Pancreatic Transplant Jejunitis Complication: A Case Report

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Radiology Case. 2025 July; 19(7):1-7 :: DOI: 10.3941/jrcr. 5644

AUTHORS' CONTRIBUTIONS
Each author contributed to the idea of the paper, the research of the case, and the editing of the case report.

ACKNOWLEDGEMENTS
Thank you to Dr. Imtiaz Ahmed for continued support on the publication of the case report.

DISCLOSURES
No disclosures for all authors

CONSENT
No consent due to no patient identifiers used.

HUMAN AND ANIMAL RIGHTS
No human or animal experiments were conducted.

ABSTRACT

Background: Pancreas transplantation aims to achieve stable glycemic control, often leading to insulin independence, while improving quality of life and reducing secondary complications associated with diabetes. One of the most common surgical approaches to the transplant is with a segment of the donor duodenum followed by a side-to-side duodenojejunal anastomosis. Complications of the procedure exist and it is important to conduct a follow-up CT scan post-transplant, especially if the patient complains of abdominal pain. Jejunitis should be considered in the differentials and a CT scan can help aid in confirmatory diagnosis.

Case presentation: Patient X, a 36-year-old male, recently underwent a pancreas transplant. Postoperatively, he presented with abdominal pain, leading to a workup with CT imaging that revealed jejunitis (inflammation of the jejunum), a condition that may be related to his recent transplant surgery.

Conclusion: Jejunitis is a complication of pancreatic transplant that can be identified with a follow-up CT scan. It is imperative to conduct a follow-up CT scan in a pancreatic transplant patient with any abdominal complaints to rule out infection, inflammation, or bleeding. Jejunitis should be added to the list of possible differential diagnosis as its symptoms may mimic other post-transplant complications.

CASE REPORT

CASE REPORT

Diabetes mellitus type 1 is a worldwide pandemic affecting an estimated 8.4 million individuals worldwide in 20211. The pathophysiology of dm type 1 involves the autoimmune destruction of beta-cells in the pancreas, which are responsible for insulin production. Therefore, patients with dm type 1 are unable to produce insulin which leads to chronically increased levels of blood glucose. This chronically increased blood glucose levels can lead to multiple macro- and micro-vascular complications, such as diabetic retinopathy, diabetic glomerulonephropathy, and premature cardiovascular disease [2]. While insulin supplementation is the currently recommended treatment for dm type 1, a pancreatic transplant is the only near cure treatment.this invasive procedure is indicated in patients presenting with severe complications of dm type 1, including severe and frequent episodes of hypoglycemia and ketoacidosis [3]. Although pancreas transplant alone (PTA) is performed less frequently, it is generally reserved for patients with severe and progressive diabetic complications where quality of life is significantly compromised [4]. These complications may include frequent acute metabolic crises (e.g., hypoglycemia, hyperglycemia, ketoacidosis), incapacitating emotional or clinical difficulties with exogenous insulin therapy, and consistent failure of insulin-based management to prevent acute complications 5. During the procedure, a donor pancreas with

a segment of the donor duodenum is placed into the abdomen, followed by side-to-side duodenojejunal anastomosis of the graft to ensure that exocrine secretions from the pancreas are still released and able to aid in digestion [3]. While the outcomes of this procedure have greatly improved in recent years, there are still several well-documented complications that can occur. These complications include hemorrhage, sepsis, pancreatitis, and thrombosis [3]. Beyond the well documented complications, there are also additional complications that can occur that are not as well documented. This paper will focus on one of these less documented complications that can occur, specifically jejunitis (inflammation of the jejunum).

CASE PRESENTATION

Patient x is a 36 year old male that had a recent surgical history of pancreatic transplant after failed insulin therapy for type 1 diabetes. Following the transplant, patient x was presenting with abdominal pain. The patient presented with symptoms lead to small bowel obstruction or infection as differentials. As part of the workup for the patient, ct image series were captured. These images illustrated the presence of jejunitis, observed as a thickened, inflamed wall of the jejunum; and indicated by the red circles in the images below.

DISCUSSION

Pancreatic transplant has been around for a while, with varying surgical methods. This patient had undergone a direct side-to-side anastomosis between donor duodenum and jejunum. Even with improvements in pancreatic transplant techniques, many postoperative complications still exist and can be distinguished based on onset [6]. It is important to know that post-op follow up and monitoring of the transplant is done by a CT scan in about 89% of patients [7]. With our case study, we hope to highlight the importance of a CT scan to demonstrate jejunitis and add jejunitis in the potential differential diagnoses when evaluating a post-transplant patient.

Previously, a study by Lindah et al. examined the safety of a duodenoduodenostomy in comparison to a duodenojejunostomy, which this patient had undergone. Per the study, anastomotic leakage occurred 5% and 4%, respectively [8]. A further study by Walter et al. demonstrated that anastomotic insufficiency and relaparotomy was a more common complication of duodenojejunostomy when compared to duodenoduodenostomy [9]. These anastomotic leaks increase the patient's risk for an intra-abdominal abscess by almost 33% [10]. These abscesses can lead to infections, which result in an detrimental impact towards graft survival, especially in patients with prior conditions of diabetes and continued immunosuppression therapy. The treatment for these infections depends on the location and the type. It is imperative to also rule out vascular or intestinal complications since these are serious postoperative consequences that may look similar to leakage disease [11].

As a result, it is vital to conduct an abdominal CT scan after the transplant in patients with any postoperative abdominal complaints. The CT scan in our patient demonstrates jejunitis as a postoperative complication with the inflammation surrounding the jejunum near the site of anastomosis. Ultimately, with the use of a CT scan, the patient should be evaluated for the venous anastomosis and the duodenojejunostomy [7]. In addition, an abdominal CT scan is the preferred choice for diagnosis [10]. Timely diagnosis of inflammation, infection, or fluid collection can improve graft function and decrease patient mortality [12].

TEACHING POINT

Long-term outcomes and complications are difficult to generalize due to variations in practice patterns, reporting inconsistencies among transplant centers, and the lack of standardized definitions for complications. This case report highlights the unique diagnosis of jejunitis in a postoperative pancreatic transplant patient. Current differential diagnoses include leakage, infection, and vascular complications. However, in post transplant patients presenting with abdominal pain, it is important to conduct a CT scan and examine the small bowel for signs of inflammation and jejunitis. This case hopes to highlight the intricacies of the CT images demonstrating the presence of jejunitis.

QUESTIONS

Question 1: Which of the following is the only near cure treatment for Diabetes Mellitus Type 1?

A. Insulin Therapy
B. Pancreatic Transplant (applies)
C. Metformin
D. Sodium-Glucose Transporter 2 inhibitors
E. Semaglutide

Explanation:

A. Insulin therapy is the recommended treatment option, but not a near cure treatment [While insulin supplementation is the currently recommended treatment for DM type 1, a pancreatic transplant is the only near cure treatment.]

B. A transplant of the pancreas is the only near cure treatment option [While insulin supplementation is the currently recommended treatment for DM type 1, a pancreatic transplant is the only near cure treatment.]

C. Metformin is used for the treatment of Diabetes Mellitus Type 2, not type 1; and is not considered a near cure treatment [While insulin supplementation is the currently recommended treatment for DM type 1, a pancreatic transplant is the only near cure treatment.]

D. Sodium-Glucose Transporter 2 inhibitors can be used for the treatment of Diabetes Mellitus Type 2, not type 1; and is not considered a near cure treatment [While insulin supplementation is the currently recommended treatment for DM type 1, a pancreatic transplant is the only near cure treatment.]

E. Semaglutide can be used for the treatment of Diabetes Mellitus Type 2, not type 1; and is not considered a near cure treatment [While insulin supplementation is the currently recommended treatment for DM type 1, a pancreatic transplant is the only near cure treatment.]

Question 2: Which of the following image modalities is often used to assess for any complications post-operatively status post a pancreatic transplant?

A. Computed Tomography (applies)
B. X-Ray
C. MRI
D. Ultrasound
E. Positron Emission Tomography scan

Explanation:

A. Computed Tomography Scan provides better detail than an X-ray and is more likely to show any potential complications status post a pancreatic transplant [It is important to know that post-op follow up and monitoring of the transplant is done by a CT scan in about 89% of patients.]

B. X-Ray will likely not show enough details to evaluate for any complications, and therefore CT scan is better [It is important to know that post-op follow up and monitoring of the transplant is done by a CT scan in about 89% of patients]

C. MRI provides excellent soft tissue detail, but may not pick up other complications, and therefore CT scan is better [It is important to know that post-op follow up and monitoring of the transplant is done by a CT scan in about 89% of patients]

D. Ultrasound would provide to small of an image without enough detail to pick up any potential complications, and therefore CT scan is more appropriate [It is important to know that post-op follow up and monitoring of the transplant is done by a CT scan in about 89% of patients]

E. Positron Emission Tomography would not provide any details regarding potential complications of a pancreatic transplant, and therefore CT scan would be more appropriate [It is important to know that post-op follow up and monitoring of the transplant is done by a CT scan in about 89% of patients]

Question 3: Which of the following is **not** a well-documented complication of pancreatic transplant?

A. Thrombosis
B. Hemorrhage
C. Sepsis
D. Pericarditis (applies)
E. Pancreatitis

Explanation:

A. Thrombosis is one well documented complication of pancreatic transplantation [These complications include hemorrhage, sepsis, pancreatitis, and thrombosis]

B. Hemorrhage is one well documented complication of pancreatic transplantation [These complications include hemorrhage, sepsis, pancreatitis, and thrombosis]

C. Sepsis is one well documented complication of pancreatic transplantation [These complications include hemorrhage, sepsis, pancreatitis, and thrombosis]

D. Pericarditis is NOT one of the well documented complication of pancreatic transplantation [These complications include hemorrhage, sepsis, pancreatitis, and thrombosis]

E. Pancreatitis is one well documented complication of pancreatic transplantation [These complications include hemorrhage, sepsis, pancreatitis, and thrombosis]

Question 4: Which of the following best describes the appearance of jejunitis on a computed tomography scan?

A. Thinning of the jejunum
B. Absence of inflammation surrounding the jejunum
C. Thick jejunum wall without inflammation around the jejunum
D. Thinning of the jejunum with inflammation surrounding it
E. Thickened appearance of the jejunum with surrounding inflammation (applies)

Explanation:

A. Jejunitis appears as a thickened jejunum with the appearance of surrounding inflammation, not a thinned jejunum [These images illustrated the presence of jejunitis, observed as a thickened, inflamed wall of the jejunum; and indicated by the red circles in the images below.]

B. Jejunitis appears as a thickened jejunum with the appearance of surrounding inflammation, not a jejunum without the presence of inflammation [These images illustrated the presence of jejunitis, observed as a thickened, inflamed wall of the jejunum; and indicated by the red circles in the images below.]

C. Jejunitis appears as a thickened jejunum with the appearance of surrounding inflammation, not a thick jejunum without surrounding inflammation [These images illustrated the presence of jejunitis, observed as a thickened, inflamed wall of the jejunum; and indicated by the red circles in the images below.]

D. Jejunitis appears as a thickened jejunum with the appearance of surrounding inflammation, not a thinned jejunum with inflammation [These images illustrated the presence of jejunitis, observed as a thickened, inflamed wall of the jejunum; and indicated by the red circles in the images below.]

E. Jejunitis appears as a thickened jejunum with the appearance of surrounding inflammation, not a thinned jejunum [These images illustrated the presence of jejunitis, observed as a thickened, inflamed wall of the jejunum; and indicated by the red circles in the images below.]

Question 5: Which of the following is **not** an item that should be included in the differential diagnosis of jejunitis?

A. Leakage
B. Infection
C. Pericarditis (applies)
D. Vascular Complications
E. Duodenitis

Explanation:

A. Infection of the transplant, leakage around the transplant, and vascular complications are all potential differential diagnoses for jejunitis following a pancreatic transplantation. [Current differential diagnoses include leakage, infection, and vascular complications.]

B. Infection of the transplant, leakage around the transplant, and vascular complications are all potential differential diagnoses for jejunitis following a pancreatic transplantation. [Current differential diagnoses include leakage, infection, and vascular complications.]

C. Infection of the transplant, leakage around the transplant, and vascular complications are all potential differential diagnoses for jejunitis following a pancreatic transplantation; while pericarditis is not considered in the differential [Current differential diagnoses include leakage, infection, and vascular complications.]

D. Infection of the transplant, leakage around the transplant, and vascular complications are all potential differential diagnoses for jejunitis following a pancreatic transplantation. [Current differential diagnoses include leakage, infection, and vascular complications.]

E. The presence of anastomosis involving the duodenum and jejunum means that duodenitis should also be considered in the differential. [Current differential diagnoses include leakage, infection, and vascular complications.]

REFERENCES

1. Gregory GA, Robinson TIG, Linklater SE, et al. Global incidence, prevalence, and mortality of type 1 diabetes in 2021 with projection to 2040: a modelling study. *Lancet Diabetes Endocrinol.* 2022; 10(10): 741-760. PMID: 36113507.
2. Hackett E, Gallagher A, Jacques N: Type 1 diabetes: pathophysiology and diagnosis. *The Pharmaceutical Journal.* 2013.
3. Bahar SG, Devulapally P. Pancreas Transplantation. [Updated 2023 Mar 14]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024.
4. Holt RIG, DeVries JH, Hess-Fischl A, et al. The management of type 1 diabetes in adults: A consensus report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD). *Diabetologia.* 2021; 64(12): 2609-2652. PMID: 34590174.
5. Robertson RP, Davis C, Larsen J, Stratta R, Sutherland DE, American Diabetes Association [Corporate Author]. Pancreas and islet transplantation in type 1 diabetes. *Diabetes Care*. 2006; 29(4): 935. PMID: 16567844.
6. Gallego Ferrero P, Crespo Del Pozo J. Imaging in pancreas transplantation complications: Temporal classification. J Med Imaging Radiat Oncol. 2018; PMID: 29808575.
7. D'Alessandro C, Todisco M, Di Bella C, et al. Surgical complications after pancreatic transplantation: A computed tomography imaging pictorial review. *World J Gastroenterol*. 2023; 29(46): 6049-6059. PMID: 38130739.
8. Lindahl JP, Horneland R, Nordheim E, et al. Outcomes in Pancreas Transplantation With Exocrine Drainage Through a Duodenoduodenostomy Versus Duodenojejunostomy. *Am J Transplant.* 2018; 18(1):154-162. PMID: 28696022.
9. Walter M, Jazra M, Kykalos S, et al. 125 Cases of duodenoduodenostomy in pancreas transplantation: a single-centre experience of an alternative enteric drainage. *Transpl Int.* 2014; 27(8): 805-815. PMID: 24750305.
10. Ferrer-Fàbrega J, Fernández-Cruz L. Exocrine drainage in pancreas transplantation: Complications and management. *World J Transplant.* 2020; 10(12): 392-403. PMID: 33437672.
11. Ferrer-Fàbrega J, Cano-Vargas B, Ventura-Aguiar P, et al. Early intestinal complications following pancreas transplantation: lessons learned from over 300 cases - a retrospective single-center study. *Transpl Int*. 2021; 34(1): 139-152. PMID: 33084117.
12. Ozturk M, Ozkan O, Laeseke P, Kleedehn MG. Peripancreatic Fluid Collections After Pancreas Transplant: Safety and Efficacy of Percutaneous Drainage. *AJR Am J Roentgen*ol. 2021; 217(2): 404-410. PMID: 34036810.

FIGURES

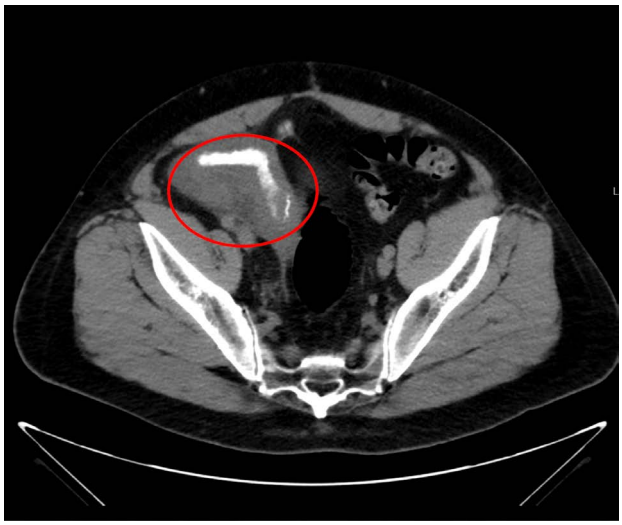

Figure 1: Inflamed Jejunum Marked by red circle on axial CT images

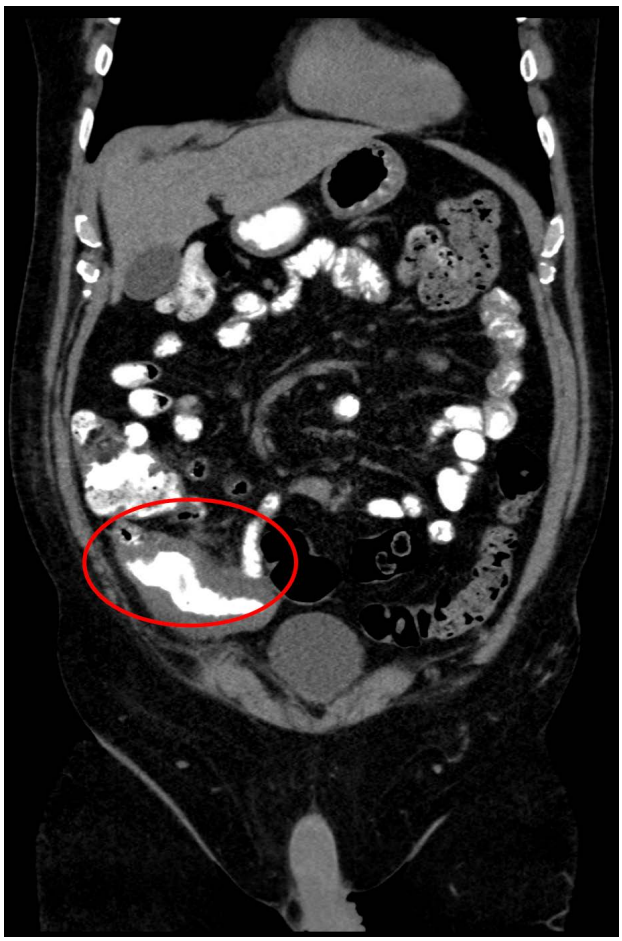

Figure 2: Inflamed Jejunum Marked by red circle on coronal CT images

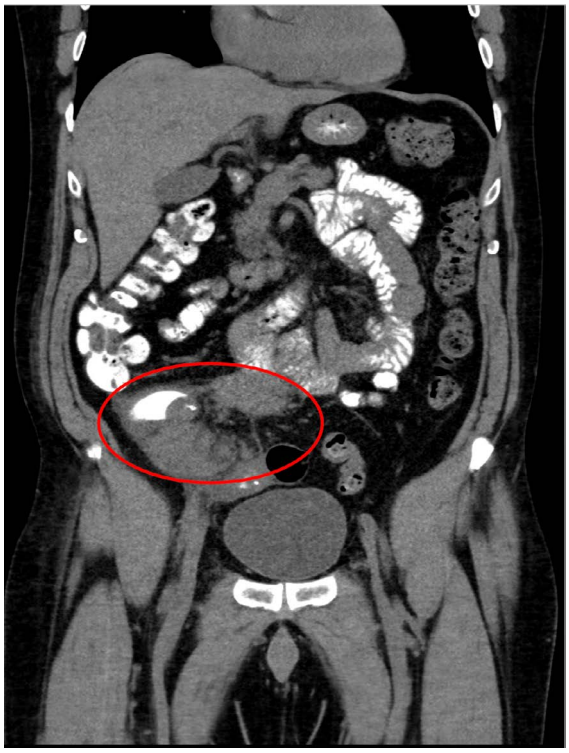

Figure 3: Different view of the Inflamed Jejunum Marked by red arrows on coronal CT images

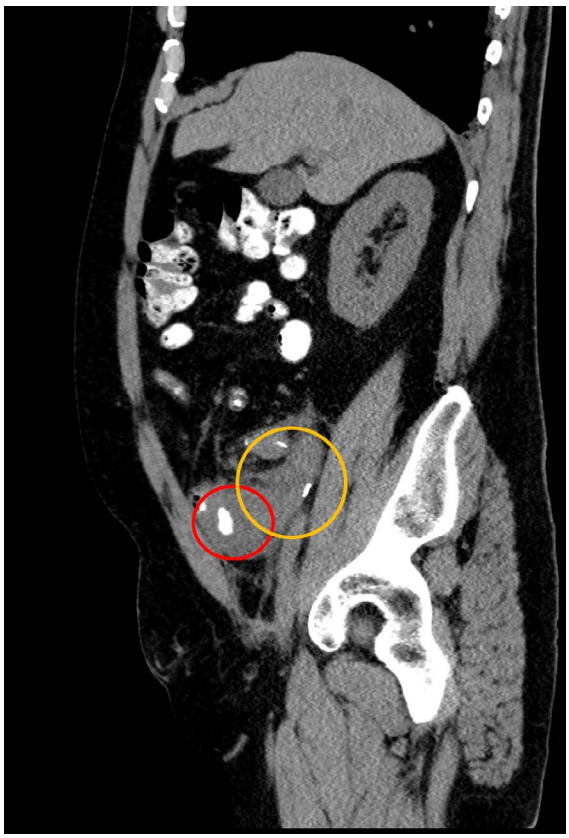

Figure 4: Inflamed Jejunum Marked by red circle on sagittal CT images

KEYWORDS

Diabetes Mellitus Type 1 (DM Type 1); Pancreatitis Transplant; Jejunum; computed tomography (CT) scan