Perforation

INTRODUCTION

Duodenal perforation represents a rare but potentially life-threatening condition. The mortality rate ranges from 8% to 25% in various published studies.¹⁻³ Traumatic injuries to duodenum are uncommon and contributes to less than 2 % of all abdominal injuries. Isolated duodenal injuries are rare, duodenal injuries often occurs with other organs injuries and damage to large vessels.⁴

Here we reported the case of road traffic accident with blunt trauma abdomen (steering wheel injury) in a 22 year old male with near complete transaction of duodenum at junction of D2 and D3 with grade 1 splenic laceration.

CASE REPORT

A 22-year male driver by occupation has been presented to ER with history of RTA due to collision of truck to the car while he was driving leading to blunt trauma to abdomen by steering wheel injury. The patient was primarily evaluated in peripheral institute and then

referred to higher centre (our institute) for further management.

Patient presented to emergency room with pain in abdomen radiating to back along with history of 2 episodes of non-bilious vomiting.

On examination, patient was ill looking, conscious and oriented, afebrile with pulse rate of 108/min with blood pressure 110/70 mm of hg and respiratory rates of 20 breaths/min with Ryles tube in situ containing bile-stained contents. Abdomen was distended with generalized guarding and rigidity all over the abdomen. Bowel sound were absent on auscultation, on digital rectal examination, stool staining was present with no evidence of bleeding, on chest auscultation air entry was equally present bilaterally, And the examination of other systems was unremarkable. X-ray chest and X-ray abdomen revealed no significant abnormalities

Blood investigations revealed hemoglobin was 13.6 g/dl, total leukocyte count was 11,000/mm³ (reference range 4000-11,000/mm³), serum lipase 64 IU/ml (reference

range:0 to 160 U/l) and serum amylase 78 IU/l (reference range: less than 95 IU/l).

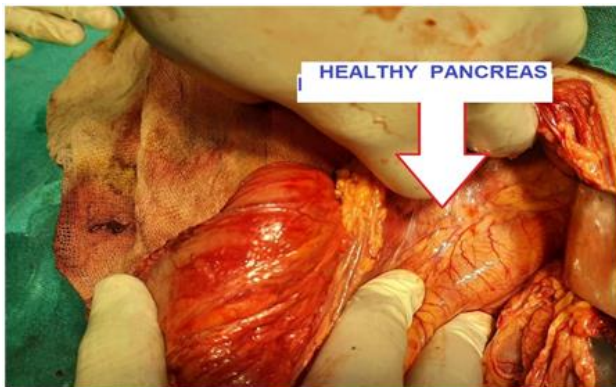


Figure 1: Intra operative exploration of pancreas to look for injury.

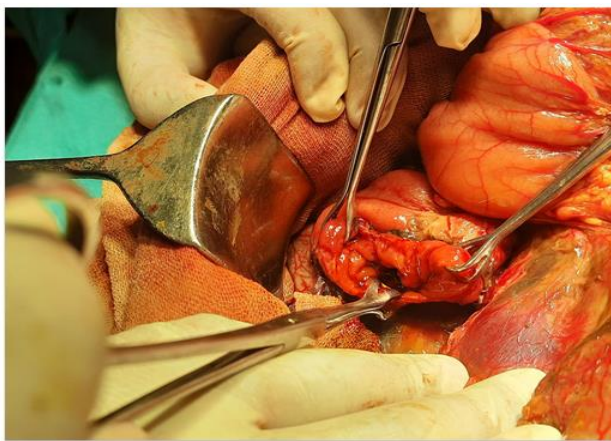


Figure 2: Perforated duodenum at the junction of 2nd and 3rd part.



Figure 3: CECT abdomen revealed extravasation of oral contrast between second and third part of duodenum.

Contrast enhanced CT scan of abdomen and pelvis revealed breach in the continuity of the duodenum at the junction of D2 and D3 also extending to proximal portion of third part of duodenum involving the posterior and the

inferior walls for an approximate length of 1.5 cm (involving 50 to 100% of its circumference). There is extravasation of oral contrast in a lesser sac through this breach with extra luminal air density specks within this extravasated collection along with grade 1 splenic laceration (AAST grading).

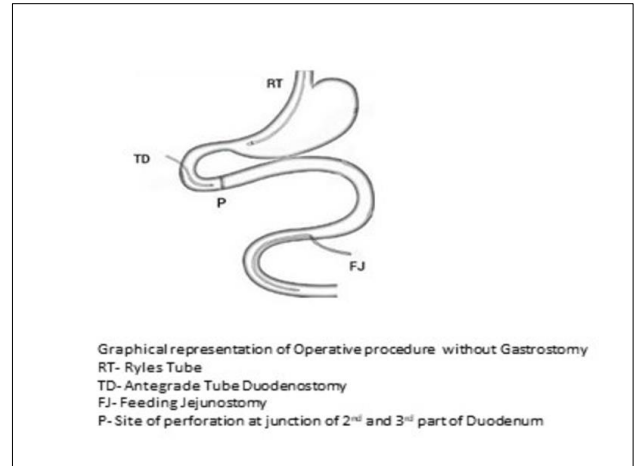


Figure 4: Graphical representation of operative procedure.

With this diagnosis of duodenal perforation decision was taken to pursue operative management. Intraoperatively there was near complete transection of duodenum at the junction of D2 and D3 involving about 60 to 70% of duodenal circumference. With no evidence of pancreatic injury. Patient underwent exploratory laparotomy with primary repair of duodenal perforation along with tube duodenostomy and feeding jejunostomy.

After 3 days of intensive care unit (ICU) stay, the patient was shifted to general ward, oral contrast dye study was performed on post operative day 7, revealing no evidence of any anastomotic leak. Tube duodenostomy was removed on post operative day 12. patient was discharged on post operative day 14 with feeding jejunostomy *in situ*.

DISCUSSION

Duodenal injuries accounts for approximately 3-5% of all abdominal organ injuries, out of all duodenal injuries 25 % occurs due to blunt trauma while remaining due to penetrating trauma.⁴

The recognition of duodenal injuries can be challenging due to its retroperitoneal location. This may lead to misdiagnosis or delay in the diagnosis and treatment increasing the mortality rates up to 40%.^{5,6}

The mechanism of duodenal injuries in blunt trauma abdomen is usually result from compression of abdominal wall against the fixed spinal column. Most of patients with duodenal injuries gives history of blunt

trauma to abdomen due to seat belt injury, deceleration trauma, steering wheel injuries etc.

In 2015, Santos et al reviewed 15 published series that analyzed a total of 1042 patients with duodenal injuries; according to study, second part of duodenum is most commonly injured in blunt trauma to abdomen followed by third and fourth part of duodenum with percentage of 36%, 18% and 15% respectively.^{7,8}

We have described a patient with AAST grade III duodenal perforation following blunt abdominal trauma. patient had atypical abdominal signs with no evidence of hollow organ perforation on standing x-ray abdomen. laboratory tests provide little help in early diagnosis of duodenal injuries. Serum amylase level has a predictive value, although it may remain normal in first 2 days of trauma in up to 40 % of cases, as in our case.⁸ Contrast enhanced computed tomography is modality of choice in stable patient with blunt trauma abdomen.⁹

The approach for management of duodenal injuries depends upon the site of the injury and amount of tissue destruction. Small perforations especially those involving the first part of the duodenum can be repaired primarily with single layer monofilament sutures maintaining largest possible residual lumen. Complete Kocherization of the duodenum is strongly recommended for adequate exposure to rule out multiple injuries and tension free repair. Tube duodenostomy is a damage control procedure for large duodenal perforations when other repair techniques are not possible due to the magnitude of duodenal damage, hemodynamic instability of the patient.¹⁰

In this case the site of perforation is beyond the 2nd part of duodenum and there was adequate lumen after the primary closure of perforation so pylorus exclusion with gastrojejunostomy is not done instead only tube duodenostomy is placed to decompress the duodenum.

CONCLUSION

The approach for management of duodenal injuries depends upon the site of the injury and amount of tissue destruction. Early diagnosis and intervention play crucial role in management of duodenal injuries.

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