



Roux-en-Y duodenojejunostomy for surgical management of isolated duodenal obstruction due to chronic pancreatitis

Himanshu Sharma*, Sanjay Marwah, Priyanka Singla, Amit Garg, Bittu Bhukkal

Department of Surgery, Pt BDS Post-graduate Institute of Medical Sciences, Rohtak, Haryana, India

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ABSTRACT

INTRODUCTION: Duodenal obstruction in case of chronic pancreatitis is a very rare occurrence and usually presents with gastric outlet obstruction. These cases sometimes require surgical intervention when conservative treatment fails. Gastrojejunostomy and vagotomy has conventionally been performed for management of these cases.

PRESENTATION OF CASE: In this report, we present two cases of isolated duodenal obstruction due to chronic pancreatitis that were managed with Roux-en-Y duodenojejunostomy. All the patients had uneventful post-operative recovery and remained symptom free up to two years of follow up.

DISCUSSION: The isolated duodenal obstruction in chronic pancreatitis is very rare occurring due to fibrotic scarring following pancreatic inflammation an irreversible phenomenon requiring drainage procedure. The advantage of performing Roux-en-Y duodenojejunostomy in these cases is that it avoids complications of gastrojejunostomy such as bile reflux and stomal ulcerations.

CONCLUSION: Roux-en-Y duodenojejunostomy should be considered as an alternative procedure when duodenal obstruction occurs beyond second part of duodenum.

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1. Introduction

Chronic pancreatitis can cause duodenal or common bile duct obstruction, either alone or in combination. Duodenal obstruction in such cases is very rare and has been reported to occur in less than 1% of patients [1,2]. It usually presents with symptoms of gastric outlet obstruction such as nausea and vomiting, abdominal pain and weight loss. The diagnosis is based on upper GI endoscopy and radiological contrast studies. The cases diagnosed with duodenal obstruction are initially managed with conservative treatment. Those patients who do not get relieved by conservative measures require surgical intervention. The surgical management of this unusual complication has traditionally been gastrojejunostomy and vagotomy, the procedure which has its own complications [1]. We herein present two patients of isolated duodenal obstruction due to chronic pancreatitis that were successfully managed with Roux-en-Y duodenojejunostomy at our institute at Post graduate institute of medical sciences, Rohtak.

1.1. Presentation of cases

We came across two rare cases of duodenal obstruction due to chronic pancreatitis that were initially managed conservatively but with no response. Both of them were successfully managed surgically.

1.2. Case 1

A 35-year-old, chronic alcoholic male, laborer by occupation, presented with complaints of abdominal pain and epigastric fullness after meals for two months. He also complained of projectile vomiting after one to four hours of meals that relieved his pain and epigastric fullness. There was no history of fever, jaundice or diabetes. On examination, he looked dehydrated but his pulse and blood pressure were normal. On abdominal examination, there was epigastric fullness and succussion splash was present. His hematological investigations were within normal limits except for low serum chloride levels (65 mmol/L) and low serum albumin levels (3.2 gm%). Chest x-ray was normal and plain X-ray abdomen revealed a large air fluid level suggestive of gastric dilatation. Abdominal ultrasound revealed bulky pancreatic head. Liver, gallbladder and common bile duct were normal. The patient was initially resuscitated with intravenous fluids, maintenance of electrolytes and nasogastric aspiration. After stabilization, upper gastrointestinal endoscopy was done, which showed dilated stomach with thickening of gastric mucosal folds and dilated proximal

* Correspondence to: House No. 1668 Sec - 55, Faridabad, Haryana, India.

E-mail addresses: himanshu86605@gmail.com

(H. Sharma), drsanjay.marwah@gmail.com (S. Marwah), singla.priyanka1710@gmail.com (P. Singla), amitgarg238007@gmail.com (A. Garg), bhukkal09@gmail.com (B. Bhukkal).

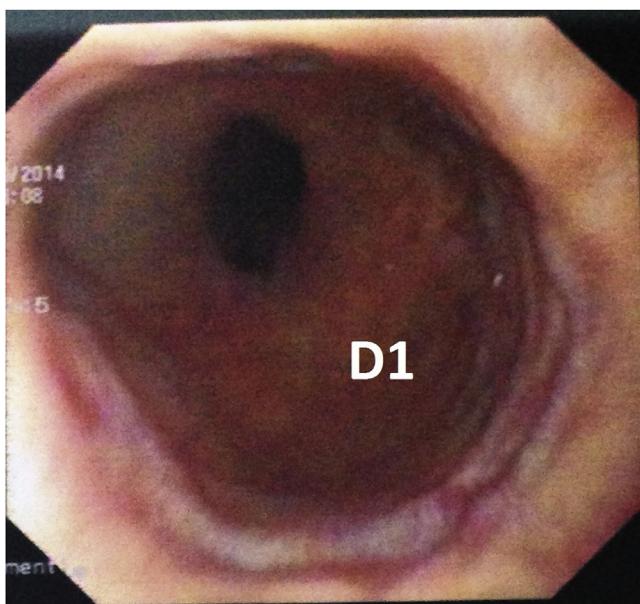


Fig. 1. Endoscopy showing dilated first part of duodenum (D1) and smooth narrowing at D1 D2 junction.

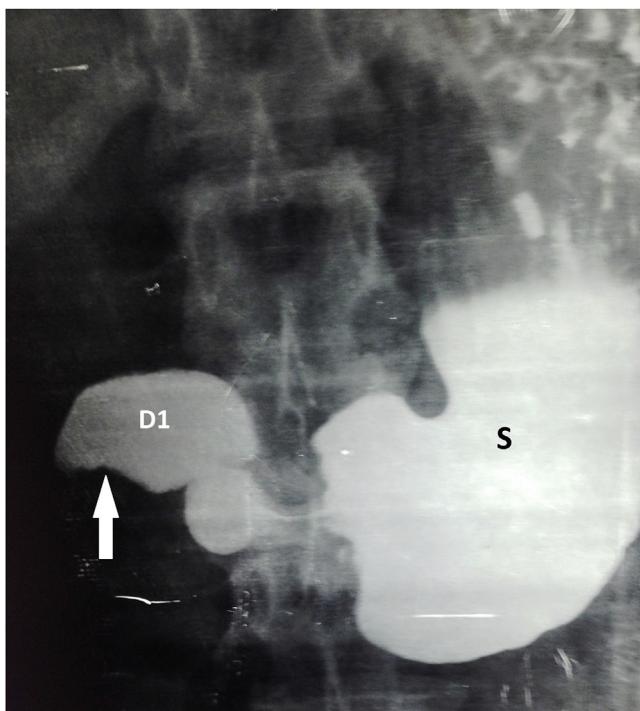


Fig. 2. Barium meal film showing dilated stomach (S) and first part of duodenum (D1). Second part of duodenum is not visualized.

duodenum with smooth narrowing at second part of the duodenum ([Fig. 1](#)). Barium meal study showed dilated stomach along with first part of duodenum. The second part of duodenum could not be visualized ([Fig. 2](#)). CT Abdomen revealed peripheral circumferential rim of soft tissue thickening and collection around the second part of duodenum (D2) with resultant compression and narrowing of D2. Pancreas head was bulky with surrounding calcification and fat stranding ([Fig. 3](#)).

The patient was conservatively managed initially with nasogastric aspiration, intravenous fluids, hyperalimentation and correction of electrolyte imbalance. However, the symptoms per-



Fig. 3. CECT film showing mass lesion in the head of pancreas (P) along with dilated stomach (S).

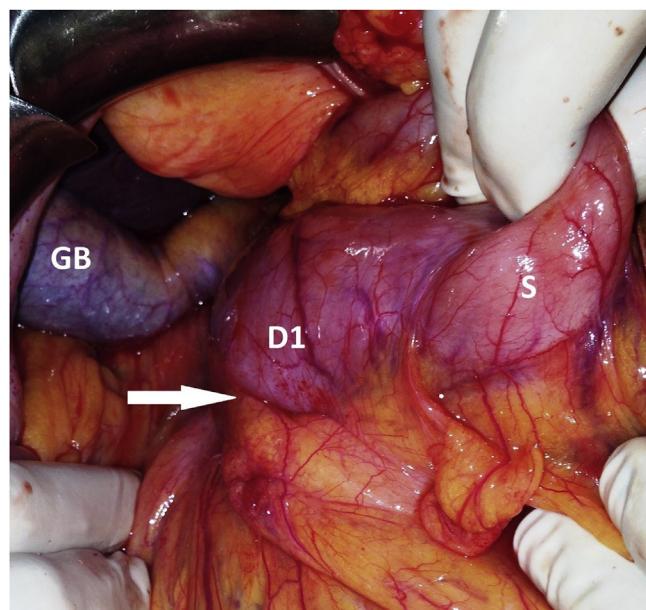


Fig. 4. Intra-operative photograph showing dilated first part of duodenum (D1) seen distal to prepyloric vein. The second part of duodenum is collapsed (arrow). S:Stomach, GB: Gallbladder.

sisted and surgery was planned. On exploration, stomach and first part of duodenum were distended; pancreatic head was bulky with edema of surrounding tissues ([Fig. 4](#)). Roux-en-Y, retrocolic, duodenojunostomy with naso-jejunal feeding tube was done. Post operatively patient developed gastroparesis with recurrent hiccups which was managed conservatively. Patient was started on liquid diet through naso-jejunal feeding tube from third post-operative day and the patient started accepting oral feed from tenth post-operative day. The naso-jejunal tube was removed at two weeks. Post-operatively histopathology report of the small pancreatic tissue sent for examination came out to be benign. On inquiring, patient was relieved of his symptoms and satisfied with his treatment. Patient was followed up to two years and remained symptom free during this period.

1.3. Case 2

A 42-year-old, chronic alcoholic male, farmer by occupation, was admitted with complaints of abdominal pain and multiple episodes of bilious vomiting for the last three months. The patient also had history of weight loss and loss of appetite. There was no history of fever, jaundice, hematemesis or melena. On examination, patient was afebrile with normal vital signs. Abdomen was

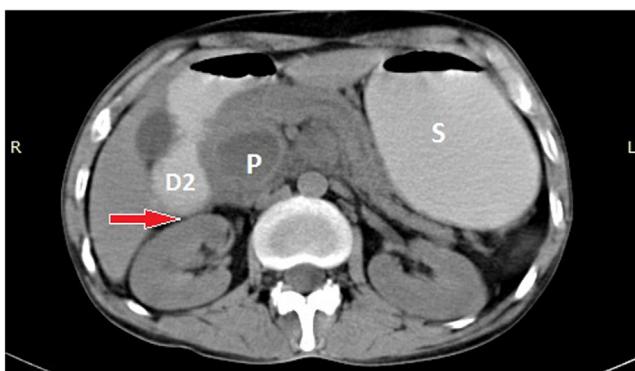


Fig. 5. CECT film showing dilated stomach (S), duodenal obstruction at junction of D2-D3 (arrow) with a cyst in head of pancreas (P).

soft, non-tender with fullness in epigastrium and succussion splash. There was no organomegaly and bowel sounds were heard normally.

His hematological investigations were within normal range except for raised serum amylase (232 IU) and serum lipase (2207 IU), and low serum albumin (3gm%), low BMI of 17. X-ray chest was normal. Abdominal ultrasound showed bulky pancreas with a small pseudocyst in head of pancreas. Liver, gallbladder and common bile duct were normal. CECT abdomen showed bulky pancreatic head with a small sized pseudocyst measuring 3.1 × 2.7 cm and pancreatic calcification. The stomach was distended and duodenum was prominent up to the junction of second (D2) and third part (D3) (Fig. 5). The barium meal study showed grossly dilated stomach along with dilatation of first and second part of the duodenum. On upper gastrointestinal endoscopy plenty of bilious fluid was noted in the stomach. The duodenum was distended up to D2-D3 junction and scope could not be negotiated beyond D2. MRI of the abdomen also revealed gastric and duodenal dilatation up to the junction of D2 and D3 (Fig. 6).

The patient was diagnosed with isolated duodenal obstruction due to chronic pancreatitis and was initially managed conservatively. However, the symptoms persisted and the patient was planned for surgical intervention. At surgical exploration, the pancreatic head was bulky, calcified, with a small pseudocyst pressing on duodenum. The stomach and duodenum were dilated up to junction of D2 and D3 with dense adhesion around third part of duodenum (Fig. 7). A Roux-en-Y, retrocolic, duodenojejunostomy was performed at the level of dilated D2 along with jejunoojejunostomy (Fig. 8). A naso-jejunal tube was passed across duodenojejunostomy into the jejunum. Postoperative period was uneventful. Naso-jejunal feeds were started on third post-operative day and patient started accepting oral feed from tenth postoperative day and was completely relieved of his symptoms 15 days after surgery. Histopathology report of the pancreatic tissue was suggestive of chronic pancreatitis. Barium meal studies at two weeks demonstrated free flow of barium through anastomosis with regressed gastric and duodenal dilatation (Fig. 9). Patient was satisfied of his treatment and was discharged under stable condition. The patient remained symptom free at two year of follow up.

2. Discussion

Chronic pancreatitis is associated with peripancreatic fibrosis that may involve and obstruct adjoining anatomical structures namely distal common bile duct, duodenum and portal venous system [3]. The reported incidence of biliary and duodenal obstruction is about 6% and 1.2%, respectively [4]. In case of combined obstruc-

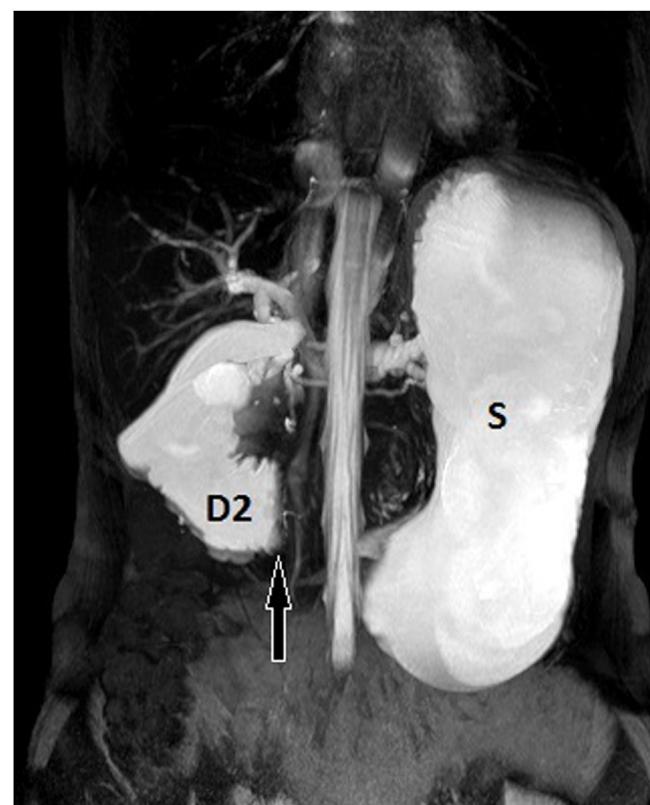


Fig. 6. MRI film showing dilated stomach (S) with duodenal obstruction at junction of D2-D3 (arrow).

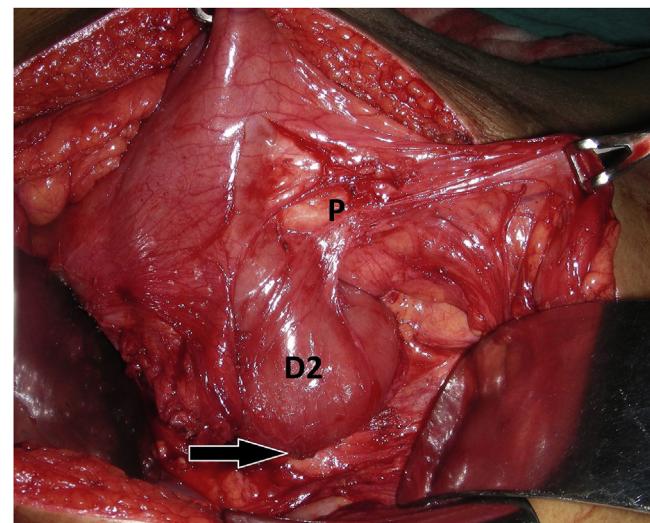


Fig. 7. Intra-operative photograph showing dilated duodenum up to junction of D2-D3 (arrow). P: Pancreas.

tion of the pancreatic duct, common bile duct and duodenum; combined drainage procedures are done to manage such cases.

The isolated duodenal obstruction in such cases is very rare. It occurs due to fibrotic scarring following pancreatic inflammation or due to pressure from pseudocyst in the head of pancreas and it usually reflects an advanced stage of the disease [5]. The obstruction is mostly reported to occur in second or third part of the duodenum as happened in our cases as well [1]. The patients usually present with repeated vomiting or large volume of nasogastric aspirate. The diagnosis is established based on barium meal study, upper

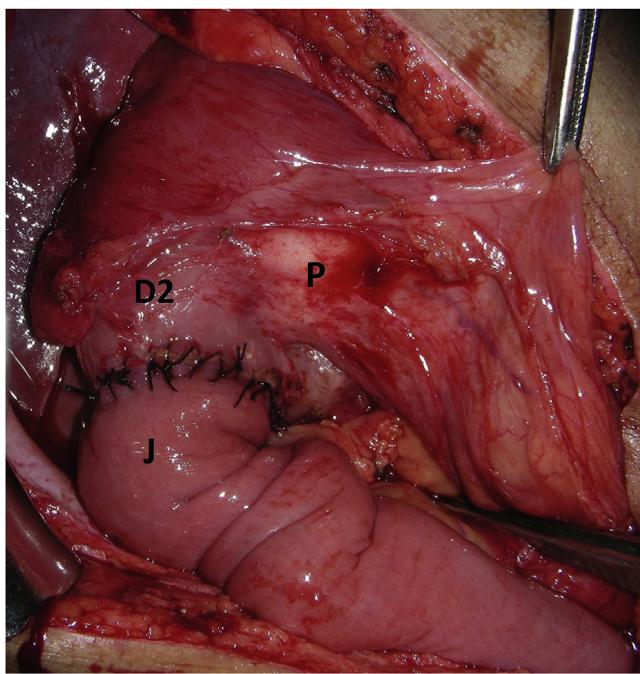


Fig. 8. Intra-operative photograph showing side to end duodenojejunostomy between dilated second part of duodenum (D2) and Roux limb of jejunum (J). A small cystic mass is seen in the head of pancreas (P).

gastrointestinal endoscopy and CECT abdomen that demonstrate duodenal occlusion with proximal gastric and duodenal dilatation. The other causes of duodenal obstruction such as duodenal diverticulitis, annular pancreas, SMA syndrome, carcinoma head of pancreas, mesenteric lymphadenitis and trans-duodenal band must be considered as differential diagnosis.

The patients presenting with duodenal obstruction due to chronic pancreatitis should be initially given a trial of conservative treatment that includes nil per orally, nasogastric aspiration, parenteral fluids and electrolyte maintenance and hyperalimentation for 2–3 weeks period. In a series of 878 patients with chronic pancreatitis, only nine patients presented with duodenal obstruction. Four out of these nine cases resolved with conservative management whereas remaining five cases required surgical intervention. In this series, duodenal involvement in the inflammatory process of moderately severe pancreatitis was seen in as high as 25% of the upper gastrointestinal studies, but was of mild degree and usually self-limiting. The authors concluded that since contiguous duodenal edema was a common finding and fibrosing pancreato-duodenitis occurred in an occasional patient only, the surgical intervention for duodenal obstruction associated with pancreatitis should be considered only after demonstrated failure of conservative management [1].

Gastrojejunostomy has been the standard procedure described over the years for duodenal obstruction due to chronic pancreatitis and vagotomy is invariably added to gastrojejunostomy in an effort to prevent marginal ulceration [1,4,6,7]. However contrary to this, duodenojejunostomy has been a well-established procedure described in the literature for cases of duodenal obstruction occurring due to various other causes like annular pancreas [8], SMA syndrome [9], duodenal diaphragm [10] and Crohn's disease [11]. Interestingly, in one of recently reported case of SMA syndrome occurring as a consequence of debilitation due to underlying chronic pancreatitis, successful management was done with duodenojejunostomy [12]. In fact, duodenojejunostomy is considered to be superior compared to gastrojejunostomy in treating duodenal obstruction following SMA syndrome [9]. Perhaps due to

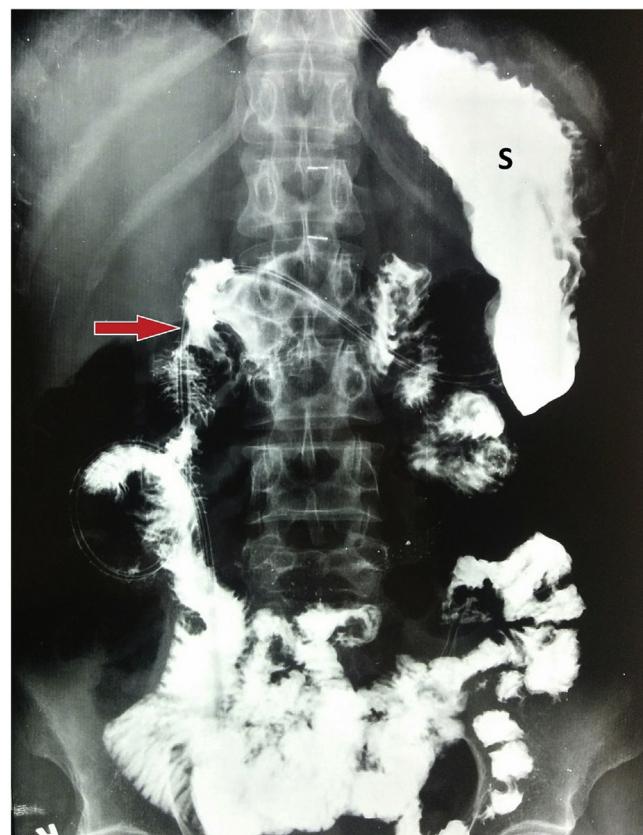


Fig. 9. Post-operative barium meal film showing free flow of barium through anastomosis (arrow) with regressed dilatation of stomach (S) and duodenum.

rarity of duodenal obstruction secondary to chronic pancreatitis, no organized plan of management has been offered and duodeno-jejunostomy has never been attempted in the past for management of such cases. The gastrojejunostomy and vagotomy procedure has its own sets of drawbacks as follows:

1. Due to bile refluxing into the stomach from anastomotic site, patient is likely to have reflux gastritis [13].
2. Marginal ulcer or stomal ulceration may occur after gastrojejunostomy, typically on the jejunal side that can produce symptoms of abdominal pain, nausea and vomiting [14].
3. The vagotomy is added to gastrojejunostomy with the aim to prevent stomal ulceration. However, vagotomy itself is likely to have long term complications such as delayed gastric emptying and post-vagotomy diarrhea [15].
4. Gastrojejunostomy performed in patients with persistent duodenal obstruction beyond second part of duodenum is likely to cause stasis of bile and pancreatic juices in proximal duodenum, a phenomenon similar to "sump syndrome" seen following duodenojejunostomy performed for obstruction at sphincter of Oddi.

Thus, by performing Roux-en-Y duodenojejunostomy in such cases, all the above complications can be avoided; patients are relieved of their symptoms early with no added morbidity of the procedure. In the end it was also ensured that this work has been reported in line with the SCARE criteria [16].

3. Conclusion

Roux-en-Y duodenojejunostomy should be considered as an alternative procedure especially when duodenal obstruction occurs

beyond second part of duodenum. However, in order to draw a conclusion that whether the above procedure is better than the historically preformed gastrojejunostomy and vagotomy, we need more studies involving large number of patients.

Consent

Informed consent for publication – taken from both the patients.

Conflicts of interest

None.

Sources of funding

None.

Ethical approval

Approved.

Author contribution

Dr Sanjay Marwah – study concept and writing the paper.

Dr Himanshu Sharma – writing the paper.

Dr Priyanka Singla – data analysis.

Dr Amit Garg – data collection.

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